

A Wild Tamarin Without a Foot— Survival Despite a Handicap

Authors: Heymann, Eckhard W., Tello, Ney Shahuano, and Hölscher, Oda

Source: Neotropical Primates, 18(2) : 59-60

Published By: Conservation International

URL: <https://doi.org/10.1896/044.018.0206>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

A WILD TAMARIN WITHOUT A FOOT—SURVIVAL DESPITE A HANDICAP

Eckhard W. Heymann
Ney Shahuano Tello
Oda Hölscher

Introduction

One might suspect that for arboreal animals like most primates, full functionality of the locomotor apparatus is an essential condition for survival. Nevertheless, the presence of healed fractures and of (congenital) malformations of the extremities reported from several wild primate populations suggest that affected individuals are capable of compensating impairments and thus to survive and even reproduce (Schultz 1939, 1956; Stokes & Byrne 2006; Arlet *et al.* 2009, Ferrari *et al.* 2010). Fractures (and perhaps other impairments) occurring at an early phase of life are suggested to be less fatal than those obtained during adulthood (Bulstrode *et al.* 1986). Here we report the case of a wild moustached tamarin, *Saguinus mystax*, who lacked one foot, probably from birth or shortly after birth on.

Methods

The observations reported here were made at the Estación Biológica Quebrada Blanco (EBQB) in north-eastern Peruvian Amazonia (4°21'S 73°09'W). Groups of *S. mystax* and its congener, the black-fronted tamarin, *Saguinus nigrifrons*,¹ are observed at EBQB during behavioural and ecological projects by researchers, students and local field assistants or routinely in-between projects by local field assistants. Apart from project-specific data, we also record unusual and rare events in the life of the tamarins.

Results and discussion

On 12 September 2008, we detected that one juvenile in our *S. mystax* study group 2 (by that time consisting of two adult males, one adult female, and two juvenile males born around 20 September 2007) lacked the right foot. The juvenile's right leg ended in a round and naked stump with skin slightly lighter than the palms of the hands and the other foot (see video at <http://www.sozio.bio.uni-goettingen.de/Peru/patita.html>). It is unknown whether the foot was already missing at birth, lost soon after birth or later through an accident or a bite. We suspect the first or second alternative: during observations of that group between 24 and 26 September 2007 we recorded one infant in an unusual position on the lower back of the carrier, and also falling from the back of the carrier, suggesting that the infant could not

hold normally to the carrier and that the foot was already missing at that time.

At first glance, the locomotion of the juvenile male (*Patita*) was inconspicuous. Only when looking very scrupulously did it become evident that *Patita* was occasionally slipping from the substrate with his right leg. When travelling on large branches, *Patita* simply touched the substrate with the stump; when travelling on small branches, this could not be unequivocally observed. *Patita* used the same routes for travelling than the other group members, but sometimes seemed to be more hesitant when a large leap had to be made. During foraging, *Patita* employed all manoeuvres typical for *S. mystax*, i.e. rapid grasping, lunging and pouncing (see Peres 1993). He was also feeding and foraging on thin terminal branches, and clinging vertically to the trunks of *Parkia* trees to consume exudates. *Patita* was not seen falling from a tree more often than other tamarins with fully functional extremities. Only on very smooth surfaces did *Patita* have obvious problems with locomotion. When trying to reach the infructescences of *Wettinia maynensis* (Arecaceae), he was sliding down the basal part of the fronds rather than climbing down headfirst, and also climbed up with difficulty compared to other *S. mystax*.

Patita was regularly seen in rough-and-tumble and chase playing with his slightly larger twin brother, although we had the impression that his playing was less vigorous than in non-handicapped tamarins. He participated in carrying twins born in January 2009 only very sporadically, while his twin brother did almost two-thirds of all infant carrying. He was last seen with his natal group on 7 December 2009. On 9 December 2009, *Patita* participated in an intergroup encounter as member of a neighbouring group to which he obviously had immigrated.

While healed fractures of the extremities and congenital malformations of hands and feet are known from callitrichids in captivity and in the wild (Schultz 1956; French 1986; Ferrari *et al.* 2010), the complete lack of a cheiridium has not been reported. While we do not know the cause of the lack of a foot in *Patita*, our observations indicate that despite some handicap during locomotion on smooth surfaces, this tamarin compensated the impairment and performed most behaviour normally, as also reported for wild *Mico argentatus* with a congenital lack of the big toe (Ferrari *et al.* 2010). However, *Patita* was clearly handicapped with regard to infant carrying. This is not surprising, given the constraints that the heavy load represented by callitrichid infants imposes on locomotion and foraging, even in captive callitrichids (Schrader & Anzenberger 2001; Caperos *et al.* 2012).

Tamarin societies are highly cooperative, and *S. mystax* may modify their behaviour in response to an injured group member (Tirado Herrera & Heymann 2004). In the absence of quantitative data, we do not know whether *Patita's* group also had modified its behaviour, particularly in the

¹ A recent phylogenetic analysis by Matauschek *et al.* (2011) concluded that most subspecies of *Saguinus fuscicollis*, like *Saguinus fuscicollis nigrifrons*, should be elevated to species rank.

critical transitional phase between infant dependency and locomotor independence. Primates with impairments are obviously also capable of surviving without any assistance from conspecifics (Struhsaker *et al.* 2011), but cooperation by group members would certainly be conducive to compensate impairments and thus to increase the likelihood of survival.

Eckhard W. Heymann, Abteilung Verhaltensökologie & Soziobiologie, Deutsches Primatenzentrum, Kellnerweg 4, D-37077 Göttingen, Germany, e-mail: cheyman@gwdg.de. **Ney Shahuano Tello**, Estación Biológica Quebrada Blanco, Río Tahuayo, Loreto, Perú, shahuano@hotmail.com. **Oda Hölscher**, Abteilung Verhaltensökologie & Soziobiologie, Deutsches Primatenzentrum, Kellnerweg 4, D-37077 Göttingen, Germany, e-mail: oda_hoelscher@gmx.de.

References

- Arlet, M. E., Carey, J. R. and Molleman, F. 2009. Species, age and sex differences in type and frequencies of injuries and impairments among four arboreal primate species in Kibale National Park, Uganda. *Primates* 50:65–73.
- Bulstrode, C., King, J. and Roper, B. 1986. What happens to wild animals with broken bones? *Lancet* (8471):29–31.
- Caperos, J. M., Morcillo, A., Peláez, F., Fidalgo, A. and Sánchez, S. 2012. The effect of infant body mass on carrier travel speed in cotton-top tamarins (*Saguinus oedipus*). *Int. J. Primatol.* 33:447–459.
- Ferrari, S. F., Coutinho, P. E. G. and Corrêa, H. K. M. 2010. Congenital digital aplasia in a free-ranging group of silvery marmosets, *Mico argentatus*. *J. Med. Primatol.* 39:166–169.
- French, J. M. 1986. Ectrodactyly and syndactyly in a common marmoset (*Callithrix jacchus*). *Lab. Anim.* 20:49–50.
- Matauschek, C., Roos, C. and Heymann, E. W. 2011. Mitochondrial phylogeny of tamarins (*Saguinus*, Hoffmannsegg 1807) with taxonomic and biogeographic implications for the *S. nigricollis* species group. *Am. J. Phys. Anthropol.* 144:564–574.
- Peres, C. A. 1993. Diet and feeding ecology of saddle-back (*Saguinus fuscicollis*) and moustached (*S. mystax*) tamarins in Amazonian terra firme forest. *J. Zool. Lond.* 230:567–592.
- Schradin, C. and Anzenberger, G. 2001. Costs of infant carrying in common marmosets, *Callithrix jacchus*: an experimental analysis. *Anim. Behav.* 62:289–295.
- Schultz, A. H. 1939. Notes on diseases and healed fractures of wild apes. *B. Hist. Med.* 7:571–582.
- Schultz, A. H. 1956. The occurrence and frequency of pathological and teratological conditions and of twinning among non-human primates. In: Hofer, H., Schultz, A.H. and Starck, D., editors. *Primatologia, vol. 1*. Basel: S. Karger. p. 965–1014.
- Stokes, E. J. and Byrne R. W. 2006. Effect of snare injuries on the fig-feeding behavior of chimpanzees of the Budongo Forest, Uganda: behavioral adaptations and long-term implications. In: Newton-Fisher, N. E., Notman, H., Paterson, J. D. and Reynolds, V., editors. *Primates of Western Uganda*. New York: Springer. p. 281–297.
- Struhsaker, T. T., Chapman, C. A., Pope, T. R. and Marcus, J. R. 2011. Healthy baboon with no upper jaw or nose: an extreme case of adaptability in the Kibale National Park, Uganda. *Primates* 52:15–18.
- Tirado Herrera, E. R. and Heymann, E. W. 2004. Behavioural changes in response to an injured group member in a group of wild moustached tamarins (*Saguinus mystax*). *Neotrop. Primates* 12:13–15.

OBSERVAÇÃO DE COMPORTAMENTO AGONÍSTICO DE *CEBUELLA PYGMAEA* SOBRE *SCIURUS SPADICEUS* EM UM FRAGMENTO FLORESTAL NO ESTADO DO ACRE, BRASIL

Rodrigo Otávio Almeida Canizo
Armando Muniz Calouro

O leãozinho, *Cebuella pygmaea* Spix, 1824 (Primates, Cebidae: Callitrichinae) é a menor espécie de primata neotropical, medindo cerca de 23 cm do focinho a ponta da cauda e pesando de 120 a 190 g quando adulto (Ankel-Simons, 2007). Ocorre na região amazônica, abrangendo o Brasil (nos estados do Acre, parte de Rondônia e sul do Amazonas), Colômbia, Equador, Peru e norte da Bolívia (Bicca-Marques e Calegari-Marques, 1995; van Roosmalen e van Roosmalen, 1997; Buchanan-Smith *et al.*, 2000; Rylands *et al.*, 2009). Embora normalmente viva em florestas primárias não perturbadas, também pode ocorrer em florestas secundárias e habitats degradados (Soini, 1988; Reis *et al.*, 2008). O esquilo-vermelho, *Sciurus spadiceus* Olfers, 1818 (Rodentia, Sciuridae: Sciurinae) conhecido popularmente em vários locais na Amazônia como quatipuru-vermelho, é uma espécie neotropical, medindo pouco mais de 30 cm do focinho a ponta da cauda e pesando de 225 a 240 g quando adulto (Reis *et al.*, 2006; Bonvicino *et al.*, 2008), podendo ser encontrada no Peru, Equador, Bolívia e Brasil (sul do rio Amazonas e oeste do rio Tapajós) (Emmons & Feer, 1997). Segundo Patton *et al.* (2000), o quatipuru-vermelho somente é encontrado em florestas primárias ou secundárias de terra firme, nunca em florestas de várzea.

A observação registrada aqui parte de um estudo em andamento com um grupo de oito indivíduos de *C. pygmaea* (um macho e uma fêmea adultos, um subadulto macho, dois subadultos, dois juvenis e um filhote cujos sexos não foram identificados), ocorrendo durante a segunda semana de habituação do mesmo, no qual se pretende estudar sua ecologia e padrões comportamentais em um fragmento urbano de aproximadamente 150 ha (Parque Zoobotânico, 9°56'30" - 67°52'08" S, 9°57'19" - 67°53'00" W). O Parque Zoobotânico é um fragmento florestal urbano