



# GORILLAS

and chimpanzees (Cameroon) Leendertz, F. H. et al. Anthrax joins Ebola in threatening Central African great apes. Submitted to Emerging Infectious Diseases. Projet Grands Singes, 2005. Projet Grands Singes 2001–2005. Internal report.

*This is not the first time that great apes were infected with Anthrax; previously, in a series of sudden chimpanzee deaths 2001–2002 in the Tai National Park, Ivory Coast, Anthrax was confirmed as the cause of death. At least 6 chimpanzees had died from the disease there (Nature 430, 2004, pp. 451–452).*

## Ebola in Congo Republic

In May, WHO confirmed an Ebola outbreak in the Congo Republic at the end of April. This new outbreak was in Etoumbi and Mbomo, south of the Odzala National Park. It is assumed that the virus was transmitted to the human population following the consumption of nonhuman primates. The number of people who died during this outbreak stayed rather low – 10 in total – because of the good management. On 8 July, the WHO was to declare that the outbreak was over.

Between 2001 and 2003 gorillas and chimpanzees died from Ebola in large numbers in northern Gabon and western Congo, especially in the Lossi Gorilla Sanctuary (*Gorilla Journal* 26). Researchers were extremely worried at that time that the disease could spread further, and this has now happened: in March 2005 Ebola spread through the Odzala National Park in the Republic of the Congo and devastated the great ape populations there. It is even feared that the disease could infect all great ape populations in western Africa within a few years.

Ebola expert Peter Walsh estimates that 20–35% of all western gorillas may have died from Ebola during the last decade. In Minkebe National Park, northern Gabon, probably more than

90% of the gorillas died in the mid-1990s from Ebola.

Experts discussed possible interventions against the further spread of the virus. Most agree that a vaccination would be the most promising method, but so far no vaccine exists. One of the other measures suggested is that rivers could be cleared of fallen trees to prevent infected apes from crossing.

*Summary of several articles and papers by various authors*

## Reintroduced Gorillas: Reproduction, Ranging and Unresolved Issues

Sixteen years after the conception of the *Projet Protection des Gorilles* (PPG) in Brazzaville in 1987 (Attwater 1990), on 18 January 2003 a group of 5 adult western gorillas (*Gorilla gorilla gorilla*) was released into the southwestern Lefini Reserve in the Republic of Congo. This landmark release was a major step forward in a long-term program to reintroduce the species to the Batéké Plateaux, an area from which it has been absent for at least 50 years. On 8 September 2004, a second group was released, containing 9 sub-adults and juveniles. The two released groups are made up of orphan gorillas that have been rehabilitated in the neighbouring Lesio-Louna Reserve (Attwater 1994, Courage et al. 2001, Cousins 2002, Watkin 2002, Courage and Harvey 2003, King 2005a). Both the rehabilitation and the reintroduction programmes are managed and funded by the *John Aspinall Foundation* (JAF), a UK-based charity founded by the late John Aspinall, in collaboration with the Congolese Ministry for Forest Economy and the Environment.

### Site Selection

During the 16 years prior to the first release, one major lesson was learnt that stands out above all others: the

need to ensure major ecological barriers between the released gorillas and any human activity. This lesson was learnt following several excursions by adult males into local villages surrounding the Lesio-Louna Reserve (Watkin 2002, King 2005a) and the amputation of the hand of one adult female that had been caught in a snare (King 2005b) during the rehabilitation of the bushmeat orphans. Therefore, while the general area for the reintroduction was identified through consideration of several ecological, sociological and political criteria, the specific site for release was chosen due to the presence of large rivers on three sides, and a vast expanse of non-forested savannah on the fourth. Without such barriers, the human-gorilla conflicts that could have arisen would have been unmanageable.

### Release Procedure

Group 1 was released in the north-eastern corner of the reintroduction site, at the confluence of the Lefini and Louna Rivers. To facilitate the transfer, the group had been caged for two months at the Lesio-Louna Reserve prior to the release. At first light on the day of the transfer, the 5 adult gorillas were darted by an experienced vet. Following medical checks, the gorillas were transported by lorry and then by boat to the release site. The following morning, the group was located about 300 m from the release site, and all appeared in good health and spirits.

Group 2 was released into a forest patch known as 'Abio', south of the territory of group 1 and separated from it by 2 km of savannah. This transfer was notable in that the group of 9 free-living sub-adult and juvenile gorillas was anaesthetised, caged and transported without the need for darting. The use of an oral sedative (medetomidine) prior to the intramuscular injection by hand of the anaesthetic (zoletil or ketamine) eliminated stress to the gorillas and



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also the dangers of darting in a non-enclosed area. As with the first release, all members of the group were located the following morning in good health.

### Rapid Reproductive Success

The highlight of the reintroduction programme so far was the birth on 13 April 2004 of the first baby successfully born to a reintroduced gorilla (King 2004). The mother, Djembo, almost 17 years old at the time of the birth, is the oldest member of the group. During the rest of 2004, the baby remained healthy and gained strength, and in September, at 5 months old, was observed on his mother's back for the first time.

### Ranging

During the first year following release, group 1 was tracked almost daily by project staff, and remained together and in good health. Their ranging behaviour was found to be similar to that of wild western gorillas. Over the course of 2003, the group developed a range containing no more than 4 km<sup>2</sup> of forest, and spent a period of 6 months,

including almost the entire dry season, in a single forest patch of 1.34 km<sup>2</sup>. During the subsequent wet season, the group travelled regularly between forest patches, remaining in any one forest patch no longer than 3.5 weeks. This ranging behaviour is typical of wild western gorillas, who have been shown to travel further during the wet season, to take advantage of the high availability of fruit, than during the dry season, when fruit is scarce and low herbaceous vegetation is the staple part of the diet (White et al. 1995, Tutin 1996, Kuroda et al. 1996).

In 2004, the birth on 13 April appeared to precipitate major changes in the social dynamics within group 1. Within 8 days of the birth, one of the two adult males became separated from the rest of the group. During the following months, he became increasingly solitary, and his encounters with the group increasingly tense. During the same period, the dominant male became more defensive, and for the first time began to threaten staff members if they approached. By October, the movements

of the solitary male became completely independent of the rest of the group, and in November he suddenly and rapidly expanded his ranging activities. He increased his range from 6.4 to 23 km<sup>2</sup> within a month, only ceasing when he encountered group 2, with whom he has remained.

The disruption of the social dynamics within group 1 appeared to impact their ranging behaviour, conceivably in reaction to the mounting tension between them and the increasingly solitary male. Nevertheless, they continued to utilise the range they had established during 2003, while extending it westwards to include approximately 6.4 km<sup>2</sup> of forest during 2004.

The social dynamics of group 2 were also disrupted, this time following the encounter with the solitary male from group 1 on 2 December 2004. Three of the younger members of the group split from the rest on the day of the encounter, and a fourth the following day. A few days later project staff succeeded in reuniting the 4 gorillas near the release site. This small sub-group remained together for the rest of December, south of the release site, occasionally being led back towards the release site by project staff. The two sub-groups have since rejoined, although the regular presence of the solitary male often results in temporary splits within the group. However, the long-term impacts of the encounter with the solitary male are unpredictable, and only further daily monitoring will determine how the social relationships within the group evolve.

Strangely, in February 2005, the remaining adult male in group 1, and the presumed father of the baby, also became solitary. As has always been the case with solitary males, he suddenly increased his ranging, following the Lefini River west for 31 km in 12 days. In doing so, he crossed the western boundary of the reintroduction site, arriving in an unprotected area of for-



**Major ecological barriers are required between adult rehabilitated gorillas and human activity.**

*Photo: John Watkin*



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est. To avoid danger to him and to local users, he was tracked, anaesthetised, and returned to his former territory. For the past 2 months he has remained within the limits of the reintroduction site, but his movements, and those of the first solitary male, require constant monitoring.

### Carrying Capacity

These initial results indicate that the reintroduction site, containing 47 km<sup>2</sup> of forest in the core area plus a further 53 km<sup>2</sup> of associated forests, will be able to support a much larger population of gorillas. This is encouraging in terms of the long-term objective of establishing a viable, self-sustaining gorilla population in the area, and it is clear that further groups can and need to be released in the area to achieve this. Three gorillas within the PPG orphan rehabilitation program in the Lesio-Louna Reserve, all females of 4 to 7 years old, are currently being prepared for future release. Arrival rates of orphan gorillas at PPG-Congo have reduced to just 1 or 2 a year in recent years, compared to the levels of 10 or more per year in the early 1990s (King et al. in press). With this trend in mind, the potential for the sustainable restocking of the southwestern Lefini with rehabilitated orphans needs to be assessed. The reasons behind the reduction in orphan gorilla arrivals at PPG-Congo also need to be investigated.

### Impacts of Visitors

One issue raised during the past 2 years concerns the negative impacts of visitors on the behaviour of the gorillas. On one occasion in 2003, a group of 4 tourists was charged by one of the male gorillas, an event which may have precipitated the attack by that male on one of the patrol staff the following day. In 2004, after half an hour of calm observation, this same adult male jumped from an overhanging tree into a pirogue containing 3 visitors and



**First baby born to a reintroduced gorilla at a) 3 days old, b) 4 months old, c) and d) 7 months old.**

*Photos: Tony King (a, c, d) and Lucas Caviglia (b)*

5 staff members. While eventually no one was seriously hurt, and the gorilla showed no aggression towards either the staff or the visitors, the incident could easily have resulted in serious injury to the gorilla, the visitors or the staff. Therefore, finding the balance between disturbance of the gorillas and the very positive impact on awareness building amongst visitors remains a serious challenge for the project.

### Unresolved Issues

The past 2 years have been very encouraging in terms of assessing the success of the reintroduction program. Observations on ranging and social dynamics, and the first birth to a reintroduced gorilla, all indicate that the released gorillas have adapted well to the site and that their behaviour is similar to that of wild gorillas. Three major issues still remain unresolved.

The first concerns the genetic viability of a population based on small numbers of rehabilitated individuals, the second the capacity of the area to contain the extensive movements of solitary males, and the third the impact of human presence, especially of visitors, on the behaviour of the released gorillas. Therefore continued research and monitoring are essential to give a true indication of the long-term success of the program.

*Tony King, Christelle Chamberlan and Amos Courage*

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