

# **REHABILITATION OF ORPHAN GORILLAS AND BONOBOS IN THE CONGO**

**BY TONY KING, CHRISTELLE CHAMBERLAN AND AMOS COURAGE**

## **Introduction**

Max is a 17-year-old male bonobo (*Pan paniscus*). As a 4.5-kg three-year-old, he was the first orphan ape ever taken into the care of the John Aspinall Foundation's Projet Protection des Gorilles (PPG) in the Republic of Congo, on 19 May 1989. Fifteen turbulent years later, on 10 April 2004, Max was finally repatriated to his native Democratic Republic of Congo (DRC). There, along with two younger male companions, he is being integrated into the growing community of orphan bonobos at a sanctuary based on the outskirts of Kinshasa named Lola ya Bonobo, translated as 'Bonobo Paradise'. During those fifteen years, 103 other bonobos and gorillas arrived at the doors of PPG-Congo. Max is one of just 29 still alive today. This is the story of those fifteen years: a cycle of hope, disease, depression, high mortality, and now of freedom and hope again.

## **Project background**

The Projet Protection des Gorilles was conceived in 1987 as a long-term response to the constant flow of orphan gorillas arriving in Brazzaville, the capital city of the Republic of Congo (Attwater, 1999). A French resident in Brazzaville, Madame Yvette Leroy, had already started rescuing orphan gorillas herself, but was soon overwhelmed by the numbers arriving, and realised that her private garden was not a long-term solution for these growing apes. She contacted the John Aspinall Foundation (then known as the Howletts and Port Lympne Foundation), famous for its captive-breeding programme for western lowland gorillas in the U.K. A few years later an orphanage was set up in the grounds of Brazzaville Zoo, funded by the foundation and in partnership with the Congolese government. The aim was to provide an outlet for young gorillas orphaned by illegal hunting and confiscated by the Congolese authorities when offered for sale, normally in the major cities of Brazzaville and Pointe Noire. With expert medical care provided by employees of the foundation, the hope was that the orphan gorillas could be saved and rehabilitated, and eventually reintroduced to a forest area protected from further hunting pressure (Attwater, 1994). While many of the orphans died, those that survived have now been successfully released into two reserves approximately 140 km north of Brazzaville (Furley, 1996; Courage *et al.*, 2001; Courage and Harvey, 2003; King *et al.*, 2003; King, 2004).

## **Why bonobos?**

While PPG was set up to provide a long-term solution for orphan gorillas, the arrival of Max in May 1989 as the first ape to join the project illustrated

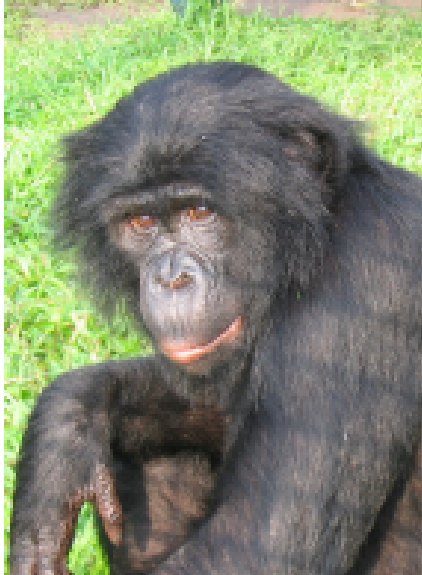
immediately that there was another issue to be tackled, that of a long-term solution for orphan bonobos. PPG cared for gorillas, and two sanctuaries in south-western Congo provided homes for orphaned chimpanzees, but there was no similar project for bonobos. PPG's objective to reintroduce gorillas to suitable habitat in Congo could not be duplicated for bonobos, as the species occurred only in the neighbouring DRC, and could not be released outside of their natural range (IUCN, 2002). Despite the absence of a long-term plan, however, PPG accepted Max, and any subsequent bonobos confiscated in Brazzaville having been smuggled across the Congo River from DRC, in the knowledge that they would otherwise die and in the hope that eventually a solution would be found for them.

This solution came in the form of Claudine Andre's bonobo sanctuary on the outskirts of Kinshasa, Lola ya Bonobo. This sanctuary lived up to its promise of being a bonobo paradise. With a large nursery building for the younger ones, the older bonobos enjoyed a life of semi-liberty in large electrified enclosures containing dense secondary forest and extensive permanent ponds and streams. Max himself was already too old to benefit from an immediate transfer to Lola, the integration of an adult male being too complicated at that time. However, two young bonobos who were confiscated in Brazzaville in March 2000 were transferred as soon as the relevant papers could be obtained from the two governments, the first time that collaboration between the two neighbouring countries had resulted in the repatriation of an endemic animal (Andre, 2000). With this significant precedent having been set, PPG and Lola planned the eventual transfer of Max and his two younger male companions, the major obstacle being funds to finance a new enclosure to allow their gradual integration into the Lola community. In the meantime, three more youngsters were transferred soon after arrival at PPG, two females in January 2003 and another female in March 2004.

### **The 'Max Transfer'**

By 2004, the enclosure for Max and his two companions at PPG, Tex and Mixa, was prepared at Lola, and the long-awaited transfer was planned for early April. At the end of March, a failed coup attempt in Kinshasa resulted in the river border between the two countries being closed for several days, forcing the transfer to be delayed by a week. Finally, on 10 April 2004, Max awoke to his last morning in his adopted country. At day-break, his usual keepers arrived at the cage, and gave each of the three bonobos a dose of Domitor, an oral sedative, mixed with honey and administered supposedly drop by drop onto their lower lips. It was hoped that this would send the bonobos to sleep, thus facilitating the intramuscular injection of anaesthetic. However, after half an hour, the sedative was having no visible effects, so a top-up dose was administered. Again, this had no visible effects. This was most likely due to the drug being administered too rapidly; rather than being absorbed into the membrane of the mouth, it was probably swallowed immediately and broken down within their stomachs.

With the tight schedule for the day already being stretched, the vet, Dr Nick de Souza from the World Society for the Protection of Animals (WSPA), was forced to act quickly. He prepared a dart for Max, approached the cage himself while hiding the blow-pipe as best he could, and was able to dart him immediately. As Max fell rapidly into anaesthesia, the younger of the two



*(Left) Max nearing the end of his 15-year exile in the Republic of Congo. (Photo courtesy of PPG.) (Right) Two orphan gorillas, Matoko and Likendzé, soon after arrival in October 2002. Emotional stress contributes to the high mortality of gorillas within the first two months after arrival, particularly in older orphans. (Photo: Sinead Lynch)*

remaining bonobos in the cage, Mixa, came to the bars to be groomed by the vet. While grooming, the vet used the pre-prepared dart to inject Mixa by hand through the bars. Tex, however, was now suspicious of the vet, and refused to approach. The Congolese TV crew were then permitted to arrive, as were the project co-ordination team. Given the bonobos' famous affinity to women rather than men, the project co-ordinator Christelle Chamberlan entered the cage and invited Tex to be groomed. Tex accepted, although keeping watch for the movements of the vet. While she groomed him, Christelle used the remaining dart to inject him by hand in his thigh. Tex responded by fleeing to the top of the cage, the vet having to catch him as he fell under the effects of the anaesthetic. The three bonobos were then loaded into two wheelbarrows, and transported to the transfer cages ready with the vehicles on the far side of a small forested river.

Once at the vehicles, the vet took blood samples for analysis in Brazzaville. However, as he worked on Tex and Mixa, Max began to awaken, and had to be injected with further ketamine to place him in his cage. Tex and Mixa were placed in a single cage, without the need for extra anaesthetic. All three were fully awake by the time the vehicle had left the dirt road of the Lesio-Louna Reserve to arrive at the tarmac road to Brazzaville.

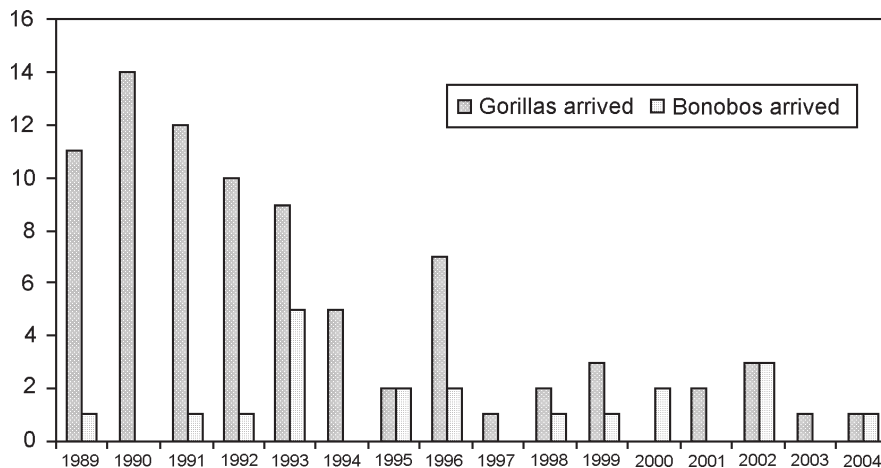
Three hours after leaving the reserve, the vehicles arrived at the port in Brazzaville. There, the Director for Wildlife and Protected Areas (DFAP) of the Congolese Ministry for Forest Economy and the Environment (MEFE) dealt with the necessary administrative issues and permits, while the two cages were loaded onto the largest available passenger boat. The half-hour river

crossing was by far the calmest moment of the entire transfer, Max profiting to drink some water and get some sleep. At the port in Kinshasa, the DFAP met his counterpart from DRC, and dealt with the necessary administrative issues there. The two cages were loaded into the back of a truck amongst much excitement, for the hour-long ride to Lola. At Lola, the three companions were reunited in their new cage, Max immediately taking a handful of hay and pushing it one-handed around the cage at high speed, a typical behaviour when he is excited. They were treated to a large basket of fruit, several bottles of water, and a lengthy grooming session, before being left alone to settle down for the night.

The following morning they explored the outdoor passage towards their forested enclosure, but had to wait a few more days before being let out into the forest, partly to help them learn about the electric fence.

#### Arrival rates at the sanctuary

After the arrival of Max at the PPG Brazzaville orphanage in May 1989, the next bonobos were not received until September 1991 and June 1992; 1993, however, saw the arrival of five bonobos, the highest number received by PPG in any one year. Overall, during the 15 years between May 1989 and May 2004, 20 bonobos have been received by PPG, with no particular trend in the numbers arriving per year, at an average of 1.3 per year (Fig. 1). In contrast, the arrival rates of gorillas during the same period show a distinct trend, from an average of ten per year between 1990 and 1994, to the low rates of two per year during the last seven years (Fig. 1).



**Figure 1. Gorilla and bonobo arrivals at PPG-Congo, May 1989 – May 2004 (1989 data include four gorilla arrivals at Mme Leroy’s; some others may have been overlooked).**

This large decline in gorilla arrivals, compared to the relatively constant rate of bonobo arrivals, could potentially be explained by a decline in the trade in orphan gorillas, while the trade in bonobos has remained constant. However,

it may also be explained by a reduction in the efforts of the Congolese authorities to confiscate orphan apes. If this were the case, though, it would suggest an increase in the trade in bonobo orphans.

If there has been a reduction in trade in orphan gorillas, this could be due to a probable reduced market for orphan apes following the civil war in 1997, as almost the entire expatriate community in Brazzaville evacuated the city. However, this was not the case in Pointe Noire, but few confiscations have been made there in recent years either. Such a theory would also be expected to be valid for bonobos.

We cannot, then, be sure why the numbers of gorillas arriving at PPG have declined. The fact that bonobo arrivals have remained constant does seem to imply that it is a sign of a true reduction in trade in orphan gorillas in Congo. If so, we hope that that is a sign of positive impacts on wild gorilla populations resulting from the efforts of PPG and other conservation organisations in Congo, rather than of declining gorilla populations due to hunting and Ebola fever.

The lack of a corresponding decline in bonobo arrivals is worrying, indicating that the trade in orphan bonobos, and therefore the illegal hunting of bonobos, continues unabated. We can only hope that the efforts of Lola ya Bonobo, and *in situ* bonobo conservation projects, will soon begin to stem that trade in DRC.

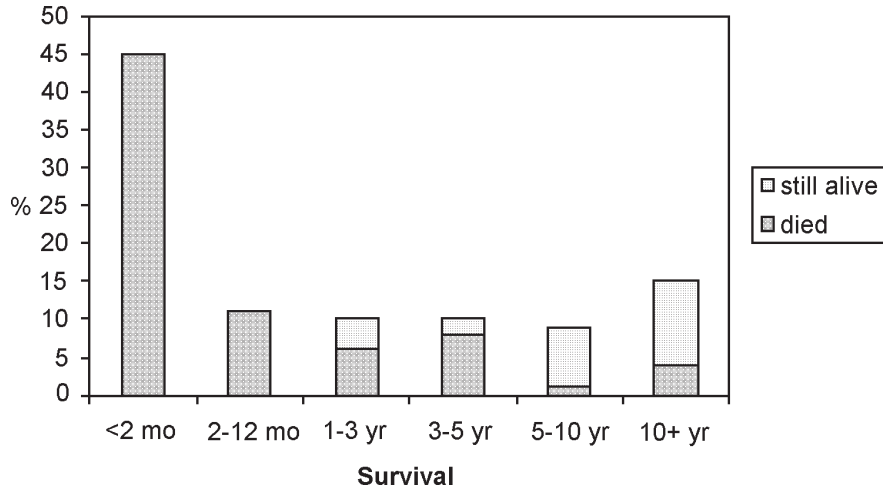
### **Survival rates**

Of the 20 bonobos received by PPG, eight (40%) are still alive today (May 2004), and all eight have now been transferred to Lola ya Bonobo. This is a higher overall survival rate than for the PPG gorillas, with just 21 still alive of 84 received (25% survival).

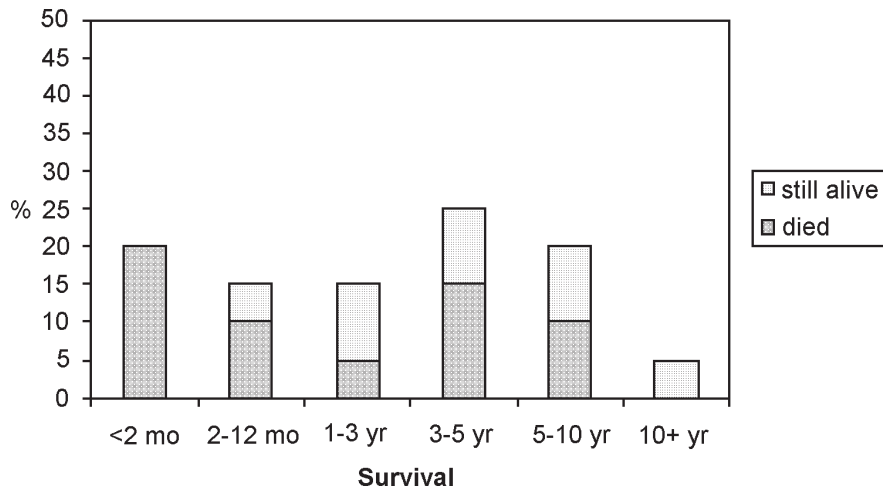
However, a closer look at the survival rates indicates some significant differences between the bonobos and the gorillas received. Firstly, a very high 45% of gorilla orphans died within just two months of arrival at PPG (Fig. 2), compared to 20% within two months of arrival for bonobos (Fig. 3). Considering only the orphans that survived longer than two months, overall survival rates for the two species are similar, at 50% for bonobos (eight of 16 still alive) and 46% for gorillas (21 of 46 still alive). These figures strongly suggest that gorilla orphans are much more susceptible to dying during the first two months after arrival than are bonobo orphans, but that for those that do survive the initial two-month period, survival rates are similar.

A second look reveals another distinct trend amongst gorilla arrivals. There is a high correlation between the estimated age at arrival of gorilla orphans and their survival rates during and after the first two months following arrival (Table 1). Mortality rates during the first two months after arrival increase with increased age at arrival, from a 17% mortality rate for orphans less than six months old at arrival, to 60% mortality for those over two years old at arrival (Table 1, Fig. 4). Conversely, mortality rates after the first two months following arrival fall with increased age at arrival (Fig. 4). Overall survival rates are lowest for gorillas arriving at less than six months old, but are fairly constant for those arriving over six months old (Table 1).

A further factor impacting survival rates appears to have been the location of the sanctuary. The original orphanage was located in the city of Brazzaville, within the grounds of Brazzaville Zoo. When civil war erupted in June 1997, the orphans were evacuated to Tchimpounga, a reserve outside Pointe Noire. The



**Figure 2. Gorilla survival following arrival at PPG-Congo, May 1989 – May 2004. (Total: 84 individuals.)**



**Figure 3. Bonobo survival following arrival at PPG-Congo, May 1989 – May 2004. (Total: 20 individuals.)**

bonobos returned to Brazzaville early in 1998, while the gorillas remained at Tchimpounga until November 1998, when they were flown to the Lesio-Louna Reserve, 140 km north of Brazzaville. The bonobos were also eventually transferred to the Lesio-Louna, in January 1999. Since the departure of the bonobos, the orphanage in Brazzaville has been abandoned, and all new

arrivals are taken immediately to the Lesio-Louna. A comparison of survival rates of orphans arriving at the orphanage in Brazzaville with those of orphans arriving after the Brazzaville orphanage was evacuated shows some clear trends (Table 2). Of eight bonobos to have arrived since the orphanage left Brazzaville, seven (88%) are still alive. Of the 12 bonobos to arrive at the Brazzaville orphanage, just one (8%) is still alive. A similar trend is apparent for the gorillas. While just 17% of the gorillas that arrived at the Brazzaville orphanage are still alive, of the 13 that have arrived since leaving Brazzaville, nine (69%) are still alive. Of these gorilla arrivals since leaving Brazzaville, the four that died (31%) all died within two months of arrival.

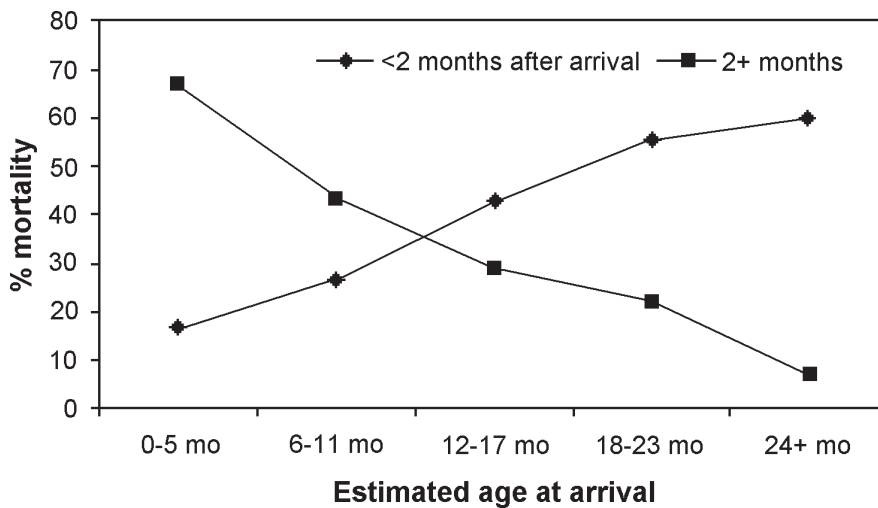


Figure 4. Mortality rates during the first two months following arrival, and after the first two months, for orphan gorillas of different ages at arrival at PPG-Congo, May 1989 – May 2004. (Data for 78 individuals.)

Table 1. The effect of estimated age at arrival on the survival of orphan gorillas at PPG-Congo, 1989–2004 (for 78 of 84 arrivals).

Estimated age at arrival	Mortality after arrival (%)					Total number
	<2 mo	2-12 mo	1-3 yr	3+ yr	Still alive	
0-5 mo	17	25	25	17	17	12
6-11 mo	26	26	5	11	32	19
12-17 mo	43	0	0	29	29	14
18-23 mo	56	6	6	11	22	18
24+ mo	60	0	0	7	33	15



**Table 2. The effect of orphanage location on the survival of orphan bonobos and gorillas arriving at PPG-Congo, 1989–2004.** [LL: Lesio-Louna Reserve; Lola: Lola ya Bonobo, DRC (data only for bonobos arriving first at PPG); Tchimpounga: PPG location June 1997 to Nov. 1998]

<b>Orphanage location</b>	<b>No. arrived</b>	<b>% died (&lt;2 mo after arrival)</b>	<b>% died (&gt;2 mo after arrival)</b>	<b>% still alive</b>
<i>Bonobos</i>				
Brazzaville (1989–1998)	12	33	58	8
LL/Lola (1998–2004)	8	0	12	88
<i>Gorillas</i>				
Brazzaville (1989–1997)	71	48	35	17
LL/Tchimpounga (1997–2004)	13	31	0	69

### Causes of mortality

Of the 20 bonobos to have arrived at PPG-Congo since 1989, eight are still alive. One is missing, presumed dead, after he escaped from his cage following his transfer to Lesio-Louna in January 1999. The remaining 11 died of illness, often unidentified. For those who died within two months of arrival dehydration and malnutrition were usually significant to some extent. Of those who survived more than two months, one died during an outbreak of an unidentified virus at the Brazzaville orphanage in June 1992, which also killed five gorillas. One died four days after the evacuation from Brazzaville to Tchimpounga in June 1997. A few days later another died; having appeared fine in the morning, she became ill during the afternoon and died in the evening. Having returned to Brazzaville in early 1998, three died later in the year, one in October (the cause of death given after autopsy as intestinal worms), the other two in December. Since moving to Lesio-Louna, one died suddenly in the communal bonobo cage in March 2003, but his autopsy was inconclusive.

Of the 84 gorillas to have arrived at PPG-Congo since 1989, 21 are still alive. Thirty-eight died within two months of arrival, all due to a combination of illness, malnutrition and dehydration. However, the higher mortality of gorilla than bonobo orphans during the first two months of arrival, and the higher mortality of older than younger gorilla orphans during those initial two months, appear to confirm the impressions of staff, vets and doctors involved with PPG that depression is a significant factor in the high mortality of gorilla orphans soon after arrival. Helen Attwater, a trained nurse who worked at the Brazzaville orphanage from its beginnings in 1989 until 1995, during which time 64 gorilla orphans arrived at the orphanage, concluded: ‘Professor Hayama, a pathologist from Kyoto University . . . had confirmed the conclusions we had drawn from our experiences to date: that the gorilla’s two main areas of vulnerability were his complex, finely tuned digestive system, that could be easily and fatally disrupted, and his fragile emotional make-up. . . Emotional stress, exposure to human disease and malnutrition that resulted in the breakdown of a fine balance of intestinal parasites held in check under natural conditions, made the survival of newly arrived orphans unlikely’ (Attwater, 1999).



Emotional stress may also have been a factor in the death of several more established PPG gorillas. Of 11 gorillas who have died after three or more years with PPG-Congo, five (45%) died relatively soon after stressful events. Magne, an 11-year-old male who had been with PPG and its predecessor Madame Leroy for ten years, was ill for several weeks during 1997, but died only days after being evacuated from Brazzaville Zoo during the civil war to a forested island near the coast (Courage, 1997). Another example concerned the first six gorillas to be transferred from Brazzaville Zoo to the Lesio-Louna Reserve, in December 1994. Two died within five weeks of the transfer, and a third, following amoebic dysentery and a chest infection, within three months of the transfer (Okayasu, 1995). All three were six- or seven-year-old males who had been with PPG nearly five years. Another male of this original group to be transferred to the Lesio-Louna, Mbinda, lived for seven years in liberty in the Reserve, but died suddenly in December 2001 while being escorted back to camp by project staff after he had left the reserve boundaries and arrived in a local village. The autopsy was inconclusive, but he was believed to have suffered a cardiac arrest.

Of the remaining six gorillas who have died after three or more years with PPG-Congo, two (1.1) were animals released in the Lesio-Louna Reserve following attacks by older released males. On both occasions, project staff felt that the wounds inflicted during the attacks could not be considered life-threatening. The first, a male, died six days after the fight, gradually deteriorating and falling into a coma-like state on his final day. The second, a female, was found dead face-down in a stream following an attack during the night, with fairly minor wounds to her face, arm, hands and feet. At the same time as the male died, another female from this group disappeared, possibly also as a result of attacks by the older group.

For the other gorillas who have died under the care of PPG-Congo, a single specific illness has rarely been identified as the cause. Intestinal and stomach problems have often been thought to be the cause, generally due to heavy parasite loads.

On two occasions, both in 1992, disease epidemics killed several of the gorillas at the Brazzaville orphanage. The second, in August, was a polio epidemic. Two gorillas were put to sleep having been completely paralysed. Another suffered paralysis of the legs and intestines, and died three years later due to an intestinal infection. A fourth suffered weakening of leg and jaw muscles, but survived and is currently caged in Lesio-Louna. He learned to eat using his fist or his shoulder to support his lower jaw. In November 2004, 12 years on, he showed signs of limping, an unconfirmed but possible sign of postpoliomyelitis syndrome.

The first disease epidemic at the Brazzaville orphanage, just two months earlier in June 1992, has yet to be satisfactorily identified. Five gorillas and a bonobo died within eight days of each other, each showing the same symptoms of severe respiratory difficulties. A doctor working in Brazzaville at the time examined them, and concluded that they were probably suffering from bacterial infections of the lungs, but that the underlying problem was heart failure, 'perhaps a virus affecting the heart muscle' (Attwater, 1999). At the time, the best guess was an unidentified viral pneumonia. However, subsequent work on cases of sudden bonobo mortality following similar respiratory and heart problems has suggested that encephalomyocarditis virus (EMC virus) might be the cause. It is beyond the scope of this report to try to identify the virus, but the similarities between several cases of sudden gorilla and bonobo mortalities in captivity, at PPG and elsewhere, appear to suggest a common cause.

## Conclusions

The repatriation of Max from PPG-Congo to Lola ya Bonobo in April 2004 signified the end of a distinct 15-year period in the history of orphan gorilla and bonobo management by PPG-Congo. Since the early years of PPG-Congo gorilla arrivals at the project have decreased markedly, from an average rate of ten per year between 1990 and 1994 to 1.4 per year between 2000 and 2004. Project resources are now directed more towards the reintroduction of the rehabilitated gorillas to the Lefini Reserve and the necessary protection of the reserve, although the project continues to be committed to the rehabilitation of the small number of new orphans that arrive. In contrast, bonobo orphans have arrived at PPG-Congo at a relatively constant rate of 1.2 to 1.4 per year over the 15 years, so much so that in the five-year period 2000–2004 arrival rates for the two species have been almost identical. When Max was accepted by PPG-Congo in 1989, it was more in hope than with any real expectation of finding him a long-term home. However, the repatriation of two new bonobo arrivals from Brazzaville to Lola in March 2000 marked the beginning of a collaboration between the neighbouring countries of Congo and DRC, facilitated by PPG-Congo and Lola ya Bonobo. Since those two pioneers, six more bonobos have been repatriated, ending with Max and his two young male companions, Tex and Mixa. From now on, we expect that orphan bonobos arriving in Brazzaville will be repatriated soon after their arrival, once health and administrative issues are resolved for each individual.

During those 15 years, PPG-Congo has received 20 bonobo and 84 gorilla orphans. It has been a hard struggle against disease, depression and civil war. Despite these problems, eight of the bonobos and 21 of the gorillas are still alive today (May 2004). All eight bonobos now enjoy a life of semi-liberty at Lola, while 17 of the gorillas are in total or semi-freedom in the Lesio-Louna and Lefini Reserves north of Brazzaville. A look at the history of these 104 orphans highlights some of the lessons learnt by PPG-Congo during this turbulent time:

- Orphan gorillas appear to have a much higher mortality rate during the first two months following arrival than is the case for bonobos. After two months, mortality rates are similar between the two species.
- Emotional stress appears to be a major influence in the high mortality of orphan gorillas during the first two months following arrival, a factor which does not appear to be significant for bonobos.
- Emotional stress appears to be more significant in older than in younger gorilla arrivals.
- Older gorillas that survive the initial two-month period following arrival appear to have a higher survival rate than younger gorillas.
- Emotional stress also appears to be at least partly responsible for several deaths of gorillas over three years after their arrival.
- Disease as a cause of death in gorilla and bonobo orphans has been reduced dramatically since moving the orphanage away from the city of Brazzaville and into more isolated areas.
- Following release of rehabilitated gorillas, attacks by older gorillas on younger gorillas became a further cause of mortality. This has been reduced, at least for the time being, by changing the release strategies.

PPG-Congo has evolved greatly since its conception in 1986 and the arrival of Max, its first orphan ape, in May 1989. We hope that this analysis of our

experiences during those 15 years up to the repatriation of Max to his native DRC will be of help to all those involved in the rehabilitation and management of orphan apes, particularly in Africa. We also hope that it will serve as a reminder of the precious existence of each orphan ape that arrived at PPG-Congo during those years, from Pokola, a two-year-old male gorilla who died within two hours of his arrival in June 1991, to Max, repatriated after 15 years in exile, and to Djembo, who turned our selfish sorrow at losing Max to joy as three days later she became the first reintroduced gorilla to successfully give birth [see *IZN* 51 (6), 352–3]. Her baby, enjoying total freedom in the Lefini Reserve, is currently the only non-orphan within the project. For all these orphans that arrived at PPG-Congo, let us not forget all those that never arrived, those anonymous victims of the bush-meat trade devastating their species across Central Africa. If we have helped bring their story to the world, then let the world now respond.

### Acknowledgements

Thanks are due to the John Aspinall Foundation and to the Government of Congo for their continued support of and commitment to PPG. Thanks also to Claudine Andre for her hard work at Lola ya Bonobo, and her long-term commitment to bonobos in general and in particular to Max and the others repatriated from Brazzaville. The veterinary expertise of Dr Nick de Souza of WSPA ensured the successful transfer of Max, Tex and Mixa to Lola, assisted by Crispin Mahamba. Jean-Paul Ipouli arranged much of the logistics for the transfer. All the staff of PPG-Congo over the years are especially thanked; it is to them that Max and many other orphan apes owe their lives. To name a few who began it all: Mark and Helen Attwater, Jean Bafinga, Albertine Ndokila, Catherine Missilou, Edith Nsonga-Ntaloulou, Ghislain Mvila, Paul Mbongo and Joachim Nkodia.

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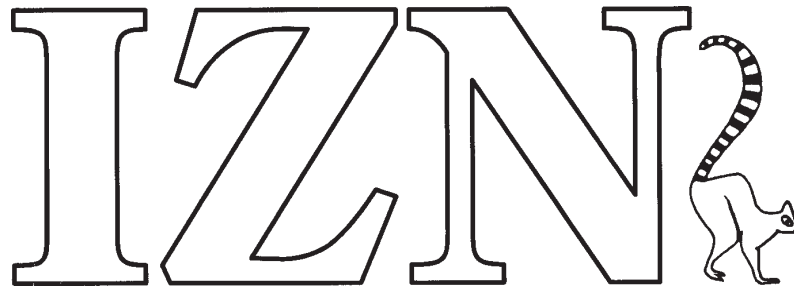
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[An appendix detailing the history of each individual bonobo and gorilla received by PPG-Congo from May 1989 to October 2004, which has been omitted for reasons of space, is available on request from the *IZN* office.]

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