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OPTIMAL PATCH USE OF *MYRICA RUBRA* FRUIT BY YAKUSHIMA MACAQUES (*MACACA FUSCATA YAKUI*) ON YAKUSHIMA ISLAND, JAPAN.

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According to marginal value theory, animals are predicted to leave patches when their food intake rate falls to the average rate in their habitat, and thereafter continue foraging in more profitable patches. Thus, the more high-quality patches an animal selects, the longer an animal should forage there. To test this, we investigated the relationship between patch residence time of Yakushima macaques (*Macaca fuscata yakui*) and availability of fruit patches at the beginning, middle and end of the fruiting-season of *Myrica rubra* by field survey in Yakushima Island, Japan. Fruit ripeness differed among trees, and a few trees had many ripe fruits at the beginning of the fruiting-season. Most trees had ripe fruits at the middle of this season, and the number of fruits decreased in all trees at the end of this season. The generalized linear model explained that 1) macaque selected patches in proportion to quantity of ripe fruits, 2) macaques ignored patches with fewer fruits at the middle of the fruiting-season, 3) the average intake rate of fruit increased from the beginning to the middle and then decreased to the end of the fruiting-season, 4) residence time for feeding at the patch decreased from the beginning to the end of the fruiting-season. Thus, when the quality of selected patch relative to average quality of other patches was higher, patch residence time was longest. The study suggests that macaques select more profitable patches according to fruit availability in each period, and spend optimal time for feeding at the patch.

Keywords: Optimal patch use; Feeding behavior; *Macaca fuscata yakui*; *Myrica rubra*