

Fatal Attack of a *Boa constrictor* on a Bearded Saki (*Chiropotes satanas utahicki*)

Stephen F. Ferrari^a Washington L.A. Pereira^c Ricardo R. Santos^d
Liza M. Veiga^b

Departamentos de ^a Genética e ^b Psicologia Experimental, Universidade Federal do Pará, ^c Departamento de Patologia e Medicina Veterinária Preventiva, Universidade Federal Rural da Amazônia, e ^d Departamento de Zoologia, Museu Paraense Emílio Goeldi, Belém, Brazil

Key Words

Predation · *Boa constrictor* · Bearded sakis · Pitheciinae · *Chiropotes* · Amazonia

Attacks by predators are significant events in the life history of any primate species [Stanford, 2002], but they are also very rare, and few, if any, records are available for most taxa [Cheney and Wrangham, 1987]. In the case of the Neotropical sakis (Pitheciinae), records are restricted to remains encountered in proximity to the nests of harpy eagles, *Harpia harpyja* [Rettig, 1978]. In addition, while there is an extensive literature on the predation of platyrrhine monkeys by raptors [Izor, 1985; Sherman, 1991; Julliot, 1994; Robinson, 1994; Vasquez and Heymann, 2001], recorded attacks by snakes are relatively rare [Chapman, 1986; Heymann, 1987; Corrêa and Coutinho, 1997; Tello et al., 2002; Perry et al., 2003]. Here, the fatal attack of a boa (*Boa constrictor*) on a bearded saki (*Chiropotes satanas utahicki*) is described from a site in south-eastern Brazilian Amazonia. It was also possible to conduct a partial autopsy on the victim, which provided information on its physical condition and insights into the cause of death.

The attack took place on an island, known as Germoplasma (03°51'53" S, 49°38'45" W), located in the Tucuruí hydroelectric reservoir, on the Tocantins river in the Brazilian state of Pará. The 100-ha island is covered predominantly by terra firme forest, which is inhabited by 7 platyrrhine species, including a group of 24 bearded sakis (*C. s. utahicki*), studied by Santos [2002]. Despite the limited area of the island, the ecology of this group appears to be typical of the genus, including a diet based on immature seeds (69.5% of feeding records).

In January 2002, two field assistants were monitoring the study group during mid-morning when they heard alarm calls emanating from the crown of a tree, in which a series of abrupt movements indicated the occurrence of unusual behaviour. On moving closer, they observed a large boa (*Boa constrictor*), which they estimated to be more than 3 m in length, wrapped around a saki at approximately 8 m above the ground. The assistants interrupted the attack by shaking lianas connected to the tree crown until the snake dropped the monkey. The saki, a nulliparous adult female with an estimated body weight of between 2 and 3 kg, was encountered dead on the ground.

Unfortunately, the internal organs were removed by the field assistants prior to preservation of the body in formaldehyde. It was nevertheless possible to confirm an absence of bone fractures of any kind and a lack of evidence of internal haemorrhaging related to either the attack or the victim's fall. From this, it appears reasonable to conclude that the consequences of the attack were fatal before the infliction of any significant internal injuries and that the cause of death was probably suffocation.

The examination also revealed that the saki was in good health and well nourished at the time of death, with no clear signs of disease, good muscle tone and well-formed bones. This would appear to exclude poor physical condition as a possible determinant of the saki's vulnerability to the attack and reinforces the conclusion that, despite its small size and potential competition from other platyrrhines, the island has been able to support a group of bearded sakis adequately over the long term (it has been isolated from surrounding forest for 17 years).

It remains unclear, however, whether other circumstantial factors contributed to or facilitated the attack. One potentially important aspect is the social context. Mobbing is a characteristic response to snakes not only in platyrrhines [Chapman, 1986; Tello et al., 2002; Perry et al., 2003], but also in such divergent forms of primate as lemurs [Burney, 2002] and tarsiers [Gursky, 2002]. Few data are available for bearded sakis, but they do seem to react collectively towards predators [Peetz, 2001] and presumably exhibit typical primate behaviour in the presence of snakes. Santos [2002] recorded a fission-fusion pattern of social organisation at the study site, resulting in the formation of parties as small as 3 individuals. Such a behaviour may significantly reduce the potential not only for defence against, but also for the detection of predators [Stanford, 2002], but the effective party size at the time and place of the attack is unknown.

This record, together with a number of other recent reports [Burney, 2002; Gursky, 2002; Tello et al., 2002], suggests that arboreal primates may be at least as vulnerable to attack by snakes as by raptors. However, the total number of records of any kind of attack remains prohibitively small for any systematic analysis of predation patterns in arboreal primates.

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