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On the South American Small-eared Zorro *Atelocynus microtis* Sclater (Canidae)

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INTRODUCTION

The small-eared zorro is remarkable for its comparatively large size, somber coloration and small ears, which are relatively shorter than in any other species of wild dog (fig. 92). Little is known of the life history of *Atelocynus microtis* and of its relationship to South American zorros in general. The advent of two live small-eared zorros at the Chicago Zoological Society park at Brookfield offered the opportunity for observation of the habits of the species and occasioned the preparation of this report. The taxonomic portion of the present study includes descriptions and comparative studies of the skins and skulls of four specimens, one from Lagarto, Río Ucayali, Peru, the second from near the mouth of the Río Urubamba, Peru, the third from an unknown locality, and the fourth, a juvenal, from near Puyo, eastern Ecuador. The above material represents all the living and preserved specimens of small-eared zorros known to exist in American institutions.

Thanks are expressed to the authorities of the American Museum of Natural History and of the Natural History Museum of Michigan State University for the loan of the aforementioned skins and skulls. I am indebted to Mr. Robert M. Bean, Director of the Chicago Zoological Society, Mr. Ralph Graham, Assistant Director, and Dr. George Rabb, Curator and Coordinator of Research, for permission to study the animals in their charge. Grateful acknowledgment is made to the zealous Colombian mammalogist, Señor Jorge Hernández Camacho, for his generous contribution of unpublished notes on small-eared zorros examined by him.

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SMALL-EARED ZORROS IN CAPTIVITY

The first small-eared zorro known to science was purchased by the Zoological Society of London in September, 1882. The animal was described and figured by Sclater (1882, p. 631, pl. 47) under the name *Canis microtis*. After it died, it was preserved as a study specimen and deposited in the British Museum (Natural History). The next published record lists two males exhibited in the Zoological Gardens of Pará, Brazil. One of the dogs originated in the State of Amazonas, the other in Salgado, Castanhal, a locality on the Bragança Railroad in Pará. The preserved skins and skulls of the animals were the subjects of reports by Hagmann (1901, p. 509), Goeldi and Hagmann (1904, p. 64), and Studer (1904, p. 114; 1905, p. 33).

The first North American institution to exhibit a live small-eared zorro was the New York Zoological Society. According to information kindly supplied by Lee S. Crandall, Curator Emeritus of that institution, the dog was registered in May, 1930, and died one year later. It is presumed to have been captured in the Amazonian region. A photograph of the animal appears in an article on dogs by Gregory (1933, p. 95).

A live specimen exhibited in the Schönbrunner Tiergarten and described by Antonius (1933, p. 250, figs. 5, 6) was the first to reach Germany. The dog originated in the Rio Tapajóz region, Pará, Brazil.

The photograph of a live, apparently tame individual in an enclosure, perhaps somewhere in Rio de Janeiro, is reproduced by Santos (1945, p. 170, fig. 47). The Brazilian name, *Cachorro-do-mato-de-orelhas curtas*, used by Santos, means "short-eared bush dog."

The male *Atelocynus microtis* now living in the Chicago Zoological Society park was received in July, 1957, from Dr. José Borrero, ornithologist, and Señor Jorge Hernández Camacho, mammalogist, of the staff of the Instituto de Ciéncias Naturales in Bogotá, Colombia. According to Señor Hernández (in litt.), the dog came from the neighborhood of Mitú, a locality on the Río Vaupés, Colombia, near the Brazilian border. It was captured by Indians, probably before being weaned, and taken to Bogotá in early 1956, when less than full-grown. Hernández also informs me that another small-eared zorro, a female, brought alive to Bogotá from the Río Ariari, Meta, died a few days after arrival. A third specimen, from Restrepo, Meta, now mounted in the Instituto de La Salle, Bogotá, was also identified by Sr. Hernández as *Atelocynus microtis*. In addition to

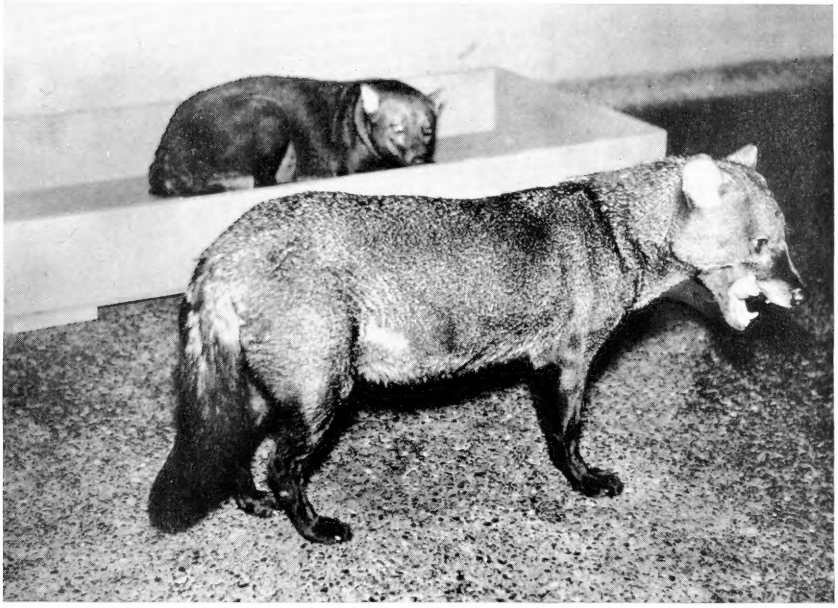

FIG. 92. *Atelocynus microtis;* male in foreground, female behind. The large head, short ears, curling tongue, exposed upper incisors and bushy tail extending to ground are characteristic. Animals in Brookfield Zoo. (Photograph by Dr. H. H. Stranskov.)

the first-mentioned male, the Chicago Zoological Society secured a female small-eared zorro in March, 1958. The country of origin of this individual is unknown. The two animals may be the first pair of the species to be exhibited alive in a zoological garden.

No doubt many other examples of small-eared zorros have been kept in zoological gardens, or as pets, or are preserved as museum study specimens but have not been recorded in the literature.

HABITS

The male small-eared zorro in the Brookfield park of the Chicago Zoological Society is exceedingly docile and friendly. Señor Hernández informed me that the dog was shy during the early part of his captivity in Bogotá but in time became very tame, permitting himself to be petted and hand fed by persons he recognized. In addition to raw meat, the dog accepted the common food of the people. Occasionally he ate shoots of Kikuyo grass (*Pennisetum clandestinum*). When the dog was angry or frightened, he growled, bared his tusks

and even attempted to bite. The Schönbrunner animal recorded by Antonius (1933, p. 252) also manifested hostility by growling or snarling. However, no unfriendly actions have been observed in the dog at the Brookfield Zoo. Hernández also noted that in Bogotá the dog never sat on his haunches or stood with his tail curved between his hind legs. Both postures, however, are routinely assumed by the animal in Brookfield. He lost none of his docility in Brookfield and, if anything, has become tamer. He quickly learned to recognize keepers and regular visitors and very obviously enjoyed being the object of attention. He was quite playful and never attempted to bite or even gnaw gently on the offered hand as friendly domestic dogs often do. Eventually he responded to petting by rolling over on his back and squealing with delight.

In his typical posture the animal stands with head lowered, forelegs slightly spread apart, hind legs with heels turned inward, feet pointed outward, tail curved back against the outer side of a hind leg, with the tip curled upward. This position of the tail, also noted by Hernández and described by Antonius (1933, p. 251, fig. 6) keeps the terminal hairs from trailing (fig. 93).

The tip of the zorro's tail is particularly sensitive. When first observed, the dog twitched his tail slowly on the approach of certain people. This movement was not made in response to being fed or petted. In time, however, the dog learned to react to attentions from familiar people, particularly his regular keeper, by a weak but unmistakable wagging of the posterior half of his tail. The hairs of the tail can be erected when the animal is excited. This character, according to Antonius (1933, p. 251), justifies the name "flag-tailed wild dog" applied to the dog by the natives of the Tapajóz region. The movements of the dog, like those recorded for the Schönbrunner animal, are marked by a cat-like grace and lightness not observed in any other canine.

The male in Brookfield is always enveloped by a strong musky aroma secreted from his anal glands. The odor is evidently emitted, or intensified, when the dog senses the approach of people or hears a sudden sound such as the slamming of a door or the cry of another animal.

The sleek pelage of the dog suggests that the animal either has more than casual aquatic habits or is specially adapted to regions of high rainfall. Another feature of the dog is the remarkably bright glow of his eyes in dim light. In the bright beam of a hand torch, the eyes shine with a pale green brilliance. The normal color of the

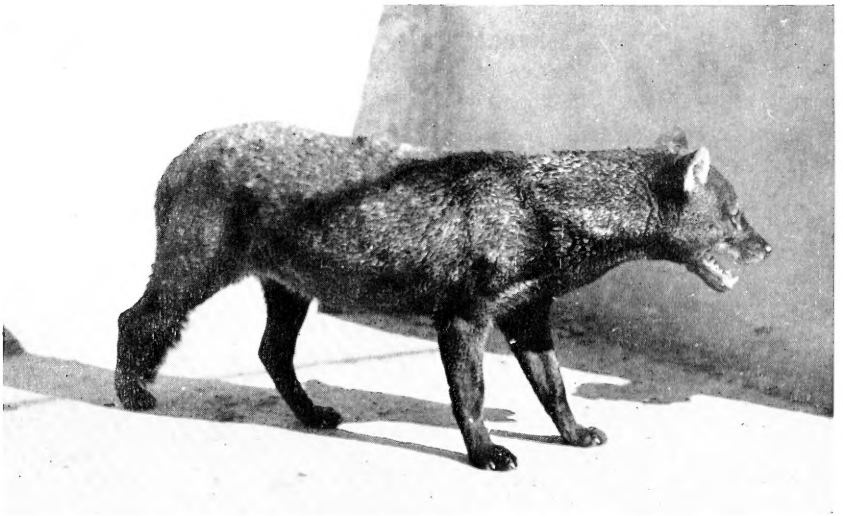

FIG. 93. *Atelocynus microtis*. *Upper*, male in typical posture with tail athwart. Note luminescence of eye in indoor daylight. (Photograph by Dr. José Borrero.) *Lower*, male. Photograph taken by Dr. Frederick Medem in Bogotá before animal was shipped to Brookfield.

iris is hazel. The upper canines are impressively long, their tips projecting outside the closed mouth for about half a centimeter.

The female small-eared zorro at Brookfield was definitely hostile at the time she was received and her disposition has never changed. She regards people with suspicion and when under direct observation emits a continuous growling or snoring sound without opening her mouth or baring her teeth. The female is nearly one-third larger than the male. Her body is more lithe and her head is heavier, with the muzzle proportionately thicker and longer. She is colored like the male and her movements and postures, whether standing, sitting or prone, are quite like those of her companion when he is not playful. The odor from her anal glands is hardly noticeable, but her eyes shine as brightly in dim light as those of the male.

The female was introduced into the cage of the male in April, 1958. I did not observe the event and no record was made of the first reaction of the dogs to each other. To date (January, 1960) there has been no indication that mating has been attempted and the female shows no signs of pregnancy.

The male, though smaller, asserts dominance in most activities. Frequently, the male and female take turns eating from a common food dish. More often, however, the male persists in eating directly from the dish while the female waits or snatches morsels with which she retires to eat at a distance. Sometimes these roles are exchanged but for a much shorter period of time before the male reasserts his dominance. As a rule, the male sates himself first and the female eats what is left, which is always ample. Competition between the dogs for the food is usually accompanied by their peculiar snarling sound. Some snapping but no biting or fighting between the dogs has been observed.

During periods of inactivity, the zorros occupy a common sleeping box. The male habitually lies in the corner that is open to the outside while the female beds down in the hidden portion.

TAXONOMY

The following synonymy includes bibliographic references to all original contributions to our knowledge of the small-eared zorro.

Atelocynus microtis Sclater

Canis microtis Sclater, 1882, Proc. Zool. Soc. London, **1882:** 631, pl. 47 (animal); Mivart, 1890, A monograph of the Canidae, p. 62, pl. 47 (animal)—description and measurements ex type; Goeldi and Hagmann, 1904, Bol.

Mus. Goeldi (Paraense), **4:** 64—Brazil (Amazonas; "Salgado (Castanhal)," Pará [?]); Miranda Ribeiro, 1914, Commissão de linhas telegraphicas estratégicas de Matto-Grosso ao Amazonas, Ann. 5, pp. 27, 29, pl. 9 (skull)—Brazil (Palmares, Rio Sepotuba, Mato Grosso); Antonius, 1933, Zool. Gart., **6:** 250, figs. 5, 6 (animal)—Brazil (Rio Tapajóz, Pará).

C[anis] microtis, Mivart, 1890, Proc. Zool. Soc. London, **1890:** 110, 113, fig. 5 (skull), fig. 6 (dentition); Studer, *in* Goeldi and Hagmann, 1904, Bol. Mus. Goeldi (Paraense), **4:** 110, 113, 114, pl. 1, fig. 5, pl. 2, fig. 4 (skull).

Canis aff. *microtis*, Hagmann, 1901, Zool. Anz., **24:** 509 (two specimens listed).

[*Canis* (*Thous*)] *microtis*, Trouessart, 1897, Cat. Mamm., fasc. 2, p. 307—classification.

[*Canis* (*Cerdocyon*)] *microtis* Trouessart, 1904, Cat. Mamm., Suppl., p. 234.

Cerdocyon microtis, Pocock, 1914, Proc. Zool. Soc. London, **1914:** 920, fig. 5 (feet and rhinarium); Cabrera, 1931, Jour. Mamm., **12:** 62—classification (*Canis microtis* Sclater not a homonym of *Canis microtus* Reichenbach, 1846).

C[erdocyon] microtis, Thomas, 1914, Ann. Mag. Nat. Hist., (8), **13:** 356 (name not preoccupied by *microtus* Reichenbach; comparison with *C. mimax*).

Lycalopex microtis, Studer, 1905, Mitteil. Naturf. Fr., **1904:** 33, fig. 1 (animal), figs. 2, 3, 5, 6, 8, 9 (skull)—characters, comparisons, and taxonomic history.

Dusicyon (*Dusicyon*) *microtis*, Osgood, 1934, Jour. Mamm., **15:** 47, 49 (characters and classification)—Peru (Lagarto, Río Ucayali, Loreto).

Dusicyon (*Cerdocyon*) *microtis*, Vieira, 1955, Arq. Zool., São Paulo, **8:** 446—Brazil; Carvalho, 1957, Bol. Mus. Paraense Emilio Goeldi, (n.s.), Zool., no. 6, p. 16—Brazil (Seringal Oriente, upper Rio Juruá, Acre).

[*Atelocynus*] *microtis*, Cabrera, 1940, Not. Mus. La Plata, **5**, Zool., no. 29, p. 14—type of genus *Atelocynus* Cabrera, loc. cit.

Atelocynus microtis, Cabrera and Yepes, 1940, Mamíferos Sud-Americanos, p. 130, pl. 17, fig. 2 (animal); Orcés, 1944, Flora (Quito), **5:** 65—Ecuador (Allpa Yacu, Río Suno, upper Río Napo, Napo-Pastaza); Orcés, 1947, Bol. Inst. Botánico, Univ. Central, Quito, **5** (6–7), p. 252—Ecuador (Allpa Yacu, Río Suno); Vieira, 1948, Bol. Mus. Paraense, **10:** 259—Brazil (João Pessoa, upper Rio Juruá, Amazonas); Hershkovitz, 1958, Nov. Colombianas, Mus. Hist. Nat. Univ. Cauca, no. 3, p. 160—Colombia (Mitú, Río Vaupés, Vaupés) (characters); Cabrera, 1958, Rev. Mus. Argentino Cienc. Nat. "Bernardino Rivadavia," **4**, (1), p. 237 (listed).

Dusicyon (*Atelocynus*) *microtis*, Paula Couto, 1950, *in* Lund, Mem. Paleo. Brasil., Rio de Janeiro, footnote pp. 398–399—classification.

"*Canis*" *microtus* [sic], Gregory (not Reichenbach), 1933, Bull. New York Zool. Soc., **36:** 88, fig., p. 95 (animal).

[*Carcinocyon*] *sclateri* J. A. Allen, 1905, Rep., Princeton Univ. Exped. Patagonia, 1896–1899, **3**, (1), p. 153 (classification and new name for *Canis microtis*, "preoccupied" by "*Canis microtus* Reichenbach, 1834 [sic]" [=1846]).

C[anis] thous sclateri, Ihering, 1910, Arch. Naturg., (76), **1**, (2), p. 146—classification; Ihering, 1911, Rev. Mus. Paulista, São Paulo, **8:** 219—classification.

Lycalopex spec., Kühlhorn, 1940, Arch. Naturg., n.f. **9:** 206, fig. 9 (head), p. 221 (locality)—Brazil (Pedra, Rio Pardo, Mato Grosso); Kühlhorn, 1955, Säugetierk. Mitt., **3:** 78—Brazil (Rancho Pedra, Rio Pardo, Mato Grosso).

Lycalopex [sp.], Krieg, 1948, "Zwischen Anden und Atlantic," pp. 226 (figure of head), 420—Brazil (Pedra, Rio Pardo, Mato Grosso).

Type.—Adult, sex unknown, skin and skull, British Museum (Natural History).

Type locality.—"The Amazons"; restricted to the south bank of the Rio Amazonas, Pará, Brazil, by Hershkovitz (1958, p. 160).

Distribution (fig. 94).—Tropical zones of the Amazonian basin in Brazil, Peru, Ecuador and Colombia, thence into the upper Río Orinoco basin in Colombia (fide Hernández, in litt.) and, no doubt, Venezuela; also recorded from the upper Rio Paraná basin in Mato Grosso, Brazil; altitudinal range from near sea level to approximately 1000 meters above.

CHARACTERS

External.—Size moderately large, limbs slender, head highly arched, ears rounded and extremely short; tail thickly haired, dark but with lateral fringe and under side of basal portion pale, terminal brush black, sometimes with a few white hairs, and sweeping ground when hanging straight down in the standing animal. Pelage of head and body short, stiff, adpressed; general body color grizzled brown or blackish without contrasting pale or bright parts on head, limbs and under parts of body; cheeks, forehead, throat and neck brown or blackish finely ticked with gray or pale buff; chin, upper surface of snout, dark brown; a blackish streak present beneath each eye; ears brown or rufous on outer side, whitish to buffy on inner side, average height from notch 6 (5–7) per cent of combined head and body length; dark mid-dorsal band well defined on nape, weakly defined on back, and forming a thick band of erectile hairs on tail; a narrow blackish collar weakly defined in living animal, nearly obsolete in dry skin; brownish or rufous under parts not well defined from sides except for whitish or buffy area of pubic region; individual cover-hairs of upper parts of body grayish basally, ringed brown suprabasally, pale buff, gray or white subterminally and dark brown or black terminally; guard-hairs like cover-hairs but bands wider, the dark terminal portion elongated; wool hairs gray, buff or pale brown, the tips usually darker.

Cranial (figs. 95–98).—Sagittal crest extending as a high convex ridge from posterior portion of frontals to lambdoid; supraoccipital

crests well developed, the lateral ridges coalescing with the sagittal crest to form a Y-shaped bifurcation, the angle directed forward (fig. 95); mid-frontal region convex or plane in transverse outline, without marked depression or trough between the two bones; supraorbital region narrow, the distance across the processes (in three males) from 65 to 77 per cent of greatest width of braincase; posterolateral frontal inflations obsolete; nasals comparatively short, broad in front, evenly tapered behind and not extending beyond plane of fronto-maxillary suture; front of orbit situated on a level between front and middle of first molar (fig. 96); maxillary above carnassial plane or convex, not forming a shallow depression between anterior and posterior roots of tooth; masseteric ridge of molar high, the surface of bone beneath as wide as or wider than the surface above. Exposed ventral portion of presphenoid extremely narrow, the lateral wings little developed (fig. 97); bony meatus of auditory bullae short; bullae well inflated, the distance between them less than the greatest transverse width (excluding bony meatus) of either; coronoid process of mandible subtriangular in outline (fig. 98); elevation of angular process above base of ramus evenly graduated, not abrupt; depth of angle less than length of $pm_{\overline{1}}$; posterior border of condylar process situated on a level with or slightly behind posterior border of angle; combined depth of angle and condylar process one half or less of depth of mandible measured at coronoid process.

Dental.—Canines well developed, length of exposed portion of upper more than combined length of $m^{\underline{1}\ \underline{2}}$ and subequal to postorbital constriction (fig. 97). First upper molar heavy, nearly as wide as long; outer alveolar length of upper carnassial equal to alveolar length of first molar plus approximately one-half that of second molar; alveolar length of lower first molar greater than combined alveolar lengths of second and third; $I^{\underline{3}}$ short, not caniniform and not projecting beyond line of inner incisors, median cuspule well developed in unworn tooth, lateral cuspule low on cingulum; outer cuspule of $I^{\underline{2}}$ half way up crown, inner cuspule near cutting edge; outer cuspule of $I^{\underline{1}}$ near cutting edge, inner cuspule absent in the permanent but present in the deciduous tooth.

Measurements.—See Table 1.

Molt.—The male, transported by airplane from the cool climate of Bogotá (altitude, 2614 meters) to typical July weather in Chicago with a two day stop en route in Miami, was molting on arrival in Brookfield. The old hair was being shed from all parts of the body except the limbs at the same time that the new coat was becoming

established. During molt, oily granular crusts of sloughed skin gather in small clumps at the base of falling hairs. Molt was completed in about three weeks. The male molted again in late March, 1958. New pelage is short, stiff, shiny and unctious.

Remarks.—The ground color of the three tanned hides of the adults is grizzled brownish; ground color of the two live animals examined and of live animals figured and described by others is grizzled blackish. The difference in coat color in prepared skins and live animals may be caused partly, if not wholly, by the tanning process and subsequent deterioration of tissues.

An immature female (Michigan State University Museum no. 3722) with all milk teeth in place and first molars deep in their sockets is grizzled blackish on dorsal surface and sides, dark brown on legs, chin and upper surface of tail. The color and texture of the pelage appear to be quite adult-like. The diagnostic characters of its skull are also like those of adults except for the masseteric ridge of the malar which is scarcely developed and is placed low, the section of the bone beneath narrower than the section above.

Rudimentary preorbital glands mentioned by Antonius (1933, p. 252) as possibly present in the Schönbrunner Tiergarten animal are not evident in any of the specimens examined by me. In the Brookfield dogs, and commonly in dogs in general, black crusts of sloughed skin form small, gland-like boluses in the preorbital depression.

COMPARISONS AND SYSTEMATIC POSITION

The small-eared zorro cannot be confused with other known canids. It bears no close resemblance to any variety of domestic dog or to wolf- or fox-like types of wild dogs. Its short ears and color pattern are unique; certain of its cranial characters, taken singly, others in combination, are diagnostic; in the live animal the mien, gait and relaxed stance or posture are distinctive. Among Neotropical dogs, *Atelocynus* is absolutely exceeded in size only by the strikingly peculiar maned "wolf," *Chrysocyon jubatus*. The Andean and Patagonian culpeo, *Dusicyon culpaeus*, equals, and in some races may average larger than, the short-eared zorro. The common zorro or crab-eater, *Dusicyon thous*, is appreciably smaller, but very old males are nearly as large as young adults of *Atelocynus microtis*.

Many of the important diagnostic characters of the small-eared zorro were noted by Osgood (1934, p. 48). This authority, nevertheless, treated the dog as a species of *Dusicyon* somewhat annectant

between the typical section of this genus and the subgenus *Cerdocyon*. On the other hand, Cabrera (1940, p. 14) appraised the combination of the distinctive characters of the animal as of generic value. He thereupon erected the genus *Atelocynus* for the small-eared zorro. Cabrera's judgment was based on a skull collected by Miranda Ribeiro (1914, p. 41) in the Mato Grosso. Available evidence sustains his conclusions.

The genera of true Neotropical zorros, namely, *Atelocynus* Cabrera, *Chrysocyon* Hamilton Smith, *Urocyon* Baird, and *Dusicyon* Hamilton Smith (includes *Lycalopex* Burmeister and *Cerdocyon* Hamilton Smith) are closely related *inter se*. Each genus except *Dusicyon*, with about nine species, is monotypic. All are members of the subfamily Caninae and each differs about as much from another as any one differs from typical *Canis*.[1] The remaining genus of Neotropical dogs, the small semiaquatic *Speothos* Lund, is very different but no less a member of the Caninae. Earlier workers included *Speothos* with the Symocyoninae (cf. Simpson, 1945, pp. 109, 223). As shown by Thenius (1954, p. 377), this classification cannot be sustained.

[1] Includes *Dasycyon* Krumbiegel (1949, Umschau Wiss. Tech., Stuttgart, **9**: 590, 764; 1953, Säugetierk. Mitt., **1**: 97). The generic name is founded on a fur dealer's pelt purchased in Buenos Aires and described under the preoccupied generic name *Oreocyon hagenbecki*. Krumbiegel's figure of a life-like reconstruction of the animal is misguided and his comparison with the very dissimilar *Chrysocyon jubatus*, misleading. The creditable portions of the description of *hagenbecki* point only, as already indicated by Cabrera (1958, Rev. Mus. Argentino Cienc. Nat., **4**: 230), to a large domestic sheep dog.

TABLE 1.—Measurements (in millimeters) of *Atelocynus microtis* Sclater

Locality	Sex	Head and body	Tail	Hind foot	Ear	Height at shoulder	Skull greatest length	Basal length	Zygomatic breadth	Least interorbital breadth	Braincase	Nasals
Brazil												
Rio Amazonas	0[1]	762	305	...	..	356	...	...	..	..	..	..
Rio Amazonas	0[2]	780	270	130	34	...	162	...	85	..	49	48
Pará	♂[3]	1000	350	...	50	...	...	...	..	..	..	..
Pará	♂[4]	955	330	145	45	...	...	155	90	33	53	59
Pará	♂[5]	720	280	...	..	...	...	...	..	..	..	..
Pará	♂[6]	720	260	125	45	...	...	132	76	28	49	50
João Pessõa	♀[7]	749	293	150	..	...	169	...	92.5	33	..	56
Peru												
Lagarto	♂[8]	...	...	...	..	...	169	...	94.5	32.2	51.6	51.3
Río Urubamba	♂[9]	...	...	...	..	...	165	...	87.7	29.3	50.0	45.8
Colombia												
Mitú	♂[10]	730	350	...	52	350	...	...	..	..	..	..
Ecuador												
Allpa Yacu	♂[11]	850	...	...	46	...	...	...	..	..	..	..
No locality	♂[12]	...	...	...	..	...	162	...	85.5	..	49.1	48.9
Puyo ... juv.	♀[13]	520	250	...	..	...	125	...	64	23	42	40

TABLE 1 (*continued*).—Measurements (in millimeters) of *Atelocynus microtis* Sclater

Locality	Sex	c–m^2	p^4–m^2	p^4	m^1	m^2	c–m_3	p_4–m_3	m_4	m_{2-3}
Brazil										
Rio Amazonas	0[1]	....	....	....	.....	...	....	....	....	....
Rio Amazonas	0[2]	....	49.5	13.0	10.0×11.5	6.5	....	52.5	15.0	11.0
Pará	♂[3]	....	....	....	.....	...	....	....	....	....
Pará	♂[4]	....	52.0	14.0	10.0×12.0	7.0	....	61.5	20	12.0
Pará	♂[5]	....	....	....	.....	...	....	....	....	....
Pará	♂[6]	....	48.5	12.0	10.0×12.0	6.0	....	54.0	15.5	12.0
João Pessõa	♀[7]	54[7]	....	....	.....	...	....	....	....	....
Peru										
Lagarto	♂[8]	67.2	55.6	13.5	11.6×14.0	7.2	74.1	59.6	16.2	13.0
Río Urubamba	♂[9]	68.1	56.8	15.2	11.5×12.5	7.0	77.3	62.8	16.2	15.6
Colombia										
Mitú	♂[10]	....	....	....	.....	...	....	....	....	....
Ecuador										
Allpa Yacu	♂[11]	....	....	....	.....	...	....	....	....	....
No locality	♂[12]	63.4	50.6	14.0	11.3×12.7	6.5	71.4	57.0	15.7	12.0

Note: Tooth measurements are length except those of m^1, which are length × width.

[1] Measurements of type, the live animal, from original description.
[2] Measurements of type, after death, from Mivart (1890, p. 62).
[3] Specimen no. 115, Bern Museum; measurements from Goeldi and Hagmann (1904, p. 64).
[4] Same specimen as preceding; measurements from Studer (1904, p. 113; 1905, pp. 34, 37, 38).
[5] Specimen no. 116, Bern Museum; measurements from Goeldi and Hagmann (1904, p. 64).
[6] Same specimen as preceding; measurements from Studer (1904, p. 113; 1905, pp. 34, 37, 38).
[7] Measurements from Vieira (1948, p. 259); upper molar series almost certainly should be 64 mm.
[8] American Museum of Natural History no. 76579.
[9] American Museum of Natural History no. 76031.
[10] Live animal in Chicago Zoological Society park, Brookfield; weight on arrival, 19 pounds; weight of female in Brookfield on arrival, 20 pounds.
[11] Measurements from Orcés (1947, p. 253).
[12] American Museum of Natural History no. 100095. [13] Michigan State University Museum no. 3722.

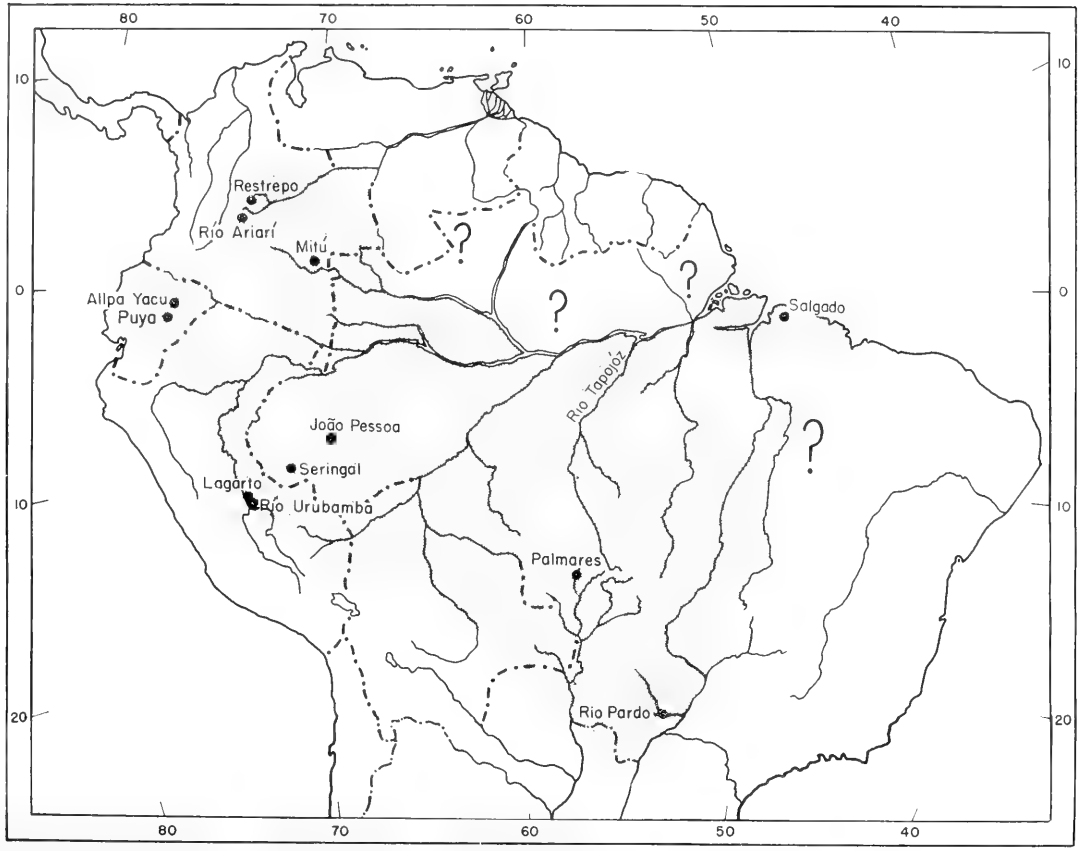

FIG. 94. Distribution of the small-eared zorro in tropical South America. Stippled area indicates the range inferred from known collecting localities (lettered).

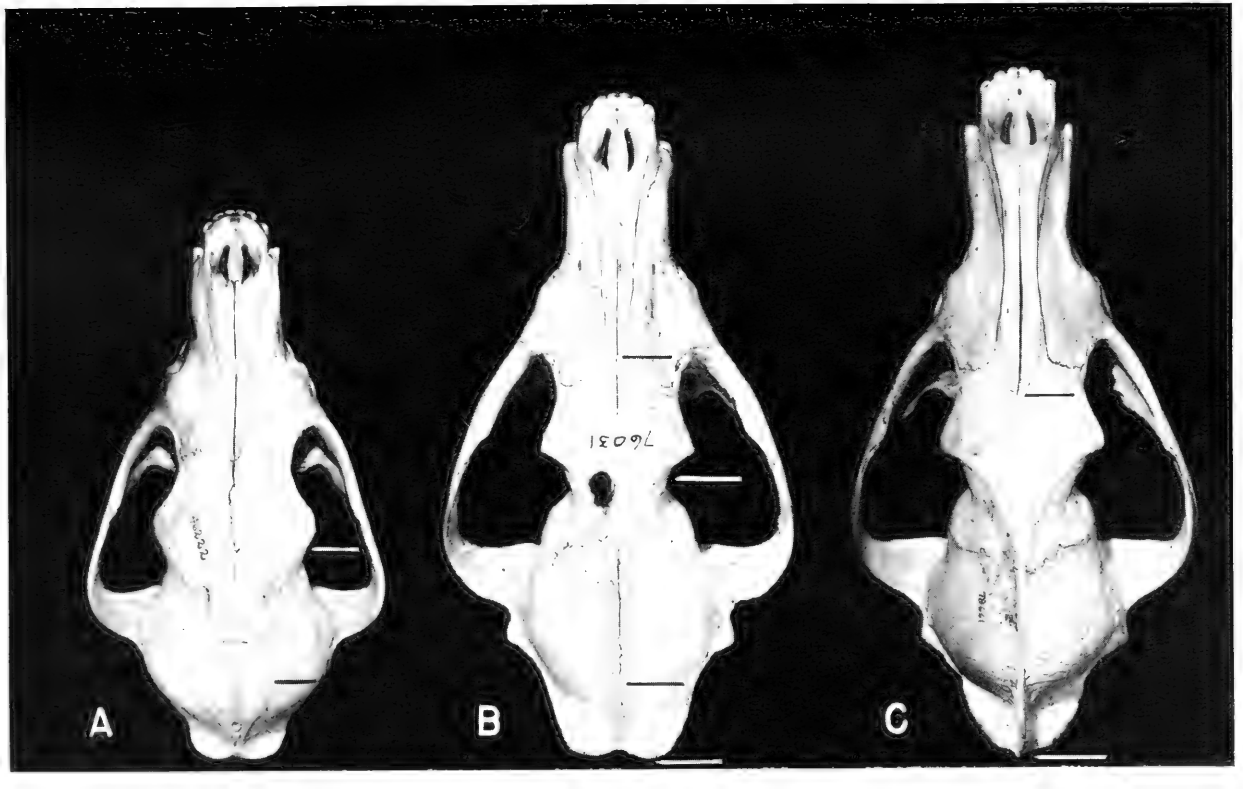

FIG. 95. Dorsal aspect of skulls of A, *Dusicyon (Cerdocyon) thous* (Rockstone, Essequibo, British Guiana); B, *Atelocynus microtis* (Río Urubamba, Loreto, Peru); C, *Dusicyon (Dusicyon) culpaeus* (Pisac Paullo, Cuzco, Peru). Appr. × ½.

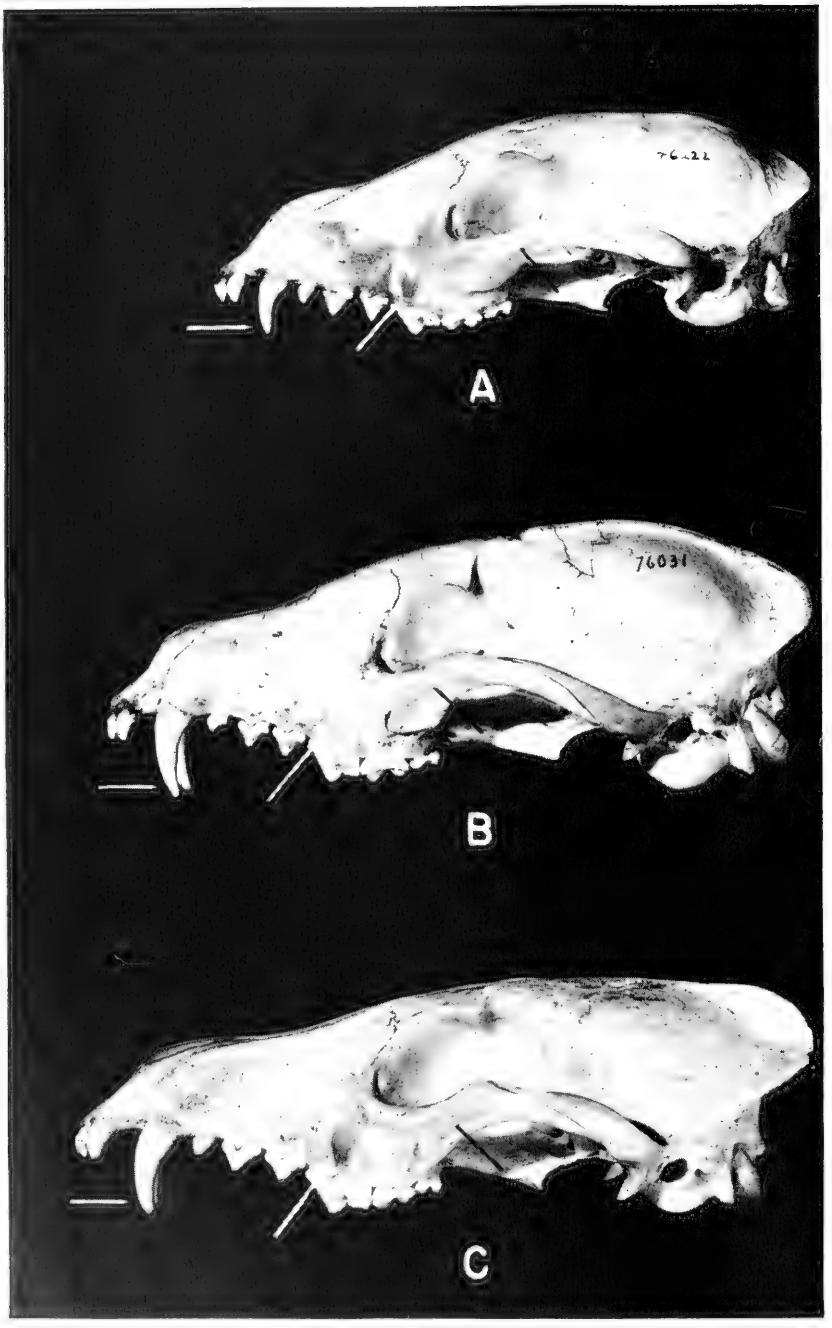

FIG. 96. Lateral aspect of skulls shown in figure 95: A, *Dusicyon* (*Cerdocyon*) *thous;* B, *Atelocynus microtis;* C, *Dusicyon* (*Dusicyon*) *culpaeus.* Appr. × ½.

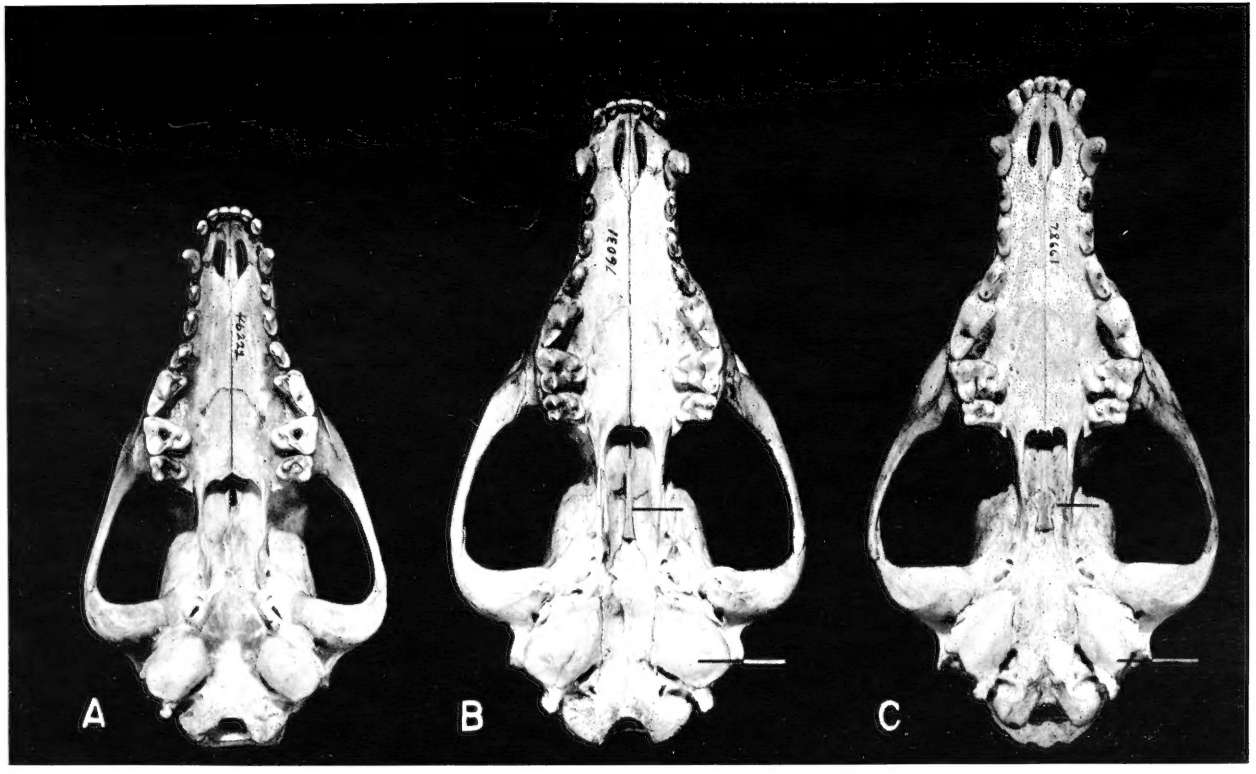

FIG. 97. Ventral aspect of skulls shown in figure 95: A, *Dusicyon (Cerdocyon) thous;* B, *Atelocynus microtis;* C, *Dusicyon (Dusicyon) culpaeus.* Appr. × ½.

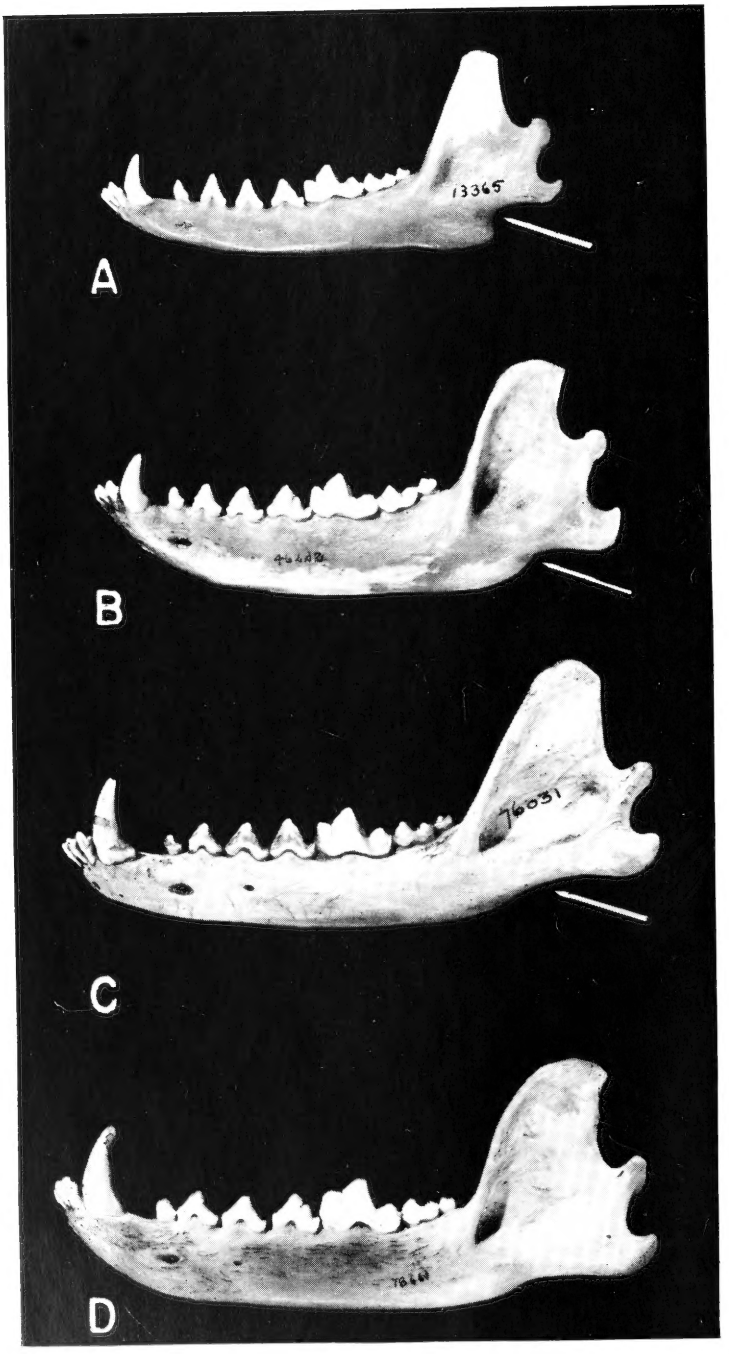

FIG. 98. Left mandible of A, *Urocyon cinereoargenteus* (California, U.S.A.); B, *Dusicyon* (*Cerdocyon*) *thous;* C, *Atelocynus microtis;* D, *D.* (*Dusicyon*) *culpaeus.* Appr. × ⅔.

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