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Considerations on Field Methods used to assess Non-human Primate Feeding Behaviour and Human Food Intake in terms of Nutritional Requirements

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The field methods used by primatologists to compare feeding behaviour of different primate species, or groups living in various environmental conditions, must be adapted to peculiar aims since no approach allows to reach accurate results in both fields of biology and behaviour, both necessary to understand the global phenomenon of feeding. Similar issues are faced by the anthropologists studying food habits and food intake in various cultural or environmental conditions. A multidisciplinary approach is required to investigate such complex interactions.

Examples to illustrate the field conditions and the corresponding issues are drawn from recent studies conducted on the lemurs of Madagascar, from the observations of great apes choosing non-nutritional foodstuffs with a potential pharmacological activity, and from the multidisciplinary anthropological studies conducted in Africa during the last decades by our research team.

The most recent studies conducted in the south of Madagascar aimed at understanding the levels of energy input and output of various social categories of lemurs (*Lemur catta*) within a group, or between groups. The factorial method initially used, implies long periods of sustained observation to reach a total estimate of the time spent in various activities. It should be controlled by a most sophisticated physiological investigation (i.e.

doubly labelled water). The quantitative evaluation of food intake that must be conducted in parallel, also implies various methods (scans vs. actual quantitative measurements) that have been discussed for previous primatological studies, according to the aim (comparative behaviour vs. nutritional issues) and the global type of diet (mainly folivorous vs. frugivorous or insectivorous) that implies to reach different degrees of accuracy in the results of comparative studies. These remarks also apply to recent research on peculiar food choices of the chimpanzee (*Pan troglodytes*), and on the interpretation in terms of behaviour (including a possible consciousness of the aim) when eating non-nutritional parts of plants that contain pharmacologically active compounds.

Anthropological studies of food choice and intake in various environmental settings also imply similar dilemmas for a balanced approach between biology (nutritional requirements) and sociocultural responses. Studies conducted in the tropical regions of Africa will illustrate the impact of cultural preferences shaped during recent or past history of human groups, that obviously play a paramount role in food choices. Although what is considered as "culture" in non-human primates plays a different and minor role, the multidisciplinary comparative studies help to understand the balance between cultural and biological factors in food choices.