

GETTING TOUGH DURING PERIODS OF FOOD SCARCITY: FOOD MECHANICAL PROPERTIES IN LEMURS.

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Dietary mechanical properties are predicted to be more challenging during periods of food scarcity as less preferred foods are eaten. This assumes that less preferred foods are mechanically more difficult to ingest and masticate. In this study, we examine how seasonality affects dietary choice and concomitant food toughness in three sympatric bamboo lemurs (*Haplemur g.griseus*, *H.aureus*, and *H. (Prolemur) simus*) in Ranomafana National Park, Madagascar. We tested lemur diets in four seasons (cool/dry, intermediate 1, warm/wet, intermediate 2) across different years. Focal animal observations occurred simultaneously with plant collection. Food mechanical properties were tested with a portable tester in the field. Because all three lemurs rely on bamboo, their dietary seasonality was largely determined by the developmental cycle of bamboo. The bulk of the diet for all three species was aseasonal; branch shoots and young leaf bases were available and eaten all year round. Food toughness followed the same general pattern and was generally not significantly different within and among lemur species across seasons, even for specific foods such as branch shoots. Foods that by definition could be considered "preferred" were eaten in the warm season (e.g., ground shoots, fruits), and were the least tough foods eaten in that season and indeed throughout the year. While ground shoots were the least tough foods for *H.simus*, culm pith, which is eaten when shoots decline, was the toughest food. We conclude that bamboo lemur diets are largely aseasonal, though seasonally limited foods are less mechanically defended.

Keywords: diet, toughness, bamboo, seasonality