

FIELD OBSERVATIONS ON THE NEOTROPICAL PYGMY SQUIRREL, *SCIURILLUS PUSILLUS* (RODENTIA: SCIURIDAE) IN PERUVIAN AMAZONIA

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Key words: *Sciurillus pusillus*, ecology, diet, *Parkia*, grouping pattern.

INTRODUCTION

With a head-body length of 89–115 mm and a body mass of 33–45 g, the Neotropical Pygmy Squirrel *Sciurillus pusillus* is the smallest of the New World squirrels (Emmons & Feer 1990). It has been reported only from a few, widely separated locations in the Guyanas, Brazil, and Peru, and its natural history is very poorly known (Anthony & Tate 1935, Emmons & Feer 1990). Olalla (1935) found pygmy squirrels exclusively in terra firme forest and observed them feeding on small fruits, bark of “huavo” trees (probably *Inga* sp.) and resins. Emmons and Feer (1990) report that *S. pusillus* pull chips of outer bark from trees and feed “chiefly on a substance scraped from the inner surface of tree bark” (p. 176).

Here we provide further information about pygmy squirrels collected opportunistically during primatological field research in north-east Peruvian Amazonia.

STUDY SITE AND METHODS

The observations reported here were made at the Estación Biológica Quebrada Blanco (EBQB), located on the right bank of the white-water river Quebrada Blanco in north-east Peru (4°21'S, 73°09'W; for

details of the study site see Heymann 1995). During behavioral and ecological research on tamarin monkeys *Saguinus mystax* and *Saguinus fuscicollis*, between April 1994 and March 1995 and in August 1995, we recorded the following information upon encounters with Pygmy Squirrels: number of animals seen, height in the forest, location within the study site, and activity.

RESULTS

Table 1 summarizes our observations of Pygmy Squirrels in the EBQB study area. Altogether, we obtained 27 sightings at 14 different locations (Fig. 1). Solitary animals were observed in 22 sightings (81.5%), two in three sightings (11.1%), and three in two sightings (7.4%). Eight of the 14 locations were either a *Parkia* tree (Leguminosae: Mimosaceae) or were located within 10–20 m of such a tree; these locations accounted for 70% of all sightings (n = 19). On several occasions, Pygmy Squirrels were seen gnawing the bark from a *Parkia* tree, probably feeding either on cambium or on exudates. Under one of these trees, large amounts of bark chips had accumulated, possibly indicating repeated and intensive use by Pygmy Squirrels. Sightings occurred at all heights between 1 m and 16 m, but tended to be

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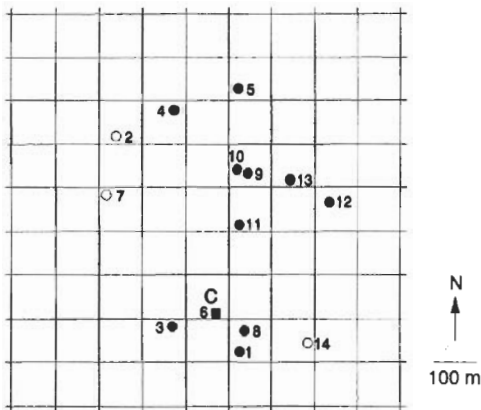


FIG. 1. Locations of sightings of *Sciurillus pusillus* in the EBQB study area. Numbers refer to Table 1. ● 1 animal, ○ 2 animals, ■ 3 animals C: location of field station.

more frequent around 9–13 m. During three of the five sightings when more than one Pygmy Squirrel was present, the animals were involved in agonistic interactions.

DISCUSSION

The most pertinent result obtained in this study is the apparent association between *S. pusillus* and trees of the genus *Parkia*. In response to wounding, these trees often exude gelatinous gums (Hopkins 1986; personal observation). In our study area, these gums are the most important source of exudates for tamarin monkeys *S. mystax* and *S. fuscicollis* (Smith & Heymann, in prep.). It is possible that Pygmy Squirrels also feed on these gums, or that they consume cambium and sap. During a survey in the upper reaches of Quebrada Blanco in 1993 (Heymann & Aquino 1994), two *S. pusillus* were observed feeding on little droplets exuding from the bark of an unidentified tree at a height of 12–15 m. Many other tropical squirrels gnaw bark, and bark is often found as a major plant food item in their stomachs (e.g., Emmons 1980, MacKinnon 1978, Whitten 1981), but here too it is not clear whether the nutritive plant part consumed is cambium or exudate.

As with other tropical rainforest squirrels (Emmons 1980, Emmons & Feer 1990) a solitary life-style seems to be the dominant mode of socio-spatial organization in *S. sciurillus*. The impossibility of

TABLE 1. Sightings of *Sciurillus pusillus* in 1994–1995

Location*	Date/Period	# Animals	Activity, Height, Remarks
1	4 Apr 1994	1	foraging at 1–1.5 m height in dense plant cover
2	6 Apr 1994	2	gnawing bark of <i>Parkia</i> , 10–12 m
3	Aug 1994–Feb 1995	1	6 different sightings, always gnawing bark of <i>Parkia</i> , 12 m
4	22 Nov 1994	1	foraging, near <i>Parkia</i> , 8 m
5	Jun–Dec 1994	1	5 different sightings, each time climbing in <i>Parkia</i> , 9–13 m
6	Mar 1995	3	2 different sightings, each time animals involved in agonistic interactions, 7 m
7	4 Aug 1995	2	agonistic interaction, 6 m
8	8 Aug 1995	1	foraging beneath branch, 13 m
9	Aug 1995	1	3 different sightings, each time climbing in <i>Parkia</i> , 5–16 m
10	12 Aug 1995	1	foraging, biting into bark protuberance, 5 m, near <i>Parkia</i> , probably same animal as in # 9
11	14 Aug 1996	1	climbing, 10 m
12	22 Aug 1995	1	climbing on trunk, 7 m, near <i>Parkia</i>
13	22 Aug 1995	1	moving on horizontal branch, 14 m, another animal than in # 12
14	26 Aug 1995	2	climbing on trunk, 14 m, near <i>Parkia</i>

* Numbers refer to the sites indicated in Fig. 1

distinguishing the sex of the animals from the distance at which they were usually observed did not allow us to determine whether sightings of two Pygmy Squirrels represented male-female pairs.

According to Emmons and Feer (1990) the distribution of *S. pusillus* is extremely patchy, and they assume that this is related to some unknown feature of the habitat. The number and spatial distribution of different locations where we encountered *S. pusillus* do indicate some patchiness, albeit perhaps not as extreme as assumed by Emmons and Feer (1990). Tentatively, we estimate that at least six home ranges of individuals or pairs of *S. pusillus* were included in the central part of our study area, but this estimate may be too conservative.

With regard to the patchy distribution pattern, there is some interesting similarity between *S. pusillus* and the Pygmy Marmoset *Cebuella pygmaea*. The latter is a specialized sap- and gum-feeder that makes extensive use of one or few exudate trees in a restricted core area within its 0.1–0.5 ha home-range (Soini 1982, 1988). After depletion of the trees they change the home-range site. Core areas of different troops are usually separated by a distance of more than 100 m. The distribution of pygmy marmosets in a given area therefore appears very patchy (see Fig. 3 in Soini 1982), and is governed by the distribution of suitable exudate sources (Soini 1988). If gums and saps were an important component of the diet of *S. pusillus* the patchy distribution might be related to the distribution of suitable exudate sources in a similar way as in the pygmy marmoset. It is also tempting to speculate about the restriction of *C. pygmaea* to periodically inundated river floodplains (Soini 1988), and the restriction of *S. pusillus* to non-inundated terra firme forest (Olalla 1935).

While the observations reported here are anecdotal and of a preliminary nature, they provide additional information on a species that is very poorly known.

ACKNOWLEDGEMENTS

The field research during which the observations reported here were made was carried out under authorizations no. 003-94-GRL-CTAR-DRA and 009-95-GRL-CTAR-DRA from the Dirección Regional Agraria - Región Loreto in Iquitos. We are

grateful to Enrique Montoya G. and Filomeno Encarnación C. from the Proyecto Peruano de Primatología for their help and support, and to our assistants Emérita Tirado H., Ney Shahuano, Arsenio Calle C., and Juan Huanquiri H. for excellent help in the field. Financial support was provided by the Deutsche Forschungsgemeinschaft (He1870/3-1, He 1870/3-2).

REFERENCES

- Anthony, H.E., & G.H.H. Tare. 1935. Notes on South American Mammalia. No. 1. *Sciurillus*. Amer. Mus. Novitates 780: 1–13.
- Emmons, L.H. 1980. Ecology and resource partitioning among nine species of African rain forest squirrels. Ecol. Monogr. 50: 31–54.
- Emmons, L.H., & F. Feer. 1990. Neotropical rainforest mammals. A field guide. Chicago.
- Heymann, E.W. 1995. Sleeping habits of tamarins, *Saguinus mystax* and *Saguinus fuscicollis* (Mammalia: Primates: Callitrichidae) in north-eastern Peru. J. Zool., Lond. 237: 211–226.
- Heymann, E.W., & R. Aquino Y. 1994. Exploraciones primatólogicas en las quebradas Blanco, Blanquillo y Tangarana (río Tahuayo, Amazonía peruana). Folia Amazónica 6: 125–138.
- Hopkins, H.C.F. 1986. *Parkia* (Leguminosae: Mimosoideae). Flora Neotrop. 43: 1–124.
- MacKinnon, K.S. 1978. Stratification and feeding differences among Malayan squirrels. Malay. Nat. J. 30: 593–608.
- Olalla, A.M. 1935. El género *Sciurillus* representado en la amazonía y algunas observaciones sobre el mismo. Rev. Mus. Paulista 19: 425–430.
- Soini, P. 1982. Ecology and population dynamics of the pygmy marmoset, *Cebuella pygmaea*. Folia Primatol. 39: 1–21.
- Soini, P. 1988. The pygmy marmoset, *Cebuella pygmaea*. Pp 79–129 in Mittermeier, R.A., Rylands, A.B., Coimbra-Filho, A.F., & G.A.B. Fonseca (eds.). Ecology and behavior of Neotropical primates, Vol. 2. Washington, DC.
- Whitten, J.E.J. 1981. Ecological separation of three diurnal squirrels in tropical rainforest on Siberut Island. J. Zool., Lond. 193: 405–420.

Accepted 26 May 1997.