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Eastern spotted skunk (*Spilogale putorius*)

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Abstract—*Spilogale putorius* is a mustelid more commonly known as the eastern spotted skunk. Found primarily in the central and southeastern United States, it is a small weasel-like skunk with a distinctive pattern of spots and stripes. Known for its handstand approach to challengers, this nocturnal mammal prefers shrub and forest habitats. Although they are not considered a species of conservation concern, some states have reported a population decline in recent years.

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Eastern spotted skunk

Spilogale putorius (Linnaeus, 1819)

CONTEXT AND CONTENT

Order Carnivora, Suborder Caniformia, Family Mephitidae, Genus *Spilogale*. Three subspecies are recognized: *S. putorius*, *S. ambarvalis*, and *S. interrupta*

GENERAL CHARACTERS

Spilogale putorius (Fig. 1) is a small weasel-like mustelid with fine, dense fur. The black fur is evident amongst the 4 to 6 broken white stripes and a white, inverted triangular nose patch (Kinlaw 1995). Two side stripes are present at the median and rear with four stripes running parallel to the vertebral column from the back of

the head to the median. Small white spots are present on each cheek and the rear, with the tip of the tail also white. This aposematic fur pattern is used as a warning defense and may aid in protection from predators since it is hard to distinguish in the dark (Maser et al. 1981, Kinlaw 1995).

Total length of *Spilogale putorius* is 351 to 448 mm, with tail length 110 to 192 mm and body length 241 to 256 mm. The hind feet are 40 to 53 mm and the ears 24 to mm. Body weight is 400 to 965 g (Maser et al. 1981). Each foot has five toes with claws of the forefeet about 7 mm, twice the length of the hind feet claws (Kinlaw 1995).

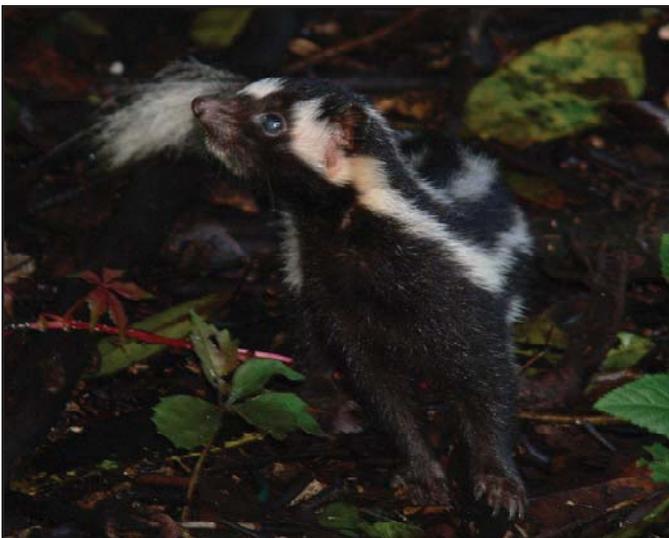


Fig. 1. Eastern Spotted Skunk. Photograph by Nora Arias Loftis.



Fig. 2. Dorsal and lateral view of adult *Spilogale putorius*. Average skull length: 5.5cm. Photograph courtesy of Skulls Unlimited.

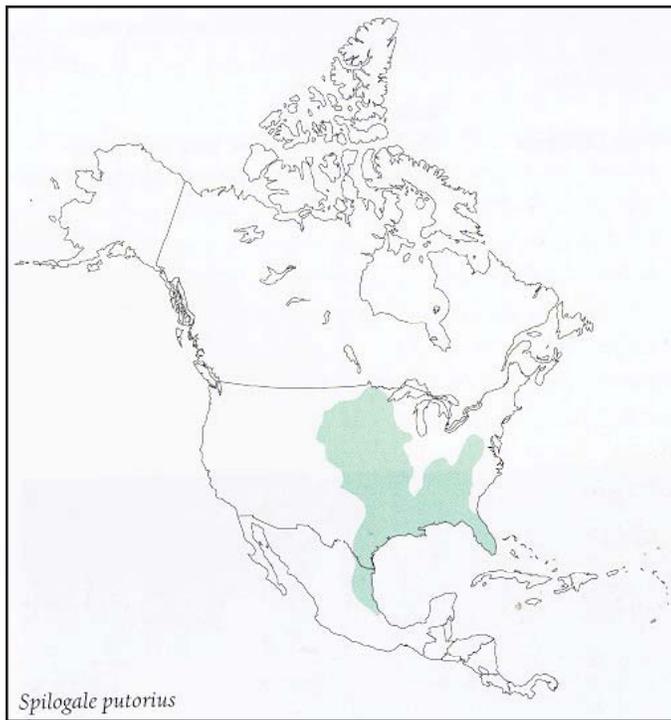


Fig. 3. Geographic distribution of *Spilogale putorius*. Map courtesy of The Smithsonian Book of North American Mammals.

Spilogale putorius is sexually dimorphic, with male external measurements about 8% larger than females. Greatest variation occurs in length of the head, body, and hind feet. The skulls (Fig. 2) of males are 7% larger than females with a wider zygomatic arch and greater development of the sagittal and lambdoidal crests (Kinlaw 1995).

Spilogale putorius has a dental formula of $i\ 3/3, c\ 1/1, p\ 3/3, m\ 1/2$, total 34. P3 is always small and sometimes absent. The carnassials are longer in *S. putorius* than other skunks; which may be associated with a diet composed mainly of meat (Kinlaw 1995).

DISTRIBUTION

Spilogale putorius occurs throughout the central and southeastern United States (Fig. 3), and northeastern Mexico (Reed and Kennedy 2000, Neiswenter et al. 2006). In Mississippi, *S. putorius* is found throughout the state, with the exception of the northwestern corner along the Mississippi River (IUCN 2008).

An increase in geographic range has been observed in the Great Plains and is thought to be a result of an increase in agriculture, which

has led to an increase in mice, a primary prey of *S. putorius* (Kinlaw 1995).

FORM AND FUNCTION

Spilogale putorius has pads on the soles of the feet that aid in climbing. The longer front claws aid in digging, climbing, and holding prey. Spotted skunks have larger ears than other skunks, which aid in heat loss and help detect movement of small animals (Kinlaw 1995).

The musk secreted by *S. putorius* is used as a defense mechanism to ward off predators (Kinlaw 1995). Paired anal glands that open through nipples just within the anus secrete the liquid. The glands are subcutaneous with bundles of striated muscles that connect the glands to the body. The muscle tissues in the glands contract with the skin near the tail and hind legs to force the musk out of the nipples (Heidt and Morgans 1982). The musk can be discharged as an atomized spray of almost invisible droplets or as a short stream of larger drops. In order to create an arc of 30-45° with the musk, the skunk will turn slightly in the direction of the challenger (Heidt and Morgans 1982).

In the bone structure of *S. putorius*, the thyrohyal and ceratohyal evolve dorsally from the basiylal (Verts et al. 2001). There are 8 sternbra present in *Spilogale*, whereas other skunks have 9 sternbra. *Spilogale* has a vertebral formula of 7 C, 14 T, 7 L, 2 S, 23 Ca, total 53. Less ventral flexion of the vertebral column is present in *Spilogale* as a result of articular surfaces that face dorsomedially (Verts et al. 2001). The transverse processes of the second thoracic vertebra have a broader base than terminal end and the sacrum is composed of two fused vertebrae. A characteristic unique to *Spilogale* is dual articulation through the lesser multangular articulating with the 1st and 2nd metacarpals (Verts et al. 2001).

ONTOGENY AND REPRODUCTION

Testes of male *Spilogale putorius* begin to increase in size in March and have reached maximum size by late September (Maser et al. 1981). Testis sizes are greatest during mating

season and associated with an increase in testosterone concentrations (Kaplan and Mead 1994). Females experience an increase in ovarian activity in March and ovulation occurs spontaneously. Mating and fertilization occurs in late March or early April with implantation occurring 14 to 16 days after mating (Mead 1968).

After a gestation period of 50 to 65 days, parturition occurs in late May or early June. Litter sizes vary; mean litter size is 5.5 and the sex ratio at birth is 65 M: 35 F (Mead 1968). A second litter may be produced after breeding in July or August (Verts et al. 2001). Neonates, weighing around 10g, are born with eyes and ears closed but can vocalize in a distinct squeal and have well developed claws (Maser et al. 1981). Although young are born with smooth skin, black and white markings are visible. At 7 days, fur is thin and sparse, offering little protection from the environment. By 24 days, the young are capable of raising the tail in a defensive warning but are still unable to produce musk (Maser et al. 1981). Eyes begin to open around 30 or 32 days and their teeth are visible around 35 days old. At 42 days, the young are eating solid food and are capable of producing musk at 46 days. The young are weaned in about 54 days and have reached full body size by 3 months of age. Males and females become sexually mature during their first summer and are able to breed by their first fall (Maser et al. 1981).

ECOLOGY

Space Use.—*Spilogale putorius* occur in brushy, rocky, woody habitats with extensive vegetation. While rarely occurring in open areas or around wetlands, some spotted skunks have been recorded in the sandy soils of Florida and on beaches (Kinlaw 1995). In a natural landscape, spotted skunks prefer to den in areas with natural cavities such as hollow logs or stumps (Maser et al. 1981). Although they can use their well-developed claws to dig burrows, *S. putorius* prefers to use the burrows of other animals such as pocket gophers, ground squirrels, wood rats, striped skunks, gopher tortoises, or armadillos (Maser et al.

1981, Kinlaw 1995). Dens of spotted skunks are positioned such that they are completely dark inside which offers more protection against unfavorable weather and enemies. A den or burrow can be complex, depending on the previous inhabitant. Burrows can consist of one or two sleeping chambers lined with grass and hay (Maser et al. 1981). Den locations of spotted skunks may depend on the placement of other dens, as well as the availability of food, presence of competition, and likelihood of predators. Spotted skunks are social, often sharing dens with up to seven other skunks. However, maternal dens are not shared with other adults (Maser et al. 1981).

Diet.—*Spilogale putorius* is omnivorous, eating whatever is readily available. During winter and spring, the diet primarily consists of birds and small mammals (e.g., small rabbits and mice) and lizards (Maser et al. 1981, Kinlaw 1995, Jones et al. 2008). In summer and fall, the diet is predominately insects, fruits, and plants. Carrion is also an important part of their diet. If the carcass is too large to carry, the spotted skunk will drag it to the den entrance or other protected location before consuming it (Maser et al. 1981).

Diseases and Parasites.—*Spilogale putorius* are known carriers of rabies in Mexico; however, they are uncommon hosts of rabies in the United States (Aranda and Buen 1999). Ectoparasites include ticks such as *Dermacentor variabilis* and *Ixodes cookie* and the flea *Polygenis gwyni*. (Kinlaw 1995). Endoparasites reported to occur in *S. putorius* include the tapeworms *Oochoristica pedunculata*, *Oochoristica wallacei*, and *Oochoristica oklahomenis* and the roundworms *Skrjabinogylus chirwoodorum* and *Capillaria hepatica* (Kinlaw 1995).

Interspecific interactions.—Potential food competitors of *S. putorius* include striped skunks and weasels. It is suggested that striped skunks are only ground-level competitors as spotted skunks obtain resources from both the ground and in trees (Kinlaw 1995). *Spilogale putorius* are most often

preyed upon by domestic dogs and cats; but have also been seen as prey of great horned owls and golden eagles. Highest mortality rates are the result of automobile accidents (Maser et al. 1981, Jones et al. 2008).

BEHAVIOR

Spilogale putorius are nocturnal and more agile and vigilant than other skunks in North America (Kinlaw 1995, Jones et al. 2008). They tend to be secretive and are rarely seen. However, *S. putorius* has been known to climb trees and will use attics of homes as den sites. *S. putorius* are more likely to be active on cool, dry, overcast nights than hot, clear, wet nights (Kinlaw 1995). Although this species does not hibernate, activity may be reduced during periods of intense heat in summers or cold in winters. *S. putorius* is more active than other skunk species (Kinlaw 1995).

A behavior characteristic of the species is the “handstand” which is used in self-defense. When threatened, the skunk will run at the opponent, stop, and raise the rear using the front legs, as in the position of a handstand. With its back at the opponent, *S. putorius* will aim the rear toward the opponent and twitch the tail and hiss (Johnson 1921). *Spilogale putorius* can demonstrate remarkable accuracy, often spraying the face of an opponent 4 m away. This species has been observed walking in this position for >1m. *Spilogale putorius* usually will flee from predators to a nearby tree, but will spray if the threat is severe (Maser et al. 1981). Spraying musk from trees has been observed in extreme cases. The musk contains sulphide butylmercaptan, and is considered stronger than the musk of striped skunks (Maser et al. 1981).

Another behavior of the spotted skunk is foot stamping, often performed in conjunction with the handstand. The skunk will rapidly pat the front feet on the ground as an audible warning to the predator (Kinlaw 1995). This stamping, which can be heard several meters away, is usually followed by the skunk spraying the opponent if the treat continues (Maser et al. 1981, Kinlaw 1995).

A third behavioral characteristic of the spotted skunk is an egg-opening practice. The skunk will straddle the egg with the front legs and bite the egg until it opens. If this does not work, the skunk, using the front legs will push the egg back and kick it with one hind leg (Kinlaw 1995).

GENETICS

Spilogale putorius ambarvalis and *S. p. interrupta* have 4 diploid chromosomes with biarmed autosomes (Kinlaw 1995).

CONSERVATION

Spilogale putorius has been listed in many states as endangered, threatened, or “of concern”, but is considered to be of least concern range wide (IUCN 2008). In the 1940s after many spotted skunks were trapped for pelts, populations of spotted skunks declined drastically. However, after a decline in harvests, numbers are increasing (Gompper et al. 2005, Hackett et al. 2006). In 2008 *S. putorius* was listed as a species of least concern by the International Union of Conservation for Nature and Natural Resources (IUCN 2008).

REMARKS

The term *Spilogale* is derived from the Greek terms *spilo*, which means spot, and the term *gale*, which means weasel. *putorius* is a Latin word meaning fetid odor (Kinlaw 1995). Other common names for *S. putorius* include: civet cat, polecat, hydrophobian skunk, phoby skunk, phoby cat, tree skunk, weasel skunk, black marten, little spotted skunk, four-lined skunk, four-striped skunk, and sachet kitty (Maser et al. 1981, Kinlaw 1995).

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