

Mustela felipei (Carnivora: Mustelidae)

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Abstract: *Mustela felipei* Izor and de la Torre, 1978, is a mustelid commonly called the Colombian or Don Felipe’s weasel and is South America’s smallest weasel. It is also the darkest weasel in South America, with little variation in dorsal coloration; the venter is cream-colored with an oval spot the same color as the dorsum. The species is endemic to the Andes. Known from 6 specimens and 5 localities in Colombia and Ecuador, it may be the rarest carnivore in South America. Globally, it is considered “Vulnerable” by the International Union for Conservation of Nature and Natural Resources, although in Colombia it is considered “Endangered.”

Key words: Andes, carnivore, Colombia, Ecuador, weasel

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Mustela felipei Izor and de la Torre, 1978 Colombian Weasel

Mustela felipei Izor and de la Torre, 1978:92. Type locality “Santa Marta, elevation 2,700 m, near San Agustín, Huila, Colombia.”

[*Mustela frenata*] *aureoventris*: Hall, 1951:401. Part, not *Mustela frenata aureoventris* Gray, 1864.

Mustela (*Grammogale*) *felipei*: Izor and de la Torre, 1978:101. Name combination.

Mustela felepei Youngman, 1982:31. Incorrect subsequent spelling of *Mustela felipei* Izor and de la Torre, 1978.

Mustela (*Grammogale*) *felipei*: Izor and Peterson, 1985:790. Name combination.

Mustela (*Cabreragale*) *felipei*: Baryshnikov and Abramov, 1997:1409. Name combination.

CONTEXT AND CONTENT. Order Carnivora, suborder Caniformia, family Mustelidae, subfamily Mustelinae, genus *Mustela*. *M. felipei* is monotypic (Wozencraft 2005).

NOMENCLATURE NOTES. The specific epithet name, *felipei*, was given in honor of Philip Hershkovitz (Izor and de la Torre 1978). English common names are Colombian weasel and Don Felipe’s weasel; local names used include chucur, chucuri, chucuro, comadreja, condumbí, and cundumí, although the same local names also are used for *Mustela frenata* (Rodríguez-Mahecha et al. 1995; Fawcett et al. 1996; Tirira 2004).

Mustela felipei has been included in the subgenus *Grammogale*, together with *M. africana* (Izor and de la Torre 1978; Youngman 1982), and *Grammogale* may warrant recognition as a distinct genus (Izor and de la Torre 1978). Bacular characteristics distinguish the species of *Grammogale* from all other extant New World mustelids (Izor and Peterson 1985). Bacular characteristics also were among the criteria used to include *M. felipei* in the subgenus *Cabreragale* (Baryshnikov and Abramov 1997; Abramov 1999). The genus *Vison* has been suggested to include *M. felipei*, *M. africana*, *M. frenata*, and *Neovison* (formerly *M. vison*); this proposal would restrict *Mustela* to include weasels and ferrets with Eurasian or Holarctic distributions (Harding and Smith 2009).



Fig. 1.—Dorsal, lateral, and ventral views of the study skin of the holotype of *Mustela felipei* (FMNH [Field Museum of Natural History] 70999). Photograph by B. D. Patterson. This species has not yet been photographed alive, either in nature or captivity.

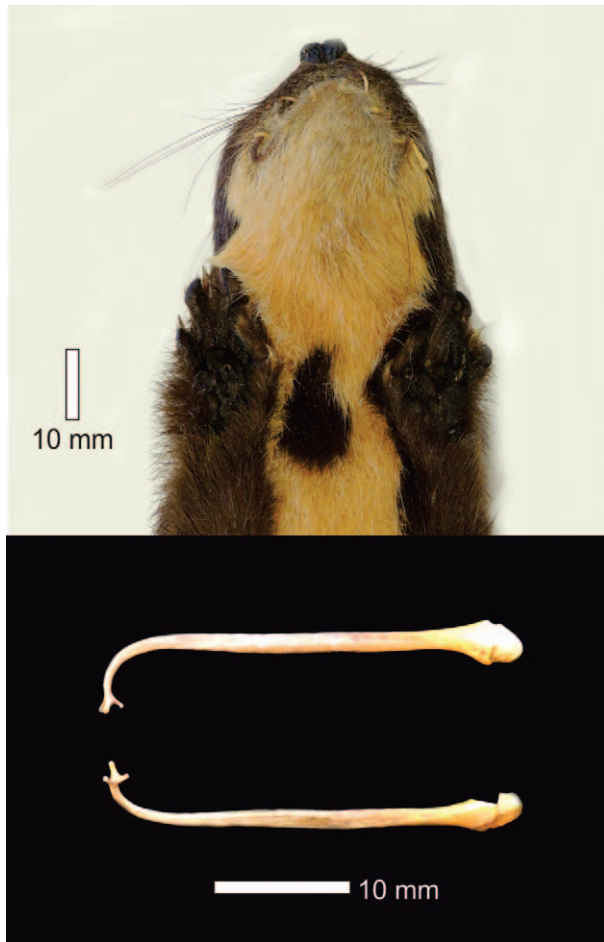


Fig. 2.—The right forefoot (top) of the paratype (FMNH [Field Museum of Natural History] 86745), showing interdigital webbing, and the baculum (bottom) of the holotype of *Mustela felipei* (FMNH 70999). Photograph by B. D. Patterson.

DIAGNOSIS

Body size of *Mustela felipei* averages smaller than the other South American weasels, *M. africana* (Amazon weasel) and *M. frenata* (long-tailed weasel), and the dorsal color is darker than in these congeners (Izor and de la Torre 1978). *M. felipei* exhibits a ventral spot on its chest or neck (Figs. 1 and 2) that is the same color as the dorsum (Izor and de la Torre 1978). The tail is short and lacks a black tip. The soles of the feet lack fur (Izor and de la Torre 1978; Ramírez-Chaves and Mantilla-Meluk 2009; Fig. 2). The skull of *M. felipei* (Fig. 3) has a wide mesopterygoid fossa with subparallel margins. The auditory bullae are short and broad compared to *M. africana* and *M. frenata*, and are more inflated posteromedially. The lambdoidal crest is weakly developed. The nasals are narrow and anteriorly less flaring in comparison with *M. frenata*. The p2 is reduced and almost equal in size to m2 (this tooth is larger in *M. frenata* and absent in *M. africana* [Izor and de la Torre 1978]).



Fig. 3.—Dorsal, ventral, and lateral views of skull and lateral view of mandible of the adult male holotype of *Mustela felipei* (FMNH [Field Museum of Natural History] 70999) from Santa Marta, near San Agustín, Huila, Colombia. Condylbasal length of the skull is 42.6 mm. Photograph by B. D. Patterson.

GENERAL CHARACTERS

Mustela felipei presents an elongate body, small head, and short, rounded, and stubby ears. The dorsal pelage is uniformly dark brown with little variation from nose to tail. The venter is light orange-buff fading to whitish on the chin extending posteriorly in a band (20 mm wide) from the lower

lip and corners of the mouth, to the lower abdomen (Fig. 1). Individual hairs are uniform in color from base to tip and the underfur is paler than the guard hairs (Izor and de la Torre 1978). A ventral dark brown marking, generally oval and 15–50 mm long, is located on the throat or upper chest; a specimen from Ecuador presents a 2nd small mark of 26 mm, and a 3rd mark in the abdominal area (Izor and de la Torre 1978; Ramírez-Chaves and Mantilla-Meluk 2009). Average external measurements (mm; with parenthetical range and *n*) of adult males and females, respectively, were: total length, 347 (324–390, 3), 347 (1); length of tail, 114 (100–140, 4), 118 (115–122, 2); length of hind foot, 45 (41–50, 2), 38 (37.6–38, 2); length of ear, 18 (1 male and 1 female).

The skull shows features reminiscent of an immature animal (rounded appearance, inflated braincase, and lack or reduction of prominent crests for muscle attachment, relative to other weasels [Fig. 3]). The postorbital constriction is not pronounced; the least postorbital breadth is equal to one-half or more of the zygomatic breadth (Izor and de la Torre 1978). Average craniodental measurements (mm; with parenthetical range and *n*) of adult males and females, respectively, were: condylobasal length, 42.9 (42.4–43.9, 3), 41.5 (1); zygomatic breadth, 25.8 (25.2–26.4, 3), 23.5 (1); mesopterygoid fossa breadth, 4.2 (4.1–4.38, 4), 3.85 (1); least interorbital breadth, 12.3 (10.7–13.2, 3), 10.5 (1); length of upper toothrow, 14.9 (14.5–15.4, 4), 15.4 (1). Additional cranial measurements are available (Izor and de la Torre 1978; Ramírez-Chaves and Mantilla-Meluk 2009).

DISTRIBUTION

Mustela felipei is known from only 5 localities (Fig. 4), 4 in Colombia and 1 in Ecuador, over an elevational range from 1,525 to 2,700 m (Ramírez-Chaves and Mantilla-Meluk 2009; Ramírez-Chaves et al. 2012). The northernmost record is located at Alto de Galápagos, in the Western Cordillera of Colombia, on the limits between the departments of Chocó and Valle del Cauca (4°51'N, 76°25'W, 2,000 m—Alberico 1994) and the southernmost record is located near Baeza, in the province of Napo, northeastern versant of the Andes of Ecuador (0°25'S, 77°55'W, 1,525 m—Schreiber et al. 1989; Ramírez-Chaves and Mantilla-Meluk 2009). The other 3 confirmed localities are: Colombia, department of Huila, Palestina, Parque Nacional Natural Cueva de Los Guacharos, valle del río Suaza (01°37'N, 76°06'W, 2,080 m); Huila, San Agustín, Santa Marta, east flank of the Central Cordillera (2°33'N, 76°39'W, 2,700 m); and department of Cauca, Popayán, west flank of the Central Cordillera (2°27'N, 76°37'W, 1,750 m—Ramírez-Chaves and Mantilla-Meluk 2009; Ramírez-Chaves et al. 2012). No fossils are known.

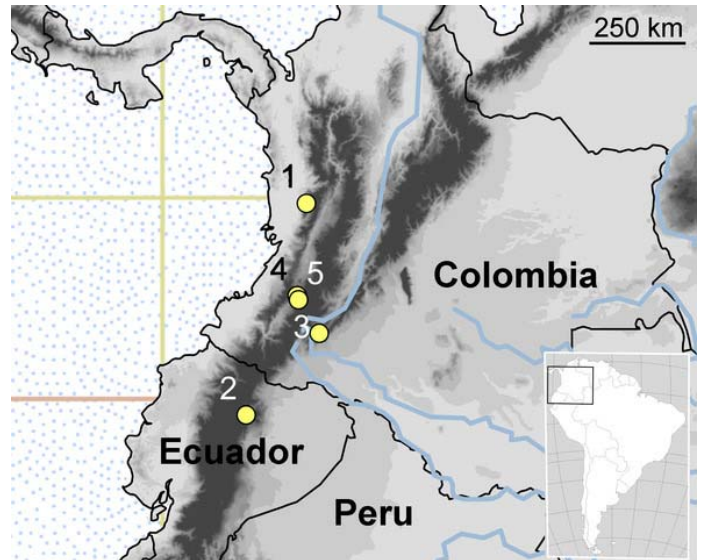


Fig. 4.—Geographic distribution of *Mustela felipei*. Localities are: 1, Alto de Galápagos (northernmost record); 2, Baeza (southernmost record); 3, valle del río Suaza; 4, Santa Marta (type locality); 5, Popayán.

FORM AND FUNCTION

The vertebral formula of the type specimen is 7 C, 14 T, 6 L, 3 S, 22 Ca, total 52. The caudal vertebrae are disproportionately short from the 1st to the 3rd and from 16th through 19th. The posteroventral processes on the centra of the 3rd through 5th cervical vertebrae are small and single (they are triple in Nearctic *Mustela*—Izor and de la Torre 1978). In the pelvis of a male specimen, the angle formed by the inferior rami of the pubes at the posterior end of the pubic symphysis in caudal aspect is acute (this is perpendicular in *M. frenata*—Izor and de la Torre 1978).

Both of the articular surfaces of the shoulder joint, on the scapula and the humerus, are relatively large. The trochlea and capitulum of the humerus are at the same level on the distal end, so the axis of their articular surfaces is at right angles to the shaft. The mesiolateral axis of the head of the femur is nearly at right angles to its shaft (Izor and de la Torre 1978).

The baculum of *Mustela felipei* (Fig. 2) has a slender shaft with a shallow, narrow urethral groove and an expanded base. The baculum curves approximately 90° dorsally; it has a trifid distal end, with the processes nearly equidistant in distal view (Izor and de la Torre 1978). The trifid tip is a character shared with *M. africana* (Izor and Peterson 1985).

In the skull, no sagittal crest is formed because of the arrangement of the 2 temporalis muscles; these gradually approach one another posteriorly, but they do not meet. The lambdoidal crest is weakly developed. The auditory bullae are inflated posteromedially, and the associated foramina

are large. The mesopterygoid fossa is wide ($> 16\%$ of the zygomatic breadth) with almost parallel sides (Izor and de la Torre 1978).

The dental formula is $i\ 3/3, c\ 1/1, p\ 3/3, m\ 1/2$, total 34, and the dentition is specialized for a carnivore diet. Upper and lower incisors and canines are typical for the genus. The postcanine teeth are in contact; the lingual cingula are developed. P2 is low-cusped with a single root posterior to the apex near its anterior margin. In ventral view, P3 is ellipsoid, with the labial margin convex; its anterior part is reduced like that of P2, but to a lesser degree. The protocone and parastyle of P4 form an acute angle. The M1 protocone is large with prominent anterior and posterior cingula (with rectangular appearance to the lingual side). The mandibular teeth present the following characteristics. The p2 is reduced (equal in size to m2). The p3 and p4 are reduced anteriorly. The protocone of p4 is convex in lateral view. The m1 and m2 are well developed (Izor and de la Torre 1978).

The penis is slender for most of its length; it increases greatly in diameter proximal to the distal dorsal curve. The penis has partly erectile tissue at its distal end that lies in 2 asymmetrically arranged lateral masses. A small and discrete structure, possibly with a secretory role, is located covering the urethra on the ventral side of the shaft. Distally, the penis shows the 3-pointed structure of the baculum, partially obscured and filled in by soft tissue (Izor and de la Torre 1978).

ECOLOGY

Little is known of the habitat preferences of *Mustela felipei* apart from the places where the recorded specimens have been found. One specimen was collected in the upper Suaza River valley, Colombia, in an area with stretches of torrential currents interrupted by quiet pools (Schreiber et al. 1989). Another specimen was captured alive in a Sherman trap (80 by 90 by 230 mm; H. B. Sherman Traps, Inc., Tallahassee, Florida) baited with a mixture of cracked corn with canned sardines in oil; the trap was located in mixed grass with low herbaceous vegetation in Alto Galápagos, Colombia (Alberico 1994).

Its naked foot soles with extensive interdigital webbing (Fig. 2) and riparian distribution suggest that *M. felipei* is adapted for aquatic environments (Izor and de la Torre 1978). Nevertheless, such feet also may be useful for moving over the soils of tropical cloud forest, which are generally near saturation, given near-daily rains and high humidity (Alberico 1994).

In one specimen (the holotype), the frontal sinuses show bilateral lesions typical of nematode infestation but this region of the skull does not appear distorted (Izor and de la Torre 1978).

GENETICS

Phylogenetic analysis using sequences of the mitochondrial cytochrome-*b* gene indicates that *Mustela felipei* is the sister species of *M. africana*, with a divergence time from *M. frenata* estimated at about $3\text{--}4 \times 10^6$ years ago. These 3 species plus *Neovison vison* (American mink) comprise a distinct New World lineage, which separated from 2 Southeastern Asia species after this group diverged from a large Eurasian lineage (Harding and Smith 2009). The cytochrome-*b* sequence of *M. felipei* was obtained from the paratype (FMNH 86745) deposited at the Field Museum of Natural History, Chicago.

CONSERVATION

Mustela felipei may be the rarest carnivore of South America (Schreiber et al. 1989). Globally, it is considered “Vulnerable” by the International Union for Conservation of Nature and Natural Resources (Emmons and Helgen 2008). In Colombia, it is listed as “Endangered” (Mesa-González 2006; Ministerio de Ambiente, Vivienda y Desarrollo Territorial [MAVDT] 2010), although in Ecuador it is listed as “Data Deficient” (Tirira and González-Maya 2009). Previous assessments for Ecuador included the species in “Critically Endangered” based on the small area of occupancy in a strongly fragmented habitat and a severe population decline (Tirira 2001).

The species has been collected in Cueva de los Guacharos Natural National Park and near Purace Natural National Park in Colombia (Ramírez-Chaves and Mantilla-Meluk 2009). In Ecuador, it has not been reported from any protected area (Tirira and González-Maya 2009). The potential distribution of *M. felipei* may include 5–9 protected areas in Colombia and 14 in Ecuador (Burneo et al. 2009; Ramírez-Chaves and Mantilla-Meluk 2009). The most recent record of *M. felipei* was in 1988, and subsequent fieldwork in 6 localities in Colombia (2 adjacent to localities where the species had been previously collected) failed to trap the species (Fawcett et al. 1996).

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