

Conservation Conversation



A Comparative Study of Resource Use by Howler Monkey Groups (*Alouatta palliata*) in Isolated Rainforest Fragments of the Region of Los Tuxtlas, Veracruz, Mexico

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We present data obtained from a six month-long field study period (March-July and September 1999) on the feeding preferences of howling monkey (*Alouatta palliata*) groups inhabiting three forest fragments of different areas: 2.5 ha., 3.5 ha., and 240 ha. General activities of howling monkeys in the smaller fragment were distributed as follows: resting 74.5%, feeding 24.3%, social interactions 0.6%, locomotion 0.5%, and traveling 0.2%. For the group of howling monkeys inhabiting the 3.5 ha fragment, time devoted to these activities varied as follows: resting 78.6%, feeding 16.4%, social interactions 3.6%, locomotion 0.9%, and traveling 0.5%. The activities of the howler troop in the largest site were: resting 69.2%, feeding 28.8%, traveling 1.4%, social interactions 0.8%, and locomotion 0.7%.

In the small forest fragment, we recorded feeding in 16 trees representing six species. Two tree species, *Brosimum alicastrum* and *Ficus tecolutensis*, were the feeding focus of howlers, who spent 86.2% of their feeding time on trees of these species.

In the 3.5 ha fragment, we recorded the use by howlers of 30 trees representing 15 species of five plant families. Among these species, *Ficus* sp.1, *Poulsenia armata*, *Ficus* sp.4, *Cecropia obtusifolia*, *Spondias radlkoferii* and *Clarisa biflora* accounted for 71.1% of feeding time, but species of Moraceae accounted for 69.8% of feeding time.

The group of howling monkeys from the largest site used 45 trees of 22 species for feeding. Among these, *Ficus* sp.9, *Pseudolmedia oxyphyllaria* and *Poulsenia armata*, of the Moraceae, contributed to 51.7% of feeding time.

In the small site howlers spent 81.9% of feeding time eating young leaves, 16.2% consuming mature leaves and 1.1% and 0.8% eating immature and mature fruits respectively. The howlers from the 3.5 ha fragment spent 42.6% of their feeding time eating mature fruit, 34.2% consuming young leaves, 10.7% eating flowers and 9.8% consuming mature leaves. Immature fruit and other items accounted for 1.5% and 1.2% of their feeding time respectively.

The howlers from the largest site spent 64.8% of their feeding time on mature fruits, 22.5% eating young leaves, 7.1% consuming immature fruits, and 4.7% eating flowers.

Clear differences were evident in the howler troops inhabiting the forest fragments investigated. A general trend toward a more diverse resource base in the diet was evident from the small to the large forest fragments. Number of trees used ranged from 16, to 30, to 45 as forest fragment size increased. A similar trend was evident in the case of the number of tree species used, ranging from 6 to 15 to 22.

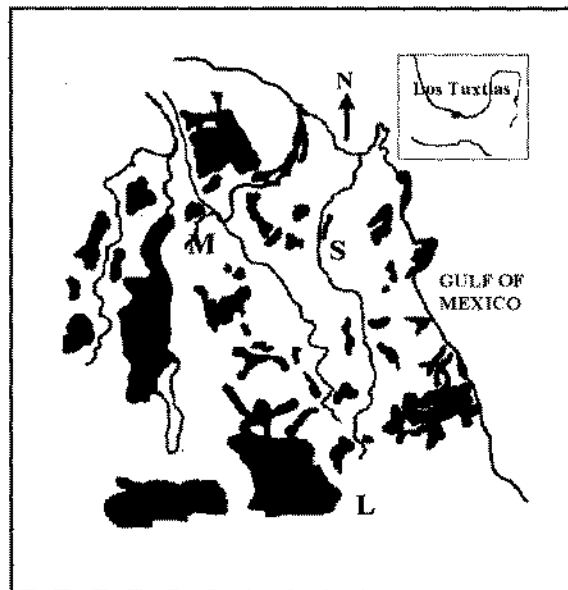
While the observed diet of the howler troop in the smallest fragment was dominated by leaf consumption, that of troops in the medium and large fragment included regular amounts of

fruit and flowers.

From a conservation view point our results suggest that howler monkey troops existing in very small habitat islands may not have enough resources to sustain nutritional requirements and may be existing in a high stress environment. In addition, these troops can not expand their range and dietary options as resources become depleted or disappear as a result of further deterioration of the habitat island.

Phenological irregularities in leaf and fruit production within and between years may impose further pressure on these troops. The establishment of tree corridors between isolated forest fragments may ease some of these pressures and may add connectivity among isolated howler monkey troops.

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Study sites: S (small) = 2.5 ha forest fragment; M (medium) = 3.5 ha fragment; L (large) = 240 ha fragment. These are located in the northeastern area of the region of Los Tuxtlas in southern Veracruz, Mexico (95° 00' W, 18° 25' N). Dark areas are rain forest patches. Continuous lines are streams. The area borders to the east with the Gulf of Mexico.

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