MAMMALIAN SPECIES No. 636, pp. 1–6, 3 figs.

Eira barbara.

By Steven J. Presley

Published 12 May 2000 by the American Society of Mammalogists

Eira C. H. Smith, 1842

Eira C. H. Smith, 1842:201. Type species *Eira barbara* C. H. Smith, 1842:201 (= *Mustela barbara* Linnaeus, 1758).

CONTEXT AND CONTENT. Order Carnivora, suborder Caniformia, family Mustelidae, subfamily Mustelinae. The genus *Eira* is monotypic.

Eira barbara (Linnaeus, 1758)

Tayra

Mustela barbara Linnaeus, 1758:46. Type locality "Brasilia," restricted by Lönnberg (1913) to "Pernambuco."
Galera barbata Browne, 1789:485. Type locality "Jamaica."
Tayra barbara Oken, 1816:377. Type locality "Guyana."
Gulo barbatus Desmarest, 1820:174. Renaming of *Mustela barbara* Linnaeus, 1758.
Galictis barbara Bell, 1826:551. Type locality "Argentina."
Eira barbara C. H. Smith, 1842:201. Type locality "Panama, Veraguas, Calovevora."

CONTEXT AND CONTENT. Context as for genus. Seven subspecies are currently recognized (Cabrera, 1958; Hall, 1981).

E. b. barbara (Linnaeus, 1758:46), see above.
E. b. inserta (Allen, 1908*b*:662). Type locality "Ulse, Matagalpa, Nicaragua."
E. b. madeirensis (Lönnberg, 1913:19). Type locality "Humaytá, Madeira River, Amazonas, Brazil."
E. b. peruana (Nehring, 1886:186). Type locality "Yurac Yacu, Department of San Martín, Perú."
E. b. poliocephala (Traill, 1821:440). Type locality "Demerara, Guyana."
E. b. senex (Thomas, 1900:146). Type locality "Hacienda Tortugas, Jalapa, Veracruz, México."
E. b. sinuensis (Humboldt, 1812:348). Type locality "Río Sinu, Bolivar, Colombia."

DIAGNOSIS. *Eira* can be differentiated from *Conepatus, Lutra, Mustela, Spilogale,* and all other sympatric genera, except *Galictis,* by external ear morphology. Shallow bursa of external ear in *Eira* is retained but remote from margin, and its posterior flap is not concealed by anterior flap, whereas bursa is marginal and posterior flap is hidden by anterior flap in other genera (Pocock, 1921).

Rhinarial characters distinguish *Eira* from *Galictis.* Rhinarium is grooved on both upper and anterior surfaces in *Eira* but only lower half of anterior surface is grooved in *Galictis.* Nostrils are larger and closer together in *Eira* than in *Galictis*; infrarhinarial portions are deep both medially and laterally and are marked in front by fine oblique grooves on each side that meet at midline above the inferior angle of anterior rhinarium (Pocock, 1921). Rhinarium is about twice as deep as upper lip, which has no gutter.

Feet of *Eira* differ from those of all other mustelid genera except *Galictis* (Pocock, 1921). Plantar pads of *Galictis* are separated from carpal and metacarpal pads by a deeper and wider groove than in *Eira.* These pads are confluent throughout their width; only a slight division exists between the two moieties of carpal pads, and no division is found in the metatarsal pad.

GENERAL CHARACTERS. The tayra (*Eira barbara*) is a large, slender mustelid with a long tail and long legs with strong claws (Fig. 1). Body is muscular and slender, with a slightly humped back. Ears are small and rounded, concolor with head, and do not protrude above crown (Pocock, 1921). Tayras have long, stiff facial vibrissae. Tail is bushy and two-thirds as long as body (Borrero, 1967; Emmons and Freer, 1990; Tello, 1979).

Tayras have strong claws on forefeet and hind feet, which are adapted for running and climbing but not digging or swimming (Pocock, 1921). Feet are naked below and possess short curved claws that are interdigitally webbed to proximal end of pads. In addition, *Eira* has large four-lobed plantar pads, double carpal and metatarsal pads, and a hairy heel. Digits are unequal in length; the first is shortest, second and fifth are intermediate and about equal length, and third and fourth are longest and of about equal length. Consequently, digital pads, when not spread, form a strongly curved line around anterior margin of plantar pad (Pocock, 1921). Carpal vibrissae are especially well developed in *E. barbara.*

Anal glands of *E. barbara* are not enlarged, and their secretion, although unpleasant, is not particularly offensive to humans; apparently it is not used by the tayra for self-defense (Hall and Dalquest, 1963; Pocock, 1921). Immediately dorsal to anus, *E. barbara* has a shallow, depressed area bounded laterally and caudally by a low ridge of skin. This structure is similar in embryological origin to the deep subcaudal glandular pouch present in *Meles* (Pocock, 1921). Perineal region between anus and vulva or scrotum is scantily haired to naked. In contrast to other mustelid genera, baculum is apically unbranched (Pocock, 1921).

Ranges of measurements (no sample sizes given) of individuals from across the entire geographic range (Emmons and Freer, 1990) are as follows: length of head and body, 559–712 mm; length of tail, 365–460 mm; length of hind foot, 90–123 mm; length of ear, 30–42 mm; mass, 2.7–7 kg. Geographic variation in size has not been reported. Adult males are 30% larger than females (Kaufmann and Kaufmann, 1965; Poglayen-Neuwall, 1975); however, this difference is not as great as those reported for other mustelid genera. Adult males are also more heavily muscled around neck and shoulders than females.

Pelage of *E. barbara* is short and course, with soft, brown underfur. Dorsum, legs, feet, and tail are dark brown to black, contrasting sharply with head and neck, which are grizzled tan, grayish brown, or pale yellow. Rare individuals have dark brown heads and necks, which are slightly paler or concolor with dorsum (Barquez et al., 1991; Eisenberg, 1989; Emmons and Freer, 1990; Mares et al., 1989; Redford and Eisenberg, 1992). Underparts are dark brown or black, except for a bright pale yellow to orange spot, often triangular, on chest and throat. Eyes are black with a blue-green eye shine (Kaufmann and Kaufmann, 1965). Young are entirely black, sometimes with a white throat patch, white head, or dark middorsal strip that extends to the tail (Alston, 1882; Emmons and Freer, 1990; Kaufmann and Kaufmann, 1965; Krumebiegel, 1942; Poglayen-Neuwall, 1978). With age, guard hairs develop white tips, giving the animal a frosted appearance (Krumebiegel, 1942). Albinism and amelanism are more common in the tayra than

FIG. 1. *Eira barbara* from Rio de Janeiro Zoo, Brazil. Photograph by T. S. Carter.

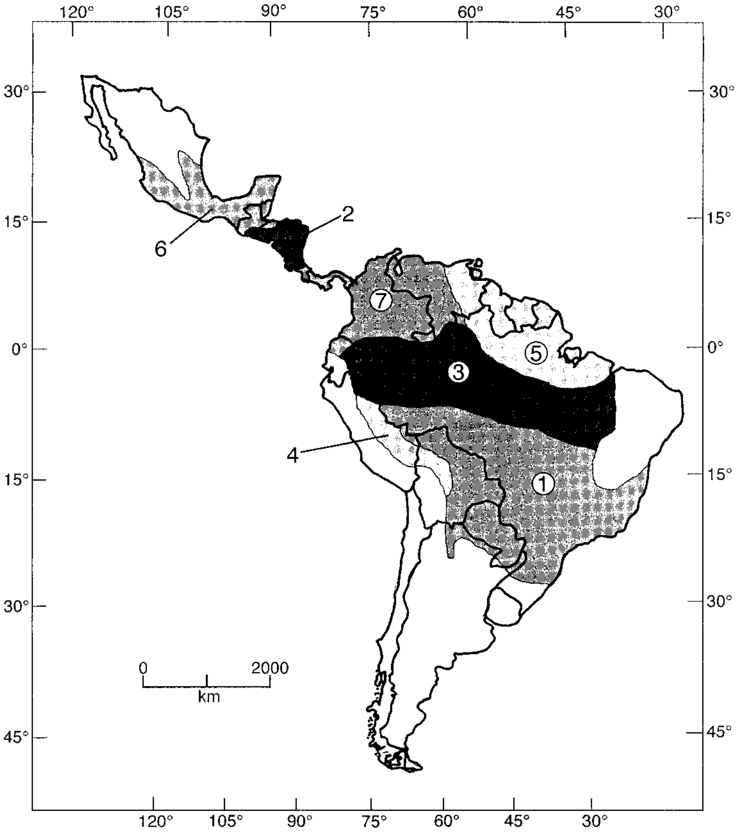

FIG. 2. Geographic distribution of *Eira barbara* in North and South America (Cabrera, 1958; Hall, 1981): 1, *E. b. barbara*; 2, *E. b. inserta*; 3, *E. b. madeirensis*; 4, *E. b. peruana*; 5, *E. b. poliocephala*; 6, *E. b. senex*; 7, *E. b. sinuensis.*

in other mustelids (Krumbiegel, 1942). In Guyana, a yellow morph occurs with the more typical color morph.

Subspecies differ in color. *Eira b. barbara* is dull brown with a nondistinct gray to brown head and a yellowish throat patch; body is lighter than *E. b. sinuensis* and darker than *E. b. senex* (Krumbiegel, 1942). *E. b. inserta* is black with a dark brown head and no throat patch (Kaufmann and Kaufmann, 1965; Krumbiegel, 1942). *E. b. madeirensis* is dark chocolate brown, with head and nape slightly lighter than body; a throat patch may be present (Krumbiegel, 1942). Color of *E. b. peruana* is as in *E. b. madeirensis* except that limbs are darker than body and tail is black (Krumbiegel, 1942). Pelage of *E. b. poliocephala* is similar to that of *E. b. barbara* but with a darker yellow throat patch and yellow shoulder patches, which sometimes join forming a complete yellow collar (Alston, 1882; Cabrera, 1915; Emmons and Freer, 1990; Krumbiegel, 1942). *E. b. senex* has a distinct grayish white head and neck. The grayish white color extends to shoulders fading to a dark yellow, face is darker, and body and limbs are dark brown (Krumbiegel, 1942). *E. b. sinuensis* is darker than *E. b. senex,* nape is darker brown than head, and a throat patch may be present (Krumbiegel, 1942).

DISTRIBUTION. *Eira barbara* occurs from southern Veracruz, Mexico, south to northern Argentina, and across most of South America east of the Andes (Fig. 2). It is the most common medium-size predator throughout much of its range (Emmons and Freer, 1990). The tayra is uncommon in eastern Mexico along the Gulf of Mexico and along the Pacific coast in southern Mexico (Kuns and Tashian, 1954; Leopold, 1959). It is common in forests of Costa Rica (Janzen, 1983) and Panama (Alston, 1882; Kaufmann and Kaufmann, 1965) and throughout Central America (Emmons and Freer, 1990; Reid, 1997). *E. barbara* is also common in Colombia, Guyana, Surinam, French Guiana (Eisenberg, 1989), Venezuela (Handley, 1976), Bolivia (Anderson, 1997), Brazil (except in the caatingas and cerrado of the northeast—Emmons and Freer, 1990), Paraguay, and northern Argentina east of the Andes as far south as Tucumán (Barquez et al., 1991; Mares et al., 1989; Redford and Eisenberg, 1992). *E. barbara* is found up to 2,400 m (Emmons and Freer, 1990) but is rare >1,200 m (Eisenberg, 1989).

FOSSIL RECORD. Two fossil species of *Eira* have been described from post-Pliocene deposits of Maryland and Virginia under the names *Galera macrodon* and *G. perdicida* (Cope, 1868*a*, 1868*b*, 1868*c*). The latter species may be referable to *Mephitis* (Alston, 1882) and the former to *Trigonictis* based on additional material collected from deposits of the Blancan land mammal age in the United States, specifically from Washington, Idaho, Nebraska, Kansas, Texas, North Carolina, and Florida (Ray et al., 1981). *Trigonictis* is considered an intermediate form between *Galictis* and *Eira* and ancestral to both. In addition, extinct species of *Eira* were noted from the Pliocene of the Eastern Hemisphere, but specimens, references, or specific names were not given (Scott, 1937). *Eira* and other endemic monotypic mustelid genera (e.g., *Lyncodon* and *Pteronura*) from South America may have evolved in situ and moved north as part of the north and south American interchange across the Panamanian land bridge (Hershkovitz, 1972). In contrast, recent collections suggest that *Eira* may have a North American origin (Ray et al., 1981).

FORM AND FUNCTION. *Eira barbara* is a large mustelid similar in appearance to Nearctic members of the genus *Martes* and is thought to have a similar ecological role in Neotropical regions (Scott, 1937).

Deciduous dental formula is i 3/3, c 1/1, p 3/3, m 0/0, total 28 (Poglayen-Neuwall, 1978). Adult dentition is i 3/3, c 1/1, p 3/3–4, m 1/1–2, total 34 (Fig. 3; Borrero, 1967; Herán, 1971; Mares et al., 1989; Poglayen-Neuwall, 1978). Unlike other mustelid genera, *Eira* lost the first premolar in both upper and lower jaws (Herán, 1971; Pocock, 1921), although the first upper premolar is retained in a few individuals (Herán, 1971).

Upper limit (85 kHz) and upper useful limit (40 kHz) of hearing range for tayra are lower than those for felids and procyonids but higher than those of canids and ursids (Ewer, 1973). Tayra have an olfactory response, flehmen, in which lips are pulled up, nose

FIG. 3. Dorsal, ventral, and lateral views of the skull and lateral view of mandible of *Eira barbara* from Para, Brazil (male, Field Museum of Natural History 34327). Greatest length of cranium is 103.8 mm. Photographs by João A. Oliveira.

is wrinkled and drawn back, head is raised, and breathing is stopped for a moment (Brosset, 1968; Ewer, 1973). Flehmen may be elicited by a number of strong-smelling substances but usually is seen in response to conspecific urine (Brosset, 1968).

ONTOGENY AND REPRODUCTION. In captivity, breeding activity and social interactions of adult tayras occur during the day (Encke, 1968; Poglayen-Neuwall, 1975, 1978; Vaughan, 1974). However, on Barro Colorado Island, Panama, two males and one female engaged in nocturnal behavior thought to be of a sexual nature (Kaufmann and Kaufmann, 1965). Male *E. barbara* appear ready to mate year round (Brosset, 1968; Poglayen-Neuwall, 1975) and can reproduce by 18 months of age (Poglayen-Neuwall, 1975). Female tayras have their first estrus at about 22 months of age, and estrous cycle is 52.2 days ± 15.5 *SE* in young females and 93.9 ± 21.0 days in older females (Poglayen-Neuwall et al., 1989). Females enter estrus several times each year for periods of 3–20 days (Poglayen-Neuwall, 1975; Vaughan, 1974). Gestation lasts 63–67 days (Poglayen-Neuwall, 1975, 1978; Vaughan, 1974). Delayed implantation does not occur (Poglayen-Neuwall, 1975). Tayras have four teats and give birth to one to three young, but twins are most common (Encke, 1968; Poglayen-Neuwall, 1975, 1978; Poglayen-Neuwall and Poglayen-Neuwall, 1976; Vaughan, 1974). In one case of triplets (Encke, 1968), one young died at 1 month of age from enteritis, degeneration of the liver, and enlargement of the spleen.

In the wild, males do not remain with females and young through rearing. In captivity, females became intolerant of males during later stages of pregnancy. However, in one situation a male that remained with the female and her young neither molested the young nor contributed to their welfare (Encke, 1968).

Five stages of development are defined (Poglayen-Neuwall and Poglayen-Neuwall, 1976). First is the infant stage, days 1–50, during which cubs suckle and do not leave the den. During days 50–75, the fledgling stage, cubs leave the den for short periods, and solid food is provided by the mother in addition to milk. The weaning stage, days 75–100, includes exploratory excursions with independent feeding on fruits and insects. During the transition stage, days 100–200, the birth den is abandoned, and cubs are weaned and begin to hunt with their mother and kill prey on their own. During dispersal, days 200–300, family bonds break down and young go their separate ways.

Young are born completely haired, with eyes and ears closed; mass at birth is about 100 g. Ears open at 27–34 days, and eyes open at 35–47 days after birth. Deciduous teeth begin emerging at day 36 and are completely erupted by day 99. Permanent teeth appear at day 115 and are completely emerged by day 224 (Poglayen-Neuwall, 1978). Young consume solid food by day 70 and are weaned by day 100. At 6 months, cubs are adult size and difficult to distinguish from their parents (Encke, 1968).

When outside the den, young and mother use a clicking call to maintain contact if they are not within sight of one another. Mothers are protective of young and will carry small pups about by the middle of the body when a threat is perceived. This protective behavior persists as pups grow and mothers carry or drag them back to the den by their necks or ears (Poglayen-Neuwall and Poglayen-Neuwall, 1976). Female tayras become more attentive to their young with successive litters (Vaughan, 1974).

Prey-catching ability develops slowly and is learned (Poglayen-Neuwall and Poglayen-Neuwall, 1976). When only 3 months old, young will follow and bite rodents and small birds on the rump or limbs. Through experience, bite placement is improved, resulting in killing bites to the base of the skull. The mother introduces cubs to prey by first bringing them wounded prey and letting the cubs do the killing, then by releasing wounded or slow prey near the young for them to catch and kill (Poglayen-Neuwall and Poglayen-Neuwall, 1976).

ECOLOGY. Based on radio-tracking data, *E. barbara* is a solitary, diurnocrepuscular predator that travels extensively within a large home range (Sunquist et al., 1989). The tayra rarely is found outside forested habitats and consumes fruit and small vertebrates, many of which are arboreal. During 25% (15 of 61) of direct observations, tayra were seen in or near the canopy, suggesting a strong arboreal tendency.

Tayras inhabit tropical and subtropical forests, including secondary rain forests, gallery forests, gardens, plantations, cloud forests, and dry scrub forests (Emmons and Freer, 1990). They have adjusted to living near human habitations and take advantage of food sources provided by humans in gardens, orchards, sugar cane fields, and corn fields (Hall and Dalquest, 1963; Hershkovitz, 1972). In the llanos of Venezuela, tayras are usually found along gallery forests. However, tayras cross these extensive grasslands at night, presumably moving from one forest to another (Defler, 1980). In Veracruz, Mexico, tayras generally are restricted to forested habitats (Hall and Dalquest, 1963). Tayras are found in the Atlantic rain forest of Brazil, throughout Amazonia, in deciduous and scrub forest of the pantanal in Paraguay and Bolivia, and in gallery and scrub forest and tall grass savannas in Argentina, Bolivia, and Paraguay (Redford and Eisenberg, 1992). In Belize, no significant habitat preference was found for *E. barbara* (Konecny, 1989). However, this was probably caused by low rodent densities in wooded habitats that forced tayras to spend more time hunting in grasslands.

Abundance of the tayra throughout much of Central and South America may be a consequence of its ecological distinctiveness as compared with most sympatric carnivores. Habitat preferences, activity periods, and diet preferences may reduce interspecific competition between *E. barbara* and other carnivores (Sunquist et al., 1989). In addition, no evidence suggests that tayras suffer from trappers or hunters in pursuit of pelts (Emmons and Freer, 1990).

The tayra is an opportunistic omnivore, consuming a variety of fruits, carrion, small vertebrates, insects, and honey (Cabrera and Yepes, 1960; Emmons and Freer, 1990; Galef et al., 1976; Hall and Dalquest, 1963). In Venezuela, three species of vertebrate (*Echimys semivillous, Rhipidomys,* and *Iguana iguana*) and four species of fruit (*Genipa americana, Zanthozylum culantrillo, Guazuma tomentosa,* and *Psychotria anceps*) were recorded from 18 collected scats (Sunquist et al., 1989). Both *Echimys semivillous* and *Genipa americana* were found in 50% of the scats. Moreover, all prey items were from closed habitats, supporting the idea that *E. barbara* is a forest specialist. In a similar study in Belize, four species of small mammals were found in 31 tayra scats: *Didelphis marsupialis* (9.6%), *Oryzomys palustris* (22.5%), *Sigmodon hispidus* (32.3%), and *Rattus rattus* (29.0%—Konecny, 1989). In addition, small birds were found in 19.4% of scats, arthropods in 58.0%, and fruit in 67.7%. The primary fruit taken was *Calocarpum mammosum.* Additional fruits consumed include *Cecropia mexicana, Astrocaryum standleyanum,* and *Spondias mombin* (Galef et al., 1976). In captivity, tayras accept mushrooms, milk, honey, bread, eggs, hamburger, ripe and rotten fruit, alcoholic beverages, small to large birds, rodents as large as *Myocastor coypus,* reptiles, fish, carrion, goat meat and bones, canned dog and cat food, and table scraps (Brosset, 1968; Kaufmann and Kaufmann, 1965; Poglayen-Neuwall, 1975, 1978; Vaughan, 1974).

Predation on tayra by larger vertebrates has not been reported. One internal parasite, *Trypanosoma cruzi,* (Barretto and Ribeiro, 1972) and two fleas, *Ctenocephalides f. fells* and *Hechtiella lopesi* (Guimarães, 1940; Guimarães and Linardi, 1993), have been reported from *E. barbara* in Brazil.

BEHAVIOR. Tayras are essentially diurnal with peaks in activity in early morning and late afternoon, though occasional activity occurs until midnight (Defler, 1980; Hall and Dalquest, 1963; Kaufmann and Kaufmann, 1965; Konecny, 1989; Sunquist et al., 1989), particularly near human habitations where tayras become more crepuscular (Emmons and Freer, 1990). However, dispersal across open areas (Defler, 1980) and some sexual activity (Kaufmann and Kaufmann, 1965) have been reported at night. Many vertebrate prey are nocturnal and may be taken at dawn and dusk (Sunquist et al., 1989). Tayras forage for fruit in trees during daylight hours. In captivity, tayras are almost exclusively diurnal (Brosset, 1968; Kavanau, 1970, 1971; Kavanau et al., 1973; Poglayen-Neuwall, 1975, 1978, 1992; Poglayen-Neuwall and Poglayen-Neuwall, 1976; Poglayen-Neuwall et al., 1989; Vaughan, 1974).

Wild tayras usually occur singly (Defler, 1980; Emmons and Freer, 1990; Galef et al., 1976; Osgood, 1912, 1914, 1916) or in male–female pairs (Defler, 1980; Galef et al., 1976; Hall and Dalquest, 1963; Kaufmann and Kaufmann, 1965; Konecny, 1989). Larger groups of tayras nearly always consist of a mother with her subadult cubs (Dalquest, 1953; Leopold, 1959). One report of tayras living in troops of 20–157 animals (Alston, 1882) is regarded as erroneous (Poglayen-Neuwall, 1978). Integration of strange individuals into an established group is difficult (Poglayen-Neuwall, 1978).

Foraging tayras use olfaction as the primary method of prey detection. Eyesight may be relatively poor (Defler, 1980). Radiotracking in Belize showed that tayras move unidirectionally while foraging, with little backtracking or crossing, and travel an average distance of 6.89 km/day (Konecny, 1989). Tayras are active hunters that chase their prey; prey are rarely stalked and never ambushed.

Tayras stand erect, using their long bodies to survey unfamiliar surroundings, especially in thick grass (Kaufmann and Kaufmann, 1965; Poglayen-Neuwall, 1978). They move equally well on the ground and in trees and use their tails for balance (Kaufmann and Kaufmann, 1965). On the ground, tayras walk or trot and use a bounding gallop at high speeds (Kavanau, 1971). Tayras ascend and descend vertical trunks head first using a gallop pattern, grasping the trunk alternately with forefeet and hind feet (Kaufmann and Kaufmann, 1965). On horizontal limbs, tayras move as they do on the ground.

Despite having partially webbed feet (Pocock, 1921), captive individuals avoid entering water (Kaufmann and Kaufmann, 1965). However, a tayra swam across a pond in pursuit of a *Mazama* (Villa-R., 1948), and radiocollared tayras repeatedly crossed a large river during high and low water levels (Konecny, 1989).

Tayras construct dens in hollow trees or dig burrows at the base of trees. In Costa Rica, an entrance to a tayra burrow at the base of a *Manilkara zapota* tree was 12 cm in diameter (Janzen, 1983). In addition, tayra nests can be found in tree forks (Gaumer, 1917). In captivity, tayras prefer elevated nest boxes without nesting material, which is discarded if provided (Poglayen-Neuwall, 1975; Vaughan, 1974).

Tayra maintain relatively large home ranges for their size. A radiotracked female with two pups maintained a small home range (225 ha) centered around the den until the pups were about 3 months old, after which her range expanded to almost 900 ha (Sunquist et al., 1989). Upon expansion of her home range and weaning of the young, the female used new dens daily that were an average of 867 m apart. In a study in Belize, a female had a home range of 16.03 km^2 over a 13-month period, a male had a home range of 24.44 km^2 over a 10-month period, and another male had a home range of only 2.11 km^2 over a 3-month period (Konecny, 1989). The short duration of radiotracking for the last animal probably accounts for the small size of the observed home range. Home ranges of all three animals overlapped greatly, suggesting that tayras spend little or no time on territorial behavior (Konecny, 1989).

REMARKS. In 1789, Browne published *The Civil and Natural History of Jamaica,* in which he described a species of *Galera* that was "seldom seen in Jamaica; though frequent enough on the coast of Guinea, from whence it is sometime brought there in the African ships" (Browne, 1789:487). The name *Galera* was subsequently applied to both an African and American form, creating considerable nomenclatural confusion. Allen (1908*a*) reviewed usage of the name *Galera* and found it to refer to the modern day *Herpestes* from Africa. In addition, Allen pointed out two erroneous assumptions made by subsequent authors that led to confusion: the "Guinea fox" of Browne is *Mustela barbara* of Linneaus, and the Guinea fox was brought from Guiana and not Guinea, as stated by Browne (Allen, 1908*a*).

Eira comes from the common name of the tayra used by the indigenous peoples of Bolivia and Paraguay, and *barbaros* is Greek for "strange" or "foreign" (Gotch, 1979). *Eira barbara* has a plethora of common names throughout its range: bushdog in Belize, irara in Brazil, tayra in Colombia, tolomuco in Costa Rica, tejón, manco, and perro de monte in Peru and Ecuador, lepasil in Honduras, gato eirá in Paraguay, comadreja grande, gato negro, and gato cutarra in Panama, cabeza de viejo in Mexico, and guacho and guanico in Venezuela (Emmons and Freer, 1990).

Tayras have been commonly exported from South America to zoos over the last 35 years. Diurnal activity, hardiness, and large size make them attractive in exhibits (Poglayen-Neuwall, 1978), but reproductive success has eluded most zoos. Those that are successful keep the breeding pair together consistently, removing the male just prior to parturition and returning him after cubs are weaned. The first recorded captive births were at the London Zoo on 5 September 1878 (Poglayen-Neuwall, 1978). By the early 1970s, successful births were reported from Louisville Zoo in Louisville, Kentucky, San Diego Zoo in San Diego, California, Randolph Park Zoo in Tucson, Arizona, and Antelope Zoo in Lincoln, Nebraska.

I thank C. P. Bloch, M. J. Cramer, C. López-González, J. C. Roberts, and M. R. Willig for critically reviewing early versions of this manuscript; I. Poglayen-Neuwall and one anonymous reviewer for providing helpful comments; I. Tiemann for translating papers in German; and B. D. Patterson of the Field Museum of Natural History in Chicago for allowing me to borrow a specimen under his care.

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Editors for this account were ELAINE ANDERSON and VIRGINIA HAYSSEN. Managing editor was VIRGINIA HAYSSEN.

STEVEN J. PRESLEY, PROGRAM IN ECOLOGY AND CONSERVATION BIOLOGY, DEPARTMENT OF BIOLOGICAL SCIENCES, TEXAS TECH UNIVERSITY, LUBBOCK 79409-3131.