

1 INTRODUCTION

Western lowland gorillas (*Gorilla gorilla gorilla*) are usually housed in captivity in groups containing one adult male, several adult females, subadult and juvenile males and females, which is a common pattern among free-ranging gorillas. Because of this polygyne structure and encouraging breeding success, increasingly zoos now face the problem of a "surplus" of male gorillas. Present knowledge from studies of feral and captive groups indicates that if several adult males remain within a group, this can cause an increase in aggression between male members. As a result, quite often these males are kept solitary. The occurrence of all-male groups among feral mountain gorillas (*Gorilla gorilla beringei*) suggested the idea of keeping bachelor groups in various zoos throughout Europe and the USA.

Providing all-male groups in zoological gardens with the necessary social environment is important for the psychological well being of the individual animal. This strategy will ensure a viable male population to fall back upon as a genetic "reservoir" for building new social groups or introducing a new male into social groups, if the resident male should die. Additionally, such groups can also present an interesting and alternative solution to solitary housing, for the zoo management since they can also be very attractive and entertaining for the public.

The research goal of this project was to investigate social behavioral dynamics among all-male groups of western lowland gorillas in two European Zoos. This project was a comparative study of the group formation of an all-male group and an already established group. The main emphasis concerning the formation of the bachelor group at the Environmental Park of Paignton (UK) was to gain an understanding of the development of social behavioral dynamics within an all-male group and to formulate recommendations for the establishment of future all-male groups in captivity. Questions that were addressed during this study concerned the influence group formation had on the expression of social and non-social behaviors by individual group members.

The study of the established group at Loro Park, Tenerife (Spain) focused on selected social behaviors, particularly the ones known to be demonstrated by free-ranging mountain gorilla all-male groups. Free-ranging mountain gorillas have been observed to form coalitions and support others during aggressive interactions. As described by Yamagiwa (1987), these behaviors play an important role in the adaptive coexistence of males. Thus, this study examined whether all-male groups employ the same mechanisms in captivity during agonistic interactions between individual males as free-ranging males. Social compatibility between the males plays an important role for a long-term establishment of all-male groups. In addition, previous individual experiences of each male can influence the long-term management of all-male groups in captivity.

Additional attention was paid to the size and design of the enclosures since it is believed that these features are significant factors in the successful management of all-male groups. Thus, this study investigated if males use the same behavioral mechanisms when kept in captivity, as compared to their free-ranging counterparts. In addition, special circumstances, which exist in captive settings, such as, limited spaces and places to retreat from each other as well as access to limited resources such as food items, enrichment and resting spots were observed. Previous individual experiences of each male were reviewed because they can play an important role in successfully housing such groups in zoological gardens.

The following chapters present the background information on the distribution, ecology, demography and behaviors of free-ranging gorillas and the status of captive gorillas.