Reactions of White-Bellied Spider Monkeys to a Predation Attempt by a Cougar

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REACTIONS OF WHITE-BELLIED SPIDER MONKEYS TO A PREDATION ATTEMPT BY A COUGAR

Ítalo Mourthé

An increasing body of evidence suggests that large felids are one of the main predators of large arboreal primates (e.g., Peetz *et al.*, 1992; Matsuda and Izawa, 2008). Predators employ highly specific hunting techniques in order to successfully capture their prey, and prey species may evolve elaborate defense behaviors in order to avoid been killed (Zuberbühler and Jenny, 2002). However, just as there are a scarce number of predation records in the wild, there are also relatively few accounts of behavioral responses by primates facing their predators (Stelzner and Strier, 1981; Heymann, 1990; Nunes *et al.*, 1998; Asensio and Gómez-Martín, 2002; Miranda *et al.*, 2006). Here, I describe the reactions of white-bellied spider monkeys (*Ateles belzebuth*) facing a large potential predator, the cougar *(Puma concolor)* at Maracá Ecological Station (MES; 3°21'44" N, 61°26'01" W), a large riverine tropical rainforest island in the state of Roraima, Brazil.

On June 22, 2010, I witnessed the furtive approach of a cougar while following a mixed-sex troop of approximately 7–9 spider monkeys in a relatively low *terra-firme* forest. The cougar was observed at 0704h moving quickly and silently, and it appeared to be pursuing the spider monkeys. During the few seconds the cougar was observed, it crouched with its head slightly raised, its ears up and facing forward, and its face oriented toward the moving monkeys. Then, it resumed tracking the monkeys' route and I did not see it again. The cougar apparently did not perceive — or ignored — my presence nearby.

The spider monkeys reacted instantly when they detected the cougar. Intense and loud barking calls were emitted and they quickly climbed as high as possible in the canopy (*ca.* 18 m). However, monkeys did not shake branches or throw sticks down as observed when they are disturbed by predators (e.g., Matsuda and Izawa, 2008)Colombia</title><secondary-title>Primates</secondary-title></titles><periodical><full-title>Primates</full-title></periodical><pages>65–68</pages><volume>49</volume><keywords><keyword>Predation</keyword><keyword>Spider monkey</keyword><keyword>Jaguar</keyword><keyword>Puma</keyword></keywords><dates><year>2008</year></dates><accession-num>PDF0219</accession-num><call-num>0869</call-num><urls></urls></record></Cite></EndNote>. Then, I noted the troop split into two vocalizing parties about 50 m apart from each other. After approximately 10 min the party I was following stopped vocalizing and resumed moving in the same direction where the other party was still barking. The 4–5 individuals moved in a single file, very slowly and silently, for about 80 m from the point where they had detected the cougar, then stopped again at 0727h in a large tree (*ca.* 30 m). There, the spider monkeys recommenced their alarm calls, varying in frequency and intensity. At this time, they moved back and forth quickly, mostly in a stereotyped way, while vocalizing—a behavior consistent with the definition of mobbing (Curio, 1978; Lloyd *et al.*, 2006)2006—on thick horizontal branches (apparently avoiding the peripheral ones), shaking, breaking, and dropping sticks from the tree. They were very agitated in the tree, and once they stopped moving, their bodies stayed oriented toward the place where, presumably, the cougar had been seen. Both males and females engaged in this mobbing. For instance, an adult female was seen going back and forth repeatedly on the same branch, vocalizing loudly and gazing up at a specific point. At 0750h I heard one loud roar from the cougar but there was no indication that a monkey had been caught. The monkeys became visibly more stressed, barking and moving more intensely and chaotically. The roaring came from the east, the direction that spider monkey barks had been oriented. At 0801h the spider monkeys stopped barking and the party resumed travelling again, slowly and silently, moving northward from that area. Approximately one minute later the other party (3–4 ind.) was also seen travelling quietly in the same direction. At that time, barking ceased completely and they joined together as one troop. In total, the troop had vocalized continuously for at least one hour. Then, the spider monkeys resumed their typical activities but several individuals remained visibly stressed and vigilant. For instance, while they were resting just around mid-day, one female suddenly start barking and other individuals joined this barking bout that lasted approximately 20 min. Some monkeys were looking down, scanning the area frequently while barking but I saw no apparent reason for this behavior.

Although I have no evidence that a predation event occurred, there is evidence that large felids prey on spider monkeys at other sites (Matsuda and Izawa, 2008)Colombia</title><secondary-title>Primates</secondary-title></titles><periodical><full-title>Primates</full-title></periodical><pages>65–68</pages><volume>49</volume><keywords><keyword>Predation</keyword><keyword>Spider monkey</keyword><keyword>Jaguar</keyword><keyword>Puma</keyword></keywords><dates><year>2008</year></dates><accession-num>PDF0219</accession-num><call-num>0869</call-num><urls></urls></record></Cite></EndNote>. In the present study, the spider monkeys were visibly alarmed by the cougar and their altered behaviors imply that they recognize cougars as a threat (Peetz *et al.*, 1992)1992. The monkeys' reactions were consistent with detecting and escaping the predator: a noisy barking followed by a mobbing attempt and finally, a silent retreat. Certain environmental variables are clearly linked to predation risk such as height or obstructive cover (Cheney and Wrangham, 1987; Miller and Treves, 2007)K.C.</author><author>Panger, M.</author><author>Bearder, S.K.</author></secondary-authors></contributors><titles><title>Predation on primates – Past studies, current

challenges, and directions for the future</title><secondary-title>Primates in Perspective</secondary-title></titles><pages>525–543</pages><dates><year>2007</year></dates><pub-location>New York</pub-location><publisher>Oxford University Press</publisher><urls></urls></record></Cite></EndNote>, and it is likely that spider monkeys were not feeling safe enough at their initial height to confront the predator—this may explain why their initial response did not include agonistic behaviors. Once they reached a taller tree, they rapidly began agonistic displays.

Previous studies have suggested that antipredator behaviors depend on the type of predator and the situation where the encounter occurs (Asensio and Gómez-Martín, 2002). Mobbing calls can communicate the presence of a predator to conspecifics as well as prompt predator to move away (Lloyd et al. 2007). Following mobbing, the spider monkeys performed a coordinated, secretive retreat, which might be a response to a cursorial predator able to pursue them throughout the forest (e.g., Zuberbühler *et al.*, 1997)1997. Antipredator behaviors in primates typically include quick escapes and noisy vocalizations (e.g., Phillips, 1995; Lloyd *et al.*, 2006; Matsuda and Izawa, 2008), but cryptic behaviors (e.g., Yeager, 1991; Zuberbühler *et al.*, 1997; Gilbert, 2000) such as the one illustrated here are not commonly reported in large species. In addition, unlike the usual pattern observed in other primates where males were the main group protectors (Cheney and Wrangham, 1987), my observations suggest that adult spider monkeys of both sexes play an active role in group defense (see also Matsuda and Izawa, 2008)Colombia</title><secondary-title>Primates</secondary-title></titles><periodical><full-title>Primates</full-title></periodical><pages>65–68</pages><volume>49</volume><keywords><keyword>Predation</keyword><keyword>Spider monkey</keyword><keyword>Jaguar</keyword><keyword>Puma</keyword></keywords><dates><year>2008</year></dates><accession-num>PDF0219</accession-num><call-num>0869</call-num><urls></urls></record></Cite></EndNote>. More research is needed to understand the impact of antipredator behaviors on primate evolution and population dynamics.

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