

Diverse diets and high-sugar foraging preferences: foraging criterion in low altitude primates

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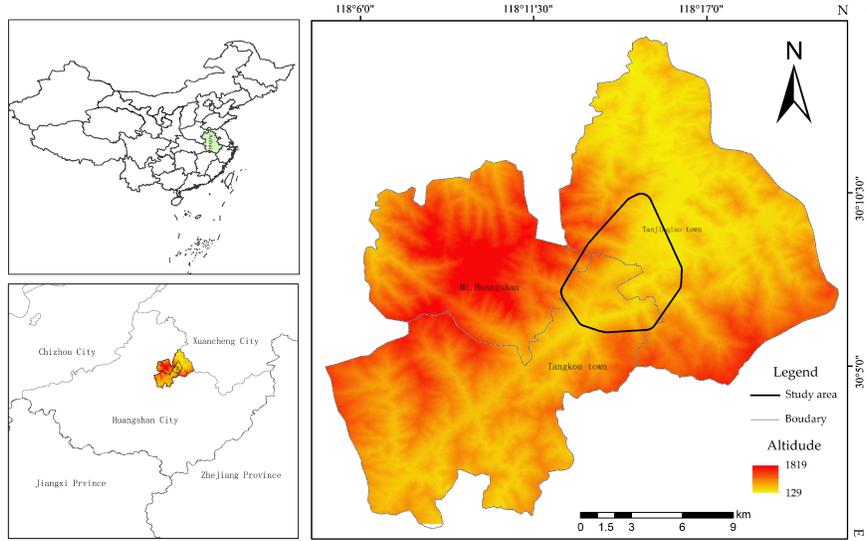
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Abstract

Nutrient composition and food availability determine food choices and foraging strategies of animals. Altitude affects species distribution and food availability, whereas primate food needs increase with body size. However, the mechanism of food selection in large primates at low altitudes requires further investigation. As the largest species in the genus *Macaca*, the Tibetan macaque (*Macaca thibetana*) has sophisticated foraging strategies. In this study, we researched a group of 29 wild Tibetan macaques (Tianhu Mountain Group) that live in a low-altitude area around Mt. Huangshan, Anhui Province, China. We used instantaneous and scan sampling for observing the foraging behavior of these macaques from September 2020 to August 2021. We recorded the dietary composition and food availability, compared the nutrient content of staple food and non-food items, and analyzed the role of key nutrients in food selection. We found that Tibetan macaques forage on 111 plants belonging to 93 genera and 55 families. The food types included 52.5% fruits, 17.0% mature leaves, 6.3% young leaves, 1.9% stems, 4.5% flowers, 14.4% bamboo shoots, 1.3% tender shoots, and 2.1% other. Tibetan macaques forage for a maximum total of 76 plant species during spring. However, dietary diversity was highest during summer ($H' = 3.052$). Monthly fruit consumption was positively correlated with food availability. Staple foods are lower in fiber and tannins than non-foods. In addition, there was a positive correlation between the time spent foraging for specific foods and sugar content of the food. The results showed that the plant species and food types fed by Tibetan macaques were diverse, and their foraging strategies varied seasonally. Our findings confirm the effect of nutrients on food choice in Tibetan macaques, highlighting the importance of sugar in their food choices and suggesting that the foraging behavior of Tibetan macaques is highly flexible and adaptive.

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