

## **An Observation of Agonistic Behavior in Howler Monkeys (*Alouatta palliata*) on Barro Colorado Island, Panama**

Authors: Méndez-Carvajal, Pedro G., Santamaría, Mario, and Moreno, Ricardo A.

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AN OBSERVATION OF AGONISTIC BEHAVIOR IN  
HOWLER MONKEYS (*ALOUATTA PALLIATA*) ON BARRO  
COLORADO ISLAND, PANAMA

*Pedro G. Méndez-Carvajal*  
*Mario Santamaría*  
*Ricardo A. Moreno*

Barro Colorado Island (BCI) is a forested nature reserve of 1,500 ha in the Panama Canal. It has a well-marked five-month dry season and a seven-month wet season (Leigh Jr. *et al.*, 1982). BCI harbors a large population of howler monkeys (*Alouatta palliata*), which was the focus of the first modern field study on wild primates (by C. R. Carpenter in the 1930s) and which has been monitored and studied ever since (Carpenter, 1934, 1965; Chivers, 1969; Mittermeier, 1973; Milton, 1980, 1982; Neville *et al.*, 1988). Agonistic

behavior among howler monkeys is a mechanism to gain access to food, space, and/or females in estrus (Clarke, 1982, 1983). Agonistic behavior includes infanticide (Galletti *et al.*, 1994) and fights between males, females, and satellite males, as well as displacements, pushes, chases, and grabs (Neville *et al.*, 1988; Wang and Milton, 2003). Increases in agonistic interactions can occur when food resources are scarce (Cowlshaw and Dunbar, 2000).

Agonistic behavior is reported as “rare” at BCI (Carpenter, 1934, 1965; Altmann, 1959; Southwick, 1963; Chivers, 1969). Wang and Milton (2003) have suggested that the low incidence of social interactions between males within groups reflects the energy costs of social behavior and indicates that relationships between males are “structured by more subtle means than overt physical interactions, possibly including vocal communication, relationships with individual group females, and kinship” (p.1227). Although there are some reports of aggression between male and female howler monkeys, it generally occurs during feeding bouts and has never been fatal for one of the antagonists. Carpenter (1934) described an incident on BCI that involved an adult male biting the tail of a juvenile, but aggressive interactions involving fights are otherwise rarely seen (Milton, 1982).

In this report we describe an incident of extreme agonistic behavior that occurred on 17 October 2003. Mario Santamaría, a wildlife ranger on BCI, observed an adult male howler monkey pursue, catch, and kill a young female. The male chased this younger female individual, repeatedly biting her on the lower back just above her tail for some 20 minutes. Soon after, on the same day, the female was found dead about 12 m from the tree where the attack occurred (Fig. 1).

Howlers on BCI frequently have wounds and scarring believed to result from fights with conspecifics rather than just from accidents or predator attacks. This is, however, the first report of a fight of this sort having a fatal outcome, and the first report of extreme agonistic behavior in the howler monkey population on BCI in almost 70 years.



**Figure 1.** Dead body of the young female howler monkey attacked and killed by an adult male. Fausto Trail, Barro Colorado Island, Panama. Photo ©Tom Kursar.

Milton (1982) has argued that bot-fly parasitism is an important factor regulating the BCI howler monkey population, along with nutritional issues and food availability. This howler population has been considered to be peaceful, and males are thought to be well-received by females in estrus. It is possible that agonistic behavior may play a more important role in the dynamic and social interactions of the population of howler monkeys on BCI than previously thought, even if this behavior appears to be relatively uncommon. We suggest that aggressive behavior among howler monkeys on BCI needs to be further considered in other studies.

**Pedro G. Méndez-Carvajal, Mario Santamaría, and Ricardo A. Moreno,** Smithsonian Tropical Research Institute, Box 0843-03092, Balboa, Ancon, Republica de Panama. *Current address of first author:* Florida Museum of Natural History, Dickinson Hall, PO Box 117800, University of Florida, Gainesville, FL 32611-7800, USA, e-mail: <Mendez55@ufl.edu>.

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