

Preface

This book is based on a field study to investigate the flexibility of François' langur (*Trachypithecus francoisi*) in feeding, ranging, time budget, group structure, social behavior and breeding in response to ecological pressures and human disturbance. A second aim of the book was to collect data on infant behavior development and color change from the natal pelage. Systematic observations were conducted during 6-month pre-and 14-month intensive investigation on five langur groups at Mayanghe Nature Reserve (MNR), Northeast Guizhou, China.

T. francoisi at MNR had an extremely broad diet comprising 164 species (55 families and 108 genera) from trees, bushes, lianes, herbs, crops, bamboo and ferns, but the top 10 food species accounted for only 51% of total feeding records. Nearly half (47%) of the feeding records came from food species other than trees, and this figure varied from 30% in spring to about 68% in winter. Crop-raiding by the langurs was common at MNR. The langur's diet was comprised by 43.3% young leaves, 20.6% mature leaves, 25.7% fruits, 6.5% seeds, and a small proportion (3.9%) from buds, flowers, roots and shoots. Langurs shifted their diet from more folivorous in spring and summer (93% to 79%) to more frugivorous in autumn and winter (53% to 55%). Comparatively, langur groups in the continuous forest block had more preferred high-quality and assimilable young leaves and less mature leaves in their diet, while the reverse was the case in the diet of those in the fragmented habitat.

François' langur at MNR had a very long daily travel distance, (881 ± 354) m, varying from shorter in spring and summer and longer in autumn and winter, and a large range size, about 78 km^2 , ranging from 46.25 km^2 to 110.75 km^2 . Range overlap between neighbouring groups varied from 0.7% to 83% of the range, attributable to vegetation structure and to the formation of new groups. Groups exhibited high tolerance towards neighboring one-male groups, and mate defense plays the primary role in territoriality. Subadult males took the major role in group progression, followed by adult females and juvenile males. The langurs slept in cliff caves, cliff platforms, and ground sunk caves. Choice of sleeping site involved function of location of feeding patch, climatic condition and social cohesion.

Langurs normally had two feeding peaks, one in the morning and one in later afternoon, followed by two long resting periods, midday resting and nighttime sleeping, respectively. Langurs spent about 41% of the daytime resting, 25% feeding, 17% moving, 5% grooming, 12% playing, while "other" took less than 0.1%. Time allocation patterns varied from season to season, indicating a dynamic compromise integrating benefits and costs in food availability, feeding effort and metabolic needs. Langurs spent more time feeding and less time moving

when preferred food was abundant, and decreased feeding and increased moving in response to general shortage of preferred food, but adopted a reverse pattern when preferred foods became extremely sparse in winter. Langurs in low-quality habitat tend to rest more and play less to minimize energy expenditure. Time allocation patterns also showed differences between different sex-age classes.

At MNR, group size of *T. francoisi* varied from 8 to 19 individuals. Groups were one-male, or age-grade multimale matrilineal societies, and transition could take place by growth of male offspring or invasion by extra males. Mating was always preceded by adult female solicitation, characterized by displaying of the perineum towards the male. False mounting occurred between individuals of the same sex, or between juveniles in different sexes and both sexes could be the initiator. Births occurred in most months of the year, with a slight peak (55% of birth records) in February and March. Interbirth interval was 24 months on average, varying from 19 to 28 months. Infanticide was rare, and the resident males and subadult males in age-graded multimale groups were involved in resistance against the invading male and prevented infants from threat. Infanticide avoidance apparently involved also a kind of female counter-strategy in that invasion by an extra-group male resulted in a group split and division of females, and loss (not necessarily by infanticide) of unweaned infants, accelerating the resumption of oestrus by the females and probable shortening of birth interval. Social grooming was primarily initiated by adult females and played a function of association between adult females and their young offspring.

The earliest solid food record by infants occurred on the 34th day after birth during this study; and solid food occupied only 14% of total infant feeding records during the second month, and increased to 50% by 4 months and to about 90% by 10 months, but food scarcity in the lean season led to renewed milk intake. The suckling period varied from 12 to 14 months; 30% of suckling records were allomothering-nursing. Independent locomotion took place in the 8th week and occupied only 6% of the second month's locomotion, and this figure increased to 42% by 4 months old, and 98% by one year old. The first two weeks of life were characterized by an extreme physical proximity between the newborn and the mother. After that, infants could be held by allomothers, and the time spent with allomothers increased. Alloparents were adult and juvenile females in most cases, and subadult and juvenile males occasionally and adult males very occasionally engaged in infant care.

François' langur infant was born with a bright golden coat and grey-white face, ears, palms and soles, and pinkish ischial callosities, and scattered blackish hairs can be seen only on the upper surface of the tail. This color gradually darkens, and a yellowish white tract of fur appears from the corner of the mouth to the upper edge of the ear pinna after one month old. The crest can be seen on the crown after the 60th day, and it gradually becomes more pointed as it darkens in color, and the pelage darkening process dramatically accelerates after 100 days, and fully changes into blackish in a period of just 5 days (125 to 130 days), and becomes jet black

by 12 months. The "handlebar moustache" becomes whiter and narrower, resembling that of adults by 13 to 14 months old. The palm and sole, and the ischial callosities, change into the adult color by 8 months old; after 14 months, there is no pelage difference between infants and adults, though infant could still be distinguished from other age-classes by body size and behavior.

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