Title	PREFACE
Author(s)	YAMAGIWA, Juichi
Citation	African Study Monographs. Supplementary Issue (2008), 39: 1-2
Issue Date	2008-04
URL	http://dx.doi.org/10.14989/66242
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

PREFACE

The history of the evolution and adaptive radiation of primates has occurred under the influence of worldwide climate changes during the tertiary and quaternary periods. Except for some species that have extended their distribution into arid areas, most primate species have been confined to the tropical forests up to the present. The African great apes (genera *Gorilla* and *Pan*) may indeed have similar evolutionary histories in the tropical forests of Equatorial Africa. However, they exhibit different social features. Gorillas tend to form cohesive groups consisting of one male and several females with their offspring, whereas chimpanzees always form multi-male and multi-female groups and show fission-fusion grouping patterns.

Earlier studies attributed these differences to distinct niche separation between these apes. Terrestrial gorillas tended to stay in wet valleys and to nest on the ground, while arboreal chimpanzees preferred dry ridges and nested in trees. Gorillas usually ranged in secondary regenerating forests to feed on herbaceous vegetation, and chimpanzees ranged in primary forests to feed exclusively on fruits. The folivorous feature of mountain gorillas may contribute to their cohesive grouping, weak site fidelity, non-territoriality, and egalitarian social relationships. On the other hand, the frugivorous feature of chimpanzees may promote the fission-fusion grouping, territoriality, and dominance rank among individuals within a group.

However, recent studies on sympatric populations of gorillas and chimpanzees (Lopé in Gabon, Ndoki and Lossi in Congo, Mondika and Bai Hokou in Central African Republic, Kahuzi in Democratic Republic of Congo, and Bwindi in Uganda) suggest that differences in diet between them are quantitative rather than qualitative. Both gorillas and chimpanzees exhibit frugivorous features and feed regularly on insects, such as ants and termites, in the lowland tropical forests. The diversity of fruits consumed by gorillas occasionally exceeds that of chimpanzees, although gorillas consume a large amount of vegetative foods and rely upon terrestrial herbaceous vegetation when and where fruit is scarce. Western lowland gorillas frequently range in primary forest and occasionally nest in trees, as do chimpanzees. Based on these new findings, we should reconsider the ecological factors influencing their social features.

In Equatorial Africa, the ranges of gorillas and chimpanzees overlap extensively. The refuge forests on the edge of the Congo Basin may represent the core areas of their past adaptive radiation. The present distributions of these two species show that gorillas have enlarged their range into the higher altitudes while chimpanzees have expanded their range into the drier areas. The differences in their socio-ecological features may reflect their past adaptive abilities in tropical environments. Food is the primary limiting factor for primates, through its sparse distribution, physical protection, and toxic secondary compounds. The availability of foods fluctuates seasonally and annually. During the driest and coldest periods, the decreased availability of foods probably raised competition within and between species in the refuge forests. Such severe conditions may have promoted different

socio-ecological features between gorillas and chimpanzees. However, the characteristics of ape foods in tropical forests have not been thoroughly studied, and the lack of such information precludes deeper analyses.

Which kinds of environmental factors shape the socio-ecological divergence between gorillas and chimpanzees? In order to answer this question, our studies aim to clarify seasonal and annual fluctuations of ape foods in their natural habitats. We have selected two study sites (Kahuzi in Democratic Republic of Congo and Moukalaba in Gabon), both inhabited by gorillas and chimpanzees sympatrically and characterized by different environmental conditions. The Kahuzi-Biega National Park is located in the eastern refuge forest, which is characterized by montane forests on the Central Albertine Rift. The Moukalaba-Doudou National Park is located beside the western refuge forest near the Atlantic Ocean, and it includes closed-canopy forests, swamps and savannas. The major differences in vegetation between the two sites are the scarcity of fruit in Kahuzi and the sparse terrestrial herbs in Moukalaba. We have conducted a survey on climate, vegetation, diet of apes, nest construction, and their ranging for more than four years at both study sites. We have also tried to habituate groups of gorillas and chimpanzees in order to collect data on their social interactions. In this volume, we provide data on the phenology of fruits eaten by gorillas and chimpanzees and on their dietary preferences at both study sites. We tried to estimate the abundance of gorillas by a new census method carried out by counting their fresh dung piles. We also provide data on the process of gorilla habituation in Moukalaba and discuss the habituation methods in comparison with those used at the other study sites. Precise information on habitat capacity and responses of apes to habitat changes are important for conservation planning and promotion of ecotourism. We hope that the reports presented here will contribute to a better understanding of the environmental factors influencing the socio-ecological features of gorillas and chimpanzees in Equatorial Africa. Such a deeper understanding could lead to wise management of national parks, including the implementation of appropriate conservation measures in the habitats of the great apes.

This study was financed by a grant-in-aid by the International Scientific Research Program (No. 12375004, No. 16255008, No. 19107007 to J. Yamagiwa) of the Ministry of Education, Science, Sports and Culture, and by the Global Environmental Research Fund by the Japanese Ministry of Environment (F-061 to T. Nishida, Japan Monkey Centre), Japan. It was conducted in cooperation with the Centre de Recherches en Sciences Naturelles (CRSN, Democratic Republic of Congo), the Centre National de la Recherche Scientifique et Technologique (CENAREST, Gabon) and the Institut des Recherches en Ecologie Tropicale (IRET, Gabon). We thank the Institut Congolais pour Conservation de la Nature of the Congolese government and the Ministere des Eaux et Foret and Conseil Nationale des Parcs Nationaux of the Gabonese government for supports of our research project. We are also greatly indebted to all field assistants of Kahuzi-Biega National Park and Moukalaba-Doudou National Park and the people in the villages beside these national parks for their kind supports and hospitality throughout the fieldwork.

Juichi YAMAGIWA