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Re-examining the hypothesis of allopatric distribution of *Myoprocta acouchy* and *M. pratti* (Mammalia: Dasyproctidae) in south america

Héctor E. Ramírez-Chaves[1]*
Andrés F. Suárez-Castro[2]
Bruce D. Patterson[3]

ABSTRACT

Currently, two allopatric species of acouchies, genus Myoprocta *(Rodentia: Dasyproctidae) are recognized. Nevertheless, there is morphological variability in the regions where the species are distributed that suggests either sympatry of two (or more) distinct species or else breakdowns in the characters that have been used to diagnose the species. We reviewed specimens of* Myoprocta *from Colombia and found that both reddish and greenish forms are sympatric in the Amazon basin of the country, including areas adjoining Ecuador and Peru. These records apparently refute the hypothesis of allopatry for these species in South America. However, the results of a principal components analysis showed little or no morphological separation between these two forms. In addition, a review of skulls throughout the geographic range of* M. pratti *shows high morphological variation. Although sympatry of reddish and greenish acouchies has been suggested for the Amazon region of Ecuador, our review found no evidence of this. In view of our findings, further revisionary work is needed to clarify the status of these forms.*

Key-Words: Amazonas; Acouchies; Distribution; Hybridization; Sympatry.

INTRODUCTION

The acouchies (*Myoprocta*) are medium-sized caviomorph rodents of the family Dasyproctidae endemic to South America (Voss *et al.,* 2001; Woods & Kilpatrick, 2005). Two species are currently recognized: *M. acouchy,* distributed in Guyana, French Guiana, Surinam, and Brazil north of the Amazon and east of the Rio Branco, and *M. pratti,* distributed in southern Venezuela (headwaters of the Orinoco), eastern Colombia and Ecuador, northern Peru, and western Brazil (Woods & Kilpatrick, 2005). Voss *et al.* (2001) identified a combination of pelage, size, and cranial characters to distinguish *Myoprocta* species. *Myoprocta acouchy* (red acouchi) is principally rich reddish-brown dorsally, with saturate long dark hairs along the rump midline and uniformly orange or reddish underparts, whereas *M. pratti* (green acouchi)

[1.] School of Biological Sciences, University of Queensland, Goddard Building 8, St. Lucia 4072, Brisbane, Australia. E-mail: hera.chaves@gmail.com (corresponding author).
[2.] Grupo de Investigación en Conservación y Manejo de Vida Silvestre, Instituto de Ciencias Naturales, Universidad Nacional de Colombia
[3.] Integrative Research Center, Field Museum of Natural History, 1400 S. Lake Shore Dr., Chicago, IL 60605, USA. E-mail: bpatterson@fieldmuseum.org
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is drab yellowish- or grayish-brown dorsally, with less saturate hairs along the rump midline and yellowish underparts. Also, red acouchies are on average larger than green acouchies, and the species were found to have non-overlapping morphometric distributions in multivariate ordinations obtained by principal components analysis. Cranially, the sphenopalatine vacuities, which perforate the bony roof of the mesopterygoid fossa, are very narrow slits (0.1 mm wide) in most specimens of *M. acouchy,* whereas in *M. pratti* they are wider (~ 1 mm), with teardrop-shaped openings posteriorly.

Although Voss *et al.* (2001) substantially clarified the nomenclature of the genus, questions remain concerning the geographic distributions of the referred taxa and whether additional forms exist besides the two recognized species. Voss *et al.* (2001) considered *M. pratti* and *M. acouchy* allopatric, even as they acknowledged implied sympatry of *Myoprocta* species in records from the Amazonian region of Colombia and Ecuador. They attributed reported instances of sympatry involving *Myoprocta* species to confusion concerning their technical nomenclature.

Historically, two kinds of acouchies have been recognized in Colombia. Cuervo-Díaz *et al.* (1986) registered two species of *Myoprocta* in the Serranía de La Macarena and Amazonas region: *M. acouchy* and *M. exilis.* Voss *et al.* (2001) considered *M. exilis* a junior synonym of *M. acouchy* (see also Woods & Kilpatrick, 2005), which simply dismisses evidence for two sympatric species. Alberico *et al.* (2000) also listed both *M. acouchy* and *M. exilis* as elements of Colombia's mammal fauna. These authors recorded *M. acouchy* in the Colombian departments of Amazonas, Boyacá, Caquetá, and Meta over an elevational range from sea level to 2000 m. Alberico *et al.* (2000) considered *Myoprocta milleri* Allen, 1913, from La Murelia in Caquetá, as a junior synonym of *M. acouchy,* but others regard this name as a synonym of *M. pratti* (Voss *et al.,* 2001; Woods & Kilpatrick, 2005). Still others regard *milleri* as a name given to hybrids between red and green acouchies in the headwaters of Río Vaupés (Emmons & Feer, 1997). Recently, following the conclusions of Voss *et al.* (2001), Solari *et al.* (2013) recognized only *M. pratti* in the Amazonas and Orinoco regions of Colombia.

Two species of acouchies have also traditionally been recognized in eastern Ecuador (Albuja, 2011). According to Lönnberg (1925), green acouchies (*M. pratti archidonae*) inhabit the Napo valley, whereas red acouchies (*M. exilis parva*) inhabit the Curaray valley; both these taxa were considered green acouchies by Voss *et al.* (2001). Lönnberg (1921: 41) described *parva* as a "dark grizzled brownish" acouchi, differing in coloration from both the mostly reddish *M. acouchy* of the Guianas and the olive or pale yellowish *M. pratti* from Peru.

In this work, we reviewed specimens housed at four natural history collections in order to clarify the presence and distribution of the species of genus *Myoprocta* in Colombia and Ecuador, and evaluate the variation in the diagnostic characters used in the most recent revision of the genus (Voss *et al.,* 2001).

MATERIAL AND METHODS

We reviewed specimens housed at the following collections: Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá (ICN); Instituto Alexander von Humboldt, Villa de Leyva (IAvH); Museo de Historia Natural, Universidad del Cauca, Popayán (MHNUC); and Field Museum of Natural History, Chicago (FMNH). Cranial measurements and morphological characters followed Voss *et al.* (2001), including: Condyle-incisive length (CIL), length of diastema (LD), maxillary toothrow (MTR), length of molars (LM), breadth of M^1 (BM1), breadth of P^4 (BP4), breadth of palatal bridge (BPB), length of nasals (LN), least interorbital breadth (LIB), breadth of braincase (BB), zygomatic breadth (ZB), and zygomatic length (ZL). In addition, we reviewed photographs of four specimens, including the type specimens of *M. pratti archidonae* and *M. parva,* both at the Naturhistoriska riksmuseet, Stockholm (NRM), in order to clarify their assignment to either red or green acouchies.

To evaluate whether there is a morphological gap separating red and green acouchies as discrete groups, we performed a principal component analysis (PCA). We selected variables based on the findings of Voss *et al.* (2001), who determined that most red acouchies have noticeably larger toothrows, broader interorbits, and longer nasals than green acouchies. In addition, we used the condyle-incisive length (CIL), length of diastema (LD), length of molars (LM), length of nasals (LN), breadth of braincase (BB) and zygomatic breadth (ZB). We included 51 adult specimens (those with complete maxillary tooth eruption) from Colombia, Ecuador, Peru, Brazil, French Guiana, and Surinam, including 35 identified by Voss *et al.* (2001) and used as reference samples for newly studied specimens from Colombia and Ecuador. The analysis was made with the software PAST v. 2.17 (Hammer *et al.,* 2001).

RESULTS

We reviewed 32 specimens (Appendix 1) from Colombia, 22 of which are attributed to *M. pratti* and called greenish acouchies based on skin coloration and the shape of the sphenopalatine vacuities. In addition, nine skulls from Colombia exhibited sphenopalatine vacuities appearing as narrow slits in the roof of the mesopterygoid fossa, a qualitative cranial character supposedly diagnostic of *M. acouchy* (Voss *et al.,* 2001) (Fig. 1). Cranial measurements of specimens of both samples are shown in Table 1.

FIGURE 1: Ventral view of the skull of greenish acouchi *M.* cf. *pratti* (ICN 775) (top) and reddish acouchi *M.* cf. *acouchy* (ICN 1678) (bottom) from Colombia, showing the difference in the shape of sphenopalatine vacuities. Scale bar: 20 mm.

TABLE 1: Factor loadings for the first three factors from a principal component (PC) analysis of 8 variables comparing adult specimens of *Myoprocta* spp. Abbreviations explained in the text.

	PC1	PC2	PC3
CIL	0.73	-0.09	0.34
LD	0.30	-0.15	0.28
MTR	0.02	0.04	0.13
LM	0.01	0.02	0.08
LN	0.45	-0.11	-0.86
LIB	0.27	0.93	0.01
BB	0.17	-0.08	0.20
ZB	0.26	-0.29	0.07

Although we found some individual variation, skins from Colombia of greenish acouchies are typically drab brownish dorsally with yellowish underparts (Fig. 2). On the other hand, skins of the reddish acouchies are reddish-brown dorsally with uniformly orange or reddish underparts, the diagnostic features of *M. acouchy.* Some of these reddish individuals tend to be darker, but the color pattern is the same (Fig. 2). Also, they have long and saturate hairs on the rump midline. On the other hand, *M. pratti* skins vary in this character and those that are darker have a blackish patch on the rump (Fig. 2).

We found no evidence of the presence of red acouchies in Ecuador in the sample we evaluated. Based on external coloration and sphenopalatine vacuities, the NRM specimens are green acouchies. However, the type series of *Myoprocta exilis parva* (NRM 615574, NRM 585575; Río Curaray, El Oriente, Ecuador) lacks skulls (Daniela Kalthoff, *pers. comm.*), so that cranial characters could not be assessed.

Results from the PCA analysis showed no clear morphological gap between the red and green acouchies (sensu Voss *et al.,* 2001), either typical forms or their reddish and greenish counterparts in Colombia (Fig. 4). The first three components explain about 88% of the total variability observed. The first principal component (PC 1) explains 69.69% of the variation and the second principal component (PC 2) explains 9.51%. All variables contributed positively to PC 1. Thus, the first principal component reflects variation in overall cranial size. The variables that contributed most strongly to PC 1 were condyle-incisive length (0.7346) and length of nasals (0.4541). The other principal components had both positive and negative variable contributions (Table 1), and reflect variation in cranial shape. In the scatter plot, both forms have overlapping morphometric distributions. However, linear measurements of Colombian

FIGURE 2: Ventral and dorsal view of the skins of *Myoprocta* from Colombia, showing the differential color patterns. a: greenish acouchi (ICN 211); b: greenish acouchi (ICN 212); c: reddish acouchi (IAvH 2542); d: reddish acouchi (IAvH 1856).

TABLE 2: Summary statistics for skull measurements (mm) of *Myoprocta* spp. from Colombia reported in this study. The sample mean plus or minus one standard deviation, the observed range (in parentheses), and the sample size. Abbreviations explained in the text.

	Red and reddish acouchies		Green and greenish acouchies		
	Brazil/Surinam/French Guiana	**Colombia**	**Colombia**	**Ecuador**	**Peru**
CIL	67.11 ± 2.98 (68.25 – 76.06) 17	66.43 ± 4.43 (60.6 – 71.00) 4	68.31 ± 2.23 (71.0 – 64.8) 8	67.86 ± 3.32 (62.9 – 71.23) 6	65.21 ± 2.80 (61.5 – 69.3) 11
LD	20.14 ± 1.73 (19.01 – 24.21) 17	20.43 ± 1.39 (18.9 – 22.32) 5	20.99 ± 1.48 (18.67 – 23.74) 9	20.92 ± 1.68 (18.67 – 23.63) 7	19.48 ± 1.43 (19.7 – 20.9) 11
MTR	12.75 ± 0.85 (12.65 – 14.89) 17	13.04 ± 0.63 (11.8 – 13.9) 7	12.75 ± 0.63 (12.23 – 13.74) 9	12.61 ± 0.76 (11.7 – 13.4) 7	12.48 ± 0.93 (12.4 – 13.6) 10
LM	9.00 ± 0.73 (8.35 – 10.71) 17	8.80 ± 0.51 (7.8 – 9.44) 7	8.89 ± 0.50 (8.28 – 9.57) 9	8.92 ± 0.56 (8.3 – 9.6) 7	8.70 ± 0.72 (7.6 – 9.4) 11
BM1	3.38 ± 0.25 (3.26 – 4.11) 17	3.55 ± 0.33 (2.9 – 3.9) 7	3.49 ± 0.22 (3.21 – 3.77) 9	3.48 ± 0.26 (3.1 – 3.8) 7	3.53 ± 0.30 (3.2 – 4.3) 11
BP4	3.53 ± 0.36 (3.09 – 4.54) 17	3.71 ± 0.61 (2.5 – 4.3) 7	3.60 ± 0.41 (3.0 – 4.02) 9	3.70 ± 0.38 (3.0 – 4.0) 7	3.61 ± 0.34 (3.1 – 4.0) 11
BPB	8.36 ± 0.93 (7.79 – 10.76) 17	7.40 ± 0.54 (6.6 – 7.89) 7	7.83 ± 0.68 (6.5 – 8.6) 9	8.59 ± 0.59 (7.3 – 9.2) 7	8.23 ± 0.51 (7.2 – 9.0) 11
LN	25.31 ± 2.25 (22.59 – 30.31) 17	23.49 ± 1.54 (21.3 – 25.5) 7	22.92 ± 1.04 (21.46 – 24.3) 8	25.11 ± 1.70 (22.5 – 27.0) 7	22.88 ± 2.63 (15.9 – 25.9) 11
LIB	21.99 ± 1.64 (21.48 – 26.01) 17	22.80 ± 3.42 (19.5 – 29.9) 7	21.20 ± 0.79 (20.3 – 22.5) 9	20.98 ± 1.45 (19.3 – 22.9) 7	21.09 ± 1.39 (18.8 – 24.3) 11
BB	28.08 ± 1.12 (27.89 – 31.51) 17	28.40 ± 1.01 (27.5 – 29.05) 6	29.38 ± 1.49 (28.2 – 31.2) 8	28.63 ± 1.41 (26.9 – 30.6) 6	28.92 ± 0.78 (27.0 – 29.9) 11
ZB	36.13 ± 1.86 (35.38 – 40.81) 17	36.59 ± 1.25 (35.3 – 38.03) 5	38.07 ± 0.96 (36.6 – 39.4) 6	37.51 ± 2.19 (34.5 – 39.9) 6	36.20 ± 1.10 (34.7 – 38.3) 9

specimens (Table 2) show that reddish acouchies tend to have longer maxillary tooth rows, longer nasals and broader inter-orbital breadth than greenish acouchies, in parallel with the differences suggested for the red and green species by Voss *et al.* (2001).

Locality records for reddish acouchies in Colombia are located in the Amazonas region, in the Departments of Amazonas, Leticia, Parque Nacional Natural Amacayacu, San Martín (03°29'S, 70°12'W; 100 m), and Puerto Mogue, cerca de Bocas de la quebrada Cabimas (03°41'S, 70°24'W; 116 m); Department of Meta, Los Micos, La Macarena (03°18'N, 73°54'W; 403 m), Parque Nacional Natural La Macarena, Campamento Izawa, Río Duda (02°33'N, 74°03'W; 240 m), and Río Apaporis, without precise locality but probably in the Department of Meta (Fig. 3).

DISCUSSION

Our results confirm the presence of two morphs identified by others as species and living in sympatry in Colombian Amazonia (Appendix 1). The presence of reddish acouchies in Colombia corroborates previous statements that at least two species of the genus occur in sympatry in the eastern part of the country (Emmons & Feer, 1997). Yet it is not possible to state unequivocally that the reddish acouchis of Colombia are identical to *M. acouchy,* merely that they share morphological characters thought to be diagnostic of that form. Possible hybridization between species must be tested, especially in the headwaters of Apaporis and Vaupés River. If these records represent *M. acouchy,* then the records from Los Micos extend the known distribution of the species 1300 km to the west from the nearest confirmed locality in Roraima, Conceicão, Brazil (see Voss *et al.,* 2001) (Fig. 3).

It is important to highlight that the apparently allopatric ranges of these species is due to inadequate revision of material in national collections of Colombia and the limited information in the check lists of Colombian mammals that have recorded the species. The finding that at least two species are sympatric in Colombia is not surprising, considering that the eastern portion of the country is relatively poorly known in terms of its flora and fauna. In fact, 74 % of the species registered by Lim *et al.* (2005) from the Guiana Shield have been recorded both in the Amazon Basin and Guyana. Both *M. acouchy* and *M. pratti* were listed as occurring in the Orinoco Basin of Colombia and Venezuela, but no information about voucher specimens was provided (Ferrer-Pérez *et al.,* 2009). However, previous assessments (Linares, 1998; Sánchez & Lew, 2012) recorded *M. pratti* for Venezuela, only from localities south of Orinoco River (Linares, 1998)

Based on the records of reddish acouchies in Department of Amazonas, Leticia, Parque Nacional Natural Amacayacu, locality that is geographically close to the border of the republics of Ecuador and Peru, at least two species of *Myoprocta* are likely to be present in eastern Ecuador, as previously by Albuja (2011), and in northern Peru, where only *M. pratti* has been registered (Pacheco *et al.,* 2009). The specimens on which Lönnberg (1921, 1925) based the description of *M. e. parva,* and *M. pratti archidonae* are likely green acouchies as previously suggested by Voss *et al.* (2001). A review of additional specimens in collections from Ecuador and Peru is needed in order to clarify the distribution of red acouchies in South America.

High geographical variation in the external and cranial diagnostic characters of *M. pratti* and *M. acouchy* has been observed, and there is an unappreciated variability throughout the geographic range of *Myoprocta* that suggest breakdowns in the characters used to diagnose taxa. Specimens of *M. acouchy* from French Guiana and Suriname (FMNH 21785, FMNH 95755) exhibit wider sphenopalatine vacuities (which are slightly teardrop-shaped) and paler coloration that those described by Voss *et al.* (2001), although the vacuities are not as wide as in *M. pratti.*

In the other hand, specimens attributed to *M. pratti* based on the light greenish dorsal coloration, typical of the species from Peru (*i.e.,* FMNH 75196) exhibit sphenopalatine vacuities as narrow slits (~ 0.1 mm wide), as is typical of *M. acouchy* (neotype illustrated in Voss *et al.,* 2001). Furthermore, although typical red acouchies specimens from Brazil and Surinam tend to be larger than specimens of *M. pratti,* both greenish and reddish acouchies from Colombia, Ecuador and Peru have overlapping morphometric distributions, contrary to the statement of Voss *et al.* (2001).

Nevertheless, as previously stated by Voss *et al.* (2001), red acouchies tend to have longer maxillary tooth rows, longer nasals, and broader inter-orbital breadth, and the difference in coloration between red and green acouchies from Colombia is conspicuous when average specimens of both kinds are compared. Unfortunately, there are too few skins of reddish acouchies from Colombia in collections to evaluate

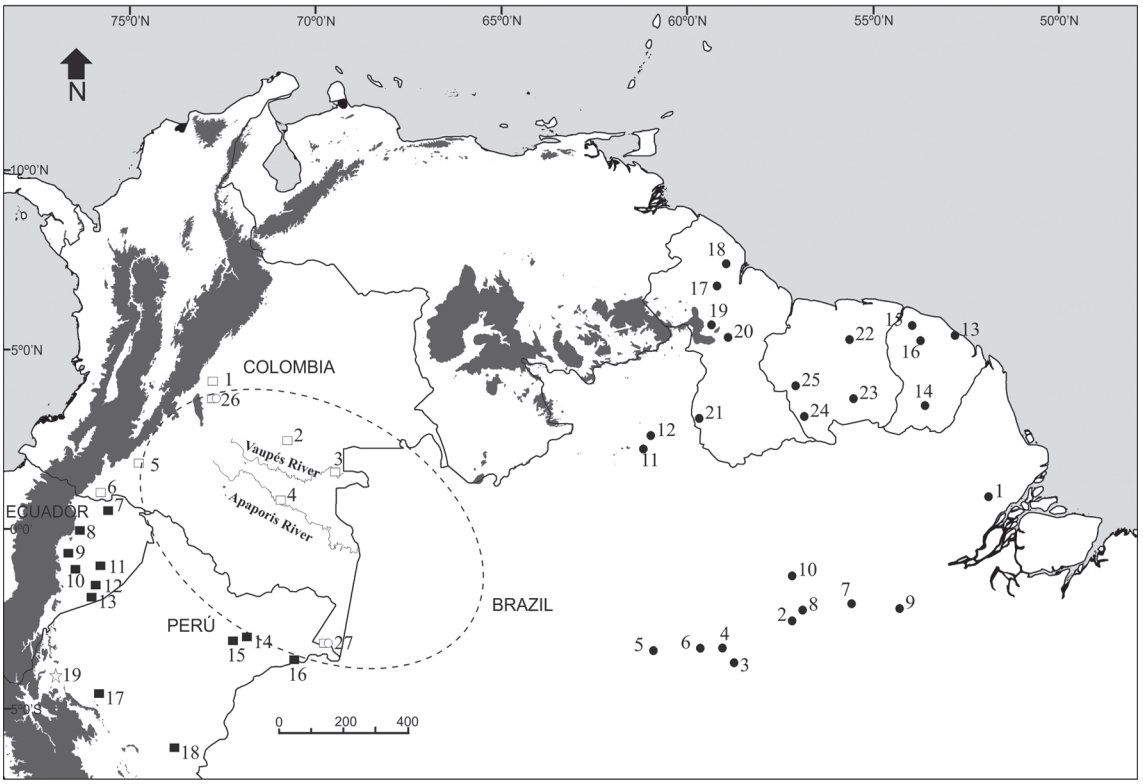

FIGURE 3: Geographic range of *Myoprocta* in Colombia and adjacent countries. Filled circles indicate localities of Red acouchi *M. acouchy* (Voss *et al.,* 2001). Open circles indicate reddish acouchies from Colombia. Filled squares represent Green acouchies from Ecuador and Peru. Empty squares represent records of greenish acouchies from Colombia. Star represents the type locality of Green acouchi *M. pratti* (Río Marañón, Pongo de Rentema). Dotted oval indicates area of sympatry between reddish acouchies and greenish acouchies. Locality 26 (Meta, Los Micos, Colombia) is the westernmost known of reddish acouchies. The localities are presented in Appendix 2.

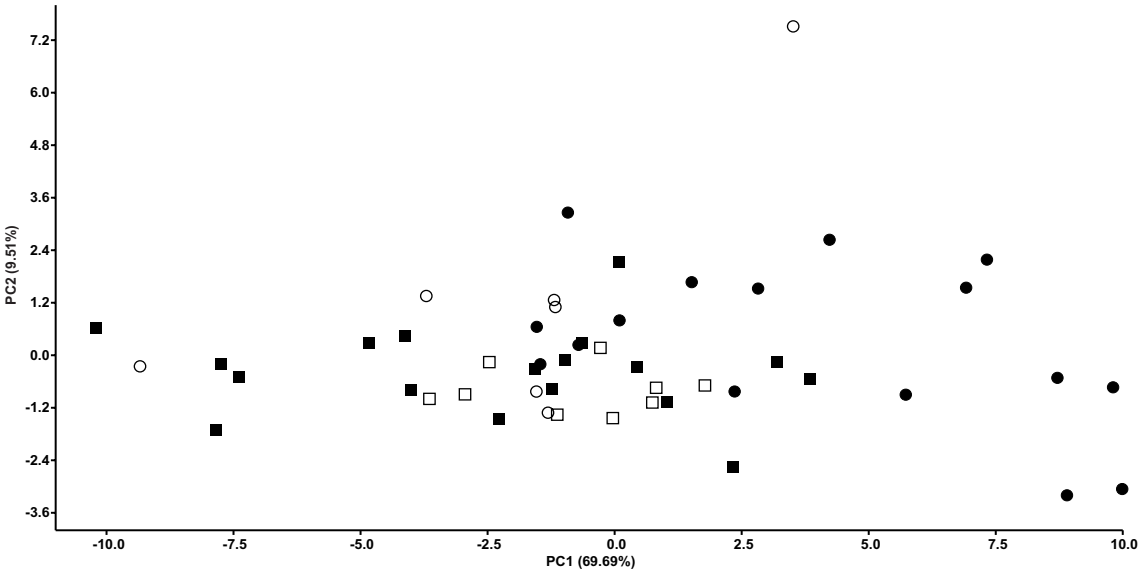

FIGURE 4: PCA biplot for specimens of *Myoprocta* spp. Empty squares: greenish acouchies from Colombia. Filled squares: green acouchies from Ecuador and Peru. Open circles: reddish acouchies from Colombia. Filled circles: red acouchies from Brazil, Surinam and French Guiana.

whether coat-color variation could be related with geographic origin (Voss *et al.,* 2001). Further analyses are needed in order to know whether variation in size and cranial shape is related to geographic origin, sexual dimorphism or age variation.

Based on our results, *Myoprocta pratti* as currently understood probably comprises a complex of species. Two species are apparent in published 12S rRNA gene sequences (Rowe & Honeycutt, 2002), but these samples lack information regarding their provenance and are not vouchered by museum specimens with potentially diagnostic characters. Genetic information could test whether the apparent sympatry of Colombian acouchies involves *M. pratti* and *M. acouchy* as suggested by morphological characters or rather whether it involves two divergent morphs that both belong to a complex of species currently identified as *M. pratti.*

CONCLUSIONS

Two different species of acouchies (reddish and greenish) appear to be present in the Amazonas region of Colombia, apparently refuting the allopatric distribution hypothesis proposed by Voss *et al.* (2001). However, contrary to earlier beliefs, the species also exhibit overlapping morphometric distributions. The western Amazonian form, *M. pratti,* is highly variable geographically in purported diagnostic characters; it may well represent a complex of species. Further revision of the genus *Myoprocta* is needed to clarify the richness and the distribution of the taxa comprised in the genus; information on the genetic distinctions among these forms would be most useful.

RESUMEN

Actualmente, dos especies alopátricas de acuchís, género Myoprocta *(Rodentia: Dasyproctidae) son reconocidas. Sin embargo, existe variabilidad morfológica en las regiones donde las especies se distribuyen que sugiere simpatría entre dos (o más) especies distintas o inconsistencias en los caracteres que han sido usados para diagnosticar las especies. Revisamos ejemplares de* Myoprocta *de Colombia y encontramos que formas de acuchís rojizos y verduzcos son simpátricos en la cuenca Amazónica del país, incluso en áreas adyacentes a Ecuador y Perú. Estos registros aparentemente refutan la hipótesis de distribución alopátrica para dichas especies en Sudamérica. Sin embargo, los resultados de los análisis de componentes principales mostraron poca o ninguna separación morfológica entre las dos formas. Adicionalmente, la revisión de cráneos a lo largo del área de distribución de* M. pratti *mostró una alta variación morfológica. Aunque simpatría entre acuchís rojizos y verduzcos ha sido mencionada para la región Amazónica de Ecuador, en nuestra revisión no encontramos evidencia de esto. En vista de nuestros hallazgos, se requiere de una revisión adicional para clarificar el estado de aquellas formas.*

Palabras-Clave: Amazonas; Acouchís; Distribución; Hibridación; Simpatría.

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APPENDIX 1

Specimens from Colombia, Ecuador and Peru reviewed. Additional specimens from Brazil, French Guiana, and Surinam appear in Voss *et al.* (2001).

Reddish acouchies, *Myoprocta* cf. *acouchy* (9 specimens): COLOMBIA: Amazonas, Leticia, Parque Nacional Natural (PNN) Amacayacu, San Martín. (IAvH 5373, skull; IAvH 5374 male, skull; IAvH 5376, female, skull). Amazonas, Río Amacayacu, Puerto Mogue, cerca de Bocas de la quebrada Cabimas (IAvH 1856, male, skin + skull). Meta, Los Micos (ICN 1493, skull). Meta, PNN La Macarena, Campamento Izawa, Río Duda (IAvH 2541, female, skin + skull; IAvH 2542, female, skin + skull). Río Apaporis. ICN 4728 (skull): Río Apaporis (ICN 4717, skull).

Greenish acouchies, *Myoprocta* cf. *pratti:* COLOMBIA (22 specimens): Amazonas, Leticia, Parque Nacional Natural (PNN) Amacayacu, San Martín (IAvH 5375, female, skull). Guaviare, San José del Guaviare, Mesas de la Lindosa (ICN 212, female, skin). Río Apaporis (ICN 775, male, skull; ICN 3665, skull; ICN 4433, skull; ICN 4438, female, skull). Caquetá, La Tagua, Tres Troncos (FMNH 71132, female, skin). Meta, Los Micos (Trocha del Cable), La Macarena. ICN 1421(female, skin): Meta, left margin of River Guejar, c.a., Los Micos (ICN 285, female, skin). Meta, Villavicencio, Parque Nacional Natural La Macarena, Rio Guapaya (FMNH 88023, male, skin + skull; FMNH 88024, female, skin + skull; FMNH 88043, female, skin + skull). Putumayo, San Antonio, Río Guamués, 400 m (ICN 10048, male, skin + skull). Putumayo, San Antonio: Rio Mecaya (FMNH 71133, female, skin + skull; FMNH 71134, male, skin + skull). Vaupés, Laguna de Inaná (ICN 284, skin). Vaupés, between Macuparaná and Caño Castaño, affluent of Par-Wasai (ICN 889, female, skin + skull; ICN 211, female, skin). Colombia, no locality data (MHNUC 279, skin + skull; MHNUC 280, skin; MHNUC 281, skin + skull; ICN 3786, skin).

ECUADOR (11 specimens + photographs*): Napo, Río Suno, below Loreto (FMNH 31118, female, skin + skull). Napo, Lago Agrio, 12 km NE (FMNH 125085, female, skull; FMNH 125086, male, skull). Pastaza, Rio Pindo Yaco (FMNH 43186, female, skin + skull; FMNH 43187, female, skin + skull; FMNH 43188, male, skin + skull). Pastaza, Montalvo (FMNH 41485, female, skin + skull; FMNH 41486, male, skin + skull). Pastaza, Río Capahuari (FMNH 43191, male, skin + skull). Pastaza, Río Yana Rumi (FMNH 43189, male, skin + skull; FMNH 43190, female, skin + skull). Río Curaray, El Oriente (NRM 585577*, NRM 625576*: Type series of *Myoprocta exilis parva,* male and female, skins). Archidona (NRM 615574*: Type of *Myoprocta pratti archidonae,* female, skin + skull; NRM 585575*, skin + skull).

PERU (19 specimens): Cuzco, Quispicanchi: Quincemil (FMNH 75195, female, skin + skull; FMNH 75196, male, skin + skull; FMNH 78667, female, skin + skull). Loreto, Alto Amazonas, Río Morona, Quebrada Pushaga (FMNH 88907, male, skin + skull; FMNH 88954, female, skin + skull). Loreto, Mariscal Ramon Castilla: Río Yavari Mirim, San Fernando (FMNH 88908 female, skin + skull). Loreto, Mariscal Ramon Castilla, Río Yavari Mirim, Quebrada Esperanza (FMNH 88910, male, skin + skull). Loreto, Mariscal Ramon Castilla, Alto Yavari Mirim, boca Río Yaquerana (FMNH 88909, male, skin + skull; FMNH 88911, male, skin + skull). Loreto, Maynas, Iquitos (FMNH 24793, female, skin + skull; FMNH 24794, female, skin + skull; FMNH 34250, skull). Loreto, Maynas, Río Maniti, Santa Cecilia (FMNH 86920, female, skin + skull). Loreto, Maynas, Río Nanay, Santa Luisa (FMNH 86918, female, skin + skull; FMNH 86919, female, skin + skull; FMNH 87209, female, skin + skull). Loreto, Ucayali, Contamana, Cerro Azul (FMNH 64295, female, skin + skull). Madre de Dios, Manu, Altamira (FMNH 98072, male, skin + skull). Pasco, Oxapampa, Puerto Victoria (FMNH 24792, male, skin).

APPENDIX 2

Localities of the records in Fig. 3.

Myoprocta acouchy from Voss *et al.* (2001) and *M.* cf. *acouchy* (specimens from Colombia reviewed here): 1. Brazil, Serra do Navio; 2. Boca Rio Piratucu; 3. Lago do Baptista; 4. Lago do Serpa; 5. Lower Solimões; 6. Santo Antonio do Amatari; 7. Pará, Colonia do Veado; 8. Faro; 9. Monte Alegre; 10. Cachoeira Porteira; 11. Roraima, Conceicão; 12. Serra Grande; 13. French Guiana, Paracou; 14. Saut Macaque; 15. St.-Laurent du Maroni; 16. Tamanoir; 17. Kartabo; 18. Guyana, Supinaam River; 19. Potaro; 20. Moraballi; 21. Dadanawa; 22. Surinam, Locksie Hattie; 23. Paloemeu Camp; 24. Kaiserberg Airstrip; 25. Wilhelmina Mountains; 26. Colombia, La Macarena. 27. PNN Amacayacu.

Myoprocta cf. *pratti:* 1. Colombia, Meta, Río Guejar; 2. Guaviare, Mesas de la Lindosa; 3. Vaupés, Wasai; 4. Vaupés, Laguna de Inaná; 5. Caquetá, La Morelia (Allen, 1913); 6. Putumayo, San Antonio. 7. Ecuador, Lago Agrio, 12 km NE; 8. Napo, Río Suno, below Loreto; 9. Archidona. 10. Pastaza, Rio Pindo Yaco; 11. Río Curaray, El Oriente; 12. Pastaza, Montalvo; 13. Pastaza, Río Capahuari. 14. Peru, Loreto, Maynas, Río Nanay, Santa Luisa; 15. Loreto, Maynas, Iquitos; 16. Loreto, Mariscal Ramon Castilla, Alto Yavari Mirim; 17. Loreto, Alto Amazonas, Río Morona, Quebrada Pushaga; 18. Loreto, Ucayali, Contamana.

Myoprocta pratti: 19. Río Marañón, Pongo de Rentema (Type locality).