From Mac’s Nest: Letting Go of an Old Friend
Rhonda Quisenberry, Houston, Texas, USA

It took me a week to return to Mac’s building after his death, now a skeleton of the old school of gorilla keeping. What took us all by surprise was how fast his odor disappeared. His wonderful scent was gone as if it belonged to his soul. Alone, I entered the area of his night rooms and prepared myself to bend down and look into where I used to enjoy watching him make his night nest. He had a funny way of shaking the flakes of his coastal Bermuda hay, sometimes brushing them across his sagittal crest, breaking them up to make his giant fluffy bed. In doing so he would get hay stuck all over his head, which we called “hay head”. He’d then plop in the middle and twiddle his toes. It was from that nest that I received so much joy.

By the time I became Mac’s keeper it had already been decided that he would spend the rest of his life without the company of other gorillas. He had a history of aggression and the last introduction he was involved in proved to be more stressful than enriching. So, at the age of 40, diagnosed with congestive heart failure and arthritis, he relied on his keepers for daily comfort, stimulation, and company, and I was a brand new keeper. Mac was my introduction to a career I had dreamed about for 20 years. It was 1994 and at the height of the genocide in Rwanda, a constant reminder of the uncertain fate of his species.

At the Houston Zoo it was common for new primate keepers to start with Mac because he was so easy to work with. He shifted from his night rooms to his exhibit and back several times a day reliably and with ease. Aside from occasional grumpy grumbles he was usually pretty mellow. My big challenge was how to constantly improve his quality of life. The zoo’s “Gorilla Habitat” was built in 1973. At the time it was considered state of the art because it was air-conditioned and had a naturalistic appearance. It had hydraulic doors, surveillance cameras in the exhibit and public area, skylights over the exhibit, and easy to clean cement surfaces. After many years of housing several gorillas in pairs it became obvious that the facility was really only big enough for one.

The fact that Mac (full name M’Kubwa) was the only Eastern Lowland Gorilla in North America seemed to be the final justification for his solitude. For the remainder of his life he was housed with an array of monkeys and birds. He made the most heart-warming vocalizations. In the mornings upon our arrival he would hear the kitchen door shut and greet us with a quiet hum from his nest. At other times of the day his vocalizations would

Drawing of Mac by the author, photo of Mac from the Internet.
often begin low then go up in pitch at the end. If he did them very enthusiastically the force would cause his voice to separate into two tones. This would be accompanied by pursed lips with his chin up. You just knew you were accepted when you heard it. The acoustics in his exhibit were good for singing and I used to wait until everyone within earshot was gone then practice my Joni Mitchell voice. I wondered if the rhythmic tones would interest Mac while I hosed his exhibit, something other than the white noise from his waterfalls and the crowds of visitors. I noticed that I would sometimes hear him vocalize after the first line of a particular song. I sang it often because I knew all the lyrics and could reach all of the notes. I would sing the first line and then pause to hear him join in from his nest in the back. So it became our song and I continued to sing it to him the rest of his life, just the part where he participated. It went like this: “I am on a lonely road and I am traveling MMMMHuuuuuuuu” (really high and two-toned at the end) looking for something, what can it be?”

Someone donated a TV/VCR for Mac’s enrichment after seeing that he seemed to enjoy looking at a collage of gorilla photos on his wall. At first we showed him anything we could receive without an antenna through his thick cement walls. Sometimes he would watch and other times would leave and go back to his nest. We acquired a couple of gorilla tapes that held his attention for awhile and then we were given a copy of Gorillas in the Mist. I put it in the VCR, fast forwarded to the first gorilla scene and left him watching it while I began to clean his exhibit. Some time had passed when I heard him scream like I had never heard before. As I ran back to him I could see him bipedally slamming the bars in front of the TV and biting his hand. When I rounded the corner I found him watching a scene in which poachers were tearing a baby gorilla from its mother. The tree they were in was chopped down and she was murdered with machetes. Mac was taken from the wild in Tulakwa, Congo in the 1950’s. I will forever believe that the scene he saw that morning reminded him of his own horrific experience so long ago.

Ten years have passed. I’ve been working with our orangutans for the last seven, and they are now my area of expertise. I attended the 1997 Gorilla Workshop in Pittsburgh to present a poster on our training achievements with Mac but felt inferior at the time because everyone else worked with troops of gorillas or did field work. I feared that people would not agree with our decision to keep Mac alone. I felt he couldn’t teach our guests all the fascinating complexities of his species, but he taught me how to be a keeper, as well as all those who worked with him. His magnificent presence demanded compassion and respect. I continued seeing him by closing his building at night. On May 20, 2004 he died peacefully in his nest surrounded by many who loved him. He was at least 51 years old. He was nearly blind and his prostate and kidneys were failing.

When I bent down to see where his nest used to be for the first time after his death, I wanted to hear him greet me. Very distinctly in my mind I heard him as if he were there. A friend said later that he spoke to me in spirit. I cried. The Houston Zoo is now making progress toward a new “African Forest” habitat. It will be home to a troop of gorillas as well as retired research chimpanzees. We are all learning.

Mac the Silverback

After you’re gone
Will you have made a difference?
For fifty years
You’ve given your life
So the others could have significance.

M’Kubwa
Swahili for big
Mac for short.

I’ve watched the many
Who have visited your world,
Watched their eyes
Connect, respect
And look bewildered.

Will they remember you
And save the others?

Have they heard your sweet hum
As you greet the morning?
Have they witnessed your grandeur
When you beat your chest in warning?

Did you remember the others
When shown images in the mist?
A baby being torn from his mother
While she was murdered in the forest.

You screamed
But you still trusted me
To touch your hand
And scratch your silverback.

After you’re gone
You Mac I will remember.
You’ve given your life so gracefully
And touched mine forever.

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From the Editors... (See Contact Info. on page 63)

Beth Armstrong

In this issue of GG, we wanted to focus on the power of one-on-one relationships between gorillas and their caregivers. The eloquent Mac cover story, as well as the Jabari tribute are indicative of the special relationship that we are all fortunate to have with gorillas. They can inspire us, make us laugh, cry, and they can definitely put us in our place, but more importantly they can be our muse. Bongo for me was a reminder of everything we had done wrong for decades. His life was tragic with the all too familiar story of capture from the wild, sterile cage with no bedding, 24 hour public display, one female for companionship, and all his infants pulled for hand-rearing in the late 60’s and early 70’s.

He was a hard-sell, it took me six weeks before there was even a bit of a thawing on his part in relation to me. It involved an orange, a favored food item. I pushed the whole orange through the bar of the cage, he came over, quietly vocalized and gently pushed the orange back through. Now, keep in mind, I had been the target of numerous projectiles during the previous six weeks, understandable, as I was new and the Public was visible directly behind me through plexi-glass windows. I picked the orange up and cautiously pushed it back through, thinking, what’s going on here? He pushed it back, I picked it up pushed it back through again, now at this point I think there was a very definite gorilla eye-rolling happening on his part as it finally dawned on me, Bongo wanted me to peel and section his orange and place each piece along the horizontal bars of the cage. He gently vocalized as he ate each individual piece. I walked away feeling that I had just been paid the highest compliment ever received in my life.

I am happy to say that Bongo’s life vastly improved in the mid-1980’s with the closing of his building to the public, the inclusion of a wonderful female named Bridgette and the birth of their son Fossey. Bongo was what all fathers should be. It was my relationship with Bongo that awakened in me a passion for change. I can honestly say that Gorilla Gazette, the 1990 Gorilla Workshop, the surrogacy program were all directly inspired by Bongo’s life. The power of one individual to change the world is not exclusive to humans alone, we may simply be the conduit for other species that have no voice.

Pete Halliday

It is useful sometimes to reflect upon the effects gorillas have on us. Often we are so busy “doing it to them” that we forget that they “do it to us” too. Usually their effects upon us are subtle, but sometimes truly profound jumps out at us. In my journey through life, gorillas have helped me understand both myself and the world I live in. For example, many years ago at Howletts our first born male, Kijo, (then a silverback with his own group) bit the owner, Mr. Aspinall, on the hand when we were in the enclosure with the group. The bite was painful but showed restraint on the part of Kijo. On subsequent visits to Kijo and his group Mr. Aspinall interpreted any displays or aloofness on Kijo’s part as evidence that he was becoming unreliable. After a few weeks Mr. Aspinall insisted that we “arm” ourselves with sticks in case Kijo became aggressive and only play with the females & juveniles in the group, avoiding Kijo (the enclosure was quite large).

Kijo certainly was displaying more when we visited with him, I wasn’t sure what was going on, but Mr. Aspinall almost had me convinced. The next week we entered the enclosure and stood back to back near the entrance, holding out sticks as Kijo charged up and down 15’ from us. Then Kijo stopped, went over to one of his young offspring and very deliberately sat down and played with him, looking over at us every now and again.

I just had this instant understanding, threw the stick away and walked towards Kijo. He got up, rushed towards me, took my hand and led me to a comfortable area where he proceeded to play with me as he always had done. That taught me a lot about myself, people and gorillas.

Fossey and his father, Bongo. Photo courtesy of Nancy Staley.

Kijo. Photo courtesy of Jane Dewar.

Gorilla Gazette, April 2005, page 3
Update on 2004 DM Grant Winners

In this year I was honored to receive Debbie McGuire Gorilla Keeper Grant. I obtained 500 USD. I used this money to cover expenses partly for the air ticket to Calgary, where the Gorilla keeper workshop took place on 25-28 June 2004.

I was very pleased to have the possibility to take part in this conference, where many interesting lectures on nature, on various zoos etc. were given. I came across many various types of enrichment. I also found the lecturers from the field of veterinary care very interesting. As a part of the conference we visited the Calgary Zoo, including their new gorilla pavilion, which is very nice. I would like to express my sincere thanks to everybody who made my trip to this conference possible.

Marcela Cechova
Zoo and
Chateau Zlin-Lesna
Czech Republic

Jean-Damascene Hakizimana was born at home in the shadows of the Virunga Volcanoes, in the small village of Bisate. He spent his youth playing and studying a few kilometers from where Dian Fossey was undertaking her pioneering research on the endangered mountain gorillas. He never even dreamed about being able to work with wild gorillas. After he completed his secondary school studies in commerce and accounting, he spent his first few professional years working as a primary school teacher. Restructuring of the Rwandan education system in 1999 forced him out of his teaching job but opened the door for him to become a gorilla tracker for the Rwandan National Parks and Tourism Office (ORTPN). He has been happily tracking and habituating wild gorillas, assisting multiple NGO’s with various research projects, and frequently stepping up beyond the call of duty when he is asked.

This was the case in 2002-3 when an infant mountain gorilla was confiscated from poachers. Damascene went from being a gorilla tracker to a gorilla keeper, switching from his years of keeping a contact-free distance from wild gorillas to many months of acting like a gorilla mother and providing the necessary contact to keep a traumatized orphan alive. His dedication, hard work, and kindness allowed him to be recognized as a Debbie McGuire Gorilla Keeper Grant Winner in 2004.

Because Damascene doesn’t lead the life of a traditional gorilla keeper, he was allowed to use his grant award in a non-traditional manner. He is spending his money to support the education of his three young children and the younger brother he has essentially adopted in order to assist his parents. Part of the award is also going towards protecting his family’s home from torrential downpours during the Rwandan rainy season.

He would like to thank Dr. Chris Whittier of the Morris Animal Foundation's Mountain Gorilla Veterinary Project for nominating him, and more importantly Jane and Steuart Dewar and the Dewar Wildlife Trust for recognizing him with this award. He hopes to continue to live up to the legacy of Debbie McGuire in dedicating his life to the welfare of gorillas.

Jean-Damascene Hakizimana
ORTPN, Rwanda

Gorilla Gazette, April 2005, page 4
How to Host a Gorilla Workshop
Garth Irvine, Calgary, Canada

See CD rom enclosed in this issue with details and proceedings from the Rocky Mountain Gorilla Workshop

In the summer of 2002 I was given the opportunity to write my own dream job description. The Calgary Zoo was about to open its largest and by far most impressive exhibit ever, "Destination Africa" and I ended up working with two close friends, Les Stegenga and Rose Fodor as gorilla caregivers. About this time, I approached the others about hosting a Gorilla Workshop, which I had always wanted to attend, but there hadn't been one since 1997 in Pittsburgh.

We started making plans about a year and a half prior to the event, with was held June 23 to 26, 2004. We tried to keep things as cost effective as possible for the delegates, including implementing a Travel Fund. Rose did a wonderful job securing our keynote speakers, which included Ian Redmond, Kerry Bowman and Mike Cranfield, who brought a variety of gorilla experiences with them to share.

The 110 delegates from 9 countries represented a great cross section of people and a fantastic array of gorilla subjects were covered, including pro's and con's of training, hand-raising issues and other husbandry concerns. The Travel Fund raised monies to help gorilla keeper Marcela Cechova of Prague Zoo, Czech Republic and sanctuary worker, Chantal Shalukoma, from Lwiro, Democratic Republic of Congo attend. Unfortunately, we hadn't allowed enough time to get the visa processed for Chantal and despite Herculean efforts, she could not attend. The workshop raised a few thousand dollars--in large part due to a very successful silent auction. The profits from the workshop were split between supporting the Kahuzi-Biega Park guards, sending money to support the Lwiro sanctuary and some seed money for the travel fund for the next workshop in Paignton in England.

It was fun getting to know the others from around the world. Many of the names I was very familiar with though few of these people had I actually met. I find it so much easier to gather information from people that I actually know. And, well, hanging out in the bar with like minded people talking gorillas was a lot of fun too!

6th International Gorilla Workshop Announced - 23 to 26 June 2006 in Paignton, England

In Calgary it was proposed that Paignton Zoo Environmental Park (U.K.) host the next International Gorilla Workshop which we are more than happy to do. I am therefore pleased to announce that it has been scheduled for Friday to Monday, June 23rd to 26th, 2006. We will adopt the popular format of an Icebreaker on Friday evening, followed by three days comprising plenary sessions, discussion workshops and of course opportunities to visit the zoo and our new satellite coastal zoo at nearby Torquay, "Living Coasts".

A post conference tour will be drawn up to include several significant U.K. gorilla/primate collections including the renowned Howletts and Port Lympne Zoos.

For those of you who may wish to extend their stay still further, some of the other significant European collections are all within easy reach of our airports. A more detailed posting of the costs etc will follow in the next few weeks.

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Tips & Tidbits

Since GG readers come from different backgrounds, measurements used in articles vary, based on the author’s experience. To help convert these, Steuart Dewar has made this table of “Quick Tricks!” He also suggests that it’s easier to add than multiply in your head, so adding twice is often easier than multiplying by 3.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Multiply By</th>
<th>Quick Approximation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet (Ft)</td>
<td>Meters (M)</td>
<td>0.3048</td>
<td>Multiply feet by 3 then divide by 10</td>
<td>12 ft x 3 = 36 ft / 10 = 3.6 M</td>
</tr>
<tr>
<td>Meters (M)</td>
<td>Feet (Ft)</td>
<td>3.281</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kilometers (Km)</td>
<td>Meters (M)</td>
<td>0.6214</td>
<td>Halve, then add 10% of original value</td>
<td>12 KM/2 = 6 + 1.2 = 7.2 Mi.</td>
</tr>
<tr>
<td>Meters Squared (M²)</td>
<td>Square Feet (Sq Ft)</td>
<td>10.764</td>
<td>Multiply by 10 and add 10%</td>
<td>6,000 M² x 10 = 60,000 + 6,000 = 66,000 sq. ft.</td>
</tr>
<tr>
<td>Square Feet (Sq Ft)</td>
<td>Meters Squared (M²)</td>
<td>.0929</td>
<td>Divide by 10 and then subtract 10%</td>
<td>6,000 sq ft/10 = 600 - 60 = 540 M²</td>
</tr>
<tr>
<td>Square Miles (Sq. Mi)</td>
<td>Kilometers Squared (Km²)</td>
<td>2.59</td>
<td>Double and add half of original value</td>
<td>6,000 sq mi. x 2 = 12,000 + 3,000 = 15,000 km sq.</td>
</tr>
<tr>
<td>Kilometers Squared (Km²)</td>
<td>Square Miles (Sq. Mi)</td>
<td>0.386</td>
<td>Multiply by 4 then divide by 10</td>
<td>6,000 km sq x 4 = 24,000/10 = 2,400 sq. mi.</td>
</tr>
<tr>
<td>Acres (Ac)</td>
<td>Hectares (Ha)</td>
<td>0.40469</td>
<td>Multiply by 4, then divide by 10</td>
<td>324 ac x 4 = 1,296/10 = 129.60 ha.</td>
</tr>
<tr>
<td>Hectares (Ha)</td>
<td>Acres (Ac)</td>
<td>2.471</td>
<td>Double and add half of original value</td>
<td>324 ha x 2 = 648 + 162 = 810 ac.</td>
</tr>
<tr>
<td>Centigrade (C)</td>
<td>Fahrenheit (F)</td>
<td>*(9/5) + 32</td>
<td>Double and then add 30</td>
<td>12 C x 2 = 24 + 30 = 54 F</td>
</tr>
<tr>
<td>Fahrenheit (F)</td>
<td>Centigrade (C)</td>
<td>- 32 * (5/9)</td>
<td>Subtract 30 and then halve</td>
<td>60 F - 30 = 30/2 = 15 C</td>
</tr>
<tr>
<td>Gallons (G)</td>
<td>Liters (L)</td>
<td>3.7854</td>
<td>Multiply by 4, then subtract 20% of original value</td>
<td>12 G x 4 = 48 - 2.4 = 45.6 L</td>
</tr>
<tr>
<td>Liters (L)</td>
<td>Gallons (G)</td>
<td>.26147</td>
<td>Divide by 4, then add ½ of 10% of current value</td>
<td>120 L/4 = 30 + 1.5 = 31.5 G</td>
</tr>
</tbody>
</table>

Archives of the Columbus Zoo Gorilla Gazettes from 1987 to 2000 are available online at:
http://pin.primate.wisc.edu/news/journals/GorillaGazette/
A CD rom of these archives is also available by contacting Jane Dewar at jdewar@gorilla-haven.org or mailing your request to P.O. Box 210, Morganton, GA 30560, USA.

For information on a wide variety of zoo news stories, job and volunteer opportunities and conference/meeting announcements, please contact:
Zoo News, Peter Dickinson, 14 David Edwards Close, Hen Golwyn, Bae Colwyn,, Conwy, Gogledd Cymru, LL29 9UE United Kingdom
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Tel: 0044-(0)1492-514053 Mobile: UK 07732 919 431 http://groups.yahoo.com/group/zoonewadigest/
Map of Africa, courtesy PASA website
at www.panafricanprimates.org
(with minor additions to include all African countries)
"Snare Aware" Mountain Gorillas
Liz Williamson, Stirling, Scotland

Adapted from an article published in Dian Fossey Gorilla Journal, Fall 2000. Reprinted with permission.

People often ask whether mountain gorillas are still hunted, and if poaching remains a problem in the Volcanoes National Park. Until the ghastly resurgence of attempts to capture gorilla infants in 2002, there had been no known deliberate killing of gorillas in Rwanda for 20 years. Poachers set traps for antelopes, but these traps are indiscriminate towards their victims. If a gorilla is caught, his strength can enable him to break free, but during the struggle wire may cut into a hand or foot, and if these cuts become infected the animal may die. To protect gorillas and other animals, anti-poaching teams patrol the forests daily, to find and destroy snares, whilst a veterinary team will intervene to anaesthetize snared gorillas, and treat the wounds.

In “Gorillas in the Mist”, Dian Fossey described the gorillas’ “trap sense”: “Some gorilla groups seemed to be more "trap-wise" than others, perhaps because of having more experiences with the havoc caused by traps. One day I watched a group purposefully deflect their travel route from a fairly visible line of arched bamboo poles.” Anyone who has seen Bruce Davidson’s film "Shattered Kingdom" cannot have failed to be impressed by the sight of the silverback gorilla Luwawa smashing a snare. Luwawa’s ability to recognise and destroy this danger to his family made all the more poignant his tragic death - shot dead in Zaire in 1995. Luwawa’s acquired knowledge, gained through experience of poachers’ snares, was lost… would other members of his family have learned from their protectorate’s behavior? This powerful documentary was my first indication that gorillas were capable of recognizing snares and fortunately, although not truly surprisingly, the intelligent Luwawa was not alone. We have since seen evidence that other silverbacks are aware of snares intended for antelope.

In Rwanda, Karisoke research assistant Ymke Warren coined the term “snare aware” after we saw three different silverbacks manifest behaviour around snares which indicated that they recognised the threat posed. In past decades, the gorillas’ home ranges were likely riddled with snares, thus they could have come into contact with traps regularly and have learned through hard experience how dangerous they can be. We have seen silverbacks’ reactions to snares vary from avoidance, to threatening other gorillas to keep away (pig-grunting), even to the point of biting individuals who approached a snare. Usually the individuals threatened were immatures - infants and juveniles who would have had little or no experience of snares. On one occasion the individual bitten was our assistant Ymke. Ymke described the incident: “Shinda chestbeats and charges downhill, disappearing from view. Arriving at the area where Shinda’s original run was heard, observer sees a set wire snare. Observer removes snare and moves away. Observer is two meters from snare, with wire in hand, when Shinda reappears charging. Shinda charges again, ending one meter from observer, he stands and stares away from observer for 60 seconds then turns and bites observer in thigh. He stands over observer for several seconds before moving off up hill four meters”.

It could be assumed that Shinda associated Ymke with the snare and reacted to the danger by assaulting her. But take into account the time that these gorillas have spent in the company of researchers – almost every day of their lives since birth – together with their ability to distinguish between human individuals. Our interpretation of this incident was that Shinda’s behavior was intended to dissuade Ymke from coming into contact with a dangerous object, and that his punishing bite may have been intended as a lesson.

For much of 1997 and 1998, the Volcanoes National Park was closed for security reasons. When we regained access to the park and the gorillas, I was amazed to find the habituated population intact. How did they escape becoming trapped and maimed during a time when monitoring and anti-poaching activities were impossible, rendering the gorillas particularly vulnerable? The development of “snare awareness” may explain why apparently no gorillas were trapped. That they kept themselves safe from harm is a testimony to the gorillas’ intelligence and ability to learn.

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Gorilla Gazette, April 2005, Page 8
New Insights from the Field on Western Lowland Gorilla Behavior
Diane Doran, Stony Brook, New York, USA

Currently there are at least a half dozen long-term studies of chimpanzee behavior, each lasting more than a decade, and occurring throughout much of the geographical range of chimpanzees. From these studies we have learned of the great variability in behavior shown by chimpanzees across different sites. If we had limited our understanding to the results from Jane Goodall’s initial project, even as truly ground-breaking and fascinating as these results were, we would not have begun to understand the complex myriad of factors that contribute to and alter “chimpanzee behavior”.

Gorillas, on the other hand, have been largely studied in one location, until recently. There are 2 species (or some would say subspecies) of gorillas, including eastern (including mountain and eastern lowland) and western (or western lowland). Western gorillas make up the majority of gorillas in the wild and all gorillas in captivity. Yet, our knowledge of gorilla behavior has been based almost exclusively on studies of mountain gorillas by Dian Fossey and her students and colleagues.

In 1990, while studying the Karisoke mountain gorillas made famous by Dian Fossey, I decided to set up a research center in Central Africa to study this least-known species of ape, the western gorilla (Gorilla gorilla). That sounds like a rather simple (or at least straightforward) task. Luckily I was blissfully unaware of all the difficulties involved. In 1995 with permission from the governments of Central African Republic and Republic of Congo, I established the Mondika Research Center to conduct a long-term study of western gorilla behavioural ecology. My goal was to examine dietary and social adaptation in gorillas relative to other African apes, in order to refine models of social evolution and to better reconstruct patterns of hominoid and early hominid behavioral evolution.

However, before such study was possible, it was first necessary to habituate a group of gorillas to human presence, so that they would accept our presence moving among them. The length of time it takes to habituate animals varies widely: from one day for some lemurs, to ten years for some chimpanzee communities. Western gorillas, unlike mountain gorillas fall at the upper end of this scale. At Mondika it took eight years and the assistance of many BaAka trackers, field assistants, graduate students, and postdoctoral associates to fully habituate the first group. The process of habituation begins by following the trail of a gorilla group, often for days and through thorny thickets and swamps, before finally catching up to the gorillas. We then make clacking vocalizations to and making them aware of our presence. At first, the gorillas flee. Through time their response changes to aggression, complete with silverback charging us to distances of less than a meter while chest-beating and screaming. This continued for over a year. Finally, the intensity and frequency of charges diminished, and the male became habituated.

Up to that point the six females in the group had rarely been seen either because they were avoiding our presence, or because they travelled at great distances from the male. I expected that they would now quickly take their cue from the male’s calm behavior, and accept our presence. But they had different ideas. One after another, the...
females went through stages of fear and aggression similar to that of the male, with one amusing addition.

Just before a female was habituated, she would turn our loathsome presence to her advantage. Upon spotting a researcher, she would simply watch us without responding, and monitor the approach of the silverback. Just as he arrived, she would act as if she had just seen us for the first time, scream, and—before charging us—look at the silverback, thereby inciting him (and occasionally other females) to charge us on her behalf. This was clearly an obvious ploy for the male’s attention that, much to our dismay, worked. However, after about two weeks of this behavior (for each female), the male would no longer rise to the bait, and only then did the female finally accept our presence.

So, finally the work could begin. One aspect of social behavior intrigued and puzzled us. We observed that male gorillas (from two study groups) had encounters with other non-group males 3-4 times more frequently than was the norm for their close relatives, the mountain gorillas. Furthermore, although during some encounters the males were aggressive towards each other, in the majority of cases they simply ignored each other. Occasionally, members from different groups intermingled. These results were surprising, because inter-group encounters of other species with similar social structure are usually highly aggressive contests between males for access to females.

At about this time, one of my students, Brenda Bradley, was just completing her Ph.D. dissertation on the genetic structure of the gorilla population at the site, in collaboration with Linda Vigilant and Christophe Boesch of the Max Planck Institute of Evolutionary Anthropology. She extracted DNA from fecal samples collected at the nest sites of 12 groups and 2 lone males to examine paternity and patterns of male and female relatedness and dispersal patterns. Previously, Emma Stokes and colleagues had documented that both male and female western gorilla offspring leave their natal group at reproductive maturity, presumably to find mates. However, little was known about the fate of individuals after dispersal. Bradley et al. found that 12 of 14 males in the study site were related to one or more silverbacks in the area, suggesting a previously unrecognized “dispersed male network” social structure based on male kin clusters.

These findings are significant for two reasons. First it raises the possibility that male gorilla social relationships endure across group boundaries, thereby providing the basis for extra-group kin-biased behavior. It may be that the observed peaceful encounters (described above) can be explained by related males recognizing each other, and acting less aggressively during encounters with each other than with non-relatives. Secondly it provides evidence that patrilocal society is a shared trait uniting African apes and humans, distinct from that of most other mammals. Robin Dunbar has hypothesized that large brains (neocortex) evolved in apes to enable the cognitively complex feat of maintaining social relationships without regular contact. Keeping track of male brothers in other groups may be an important first step on the road to the more intricate and often highly dispersed social relationships found in human societies.

Top: Habituated silverback, Kingo, feeding on aquatic herbs in the swamp. Below: Author’s back as juvenile gorilla, George, approaches, showing how habituated they now are. Photos courtesy of the author.
There still remains a lot to learn about western gorilla behavior at Mondika. In the next year, we’ll focus on three areas of study. First we will follow-up on our study of dispersed male networks in further collaboration with Linda Vigilant. This will require collection of fecal samples from extra-group males that interact with our study group, data on behavioral response during interactions, and genetic analysis of individuals. Together this will allow us to test whether the lack of aggression during encounters can be predicted based on genetic relatedness. Secondly, one of my graduate students, Jessica Lodwick, will conduct her PhD research on female foraging strategy and sociality, in order to see whether differences in the types and degree of contest competition encountered during feeding has predictable energetic and social consequences.

These results should help us to further refine current models of social evolution. Finally, western gorillas have much larger group spread than mountain gorillas, and, at times, females can be hundreds of meters away from each other and the male. It raises the question of how individuals adapt their vocal communications to meet these new demands and remain in contact with each other. Last summer, Mike Suarez, a former field assistant at Mondika and current Ph.D. student of Robert Seyfarth at Penn, returned to Mondika to collect pilot data to address this question, and he is currently analyzing these results. Together, these studies are sure to produce findings that will enrich our understanding of the diversity of gorilla behavior.

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The Rotterdam Zoo Gorilla Group
Jos Hartog, Rotterdam, The Netherlands

The Rotterdam Zoo in the Netherlands is home to a group of ten (4.6) Western Lowland gorillas. I would like to introduce you to this extraordinary group of primates, their ups and downs and their promising future.

The Rotterdam Zoo has been keeping gorillas in captivity from as early as the 1950’s. In 1975, wild born male, Ernst, came to Rotterdam from Copenhagen, Denmark. He became the breeding male for the years to come. In 1980, he and female Salomé (who died 10Nov99 at Givskud Zoo, Denmark) had their first-born son, Gino (now at Disney’s Animal Kingdom, Florida, USA). Gino was the first gorilla ever to be born in the Rotterdam Zoo. During the following years Ernst built up a reputation as a breeding male. Together with his other females Annette, Dura and the famous one-legged Xara, he fathered the respectable number of 17 offspring.

In late December 2000, well over 25 years after Ernst’s arrival, two young females were introduced into the aging group. They were 8 year old Tamani from Apenheul Primate Park (the Netherlands) and 4 year old hand-reared Luena from the Stuttgart Nursery (Germany). But 28 year old Ernst did not want any changes to his group anymore. He severely wounded the two new females when he was first introduced to them. Tamani received several bite wounds and Luena a serious leg injury. Due to the failure of this introduction, the once close group was divided into two camps. One side of the primate building was occupied by Ernst and two old females, Xara and the infertile Kim. The other side was the terrain of Ernst’s 8 year old son Ashmar, and the rest of the group, including the two new females Luena and Tamani. On December 30th 2002, Ernst’s inexperienced son Ashmar and female Tamani had a son of their own. He was named Thomas.

Ernst. Photo courtesy of Rotterdam Zoo.
But because his father’s blood line was already well represented in the group, Ashmar could never be allowed to become a serious breeding male. Therefore some changes to the group were clearly required. It was decided to have Ashmar sterilized after the fertile females had been taking contraceptive pills for quite a while.

For 29 years Ernst had been the dominant silverback male of the Rotterdam gorilla group. His astonishing appearance had made him into a local phenomenon for the citizens of Rotterdam and the surrounding area. But when he was separated from his group, the frustrated Ernst could only gaze through the glass to see his son in charge of his former group. After long deliberations it was decided to move Ernst and his two older females to the Spanish Fuengirola Zoo. In March 2004 they finally retired and were moved down south to linger the rest of their days in the sun. It was not only a great loss for the zookeepers, but also for the large number of regular visitors to the Rotterdam Zoo.

The group currently consists of 10 gorillas; 4 males and 6 females. Ernst’s sons are Ashmar, D’jeeco and Abeeku; Ernst’s daughters are Astra and Aya; the other females are Annette, Dura, Tamani, Luena, and finally Ashmar’s only son, Thomas. Ashmar is 13 years old now and after Ernst’s departure things calmed down in the group. Luena, now 8 years old, is still the main target of bullying during the fights within the group, which is mainly due to her lack of social skills. Because Ashmar can no longer produce any offspring, the Rotterdam Zoo has looked for ways not to limit this gorilla group in its development. And ways have been found...

The year 2005 is promising to become a turbulent one for this gorilla group. In the spring of 2005 Ashmar, his brother Abeeku and his half-brother D’jeeco are scheduled to move to the Zoo Opole (Poland), where a brand new gorilla enclosure is being developed. The three of them will be forming a small bachelor group of brothers. The departure of Ashmar will pave the way for a new breeding male to bring some fresh blood into the group. Silverback male Ambam from the Port Lympne male group (United Kingdom) will be introduced as the new leader of the Rotterdam gorilla group this spring as well. Exciting times are ahead for the zookeepers of the Rotterdam gorilla group. With Ambam we hope for a fertile and healthy future for our gorillas.

Males: Djeeco & Thomas
Ashmar
Females: Dura and Aya

Photos courtesy of Rotterdam Zoo.


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Gorilla Gazette, April 2005, Page 12
From Russia with Love ... For Gorillas
Vladimir Protasov, Tumen Region, Russia

I became interested in gorillas when I finished studies at school. There was a TV show about mountain gorillas. Before seeing this film, no animal made such an impression on me. The beauty and power of a gorilla amazed me, but most important for me was the wise sight of a gorilla’s eyes. In Russia, gorillas live in the Moscow Zoo, Rostov Zoo, Kiev Zoo (Ukraine). Because I live far from these cities, I had not seen gorillas in person, and so the Internet became very important for me to learn more about these wonderful animals. For three years, since the internet came to our region, I collected the information on western lowland gorillas living in zoos of America and Europe, and collected their photos. Finally in 2003 I had the opportunity to visit the Moscow zoo. There were perfect moments, when I could observe Gaidi and Babsy, the pair of gorillas at the Moscow zoo. Gaidi has since passed away.

When I returned home, I realized the Russian Internet had absolutely no sites devoted to gorillas from zoos of Russia, and no one knew their names, so I decided to try to create the site myself. Though at first this idea seemed to me not feasible, I found people who agreed to help me with it. Two photographers from Moscow - Alexey Masanov and Vyacheslav Kurashenko have given me photos of Gaidi and Babsy. The information on gorillas was given by Jim Davis. New photos from Chris Brack (Germany) soon will appear and probably we can see a photo of male gorilla Toni from the Kiev zoo. I give special gratitude to Jane Dewar for her help and attentive attitude.

I would like to suggest that all gorilla keepers try to tell about gorillas which they take care of, to make available their photos, a photo of where their gorillas live, and to publish articles in the Gorilla Gazette and/or to create a website, as Ronald van der Beek from Apenheul or Jim C. Smith from Gladys Porter zoo have done. I am sure this information is very interesting, and the visitors of the zoos who read it, will begin to behave more correctly, understanding, that each gorilla is a unique personality and individual, instead of an exhibit in a museum.

Left to right: Gaidi and Babsy, at Moscow Zoo. Both gorillas came to Moscow from the Leipzig Zoo in Germany, wildborn in 1970 and 1971, respectively. While Babsy has no offspring, Gaidi, who died in August 2004, fathered Moseka (Romagne Zoo, France) and Amani (Givskud Zoo, Denmark).
Photos courtesy of Alexey Masanov.

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Gorilla Gazette, April 2005, Page 13
Before It Was Karisoke
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In 1971 (and that dates me), Dian Fossey heard that I was going to spend a couple of months in Tanzania and Kenya surveying black-and-white colobus, and offered to get money from the National Geographic Society for me to come to her camp in Rwanda and study the skulls and skeletons of gorillas which she had collected: some killed by poachers, some found dead.

Dian’s camp – not yet named “Karisoke” – surprised me: it was so spread out. Her hut had two rooms, an outer room where she worked and where I was given a beer and debriefed each evening, and an inner sanctum. From her front door a stone path led about fifty metres to Bob Campbell’s hut to the right, and the same distance to “the boys’ hut” to the left, and the visitors’ hut, where I was put, next to it. Bushy vegetation hid the huts from each other. I understood very quickly that Dian was not greatly in favour of human beings, and did not approve of them cluttering up her space for very long. She preferred the company of her dog Cindy and her Blue monkey Kim.

I had a paraffin stove on which I cooked unmemorable tinned stuff every evening after I had been dismissed from Dian’s hut. I could never get the thing to work properly. One evening I nearly burned the hut down. The chief steward, Kanyaragana, came in and showed me how to do it. Mechanical objects and me don’t mix, and if they work by fire there is just no hope. I scorched the ceiling a second time, and Kanyaragana came and patiently showed me again.

I wrote a report on the bones, covering the pathologies I found as well as their morphological features, but NGS seemed not to do anything with it. I just forgot about it. Much later, Nancy Lovell produced a report on the same material, plus some more that had accumulated in the meantime. My report was not at all bad, even re-reading it at this distance in time, but hers was far better than I could ever have done.

Every day, except when I stayed in camp to study the bones, Nemeye would track gorillas for me. When we found them, I was to climb up onto high ground, or a tree stump, and make myself visible to them so that they wouldn’t be alarmed by coming suddenly aware of me. When I did this, Nemeye hid. I asked Dian why he did this; she said that, as most of the black people they would see would be a danger to them, she would not let them habituate to black faces. In a way I could see the logic in this, but I wondered why they would not be able to recognise different black individuals just as they did different white ones? I didn’t share this thought with her, and I was secretly surprised when she would tell me of having taken the Park Conservator, or some government minister, out to see the gorillas. From my vantage point, I would sometimes look below and behind me, to see Nemeye peering, fascinated, through the vegetation at the gorillas. It struck me that it might not be just a job for him – he liked the gorillas.

Once or twice we did come upon the gorillas unawares, and the sudden wraaaagh! made my hair stand on end. But I was never charged. I was charged by an elephant, though. There is a rule about wild animals: when you have your camera with you they run away and hide, but when you have left your camera at home you get wonderful views of them. And so it is that I have one or two halfway decent shots of juveniles peering through bushes at me, but the best contact I had, of course, was the day I dispensed with my camera. Group 5 were feeding in an open area, where the vegetation was only a metre high. I climbed a tree-stump, and watched. As it got towards the heat of the day, they arranged themselves in a semicircle around me, just 10 or so metres away, and

Dian Fossey (right) at the camp, soon to be named “Karisoke.” The small guy to the left is Nemeye, the guide, and just behind him is Kanyaragana the camp steward. Photo courtesy of the author.
began to doze quietly. A Mountain gorilla troop, actually, is never totally quiet, because their digestive tract is very noisy – in the middle and at both ends.

The infants did not doze; they climbed into some tangled bushes, and showed off, clambering about and staring at me. One of them paid too much attention to me, and too little to the hand-holds, and ended up hanging upside-down by one foot. I laughed out loud; shaggy black heads appeared from all around, looked at me, and settled back down again.

An older juvenile, I think it was Icarus, decided to investigate me closer, but surreptitiously. He got up and came crashing stealthily through the vegetation and climbed a tree stump opposite, about two metres away.

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**Gorillas at the Madrid Zoo, Spain**

Juanvi Martinez Santana, Madrid, Spain

Madrid Zoo (MZ) is one of the biggest and most important zoos in Spain, keeping gorillas since 1972. Today MZ has one group consisting of two males and three females. With the death of Bioko (the previous alpha male of MZ group) on 16th July 2002 due to a heart problem, two groups became one.

Niky, the silverback, is the only adult male in the group. He was born in April 1986 somewhere in Guinea, and arrived to MZ on 19 April 1991 (confiscated). Since he was caught in 1991, Niky lived alone in a garage. During these years of his life, he missed the opportunity to learn the rules about the hierarchy of a gorilla troop.

When he arrived to MZ, his adaptation was very difficult. Niky didn’t understand the basic rules and was hit by the others. When Niky became a teenage male with a very big and strong body, Bioko (the old boss), started to be more aggressive in his relations with him, and the situation was worse when Niky started to show signs of sexual interest in the females. It was necessary to separate them into two groups. Now, Niky is the adult male in the only group of the MZ, weighing 230 kilograms. He is very playful and kind and loves to be near the keepers and spends all day playing. His relationship with Malabo (the younger male) is not good, they display and prefer to avoid the other. They don’t eat, sleep, play or relax together. Niky spends a lot of time in the outside exhibit. He’s a very quiet male with a peaceful character. Niky is not related to the females, so he will be an important animal when introducing “new blood” in the MZ gorilla group in the future.

Nadia was born in September 1981 in the Congo. She arrived at MZ on 02Oct82. Nadia, like Niky, and most of adults gorillas in Spain, had been confiscated. She was luckier than Niky because she was introduced to a gorilla group with gorillas of her own age, and she always lived in a gorilla group with an established hierarchy. Today she is the oldest gorilla in the zoo. She had three babies, but today only one is alive: Malabo, her last son. Being
her third baby, Nadia didn’t rear Malabo very bad, but she didn’t know how to look after him perfectly. So Malabo was reared by the MZ staff in the nursery (3 months before, his half sister Banga was born and raised in the nursery). Nadia is very intelligent, she even fakes diseases or such for getting strawberry medicine. When she doesn’t like anybody she spits right to the face!

Nadia knows some specific signs of Sign Language and use them frequently. She is very reserved, for example: She only uses the artificial termite mound for extracting honey and other things when she thinks nobody is watching her, and if you look at her, she stops! She never plays or investigates things if she is being observed. She is very independent and likes to be a bit far from the group for eating and relaxing, but she always follows and respects the males. Nadia has an excellent relationship with Banga so when Banga has her first baby, Nadia will be with her to help, or just as a comfortable and warm presence.

Nadia and I have a special link, we are true friends. She knows what I expect from her and I know what she wants just by looking at her. She had all her babies with Bioko and when he passed away, she took a long time to grieve. She spent some days sad and lost. Keepers consoled and calmed her during these days. A few days later, she joined Niky’s group. Now she is starting to accept Niky and she seems to be sexually interested in him.

Malabo, the younger male, was born at MZ on 28th November 1991 and is son of Bioko and Nadia. During his childhood Malabo learned absolutely everything from his father, and now is a 200 kg boy, very playful and nasty. He is a trouble-maker, especially with Niky. Malabo is very intelligent and knows how to get what he wants. He expresses his emotions by using a vast array of sounds and gestures. His hobby is hiding and jumping against the windows to scare people. He prepares huge night nests and is a big eater, and is always ready to enjoy enrichment items we offer him, with frozen orange juice on hot days being a favorite. Malabo also loves water, playing, splashing, and jumping into it, making him a favorite of visitors to MZ.

Banga, a female, was born on 19 August 1991 at MZ, the daughter of Bioko and Muni. She is a very sweet natured gorilla. Banga, as well as her brother Malabo, were hand-reared by MZ staff, because of the lack of experience of their mothers, and they were reintroduced in the group later. Banga suffers from temporary hair problems due to an allergy that makes her lose hair, making her look like a big chimpanzee. Nesting material for the gorillas in MZ is recycled paper, because we can’t use shavings of wood straw because of Banga’s hair problems. Due to her personality, Banga is the one gorilla who keeps the group together and in a continuous physical contact, due to her games. Nowadays Banga is trained to be temporarily isolated from the group everyday, to get urine for a hormonal study. Banga has a higher place in the group’s hierarchy than Nadia.

Gorka, is the last member of the gorilla exhibit at MZ. She is an eight year old female (born in Budapest, Hungary on 16 January 1996) and arrived at MZ in May 2004, following instructions of the EEP coordinator and with the intention of joining the group of Niky, Banga and Nadia for promoting reproduction. We were all anxious and excited about Gorka’s arrival, which was a big event (it is always exciting when a new gorilla join the group). Nowadays Gorka is being introduced to the rest of our gorillas. Everything is going well with her new family. Gorka was mother-reared and witnessed the rearing of a younger brother, so we hope this experience will help her in the future as a mother, herself.

Gorillas at MZ receive daily training, in which all the gorillas must stand on the scale to get their weights, exchange objects with the keepers and allow for individual isolation when necessary (to avoid stress, or when necessary for administering medicine, urine collection, etc.).
In July 2002, the MZ gorillas enjoyed their new exhibit for the first time, endowed with a big covered winter exhibit for raining and bad weather days (this exhibit has more than 30 percent space hidden from the visitors' to let the gorillas relax, if and when they want to). The other side of the exhibit is a lot larger and open air, and is the one where the gorillas spend most of the time, with grass, trees, plants with and without protection, artificially warm rocks for cold days, trunks, termite mounds, waterfall, river, pool, high places for climbing, caves, etc...

Keepers believe that environmental enrichment for gorillas is completely necessary and we offer it everyday. They really enjoy it and keepers also enjoy watching them and learning from them. We offer food to our gorillas four times a day (9:00 am, 11:00 am, 1:30 pm and 6:00 pm) and surprise enrichment at anytime of the day. I think that the work of all the keepers is highly important in trying to take care of such very precious animals like this (from all points of view). We hope that our efforts will be realised and soon we will have gorilla babies in Madrid. Passion for our job is what makes gorilla keepers very lucky.

Above left, Nadia; above right, Banga, playing with a sock, right. Below left, Gorka, upon arrival from Budapest. Photos courtesy of the author.

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Juanvi is one of the Debbie McGuire Gorilla Keeper Grant winners for 2003.
In May of 2002 the Oklahoma city zoo was host to the AZA primate taxon advisory groups mid-year meeting. Of the many people here to attend the tag among them was Pierre Kakule. I met Pierre at the ice breaker and we began to talk about Africa as I had just returned from a two week visit to Lewa, in Kenya. As we started to converse we began to talk about our love of Africa, animals and gorillas in particular. A few nights later I attended a lecture given by Dieter Steklis and Alicia Lily, both from the Dian Fossey Gorilla fund international (DFGFI). I had no idea that Pierre would be speaking as well. It wasn’t until then that I realized what Pierre actually does. I also had no idea to what lengths Pierre has gone to in his efforts to save gorillas in the wild.

Pierre is the chief warden of the Tayna gorilla reserve (see GG vol. 17, No. 1, April 2004, pages 21-23 for more information). Located in the highlands and western escarpment of the Albertine rift, the reserve is 60 kilometers west of Lake Edward in the North Kivu Province of the Democratic Republic of the Congo (DRC). In a beautiful area full of lush vegetation, Tayna was created in 1999 by a formal agreement between the chiefs of the Batangi and Bamate tribes; the reserve aims to protect bio-diversity in the region and educate local inhabitants on preservation and wise use of lands in and around the reserve.

Until 2001 Tayna operated without outside funds. During that time reserve staff travelled through local villages conducting workshops on the importance of conservation; focusing on the protection of large endangered mammals including gorilla, chimpanzee, elephant, okapi, and owl-faced monkeys. Their efforts have been oriented towards education and identification of endangered species plus the removal of snares, and confiscation of hunting rifles and shotguns. They also organized several clubs for children, which they call "Friends of the Gorillas". These clubs teach children basic conservation, education, and science which encourages them to be ambassadors for the gorillas in other villages.

In March of 2001, DFGFI became a primary partner and is now aiding Tayna with financial and technical assistance as they pursue long-term financial goals for conservation and rural development. Recent surveys by DFGFI have revealed that large portions of the reserve are covered in intact primary montane forest. Estimates of gorilla populations are between 250 and 500 individuals and chimpanzee populations may be even higher. The true make-up of the rich and varied fauna of the reserve is still being explored as Tayna staff work to develop a large-scale Rapid Ecological Assessment Census. At present local trackers and guards take relevant GPS points, record habitat characteristics, and keep an inventory of the preserves’ insects as well as sightings, nest and trail signs of all mammals.

**Threats to the Tayna Gorilla Reserve:** Deforestation due to agriculture and grazing were the main threat to Tayna’s diversity until the 1970’s. With the discovery of seams of gold and coltan in the (DRC) Congo and the continued civil unrest, both the destruction of habitat and the threat to species have increased alarmingly. Some of the results of mining and civil war include:

- Forest clearance and use of timber to build camps to accommodate miners.
- Forest clearance to expose substrate for mining.
- Pollution of streams by silt during mining washing process.
- Hunting of animals for bush meat to feed miners and camp followers.
- Animals maimed or dying after escaping from snares.
- Disturbance of animals and habitat due to large numbers of people resident in and moving through the forest.
- Ecological changes due to loss of keystone species such as elephant and gorilla.
- Population migration programs which move non-residents into primary virgin forest.

![Pierre and Tayna staff with one of the confiscated apes.](image)

Photo courtesy of the author.
Uncontrolled hunting and mining may yet create an "empty forest" phenomenon. Without the protection and conservation provided by projects like the Tayna Gorilla Reserve, the rich biodiversity of this region will disappear. It is for this reason that Tayna and the people who reside there succeed and funds must be found to continue its mission.

I have been told many times that one person can make a difference. I wasn't sure what could be done, but I knew I wanted to do something to try and help. If Pierre could do so much with such a small amount of resources, I knew we could come up with something to help him. In January of 2003 I requested and received support from the Oklahoma City Zoo as well as the Oklahoma City Chapter of the American Association of Zoo Keepers (AAZK-OKC) in developing a fundraising event to further the work of the Tanya Gorilla Reserve. Thus the Gorilla Golf Tournament was born.

In October of 2003 the first event was held at Traditions Golf Club raising $4262.00, which directly supported anti-poaching teams and helped fund the first wing of the reserve's education center. In 2004 the tournament raised $3921.00 to aid Tanya. We also began selling candles in our zoo gift shop, which will give us a head start for next year's event. We are very excited to be able to help Tanya each year, and are so pleased to have the support of our Zoo in this worthy event. If you would like to make a donation, sponsor a golfer, or hold a tournament of your own, please contact me. Thank you very much!

Left: Some of the Gorilla Golf Committee members, Vonceil Harmon, Mary McFarland and Debi Mangrum.
Right: Bert Castro (Oklahoma City Zoo director) and Dwight Scott (General Curator) waiting for the event to begin.
Below: "Mascot" supporting the golfers on the golf course. Photos courtesy of the author.

Debi Mangrum
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Kumba is one very special gorilla. At 37 years old and despite a recent health problem, he still remains one of the most gentle of gentlemen. A cautious and reserved individual, he looks after his family with patience and tolerance. However, don't make the mistake of thinking he won't defend them to the end if danger threatens. He is very definitely all male! And his recent breeding success bears testament to that.

Kumba was bought by Chessington Zoo (as it was then called), on 15 September 1969. He was no more than 18 months old at the time, and he came in with a young female named Bafia. He was loaned to London Zoo in 1984, where, despite their best efforts and standards of care, he never really seemed happy and settled. We brought him back to Chessington in 1995 to fill the space sadly vacated by the death of his predecessor 'Jersey Kumba' as we knew him (so called because he came from Jersey Zoo in the Channel Islands, UK). When Kumba returned, he joined Bafia, Kaja, and Kaja's new daughter Asili, and Shani who is the daughter of Lomie and Jersey Kumba. It wasn't long before he integrated into the group and a year later; he fathered Buu to Shani. Then in early 1999, he got Asili pregnant and the result is Mjukuu. Two years later, Shani's second child Shanga was born.

In mid November 2003, Kumba suffered a mild stroke. This caused him restricted movement for a little while and he was dazed and confused. The females of the group crowded round him apparently trying to help - but within a month, he was almost back to normal. He has also suffered a couple of minor nosebleeds and our vet suspects high blood pressure. He is being treated for this with low-dose beta-blockers and a daily dose of aspirin. Since then, we have suspected he has had one or two minor strokes and now has some very slight weakness in his right arm, but to all intents and purposes he has made a very good recovery. For his 37 years, he looks in fine fettle, but we were concerned that he may not be able to father any more offspring.

However, much to everyone's surprise and delight, on 23 January last year, Asili gave birth to Kumba's 4th child, a little female who we called Kumili. If this wasn't astonishing enough, Shani, beside herself with envy for her archrival's new baby, once again called upon Kumba to do his duty and the result was a bouncing male baby born on 10 August last year. We have called him Kumi meaning tenth. He was born on the 10th and is the 10th member of our gorilla family. Right from the start Shani was a very laid back mum with Kumi and often put him down on the straw which gave the others plenty of opportunity to pick him up and inspect him and pass him round the group. The youngsters certainly have had lots of opportunity to practice their parenting skills and hopefully all this man-handling (or should that be 'gorilla-handling') will result in Kumi growing up to be a confident and well adjusted member of the family.

Kumba. Photo courtesy of Iona Stewart.
Over the last year, the outside enclosure of the gorilla complex has seen top-to-toe renovations, with new ropes, climbing frames and straw substrate. Kumba has shown his old cautious nature once again, by refusing to venture out into the 'danger zone' until all the females and children have tried it first. Happily now, his appetite has got the better of him, and he has decided that 'outside' is safe at meal times and in small doses. One small strange side effect immediately following his stroke has been that his tastes changed and he began to love eating broccoli! Happily he has now outgrown this perversion, and keepers were pleased to see him give a healthy rebuff to recent offerings of broccoli. We are so proud of him and continue to give him the best care and commitment possible and hope he is with us for a good few years yet.

Above right: Kumba and Asilla, holding their daughter, Kumili.
Left, Close up of Kumili; Center, Drawing of Kumba (Chessington) by Iona Stewart, whose other works can be found at http://www.lonastewart.co.uk; Below right, Kumi. Photos courtesy of Iona Stewart.

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Monkey Business in Gabon: 
A Case Study of Bushmeat in Central Africa
Mark van Dorp, Brussels, Belgium

This report is based on a five-week field mission to Gabon in 2001 for the International Fund for Animal Welfare (IFAW). The purpose of the report is to summarise some of the major issues behind the bushmeat crisis in Central-Africa with Gabon as a case study.

Wildlife: Gabon has an extremely rich biodiversity for its small size, with 300 mammal species, 600 bird species and 6,000 plant species. There are still large wild populations of gorillas and chimpanzees present. However, the pressure on these populations is growing due to habitat destruction (especially by road building and logging) and hunting for meat consumption.

Hunting: Indiscriminate hunting of wild animals for bushmeat consumption is practiced all over Gabon, both for subsistence and for commercial trade. Hunting is considered unsustainable in all parts of Gabon, except in regions bordering large intact forest blocks. The methods used (snare and shotgun hunting) are both very indiscriminate. Animals trapped in snares often spend days in the traps before being found by the hunter, struggling to escape but usually dying a painful death.

Transport, trade and consumption: Bushmeat is transported in Gabon through a limited number of highways, waterways and the Transgabonais Railroad. The most commonly traded and consumed species include porcupines, antelopes, red river hogs, monkeys, cane rats, dwarf crocodiles and pangolins. Gorillas and chimpanzees are also traded for meat consumption, while their babies are traded as pets. In addition, illegal elephant poaching for ivory is widespread in certain regions. Many of these species are fully or partially protected by law, but this has not resulted in lower trade levels, simply because the law is not enforced. The illegal trade chain could be broken through strict controls and law enforcement on roads, rivers and trains. In terms of consumption, bushmeat constitutes an essential part of rural people’s protein intake. In the cities, however, where alternative meat is abundantly available, bushmeat is consumed as a delicacy.

Government policies: No one is legally allowed to hunt without a permit delivered by the Ministry of Forests. The only exception to this rule is the customary right of village communities to hunt for subsistence purposes. In practice, however, the law is applied only partially or — in most cases — not at all. This is due to the weak law enforcement capacity of the authorities concerned with fauna management, as well as to a lack of political willingness. Strict law enforcement is seen by all experts as a pre-condition to save Gabon’s wildlife.

Logging and Roads: Bushmeat hunting and trade increases sharply in logging areas to feed the people in the logging camps. In addition, the construction of logging roads facilitates the entry of commercial hunters into the forest. An estimated total area of 12 million hectares is currently assigned as industrial logging concessions in Gabon. French and Malaysian companies dominate the logging scene, while there are also companies from Italy, Portugal, Spain and Lebanon. French companies account for more than 25% of total concession size in Gabon. Foreign logging companies in Gabon are increasingly trying to put a halt to commercial bushmeat hunting within their concessions by anti-poaching measures. However, with the recent assignment of new logging permits in the last frontier
forests in North-East Gabon, bushmeat hunting is expected to increase further in these regions.

Conclusions: This report shows that bushmeat forms an essential part of life in Gabon. Many people depend on it for their survival, but many others use it to enrich themselves at the expense of nature. It is doubted, however, that the forest will be able to reproduce sufficiently at current off-take rates. Hunting is considered unsustainable in all parts of Gabon, except in regions bordering large intact forest blocks where animal stocks still largely exceed demand. Illegal elephant hunting for ivory is also widespread in certain regions. It is commonly agreed that the current situation can only be tackled by strict law enforcement, especially by controlling illegal commercial trade. Subsistence hunting is perceived to be less destructive, while it is much more complicated to tackle because of the importance of bushmeat in the local economy.

The Government of Gabon is trying to address the problem but does not have the means - and in some cases not the willingness - to do so efficiently and timely. If the bushmeat trade is not controlled within the coming decade, it will be too late for certain threatened species, especially great apes, leopards and elephants. The driving forces behind the exponential increase in bushmeat hunting are logging and road building. The companies and authorities responsible should make sure that immediate measures are taken to limit the impacts of these activities. Finally, NGOs and donors should use their technical expertise and lobbying power to change the situation. A concerted effort of governments, companies and civil society is the only way to prevent the last wildlife in Central-Africa from disappearing.

To contribute to this effort in Gabon, the following interventions by IFAW and other organisations are recommended as a first priority:

- Creating effective control mechanisms for transport of commercial bushmeat trade, especially on the Transgabonais Railroad as one of the major transport routes for bushmeat;
- Support for anti-poaching and fauna management in and around logging concessions;
- Support for the creation of a network of national parks;
- Building capacity of government staff and project personnel in wildlife management and law enforcement.

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Original drawing by former gorilla caregiver, Perry Beliz
A Tribute to Jabari (13 May 1990 to 18 March 2004)

“Gorilla Songs” by Vanessa Phelan
Written for Jabari, Summer 1991

A drumming of hands,
Movement in the long grasses -
Noises ...
Pleasure sounds
And a rolling shape
Clumsily, joyously
Hurtling round a sharp corner.
Warm pressure against my arm
A gentle moist touch to my face,
Enter shining
Staring into mine ...
Our wild, free cousin ...
My heart, captured forever
Pounding with Love.

Photos of Jabari as a youngster are taken during his time in Toronto, Canada. Photos of the young adult, Jabari, were taken in Dallas, Texas. All photos are courtesy of the author.

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My Life with a (fictional) Gorilla
Daniel Quinn, novelist

After shaking hands with Ted Turner under the lens of half a dozen television cameras, the first thing he said to me was: "Why a gorilla?" I laughed (to his obvious puzzlement), because I’d been told by Michael Reagan, the head of Turner Publishing, that they wanted to keep it quiet that a novel about (gulp!) a gorilla had won the one-time, half-million-dollar Turner Tomorrow Prize, established to encourage authors to seek "creative and positive solutions to global problems." Evidently they’d forgotten to tell Ted this.

Little did I guess that in years to come, I would never escape any public engagement without being asked, Why a gorilla? The gorilla in question is named Ishmael and the novel is named after him. He is encountered when the narrator of the novel, a thirty-something freelance writer spots a strange ad among the classifieds: "Teacher seeks pupil. Must have an earnest desire to save the world." Curious, the narrator "applies in person," as directed, and finds to his astonishment that the teacher is a four-hundred pound lowland gorilla who speaks to him telepathically from behind a glass screen.

Over the course of an arduous educational journey, the narrator reexamines human history through the eyes of a member of another species.

When Ishmael came out in 1992, no one knew how it would be received, least of all me. But within a week I began to receive letters from flabbergasted and delighted readers all over the country, ultimately amounting to more than 5000 before the email age arrived and I stopped counting. In hardcover, the book did reasonably well, but it only really took off in 1993 when it came out in paperback and teachers from middle school to graduate school began using it in courses ranging from anthropology to zoology, and almost everything in between, including biology, economics, geography, history, political science, philosophy, psychology, religion, and sociology. By now it has sold more than a million copies worldwide in more than twenty languages.

Why a gorilla? There can be little doubt that Ishmael himself is largely responsible for the novel’s enduring success. More than one primatologist has told me that this solemn, stately, and sometimes gruff character resembles gorillas they have known, and I’ve been surprised to hear from many readers who confessed to weeping when they had to take leave of him at the end of the book.

I have to believe that few characters in modern literature have inspired as many artists as Ishmael. The most impressive example is a larger-than-life size bronze by the distinguished nature sculptor Bart Walters, commissioned by Salisbury University in Salisbury, Maryland, for its campus.

I laughed the first time I was asked "Why a gorilla?" To me, the choice was all but self-evident. What creature could be a more impressive and authoritative spokesperson for the nonhuman community of life? I’ve grown used to living with this particular gorilla, whose name is much better known around the world than my own. When going on tour for later novels (in only one of which Ishmael made a return appearance), I half-expect some day to be asked a slightly different question, not Why a gorilla? but rather WHERE’S the gorilla?

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Gorilla Gazette, April 2005, Page 25
Omaha Gorillas Get a New Home
Janice McNernie, Omaha, Nebraska, USA

In April 2004 Omaha’s Henry Doorly Zoo opened the Hubbard Gorilla Valley. The 3.0 acre complex consists of three outdoor yards and two indoor displays. The new large complex is an addition to the original building constructed in the 1960’s. The new facility currently houses 11.3 (i.e.: 11 males, 3 females) gorillas. The concept of the complex is built around the idea that the public is enclosed and surrounded by gorillas, hence the quote “Where Gorillas Roam Free.” The habitats are filled with artificial trees, vines and rock work that surround waterfalls, streams and pools. The grass is always great to roll on or pull out! The largest indoor exhibit, which is 3,032 square feet, contains multiple species. The gorillas coexist with Diana and Colobus monkeys. These smaller primates have access to an enclosure that is visible to the gorillas and the public. The inset display can be seen from all angles through the larger exhibit. The monkeys have access to both areas through two small stainless steel mesh doors too small for gorillas. This protected area can also serve as a gorilla nursery for reintroduction purposes.

Timed feeders in all the displays are hidden inside artificial trees and rocks. Once the magnetized feeders unlock the gorillas can open the slide door to find an assortment of fruits and vegetables. In the afternoon, keepers scatter enrichment such as raisins or sunflower seeds. This has proven to be an excellent way to keep the gorillas active by promoting foraging behaviors.

As visitors walk through the public hallway, with exhibits on either side, a gorilla may be seen standing either above or below them. The glass overhead tunnel is a small branch off the outdoor habitat that overlooks the larger yard on the opposite side of the tunnel. At that same location the public can walk over windows that the gorillas use to cross under from one yard to the other. Currently we have this transfer closed off to allow each group their own separate yard.

In the new complex we have several interactive features including bubble and S-shaped windows and a patty-cake station. The 2 inch thick acrylic bubble windows are the most successful features in the complex and are the most popular with our juvenile gorillas. They enjoy banging and jumping, and occasionally like to sleep on it. In one of the outdoor exhibits called the children’s grotto there are two bubble windows connected by a tunnel where human kids can pop up into the yard. One of the two S-shaped windows is installed in the large indoor display; the other is located between the public walkway and the main yard. These acrylic windows are 2.5 inches thick and weigh 4,400 pounds. They are designed to allow the visitors to feel as though they are sharing the same space. The “patty-cake” station is situated between the walkway and the largest yard. The 3/8 inch vinyl material is designed to be pressed so it flexes enough for a person to feel the contours of the gorilla’s fingers pushing back at them. There is a stainless steel mesh guard covering most of the circular window, so the gorillas can only reach up underneath the mesh, eliminating any forceful actions.

In two of the six holding areas in the basement there are three training stations. Each elevated station situates the gorilla in front of the trainer. This is especially important to position an animal for manual semen collection. The station is inset in the holding area so the animal can also be stationed at the side, level with the trainer. All
animals have access to a training station by transferring through water-based hydraulic doors. These doors are also useful as a creep space during animal introductions. As a safety precaution, the hydraulic doors can be opened just enough to allow the smallest animal access to larger gorillas, with the hope of becoming a member. The elaborate transfer system, which includes a rotating keeper/animal passage, allows any group of animals to move to every yard and display, from any holding cage. In the basement there are glass block windows for natural lighting. This also allows the public to peek down into the animal holding. The cages have high ceilings and a lot of room for hanging enrichment. This allows keepers to easily exchange items like fire hose and rope. The holding cages are aligned so that the animals are beside and across from each other. This set up permits blackback solitary males to still be in contact with other gorillas.

There is 3,735 square feet of animal holding on the basement level. An innovative radiograph machine is designed to fit in the largest cage. There is no definite time frame for the completion of the entire apparatus, but the basic structure inside the animal area is finished. The adjoining room, where the technician will enter from, will accommodate the necessary equipment. The design of the table can also accommodate a voluntary ultrasound, with the animal stationed above the technician.

Across the tunnel from the main yard is the Red River Hog outdoor exhibit. A waterfall and stream provide water for the hogs and several species of water fowl. Anyone who has worked with hogs knows that there are always adjustments to be made in order to make the yard indestructible. A terraced outdoor display between the renovated old gorilla yard and the children’s grotto houses Wolf’s guenons. The artificial rocks and trees provide an area of vertical space covered by wire mesh. This new complex has provided more opportunities for the animals (and the keepers).

Above: Children can interact with gorillas through unique “Bubble Windows.”

Left: The main indoor mixed species enclosure.

All photos courtesy of Omaha’s Henry Doorly Zoo.

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As far as I know, the last update in the Gorilla Gazette concerning the Projet Protection des Gorilles (PPG) in Congo was by Mark Attwater in 1994. At that time, preparations were still being made to transfer some of the older gorillas at the Brazzaville Gorilla Orphanage to the Lesio-Louna Reserve, an area of undulating grasslands and gallery forest 140 km north of Brazzaville. The transfer of the first group finally occurred in December 1994, and by December 1998 all the gorillas in the care of the project were located in the Lesio-Louna Reserve, the Brazzaville orphanage having been evacuated during the civil war of 1997. During those ten years since the first transfer to Lesio-Louna, the project has evolved greatly; so much so that since September 2004 there are no longer any gorillas living in complete freedom in the Lesio-Louna Reserve. Four young orphans are still in the Lesio-Louna, spending the nights in small wooden dormitories while learning the necessary skills to survive in the forest during the days. Four adult males also remain in the Lesio-Louna, but now in captivity. The remaining fourteen gorillas that were living free in the Lesio-Louna have now been transferred to the adjacent Lefini Reserve, five in January 2003 and nine in September 2004, in what we believe is the final stage in their full re-introduction to the area.

Before considering the Lefini re-introduction program, we should first look at our experiences in the Lesio-Louna Reserve. The two rivers in the reserve, the Lesio and the Louna, and the escarpments along the eastern boundary of the reserve, were considered to be natural barriers to the movements of the released gorillas. This was the case initially, but as the gorillas grew older and more independent, they were able to use overhanging or fallen trees to cross the smaller of the two rivers, the Lesio. They even learnt to use our ferry to cross the river, operated by pulling on the ropes attached to each bank. This meant that the camp was no longer separate from the free-ranging gorillas, and had to be protected with an electric fence. Even this fence proved unreliable, the gorillas learning to test the fence with grass stems to see if it was working, and even if it was, they broke branches to form bridges across it. The first fence was replaced with a higher fence, but still, the more persistent gorillas improvised ways to enter the camp, by jumping from the water tower, or by ambushing staff as they opened the gates.

These raids on the camp, to find easy food, were annoying and disrupted the project work, and also frightened visitors not used to nearly-full-grown gorillas challenging them for their dinner. However, more serious problems arose when adult males were pushed out of the groups as they matured, and began to range further in the reserve in search of other groups. Of course they didn't find them, but they did prove capable of following the forests up the steep escarpments bordering the reserve, finding themselves in the banana and manioc bonanza of the surrounding villages. Adult male gorillas gorging themselves on the local harvest was obviously going to...
end in trouble, one way or the other. The local population showed surprising restraint, and the gorillas were returned to the reserve, sometimes being led by project staff using bribes, sometimes being anaesthetised. Inevitably, though, the males that persisted in arriving in the villages had to be caged to prevent serious accidents. In reality, that was each and every one of the males that reached adulthood while in the Lesio-Louna.

After the first two males had been caged, it was clear that the Lesio-Louna was not suitable for the long-term re-introduction of gorillas. The lack of true natural barriers between the released gorillas and human activity, at both the project camp and the surrounding villages, could not be overcome. While the forests of the Lesio-Louna could still be used during the rehabilitation of younger gorilla orphans, the project had to look elsewhere for the final re-introduction site. The south-west sector of the adjacent Lefini Reserve appeared to fulfill the requirements of major natural barriers to gorilla movement, with large rivers on three sides, and an expanse of savannah on the fourth. The rivers on the east and west sides of the area could conceivably be crossed if the gorillas followed them for a considerable distance south, but it was envisaged that the large forest block along the Lefini river forming the northern boundary would keep the gorillas in that area. Even if they did eventually cross the river on the western edge, there were no permanent settlements on the other side.

Following several years of prospecting missions and communication with the Congolese authorities, the first group was finally released in the north-east corner of the south-west Lefini on 18 January 2003. Made up of two black-back males and three adult females, the group thrived in their new territory, remaining together throughout 2003 and ranging in a similar manner to wild gorillas. During the dry season they moved very little, remaining in a small forest patch of 1.34 km² to feed on the abundant low herbaceous vegetation that provides their staple diet while fruit sources are scarce. During the wet season, though, they expanded their range to include nearly 4 km² of forest, moving regularly between forest blocks to profit from the abundant but widely-spread fruit sources.

During 2004 the group continued to expand its range, but the big event of the year was the birth on April 13th of the first baby to a re-introduced gorilla. The birth came as an unexpected surprise to the project staff, as his mother, at 17 years-old, was the oldest female in the project, and had been associated with four different dominant males during her years in the Lesio-Louna without previously becoming pregnant. After the birth, one of the two males in the group became increasingly aggressive to the females, and gradually became independent of the others. The frequency of meetings between the male and the group decreased from May, until at the end of October the solitary male suddenly increased his ranging, exploring the area rapidly in a manner similar to the solitary males in the Lesio-Louna. During November, he explored an area over double the size of the range used by the group during the previous year and a half.

By the 25th November, the solitary male had crossed a patch of savannah to reach the northern tip of a forest block known as Abio. If he followed this forest, it would lead him south along the Louna river, on the eastern border of the south-west Lefini. If then he continued to follow the Louna south, he would eventually find the opportunity to cross the Louna river, and arrive back in the Lesio-Louna Reserve. The problems of solitary males appeared to be returning.
However, on the 8th September 2004 we had transferred a group of nine sub-adults and juveniles to the Abio forest, several of whom had spent a considerable amount of time with the solitary male when they had been in the same area in the Louna. So when the male followed the Abio southwards, within five days he had met the group, and immediately his travels were over. Upon his arrival, four of the younger members of the group must have fled, as they were not found for several days. The remaining members of the group and the adult male stayed together, with no apparent problems. That was last week, so we await news of the evolution of the situation on a daily basis.

So that has brought you up to date with the gorilla re-introduction programme over the past ten years. We are very pleased with the progress of the gorillas so far released into the south-west Lefini, this year’s birth was arguably the highlight of the project so far. But as I sit here at our simple camp on the opposite side of the Louna river to the gorillas, looking out over the Lefini river, the associated gallery forest, and the impressive red sandstone cliffs topped with green savannah grass behind, I feel that what we are doing here is more than a gorilla re-introduction programme. And I don’t just mean the other programmes that make up the Projet Protection des Gorilles in Congo, primarily the orphan gorilla confiscation and rehabilitation programme and the education and awareness programme. What I’m thinking about is the Lefini ecosystem. When Mark Attwater and others were preparing the transfer of the first group of gorillas from the Brazzaville orphanage to the Louna, they chose the Louna partly because there were no wild gorillas or chimpanzees remaining in the region. They were wrong about the efficacy of the Louna river and the escarpments to act as barriers to gorilla movements, but they were right that the area was beautiful but degraded, basically an ecosystem in need of restoration. The same goes for the Lefini Reserve. A beautiful ecosystem in need of restoration.

In the Lefini, the gorilla re-introduction programme can be considered the cornerstone of a larger Lefini ecosystem restoration programme. The large mammal densities have been reduced by years of over-hunting. If you look at the trends in the sizes of fish you can buy from fishermen as you travel the Lefini River, even the fish appear to be struggling. International conservation organisations have come to Congo and have taken responsibility for several of the reserves elsewhere in the country, those which still support wild populations of gorillas, chimps and elephants. They have come to Lefini, they have surveyed the fauna and the flora, they have studied the socio-economic aspects of the area, they have made proposals for management, they have been impressed by the unique scenery, but they have not secured long-term funding and they have not taken management responsibility. It is an ecosystem in need of restoration, not just protection. And that appears hard to justify to international donors.

Unless, perhaps, those donors have other ideas. The gorilla rehabilitation and re-introduction programmes here in Congo, and in Gabon, are based on the passion for gorillas of the late John Aspinall. Or at least the underlying ideas and the long-term funding are. But there are others who share similar passions. A growing number of gorilla and chimpanzee orphan rescue and rehabilitation projects across Africa are finding, and perhaps competing for, funding and support. They must all be facing similar problems and challenges, and must also be converging on similar solutions. Ecosystem restoration should be one of those solutions. Through exploring possibilities that have been ignored by the traditional conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations. The needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations, the needs of ape conservation organisations.

Here in the Lefini, what would be different if we considered our programme as ecosystem restoration? How could we restore the Lefini ecosystem? Possibly by a zonal management system which included protection of a certain area to allow large mammals and fish to reverse the decline in population numbers due to unsustainable hunting and fishing? And perhaps by re-introducing the gorilla, a key-stone species, important for the regeneration of the forest, that cannot return itself because it has been completely exterminated? Outside of this core protected area, perhaps zones of varied rights of sustainable use by local users. And then working with local community leaders to manage the programme, employing local people, and encouraging tourism to boost the local economy? So yes, you’ve guessed it, that is what we’re doing (although of course the reality is not quite as rosy as the theory). But we’re calling it a gorilla re-introduction programme, not an ecosystem restoration programme. So it wouldn’t change our activities a great deal, but I believe it would change the attitudes of local people, Congolese authorities, and international conservationists (and, why not, donors?).
When people come, local fishermen or visiting diplomats, would a different name help them see what I see? The de Brazza monkeys feeding on the trees opposite the camp, the hippo stretching his jaw muscles in the Lefini river in front of me, the fishermen stopping at our camp to register their permit from the village committee, the fishermen returning to our camp to sell us fish that are bigger than last year (okay, I can’t prove that, but I’m sure it must be true), and an 8-month-old gorilla riding on his mother’s back. Two years ago it wasn’t like that here. Now it is. I believe that is the beginnings of restoration. And I hope the world can see that.

See next story by the same author for more information on the PPG projects.


LENGUI, Victim of the Bushmeat Trade: Twice

Tony King, PPG, Republic of Congo

This is the true story of one of the gorillas under the care of PPG-Congo, a story we use as an education tool here in Congo. Please feel free to use it yourselves if you think it might help, or contact us if you would like the story in French.

What do you know about the bush-meat trade? Do you know that along with habitat encroachment and the deadly Ebola virus, the illegal bush-meat trade is pushing our three closest living relatives to extinction. But aside from population numbers, what do you know of the individuals? What does the bush-meat trade mean to a central-African bonobo, chimpanzee or gorilla? For most, we will never know. But here is the story of one gorilla who has survived the horrors of the bush-meat trade. Twice.

Lengui arrived at the Brazzaville Gorilla Orphanage, in the capital city of the Republic of Congo, on 22 April 1994. Despite being about 18 months old, she weighed only 5 kg. A healthy gorilla of that age should weigh double that, or more. A week earlier she had been rescued while tied to a stake in a field of maize in northwest Congo, not far from the border with Gabon.

Northwest Congo is heavily forested, with a low human population density and some of the highest densities of gorillas and chimpanzees ever recorded. Lengui would have been one of the youngest members of a small group of gorillas, probably containing about eight individuals. Her father was almost certainly the large silverback male that led and protected the group, her mother one of perhaps three adult females benefiting from the silverbacks leadership. A couple of immature gorillas, and another infant, probably Lengui’s half-brother, would have completed the group.

The group would spend the day together, feeding, resting, socialising. During the wet season, the group would travel extensively, feasting on the fruiting trees spread sporadically through the forest. During the dry season there would have been less fruit available, so the group would have been more sedentary, feeding principally on the leaves and stems of succulent understory plants, more evenly spread throughout the forest. Lengui would have always stayed close to her mother, she needed her for protection, comfort, milk and transport. If the group were settled, she may have been adventurous enough to take a few steps away from her mother to play with the other infant in the group. At night she would have slept with her mother in a nest built from folded twigs, stems and leaves, sometimes on the ground, sometimes high in the forest canopy. One day, around about 12 April 1994, Lengui’s mother ventured into the small field of maize to feast on the abundant cobs. She didn’t know that this field had been planted.
by local villagers, and was unaware of the danger involved. As she walked on her knuckles, with Lengu clinging to her back, she felt a tug on her hand. This was nothing new, her forest home was full of vines and lianes that would momentarily trap her feet and hands. Without concern, she pulled her hand a little harder. But still it was stuck. The harder she pulled, the tighter the noose-like cable became. The more she pulled, the deeper the metal snare cut into her flesh.

We don’t know how long Lengu’s mother was trapped in the snare, set by the villagers in the hope of catching smaller prey like antelope or forest hog. It must have been a considerable time, however. When the villagers arrived, to check on their snares and their crop, they found just the mother’s hand, and beside it, her baby daughter, Lengu. Although she was too small too eat or to sell as smoked meat, there was a chance a price could be found for Lengu alive. In the meantime, the villagers tied her there, bringing her some fruit to keep her alive. Word spread, and after a few days her story reached Odzala National Park. Immediately, a scout was sent on a motorcycle to rescue her. He returned with her tied in a home-made basket on his back. When she arrived, dirty and exhausted, she gratefully swallowed a whole bottle of water with local honey mixed in, and fell asleep in a box full of fresh green leaves.

A week later, having recuperated some of her strength during her stay at Odzala, Lengu made the two-day trip to Brazzaville. Her arrival at the gorilla orphanage on the 22 April 1994 saved her life. The orphanage staff immediately provided her with what she was missing most - the physical contact and affection essential to young gorillas. They also treated her three different types of intestinal worms, perhaps picked up from the fruits given her by the villagers, and her infected sores from the rope that had been tied around her waist. They fed and watered her, slowly at first, gradually increasing to a nutritious diet. Unlike many orphan gorillas, she survived the initial few weeks, regained her health, and soon joined a group of other gorilla orphans rehbitating in a small forest in Brazzaville.

In June 1997 civil war hit Brazzaville. Lengu and the rest of her group were evacuated under fire to the coastal city of Pointe Noire, where she remained almost a year and a half until calm had returned to Brazzaville and the surrounding areas. By then, November 1998, she was already six years old, so rather than returning to the abandoned orphanage in Brazzaville, she and her group were transported to a protected area 130 km north of Brazzaville, the Lesio-Louna Gorilla Reserve. This is an area of savannah hills with gallery forests along the numerous rivers feeding the Lefini and eventually the Congo rivers. The site was selected to give the orphan gorillas a chance to learn the skills necessary to survive in the wild. In December 1998 she was fully released into the Lesio-Louna, along with the rest of her group, three males and three other females. Lengu thrived in her new surroundings, so much so that in January 2001 she left the group with whom she had been released and joined the dominant group in the reserve, the first true case of female transfer between groups ever observed in released orphan gorillas. This was a good sign that the behaviour exhibited by the orphans was similar to that of wild gorillas, despite the artificial nature of their social relationships.
However, while the core area of the Lesio-Louna Reserve was well patrolled by project staff, Lengu and her group were ranging further and further afield, into areas where hunters were able to avoid the park guards and lay snares. On the 26 April 2002, project staff located Lengu's group in the south of the reserve, and noticed that Lengu had an injured hand. She was not using the hand for walking. She had not been observed directly since 28 March, and it was apparent that, just like her mother eight years earlier, she had caught her hand in a snare. Unlike her mother, though, by her sheer strength she had been able to rip the snare from the ground, but in her efforts to remove it had only succeeded in tightening the metal cable around her palm. The group was led back to base camp, arriving on the 29 April, and Lengu was lured into a cage for closer inspection. The prognosis was not good. The snare had cut through her palm to the bone. All her fingers were dead, the flesh rotten. An infection had spread to her wrist. Two days later, a vet arrived from Kinshasa, anaesthetized Lengu, and amputated her arm below the elbow. Without such intervention, she would most likely have died from blood-poisoning, as her mother may well have done. Had she been a wild gorilla, this effect of the bush-meat trade would have gone unrecorded. As it was, Lengu remained eaged until the 15 May 2002, on a course of antibiotics and with regular bandage changes. She rejoined her group in the forest, and despite her handicap and an increased wariness of humans, she has continued to thrive.

On 18 January 2003, Lengu was one of a group of five gorillas released to the more isolated Lefini Reserve, the first release in a long-term programme to re-introduce gorillas to this reserve, from where the species was extirpated by over-hunting at least fifty years ago. The movements of the group are now monitored daily, and the project staff are confident that through their vigilance the zone is now free from hunters and their snares. Twice a victim of the bush-meat trade, Lengu hopes finally to live in peace and security. On 13 April 2004, ten years after Lengu lost her mother, possibly to the day, a newborn gorilla was seen in the Lefini Reserve for the first time in living memory. He was born not to Lengu, but to Djembo, the oldest member of the re-introduced group. His presence in her group is now helping to recreate that family atmosphere Lengu vaguely remembers from ten years ago in north-west Congo. With your help, let us not allow a third generation of her family to feel that sudden tug on their hand as they roam their forest home.

<table>
<thead>
<tr>
<th>Questions for you to answer from this story:</th>
<th>7. What does a gorilla group do during the day?</th>
<th>15. Where was Lengu released in December 1998?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What 3 animals are the most closely related to humans?</td>
<td>8. What does a gorilla group do during the night?</td>
<td>16. What does 'female transfer' mean?</td>
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<tr>
<td>2. On which continent can you find all of these?</td>
<td>9. What do gorillas eat?</td>
<td>17. What happened to Lengu when her hand was trapped in a snare?</td>
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<tr>
<td>3. What species of animal is Lengu?</td>
<td>10. At what time of year do gorillas eat more fruit?</td>
<td>18. What would have happened to Lengu if the vet had not amputated her hand?</td>
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<tr>
<td>5. How large is a typical gorilla group in Congo?</td>
<td>12. Why was Lengu not killed when she was found by some local villagers?</td>
<td>20. What do you think might happen to Lengu in the future?</td>
</tr>
<tr>
<td>6. What name describes the dominant male in a gorilla group?</td>
<td>13. Is it legal to kill, keep or sell a gorilla?</td>
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A Dream, a Gift & a Realization
Andrew Haig, Wichita, Kansas, USA

The Dream: For a long time, Mark C. Reed, Director at the Sedgwick County Zoo in Wichita, Kansas, dreamed of the day that we would be in a position to house and exhibit gorillas. Well, that day has come. Following five years of careful planning and an amazing fund-raising effort on the part of our Development Department, finally we have eight western lowland gorillas at The Downing Gorilla Forest. In addition, the 8.5 acre site exhibits Colobus Monkeys, DeBrazza's Guenons, Okapi and Bongo.

The Gift: Paula and Barry Downing have been most generous and instrumental in making this dream a reality. Spending time in Uganda enjoying what only a few have had the privilege of experiencing first-hand, the Downings developed a dream of their own: to bring home to Wichita the very thing they fell in love with — the spiritual magnetism of gorillas —and so provide their hometown with an opportunity to share in their majesty.

The Realization: This came in the form of an official confirmation from Dan Wharton, Gorilla SSP coordinator. Upon hearing that the Sedgwick County Zoo was to receive eight male gorillas from various zoos, the realization hit home. My staff, Scott, Nathan, Christy and I were giddy with excitement as we had worked long and hard preparing the exhibits and were now that much closer to receiving the gorillas.

July 2004 saw the opening of The Downing Gorilla Forest at the Sedgwick County Zoo. The dream became reality with the arrival of Shango and Barney from the San Francisco Zoo in May, Matt and Jabir from the Oklahoma City Zoo in June, Tommy and Billy from the Kansas City Zoo in June and Samson and Virgil from the Oklahoma City Zoo in November. The transition has been a very smooth one for the keepers and gorillas alike. I am happy to report that all of “the lads” are doing very well. Shango had a couple of episodes of displaced aggression directed towards younger brother Barney but, since July 2004, both have settled into the routines. The brothers are exhibited together in one of two dayrooms (2,100 sq. ft) or the outside exhibit (31,000 sq. ft.). Each group is rotated daily (weather permitting), and Shango and Barney can be seen wrestling and lying close to each other during the day.

Tommy and Billy are still a bit high-strung but, given the space they are allowed to utilize, both seem to be adjusting to the new surroundings. Billy is probably our most “spirited” gorilla. He continues to be a challenge but seems to really enjoy training sessions and the interaction he receives as a result. Tommy trains well but prefers to keep his distance, as he is the subordinate animal in this grouping. Both will station readily and have mastered the rotations to and from different exhibits. As a matter of routine, we are separating each gorilla in the mornings for daily checks and breakfast. Following the advice of the Kansas City Zoo keepers, we are able to “send” Tommy to the new exhibit/dayroom first so as to allow him to distance himself from his more-aggressive younger brother.
This is working very well for us as we learn to manage each bachelor group, depending on age and social status.

The Oklahoma City lads are the easiest to manage. They are much younger and tend to operate as a unit. We are working on separation protocols for this group of four youngsters ranging in ages from 6 to 11 years old. Matt (Matumaini) has not changed. He is a little bit heavier now but still has a long way to go to grow into his hands. He loves to interact with the keepers and loves to play with his adopted brothers. As typical juveniles, they have three switches: ON, More ON and Completely OUT.

This group of four will have an opportunity to experience the same growing pains as they age and mature. We could not have asked for a better group of youngsters. They seem to get along very well with Matt as the leader. Virgil, as a nursery-raised individual, is a lot like Matt. He loves to interact with people, as well. Samson and Jabir are somewhat more aloof but seem to be warming up to us.

We are in our infancy in terms of bachelor group management. The facilities were designed with this in mind. Given the design, we are able to rotate each group on a daily basis to a different area without ever letting rival groups spend time in the bedrooms intimidating each other, for example, or displaying to each other from across the hallways. This seems to have eliminated a fair amount of stress between groups and within each group, as well.

It is true what many have said: It will be interesting to see how things develop as the gorillas age and mature. For now, at least, all is well. It is a privilege to work with such charismatic creatures. I am sure we will learn a lot from them as we continue to strive to be the best spokespersons for such majestic ambassadors to the plight of so many animal species in Africa. Our goal is to become a shining example for bachelor group management. We have a long way to go, but I feel that we are well on our way to achieving that goal.

San Francisco boys, Barney (left) and Shango (right)
Photos courtesy of Rick Murphy.

Photo below left: Billy, showing off for zoo visitors in the outdoor exhibit.
Photo courtesy of Jane Dewar.

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Gorillas in the East - Taipei Zoo, Taiwan
Royce To, Taipei, Taiwan

There are two mature western lowland gorillas (Gorilla gorilla gorilla) in the Taipei zoo, namely Jeppy and Pao-Pao. They are both silverbacks and they are the only two living gorillas in Taiwan. One gorilla, kept by a private zoo in Hsin-chu, died last year at the age of 45. Jeppy and Pao-Pao both came to the Taipei zoo at different times and in different conditions. Jeppy, a captive born gorilla in Denmark, was once kept by a private zoo in Taichung. Jeppy stayed there until one day, the zoo found that there were injuries on both of his hands. Without adequate veterinary services from the zoo, they contacted the Taipei zoo for help, and veterinary care was sent to service their problems. Eventually, the private zoo realized that they simply didn’t have the space and enough medical services for keeping Jeppy happy and healthy. So, they decided to send Jeppy away, and as the Taipei zoo was willing to take him, Jeppy moved there in 1991. Jeppy is now 38, and in excellent health. He is very calm and gentle, as described by his keeper.

Living in the same enclosure, Pao-Pao is a much younger and much well-known gorilla to the locals. He came to the zoo in 1987, and is the zoo’s first gorilla. Pao-Pao is wildborn from Cameroon, and was purchased by a private corporation. His estimated age was two, with his weight slightly more than 10 kg at that time. Although Pao-Pao’s condition was good, many people worried about whether he would live long. This was because he was still too small to be kept without his mother’s care, and there were still many unsuccessful cases keeping gorillas in zoos around the world. However, Pao-Pao not only survived, but grew stronger and stronger each day. He is now 20 years old and in good condition and in good health. His present keeper is Wang Wan-xian, or simply his nickname Bro. Wang joined the zoo 16 years ago, and has taken care of Jeppy and Pao-Pao closely for the past 8 years. He still recalls when Pao-Pao was still an infant.

“Pao-Pao is our precious (as the meaning of his name “Pao-Pao” in Chinese), and we have given all our love to him. We give him milk, play with him and tuck him to bed, just like the way we treat our babies.” He also added “Until now, he is still very close with the keepers, and sometimes when I come close to his chamber, Pao-Pao will approach and give me some gestures to touch him, some kind of showing affections, maybe.” Wang also mentioned that he was pleased to see Jeppy, since this would mean Pao-Pao wouldn’t be too lonely, although Jeppy is a male and much older.

The design of the enclosure contains one outdoor space area and five chambers. They are interconnected with slide doors and overhead bridges. Due to being under used, two of the chambers were reassigned to house colobus monkeys (Colobus angolensis) and mandrills (Mandrillus sphinx). Jeppy stays in the chamber with windows on one side facing the visitors, and Pao-Pao stays in the chamber with no direct access to the visitors when he is indoors. This arrangement is because Jeppy likes to stay close to the windows observing visitors, while Pao-Pao is more sensitive to strangers. The outdoor area is bounded by concrete walls with large windows, and there is a moat between their living space and the visitors. Their living space is covered with grass, some trees and some artificial rock in various sizes. The large artificial rocks are hollow inside, allowing the gorillas to rest inside them. When Pao-Pao feels like taking a nap in the afternoon, he always likes to stay inside these rocks with his belly up. The moat, which contains no water, is used by Pao-Pao to climb up and down. Jeppy is less
active and always stay somewhere near the doorway which leads to the chambers.

Since Jeppy is aging and Pao-Pao is now a young silverback, the zoo worried that there would be fighting for dominance and for home range. Ellen Chin, the curator from the Animal Department, has voiced her concerns: “The enclosure was too cramped for the two silverbacks to stay together, and we were really worried they may hurt themselves in a fight, so we need to send one away.” Plans to send Jeppy to Taman Safari* in Bogor, Indonesia were postponed further due to the December 2004 tsunami, which has left many parts of Indonesia unstable. So Jeppy is still in Taiwan at this time (February 2005) and Pao Pao’s behavior is more or less the same. Although it will be sad to see Jeppy leave the Taipei Zoo, we are happy to see that the potential aggression between the two silverbacks will be avoided.

With Pao-Pao left alone, the zoo is now concerned about him. At his present age and with the new space, when vacated by Jeppy, available to him, the idea of looking for a female partner has become more practical and essential than ever. From the start, when Pao-Pao first came to the zoo, the Animal Department has been desperately looking for a perfect bride for Pao-Pao; however, the search has been unsuccessful. Ellen said “We can’t lose any chance now, since Pao-Pao is not too young to run his own family already, and we really hope he can have his own family and some offspring; this would be good for him, and as well as for the visitors.” Ellen further explained that since Pao-Pao is wildborn, his offspring would conserve his genes and at the same time would increase the gene pool of captive gorillas. Therefore she urged, if any zoo has a female gorilla that would match Pao-Pao, the Taipei zoo would be interested, and there is already a local sponsor promised to cover the transportation costs. Being so proud of Pao-Pao, Ellen has told me that “He is the most handsome gorilla that I had ever seen!” and “he is irresistible!”

<table>
<thead>
<tr>
<th>Pao-Pao Diet</th>
<th>Jeppy Diet</th>
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<tbody>
<tr>
<td>9:00 a.m. Feeding</td>
<td>4:50 p.m. Feeding</td>
</tr>
<tr>
<td>1000 g. Inulberry leaf</td>
<td>420 g. guava</td>
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<tr>
<td>1800 g. Paper Mulberry</td>
<td>400 g. apple</td>
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<tr>
<td>85 g. biscuits</td>
<td>530 g. banana</td>
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<tr>
<td>300 g. Rice Cake</td>
<td>700 g. carrot</td>
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<tr>
<td>130 g. monkey feed</td>
<td>330 g. papaya</td>
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<tr>
<td>150 g. sweet potato</td>
<td>100 g. sweet potato</td>
</tr>
<tr>
<td>240 g. tomato</td>
<td>140 g. tomato</td>
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<tr>
<td>250 g. corn</td>
<td>180 g. corn</td>
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<tr>
<td>280 g. lettuce</td>
<td>220 g. lettuce</td>
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<tr>
<td>200 g. Chinese kale</td>
<td>250 g. Chinese kale</td>
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<tr>
<td>250 g. cabbage</td>
<td>400 g. cabbage</td>
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<tr>
<td></td>
<td>120 g. cucumber</td>
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<tr>
<td></td>
<td>110 g. snap beans</td>
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Acknowledgements: I gratefully acknowledge the Taipei zoo for allowing me to write this article about their gorillas, I especially thank the Animal Department, Ms. Ellen Chin, Mr. Shawn Peng, Mr. Ji-Cai Xu, Mr. Wan-xian Wang, and Mr. Jian-ren Yang. I also thank Dr. Ling-Ling Lee and Dr. Tzung-Su Ding for their support on this article. Ms. Jane Dewar, thank you for your encouragement too. All photos are courtesy of the author.

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Babs: A Quality Life ... and Death
Craig Demitros, Brookfield, Illinois, USA

For the last 30 years Babs and her mother, Alpha, have been the mainstay of the gorilla group at Brookfield Zoo. Silverbacks have come and gone but the Alpha-Babs matriline has persisted as the foundation of our group. In April of 2004 we lost Babs’ daughter Baraka (14 years old) to an undetected reproductive tract abscess that developed into peritonitis. Babs immediately moved into the maternal role for her 3-year-old grandson, Nadaya. This was no surprise since Babs was an excellent mother having had four daughters of her own (in addition to Baraka, Becky and Kwizera at the Buffalo Zoo and Bana here at Brookfield).

Prior to Baraka’s death, in March of 2004, Babs was given a physical exam due to unusual posturing and locomotion as well as a high level of vaginal touch tasting. The exam showed that Babs had a vaginal abscess associated with some necrotic tissue. A regiment of Clavamox and tetracycline took care of the abscess and associated infection. Lab results of this exam and a follow-up exam about three weeks later showed that Babs had slightly elevated kidney values (creatinine and BUN). Over the next few months Babs had an on again/off again battle with a Candida infection that was treated with nystatin and fluconazole, but overall was in good health. In mid-September Babs started to look a little off. Her locomotion was a bit labored, she seemed to be straining to urinate, her appetite was depressed and she was doing a lot of vaginal touch tasting. These were similar symptoms that led to her March exam.

An exam on 20 August showed no recurrence of the vaginal abscess and an ultrasound exam showed no evidence of an abdominal abscess. What was a concern was the blood work that revealed steadily increasing levels of creatinine and BUN. Babs was also anemic and had started to lose some weight. A week later (27 August) Dr Kramer, a nephrologist from the Loyola University Medical Center, was brought in to ultrasound Babs’ kidneys and bladder. There were no gross abnormalities detected. A major concern was that Babs’ kidney values had increased again in the matter of just a week. The preliminary diagnosis was inflammatory kidney disease possibly due to an allergic reaction. We stopped any medications, supplements, seasonal diet items (including browse) and strictly followed her regular diet.

Babs was sedated again a week later (3 September) for more blood work. By this time her mouth and gums had become quite pale. The blood work showed that she was still anemic and that the kidney values had continued to increase. Four days later (7 September) Dr. Kramer returned to do kidney and liver biopsies on Babs. The kidney biopsy results showed scarring indicative of chronic renal disease. Her creatinine and BUN levels were increasing rapidly, Babs was in renal failure. The immediate steps taken were to continue to push fluids, which we had started to do two weeks earlier and start steroids (prednisone) and acetaminophen to reduce the kidney inflammation and pain. We also started to bring animals off exhibit a few times per day to push fluids, hand feed Babs and monitor her consumption. Babs was also started on erythropoietin to boost red blood cell production.

In mid-September Babs started to develop a deep cough and had some edema in her chest and abdomen, most likely due to the steroid regime. On 22 September Babs was sedated again for an exam. In addition to the continued elevation of her kidney values, Babs now had an elevated white count and was started on Clavamox. It was decided that this would be the last sedation we would do with Babs. Her chronic renal failure was an irreversible condition and we knew the direction she was heading. At this time keepers, vets and managers met to develop what essentially amounted to a hospice care management plan that would try to make Babs as comfortable as possible for as long as possible until a quality of life decision would be made.

Babs was the dominant female in our group of 2.6 and was acting in the maternal role for her grandson, Nadaya. Our goal was to use medication and intensive keeper care to keep her comfortable for as long as it was reasonable. She continued on the course of Clavamox, prednisone, iron supplements and furosemide/lasix. Keepers continued to push fluids and hand feed Babs, and with vets and managers monitored her condition on a daily basis.

Over the next few months Babs had good days and bad days, but overall was gradually declining. In our management plan we had set criteria that we would use to initiate a quality of life discussion. These included:
1) deteriorating locomotion, 2) the inability or lack of desire to go on exhibit, 3) reduction of fluid and food consumption, 4) difficulty eliminating, 5) isolating herself from the group or the group leaving her and 6) becoming the target of aggression by group members.

Although she fought hard and the staff made a valiant effort to make the best of the situation, Babs continued to decline. By the weekend of 4 and 5 December she was having a tough time. Most of our set criteria were being met. Babs was slow, she had not gone on exhibit for three days, her appetite and fluid consumption were way down and she was not producing much urine or feces. But, the group did stay by her side and we did not see any increase in aggression. The time had come to have a quality of life and a death with dignity discussion. On 6 December we met and made two decisions. Babs would be euthanized the following morning and we would allow the group access to her following the euthanasia.

Giving the group access was something we had talked about since attending the Great Lakes Regional Gorilla Workshop at the Columbus Zoo in November of 2004. At the workshop the Columbus staff showed video of group access to Sylvia who unfortunately was also a euthanasia case. The group investigation, sniffing and touching of Sylvia was very interesting, as well as respectful. Again, we’d like to thank the Columbus staff for sharing their video. Babs was sedated for euthanasia on the morning of 7 December 2004. She died under sedation before the euthanasia drug could be administered. This confirmed for the staff that the right decision had been made.

Only the five primary gorilla keepers were present while the group was given access to Babs. We gave the group access for about 30 minutes, taping the interactions, and saw some of the same sniffing and touching behaviors as in the Sylvia video. With the exception of Ramar (36 years old), our silverback, who stayed on exhibit, all the other group members came in. Alpha (Babs’ mother, 44 years old), Nadaya (Babs’ grandson, 3.5 years old), Koola and her infant Kamba (unrelated to Babs, 9 years old and 3 months old respectively) and Binti Jua (Koola’s mother, 16 years old) all investigated to varying degrees.

But, Babs’ daughter Bana (9 years old) performed the most dramatic and emotional behavior. On two occasions Bana positioned Babs’ arm and lay next to her with her head on her mother’s arm. Bana then put her arm on Babs’ chest or belly and stayed in this position touching her mother for more than a minute on each side, while the other group members stayed back. The great strength of the mother/offspring bond could not have been more evident. We believe this process provided closure to the group, as well as the staff and brought to an end the quality life and death of Babs, a gorilla’s gorilla, missed by all that knew her.

Portraits of Babs, including with daughter Kwizera. Photos courtesy of the Chicago Zoological Society/Jim Schulz.

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First Gorilla Born in the Czech Republic
M. Zdansky, G. Hervertova and A. Horova, Prague, Czech Republic

In August 2002 Prague Zoo was seriously affected by devastating floods which damaged many zoo facilities (see cover article in Gorilla Gazette 2003). The reconstruction of the damaged pavilion took a year. In October 2003 our females Shinda (13yrs) and Kijivu (12 yrs) came back from Dvur Kralove Zoo, where they were temporarily housed. At the beginning of November 2003, a new male, 13 year old Richard, arrived in Prague from Paignton Zoo in England. We introduced Richard to the females in the mid-November without any problems. After one month Richard started to breed with both females. We were checking a possible pregnancy from urine by using common human pregnancy tests.

On 17th April, 2004 we obtained a positive result and we considered Kijivu to be pregnant, but we made several other tests to be sure. Kijivu bred with Richard for another four months. The pregnancy was uneventful and Kijivu did not change her behavior. She was receiving multivitamins since the third month of her pregnancy. In October we observed that her nipples became larger and breasts swollen. She was getting bigger since third month of pregnancy. In the morning of December 13th 2004 Kijivu gave a birth to a healthy baby girl named Moja. Other members of the group behaved calmly, without any signs of stress or excitement. The umbilical cord disappeared the next day. From the first day Moja tried to suckle the mother’s milk, but we supposed that the milk was released 36 hours after parturition. Kijivu seems to be a perfect mum; she has taken care of Moja from the first moment. On the second day we saw Moja’s first urine and faeces and that assured us that Moja was suckling. Kijivu remained calm after the birth of Moja, and she did not change her behavior towards her caregivers. She was bleeding a lot on the first day after parturition, but the bleeding gradually decreased. In total Kijivu was bleeding for approximately a month, and during the last 14 days, she bled every third day.

At 10 days old, Moja developed a cold which lasted approximately a week. We added vitamin C to the diet of her mother. Immediately after birth Kijivu was given a small amount of dark beer; in total she consumed one bottle of beer in 3 days. We also offered her a tea for lactating mothers, twice a day during first three weeks, and then once a day. For the first month after parturition, we boosted and enriched Kijivu’s diet. Once a day, she received one white yoghurt, Milupa—wheaten mash for babies with calcium and multivitamins and a bit of various nuts. This all was done to increase milk production and keep the mum in good condition. After a month, we returned the diet to the normal. One week after birth, Moja started to observe her surroundings and at 10 days old she was able to hold up her head. We have continued to give Kijivu the vitamins.

After three weeks Kijivu put Moja to sit on her legs. After a month she helped Moja to stand up. We have seen twice that Kijivu tried to put Moja on her back. Richard was not interested in Moja at the beginning, however, after a week he came to have a look at the baby and since that time Kijivu goes to show Moja to him. Shinda, however, was very interested in the baby right away, observing Moja and trying to touch her. At first, Kijivu did not allow Shinda to touch Moja, but now Kijivu occasionally allows it. The addition of this newborn baby has improved the situation and strengthened relationships among group members. The members often sit, rest and sleep side by side, as our group begins their new life together.

Mom, Kijivu, daughter, Moja. Photo courtesy of Adam Köppel.

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A Remarkable Life: Debbie - 1965 to 30 August 2003
Kim Raymond, Chicago, Illinois, USA

In Kentucky, a young woman, formerly pre-med, but now studying for degrees in biology and anthropology, gathers information on how to implement a chimp training program at the primate sanctuary, where she volunteers. On Long Island, a graduate student is up late most nights, trying to stay ahead of the curve in her PhD program. A retiree in Chicago spends 15 hours a week collecting data for a research project at Lincoln Park Zoo (LPZ) on how the gorillas and chimps use the space in their new facility. There is a gorilla in Georgia named Joe, who is living out his golden years in the best home he's known. Miles, years and lifetimes of experiences separate all these primates, human and non, but a single individual binds them all together.

Each of their lives might be completely different were it not for one extraordinary primate, a gorilla named Debbie, whose life touched them all. Debbie came to Chicago in 1968 as a baby, probably stolen from her family in Cameroon. She was part of a founder group of gorillas, whose husbandry was fostered by the legendary Dr. Lester Fisher of LPZ. Although infertile, Dr. Fisher noticed Debbie seemed to be very interested in the infants in the group, always playing as big a role as was allowed in their little lives. And so, one of the first, and all time great, surrogate mothers came to be. Debbie went on to raise 10 gorilla infants, teaching them how to be gorillas, leaving a legacy totalling 26 foster children and their offspring who are living in at least 5 different zoos.

In addition to her mothering skills, it was her startling, deep connection to humans that made Debbie unique. She seemed to relish her time with humans, whom she would observe as they observed her, each on their side of the glass. Occasionally, she would spot an individual whom she never had seen before, and seemed to recognize a kindred spirit. Her signature greeting was to offer her hand, flat against a window, to which most people would naturally respond in kind. To witness Debbie reach out to the humans on the other side of the glass was an awesome experience. To see the humans react as Debbie’s chocolaty, wise and compassionate eyes met theirs was truly amazing, but to be the recipient of that greeting was magical. I will always remember when it happened to me.

Several years ago, finding myself out of work, I began spending more and more time at the zoo, most of it watching the gorillas. One day Debbie ambled over, sat directly in front of me, looked me in the eye and put her hand up to the glass, waiting for me to respond. Clearly, she recognized me as a friend and was welcoming me to her world. I felt privileged to place my hand on hers, that first time, and each of the many times that followed. She would bring others back to the zoo in the same manner. The more they came, the more they learned, not just about Debbie, but also about her family and gorillas in general. Many people were so moved and exhilarated by their connection to this special gorilla, that it entirely changed the direction of their lives. It was with this simple, but powerful, gesture that Debbie changed the world.

Jane Dewar is perhaps the most visible example. She will tell you that Debbie was her first gorilla friend and the beginning of a remarkable journey to making Gorilla Haven a reality. My friendship with Debbie led me to become a docent at Lincoln Park Zoo, and my niece Sara, who, after listening to me, is now on her way to becoming a primatologist, working on her PhD. Meanwhile in Kentucky, Leslie Owens hopes to do behavioral research on gorillas both in the field and in captivity upon finishing her degrees. Through the years, Debbie touched thousands, if not tens of thousands, of people’s hearts and minds. Debbie was one gorilla who changed the world.

Classic Debbie, "reaching out" across species barriers.
Photos courtesy of the author.

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Behavioural and Physiological Aspects of Male Lowland Gorillas in Family and All Male Groups
Nicola Wolff, Göttingen, Germany

Information about the housing of male lowland gorillas (Gorilla g. gorilla) in all male groups in zoological institutions is rare. In contrast to free ranging gorilla groups of this type, groups in captivity are established artificially. Additionally, space is limited in captivity and frequent emigrations, which are characteristic for wild groups, cannot take place. So far little is known regarding both, if, and to what extent, these limitations have any effect on the behaviour and physiology of the gorillas involved.

In order to address these questions, data was recorded in parallel for aspects of behaviour and endocrine parameters from males in both all male and family groups. These data were then characterised and compared. Behavioural observations focused on solitary and social behaviour, as well as distance parameters. In addition, adrenal and gonadal function were assessed non-invasively based on urinary androgen and glucocorticoid analysis. Behavioural data collection and determination of endocrine parameters were carried out over a period of at least two months on 15 male gorillas. These animals were living in two family and two all male groups. To achieve a more solid basis for comparison concerning the endocrine data, urine samples were collected from an additional 12 male lowland gorillas from 11 family groups, as well as four gorillas living in an all male group.

Comparison of the pattern of solitary behaviour revealed differences in the duration of feeding and resting time. These differences were mainly related to effects of husbandry and age, but not to the type of group. In contrast, clear differences in social behaviour, dominance relations and distance behaviour existed between males living in family and all male groups. Gorillas in all male groups performed a lower rate of overall social behaviour which, interestingly, affected both the affiliative as well as the agonistic interactions. Only some of the dominant gorillas in the all male group showed similar frequent agonistic interactions when compared to the males living in the family groups. Contrary to family groups, in which clear dominance relationships between males existed, in all male groups dominance relations were often unclear, resulting in a rather unstable group situation. Regarding the dispersal of the gorillas; males in all male groups generally showed greater inter-individual distances. In particular, older males stayed mainly outside the group.

Despite the clear differences in the behaviour, no clear differences in endocrine parameters between males in family and all male groups were found. Androgen and glucocorticoid concentrations were comparable between gorillas of the same age class in both group types. Thus, neither a suppression of male endocrine gonadal function, nor an elevated endocrine adrenal function of the gorillas in all male groups was detected.

To sum up; housing of gorillas in all male groups has a clear influence on the inter-individual relationships between males as well as on their behaviour. However, this is not reflected in the tested endocrine parameters. Although the results should be substantiated through future studies on this topic, the data suggest, despite the clear differences in the behaviour, that gorillas housed in all male groups are generally not physiologically stressed. The housing of surplus males in all male groups can therefore be considered an adequate form of husbandry. However, as these groups are less stable and high levels of aggression may occur, maintaining gorillas in this group type makes high demands on the management and housing conditions.

For more details and the complete dissertation, in German, please see these links.

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Modifying Louisville Zoo’s Gorilla Diets to Accommodate Overweight & Geriatric Individuals, Changes in Social Groupings and Training

Roby Elsner, Louisville, Kentucky, USA

Louisville Zoo’s gorilla diets were modified at the end of 2004 and differ significantly from those published in the previous edition of Gorilla Gazette. Consultation with the zoo’s veterinary staff and correspondence with several other zoos that house gorillas helped reshape the diet. While the revised diet still implements variety in the types of food offered and their method of presentation, standardization and other modifications were made to the previous diet:

1. because of changes in social groupings;
2. because of the addition of an older overweight female to the gorilla collection;
3. to meet the dietary needs of four gorillas over the age of 40 years; and
4. to provide more time for staff to conduct one-on-one training with the gorillas, each of whom isolates from conspecifics usually twice a day during separation training conducted within the holding area of the facility. Training sessions with the groups intact are still implemented to promote prosocial behaviours and facilitate exhibit rotation.

While the amounts of some food items are the same for each gorilla, the amounts of other food items vary per group and per individual (see table on page 45). Each morning (a.m.) during separation training or cooperative feeding, all of the gorillas receive citrus and “mush cones,” each of which contains a children’s chewable vitamin. Previously made with HiPro biscuits, “mush” is currently made with Marion Leafafer biscuits. Each batch consists of approximately 3 pounds of biscuits, softened to a mushy consistency with approximately 12 cups of hot water. Four bananas and 2 cups powdered baby cereal are then mixed into the “mush” mixture. Four ounces of the mixture are placed in a paper cone for each gorilla. Each of the four young bachelors of Frank’s group receives one cup of juice at this time as well.

Additionally during this time, each of the four geriatric gorillas receives a morning smoothie (see recipe in box on page 44). Dissolved in the drinks are Natural Pain Relief Formula Quicksorb Gels (NPR). This dietary supplement contains omega 3 and 6 fatty acids, glucosamine, chondroitin, and other ingredients to provide arthritis relief and foster healthier skin and hair for the aged individuals.

Since silverback Frank has a heart condition, his morning smoothie also contains: 325 mg buffered aspirin, 10 mg amlodipine besylate, and 25 mg hydrochlorothiazide. Specifically for Timmy’s group: 1) Tunuka’s birth control pill is dissolved in her morning smoothie. 2) To keep her feces firmly formed, Helen receives one Archway coconut macaroon with “breakfast.” 3) Paki receives one cup of juice so she won’t feel “left out” when the other members of her group receive their smoothies. 4) Often, each gorilla receives a handfed distribution of Leafafer biscuits at this time: Timmy receives 40 pieces (4 cups) and each of his females receives 20 pieces (2 cups). Biscuit distribution, however, is not confined to the morning feed; it can occur any time during the day.

One-on-one training is also routinely conducted at this time if the gorillas have been separated. A portion of each gorilla’s ration of fruit commonly constitutes reinforcers used during these sessions. Most often, each gorilla group receives two social feedings, where specific food items are spread for the group to forage as a whole. The first feeding occurs in the morning, once the gorillas have completed their shifting and staff has cleared the first area(s) the gorillas will occupy, most often one of the two larger dayrooms and its associated outdoor exhibit.

The second feeding occurs any time between 11 a.m. and 5 p.m. Staff purposely varies the time of the second social feed to keep the feeding regimen variable and less predictable. This applies to many of the feedings that occur throughout each day. The distribution of forage foods varies in time of distribution and location. While the food items may be spread in any of the rooms the gorillas occupy, staff often spreads these items outdoors. Once distributed every day with Leafafer biscuits, HiPro biscuits are currently limited to one day of distribution as a forage food (and are scheduled for eventual complete elimination from the diet). This type of forage food, as well as seeds and nuts, are handfed to members of Timmy’s group. Forage foods are distributed as shown in the box on page 45.

Gorilla Gazette, April 2005, Page 43
### Variable Food Items of Louisville Zoo Gorilla Diet, Categorized based on Each Day of the Week (2005)

<table>
<thead>
<tr>
<th>Food Type</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Method of distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Veggies 1</strong></td>
<td>Novel Item&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Kale</td>
<td>Broccoli</td>
<td>Collards</td>
<td>Cauliflower</td>
<td>Kale</td>
<td>Collards</td>
<td>Chopped, with entirety in a.m. or p.m. spread</td>
</tr>
<tr>
<td><strong>Veggies 2</strong></td>
<td>Squash</td>
<td>Carrots</td>
<td>Green beans</td>
<td>Onions</td>
<td>Squash</td>
<td>Novel Item&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Carrots</td>
<td>Chopped, with entirety in a.m. or p.m. spread</td>
</tr>
<tr>
<td><strong>Greens</strong></td>
<td>Romaine or escarole</td>
<td>Leaf lettuce</td>
<td>Novel Item&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Endive</td>
<td>Romaine or escarole</td>
<td>Leaf lettuce</td>
<td>Endive</td>
<td>Chopped, with entirety in a.m. or p.m. spread</td>
</tr>
<tr>
<td><strong>Starch</strong></td>
<td>Potatoes (cooked)</td>
<td>Apples</td>
<td>Sweet potatoes (cooked)</td>
<td>Potatoes (cooked)</td>
<td>Novel Item&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Apples</td>
<td>Sweet potatoes (Cooked)</td>
<td>Most always as reinforcement for separation or cooperative feed</td>
</tr>
<tr>
<td><strong>Citrus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Iceberg Lettuce</strong></td>
<td>Iceberg</td>
<td>n/a</td>
<td>Iceberg</td>
<td>n/a</td>
<td>Iceberg</td>
<td>n/a</td>
<td>n/a</td>
<td>1/2 in a.m. and 1/2 in p.m. spread</td>
</tr>
<tr>
<td><strong>A.M. Freebie</strong></td>
<td>n/a</td>
<td>Bell pepper</td>
<td>n/a</td>
<td>Novel Item&lt;sup&gt;5&lt;/sup&gt;</td>
<td>n/a</td>
<td>Cucumber</td>
<td>Celery</td>
<td>With a.m. spread</td>
</tr>
<tr>
<td><strong>P.M. Freebie</strong></td>
<td>n/a</td>
<td>Celery</td>
<td>n/a</td>
<td>Cucumber</td>
<td>n/a</td>
<td>Bell pepper</td>
<td>Novel Item</td>
<td>With p.m. spread</td>
</tr>
<tr>
<td><strong>Forage</strong></td>
<td>Fresh, frozen or dried fruit</td>
<td>Novel Item&lt;sup&gt;6&lt;/sup&gt;</td>
<td>cereal</td>
<td>HiPro biscuit</td>
<td>Popcorn or rice cakes</td>
<td>Seeds or nuts</td>
<td>cereal</td>
<td>Most often spread for both groups, or handled during training</td>
</tr>
</tbody>
</table>

**NOTES:** Food items are cut the previous day. Food items that remain the same each day, as well as food items charted here, are contained within an additional chart system that provides amounts of each food item for each gorilla group.

<sup>1</sup> Novel items of this veggie group (the Brassica genus) can include Brussels sprouts (cooked), Belgian endive, rapini, different types of cabbages, mustard/tunilp greens, kohlrabi.

<sup>2</sup> Novel items of this veggie group can include corn, leeks, shallots, eggplant, asparagus and beets.

<sup>3</sup> Novel greens can include other lettuces, spinach, bok choy, mesclun mix, radicchio, water cress, parsley, cilantro, frisee, mizuna and arugula.

<sup>4</sup> Novel starches can include different varieties of apples, jicama, rutabaga, parsnips and turnips.

<sup>5</sup> Novel freebies can include tomatoes, green onions, celery root, various radishes, various sprouts, fennel bulb, lemon grass, snow peas, sugar snap peas and tomatillos.

<sup>6</sup> Novel forage foods can include fresh/frozen small vegetables, canned peas beans, cooked pastalove, Pretty Bird diet, insects.

With supervisor’s approval, infrequent items—like hard-boiled eggs, coconut, peanut butter sandwiches, avocados or artichokes, may occasionally count as a replacement for a food group.

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### Recipe for 16 ounce Natural Pain Relief (NPR) Smoothie:

- 1/2 cup hot water, into which 12 NPR capsules have been dissolved; 4 cups water; Juice of 2 oranges or 1 grapefruit; 2 cups fresh fruit*; 2 peeled bananas. All items are added to a blender until liquefied smooth, then evenly distributed among 4 cups. *i.e.: strawberries, kiwi, pineapple, pear, melon, grapes, apple, mango

### Fruit (other than Bananas):


### Browse:


*also useful as forage items.
<table>
<thead>
<tr>
<th>Food Group/Type</th>
<th>TIMMY 1.0 WB 1959</th>
<th>Tunuka 0.1 WB 1963</th>
<th>Paki 0.1 CB 26Mar89</th>
<th>Troop Total 1.3</th>
<th>**FRANK 1.0 WB 1964</th>
<th>Jelani 1.0 CB 06Jan97</th>
<th>Kicho 1.0 CB 25Mar97</th>
<th>Bengati 1.0 CB 01Jun98</th>
<th>Cecil 1.0 CB 03Nov98</th>
<th>Troop Total 5.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veggies 1</td>
<td>2 lbs.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
</tr>
<tr>
<td>Veggies 2</td>
<td>2 lbs.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
</tr>
<tr>
<td>Greens</td>
<td>2 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>1.5 lbs.</td>
<td>6.5 lbs.</td>
<td>2 lbs.</td>
<td>2 lbs.</td>
<td>2 lbs.</td>
<td>2 lbs.</td>
<td>10 lbs.</td>
</tr>
<tr>
<td>Starch</td>
<td>1 lb.</td>
<td>.5 lb.</td>
<td>.5 lb.</td>
<td>.5 lb.</td>
<td>2.5 lbs.</td>
<td>.5 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>4.5 lbs.</td>
</tr>
<tr>
<td>Citrus</td>
<td>2 oranges or 1 grapefruit</td>
<td>1.5 orange or .5 grapefruit</td>
<td>1.5 orange or .5 grapefruit</td>
<td>1.5 orange or .5 grapefruit</td>
<td>6.5 oranges or 2.5 grapefruits</td>
<td>2 oranges or 1 grapefruit</td>
<td>2 oranges or 1 grapefruit</td>
<td>2 oranges or 1 grapefruit</td>
<td>2 oranges or 1 grapefruit</td>
<td>10 oranges or 5 grapefruit</td>
</tr>
<tr>
<td>Fruit</td>
<td>2 bananas or 1 lb. fruit</td>
<td>1 banana or .5 lb. fruit</td>
<td>1 banana or .5 lb. fruit</td>
<td>1 banana or .5 lb. fruit</td>
<td>5 bananas or 2.5 lb. fruit</td>
<td>1 banana or 1/2 lb. fruit</td>
<td>2 bananas or 1 lb. fruit</td>
<td>2 bananas or 1 lb. fruit</td>
<td>2 bananas or 1 lb. fruit</td>
<td>9 bananas or 4.5 lbs. fruit</td>
</tr>
<tr>
<td>Iceberg Lettuce SarafuFr</td>
<td>2 heads</td>
<td>1 head</td>
<td>1 head</td>
<td>1 head</td>
<td>5 heads (7.5 lbs.)</td>
<td>2 heads</td>
<td>2 heads</td>
<td>2 heads</td>
<td>2 heads</td>
<td>10 heads (15 lbs.)</td>
</tr>
<tr>
<td>A.M. &amp; P.M. freebies Mf'WeiPrSa</td>
<td>2 lbs. x 2</td>
<td>1 lb. x 2</td>
<td>1 lb. x 2</td>
<td>1 lb. x 2</td>
<td>5 lbs. x 2</td>
<td>1 lb. x 2</td>
<td>1.5 lbs. x 2</td>
<td>1.5 lbs. x 2</td>
<td>1.5 lbs. x 2</td>
<td>7 lbs. x 2</td>
</tr>
<tr>
<td>Forage Foods*</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>2 to 8 cups</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>.5 to 2 cups</td>
<td>5 to 2 cups</td>
</tr>
<tr>
<td>Leaf/Eater Chow</td>
<td>4 cups</td>
<td>2 cups</td>
<td>2 cups</td>
<td>2 cups</td>
<td>10 cups</td>
<td>2 lbs.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>1 lb.</td>
<td>6 lbs (3 lbs. a.m. &amp; p.m.)</td>
</tr>
<tr>
<td>Leaf/Eater mush in cone</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>32 oz. per day</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>4 oz. x 2</td>
<td>20 oz. x 2</td>
</tr>
<tr>
<td>NPR Smoothie</td>
<td>16 oz. x 2</td>
<td>16 oz. x 2</td>
<td>n/a**</td>
<td>16 oz. x 2</td>
<td>n/a</td>
<td>16 oz. x 2</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Undiluted Juice</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>1 cup x 2</td>
<td>n/a</td>
<td>n/a</td>
<td>1 cup in a.m.</td>
<td>1 cup in a.m.</td>
<td>n/a</td>
</tr>
<tr>
<td>Children's chewable vitamin</td>
<td>1 in a.m. cone</td>
<td>1 in a.m. cone</td>
<td>1 in a.m. cone</td>
<td>1 in a.m. cone</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>Oral birth control</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Browse</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
<td>Ad lb</td>
</tr>
</tbody>
</table>

*See separate chart for allocated amounts of specific forage foods per gorilla.

**Due to Frank's health issues, he receives a mid-day Smoothie of raw vegetables (approx. 1 lb. per type) and 2 cooked vegetables (approx. 1 lb. per type) in the p.m.

***Helen receives one Archway Coconut Macaroon cookie twice a day, in place of the smoothies the rest of her group gets.

**Allocation per gorilla for commonly used FORAGE foods:**
1-2 cups: Grapes and other small fresh fruits
1 cup: frozen berries or other frozen fruits, raisins and other dried fruits, seeds, nuts, canned beans, rice, pasta, Pretty Bird diet.
2 cups: cherry/grape tomatoes, canned/frozen small vegetables, non-sugary cereal; popcorn, rice cakes (2-4 disks), HiPro biscuits.
1/2 cut: insects. Novel items or replacements can be made at supervisor's discretion.
The time of distribution of highly preferred food items — those of the starch and fruit groups — varies as well, but these items are almost always handfed to individuals or thrown to them during food tosses from the facility’s roof into the outdoor exhibits. Hand feeding may occur when the gorillas are separated from one another or when an entire group is together. Often, a portion or the entirety of each gorilla’s fruit ration is distributed during the training sessions that follow the separation of individuals within holding during the afternoon shift. During this shift, each gorilla receives their second “mush cone” of the day as well. If the shift occurs late enough in the day, the geriatric gorillas receive their afternoon smoothies at this time. If the shift occurs earlier, the aged gorillas receive their afternoon smoothies as late as possible in the workday. Paki receives a cup of juice, and Helen receives an afternoon coconut macaroon as well.

For further enrichment purposes, food items may also be, distributed cooked if usually given raw; distributed raw if usually given cooked; distributed frozen; left whole; presented in or on indestructible foraging devices; packaged in destructible containers. Silverback Frank has a history of teeth problems and currently only has one molar present. Thus, he has no grinding surfaces on which to chew, so he receives handfed items throughout the day to maintain his health and weight. He is still allocated, however, food items on which to forage with the rest of his group. His specialized diet is depicted in the following chart:

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Food Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early morning (a.m.)</td>
<td>16 oz. smoothie, citrus and mush</td>
</tr>
<tr>
<td>Throughout the day</td>
<td>Frank may forage with the rest of the group for food items commonly used for social feedings.</td>
</tr>
<tr>
<td>During shifting, co-op feeds or food tosses</td>
<td>Frank may receive 2 types of raw vegetables, plus 1 cup fruit juice and water.</td>
</tr>
<tr>
<td>Between 11 a.m. and 1 p.m.</td>
<td>Frank receives a blended drink of 2 types of raw vegetables, plus 1 cup fruit juice and water.</td>
</tr>
<tr>
<td>Between 2 and 4 p.m.</td>
<td>Frank receives 2 types of cooked vegetables.</td>
</tr>
<tr>
<td>Late afternoon (p.m.)</td>
<td>16 oz. smoothie</td>
</tr>
</tbody>
</table>

Browse is considered a daily dietary item, and the gorillas receive it at varying times during the day. During colder weather when leafy browse cannot be collected from zoo grounds, the gorillas receive timothy, alfalfa, vegetation from on-ground greenhouses, or branches from which to ingest the bark. Infrequently, the gorillas may also receive phone book pages to eat. Lastly, future potential or planned modifications to decrease caloric intake including replacing Marion LeafEater biscuits with Mazuri Primate Browse biscuits, which contain less protein and fat but more fiber and replacing juice with a non-calorie substitute (such as Crystal Light).

To provide an enriching form of hand-feeding outside of training, PVC feeders were constructed and attached to the mesh of each room of the holding area where the gorillas routinely separate. Photo shows Timmy getting biscuits. Photo courtesy of the author.

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Rearing Gorillas in Peer Groups at the Nursery of Stuttgart’s Wilhelma Zoo
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Introduction: Since 1973 fifty-two gorilla babies, who were not taken care of by their mothers for various reasons, have been hand-reared at the Wilhelma Zoological and Botanical Gardens in Stuttgart. Twenty-two of them were born here, whereas thirty were sent to us from other zoos. The Wilhelma's great ape nursery is next door to the great ape house. Opened in 1982, it was specially constructed for the purpose of hand-rearing young apes with conspecifics in peer-groups, instead of hand-rearing them singly and only in contact with human surrogates. Previously our ape infants had been raised at the family home of long-time ape keepers, Heinz and Gundi Scharpf. Since – much to our relief – most of our apes in the great ape house finally started to rear their offspring in the group, we decided in 1987 to offer the nursery facilities, as well as the experience and dedication of our staff, for ape babies from other zoos co-operating in the EEP (European Endangered Species Breeding Program) for lowland gorillas. Among the 90 ape babies of all species (4 chimpanzees, 12 bonobos and 22 orangutans) hand-reared at the Wilhelma Zoo so far, the 52 gorillas are the biggest proportion, they are our main "clients."

At present, the EEP species committee is working on the second edition of husbandry guidelines for gorillas (the first edition was finished in 1993). In this context, criteria for the decision when to "pull" a baby from their mother, hand-rearing procedures in general, and procedures for early introduction to the mother or a surrogate are under discussion. A questionnaire on the success and failure of hand-rearing and early introductions of gorillas in the years since 1980 has been sent to member collections. It is hoped that the data will allow us to compare the methods and results of the Wilhelma ape nursery with methods and results from other places, so that we can better identify what the best methods are. At the same time, the great ape TAG (Taxon Advisory Group) of EAZA (European Association of Zoos and Aquaria) is also working on guidelines for hand-rearing apes.

Gundi Scharpf at her home, before the Nursery was built.

However, it may not be possible and not even recommendable to set strict rules regarding how to hand-rear a gorilla, because there is no "one and only recipe." They are all individuals, each case is different, and the more experience the keepers gain, the more flexible they can be in response to each case. If a gorilla baby has to be hand-reared, an experienced keeper should take care of them. The chances for a successful reintegration of the baby into the natal group (to the mother, another lactating female, or a female who allows bottle-feeding of the baby) or for the introduction to a surrogate mother at another zoo have to be thought over carefully. If there is no realistic prospect for that, then the owner of the baby and the species coordinator/species committee decide on a transfer to the Wilhelma nursery. In case of a positive decision, it is in the best interest of the animal to do the transfer as soon as possible. We not only have to care for the baby's physical well-being, we also do our best to support their social and psychological development, as it must be our final goal to raise a gorilla who will have normal social relationships with the members of a breeding group, breed and hopefully rear their own offspring.
Three inside enclosures and one outside enclosure are separated from the visitor area by glass walls. Visitors have a close view of the animals, but there is no hygienic risk. The bottom level of the enclosure floor is 50 cm higher than the floor of the visitor area. Thus, the young gorillas can look into a visitor's face, especially a child's, more easily, and vice versa. The inside of room 1 is separated from the visitor area and from the kitchen by glass walls, so that visitors and gorillas can watch the keepers working, and the keepers can "supervise" the gorillas from the kitchen. From all three inside enclosures the gorillas can see each other through the glass sheets.

Inside rooms 1 and 2 are connected by a door. There is wire mesh above the glass sheet and the connecting door, so that the gorillas can "keep in touch" as well. There are four night dens, two of which are connected by wire mesh. The gorillas in night dens 1 and 2 can see and hear a conspecific in night den 3, but not in night den 4, which is therefore used for other purposes. Instead, the store room, which is constructed as a cage, can be used as a night quarter for one or two gorillas. The nursery has its own little laundry as well as a room for technical equipment, a bathroom, and a room for the keepers on duty. A keeper stays overnight, if a gorilla is very sick or as long as a baby still has to be bottle-fed during the night. The keepers' room is also the first home of neonates and new arrivals: Here, "behind the scenes", away from the public and press photographers, a baby arriving from another zoo is introduced to one of our keepers by their trusted keeper, who accompanies the baby to our nursery, and stays until the baby accepts being bottle-fed by our keeper.

**Bottle-feeding:** We use Playtex disposable nursers for bottle-feeding young apes. This system provides a nipple and a bottle which consists of a holder and disposable bottles which are placed into the holder and then can be filled with milk. The great advantage of this system compared to normal bottles is that the disposable bottle contracts as the milk is sucked out, eliminating air getting into the bottle and baby's stomach. Newborn gorillas are fed human newborn formula. The neonate is bottle-fed on demand which is about every two to three hours. The daily ration of newborn formula is one sixth of the gorilla's body weight. The number of feedings per day (24 hours) is reduced from between eight and ten in the beginning to between four and six from the fourth week of life on. After six to eight weeks newborn formula is gradually changed to older infant formula over a five day period. The daily ration of older infant formula is one tenth of the gorilla's body weight. Bottle-feeding of older infant formula is continued for two to three years, in addition to the feeding of fruits, vegetables, and fresh twigs and leaves. We are convinced that the infants need to suck until then for their emotional well-being. Mother-reared gorilla infants are also nursed up to that age.

**Security blanket:** The security blanket has proved to be an indispensable part of a hand-reared gorilla infant's comfort, perhaps using it as a substitute for his/her mother's fur. It is their instinct to cling to something. Although – at least during their first six months of life – they are carried by or in close body contact to the keepers most of the time they are awake, they do have to be set down sometimes. So they hold on to their security blanket during a diaper change or when...
they go to sleep. Often, a stuffed toy like a teddy bear will do instead, making it much easier for the keeper to leave them.

**Furnishings and keeping conditions:** Furnishing of the inside rooms depends on the inhabitants' age. A neonate will stay on the keeper's arm or lap when it is first introduced to conspecifics. We use play-pens which we can put into the enclosures to keep younger infants (aged 3-6 months) safe until they can move/climb. One play-pen is so big (2.3m by 1.5m) that the keeper can sit in it with the infant being introduced to conspecifics. Another one has a roof, so that an infant can stay inside and remain in (protected) contact with conspecifics, even when the keeper leaves the enclosure. There are several wooden platforms and climbing structures, ropes, and nets. Depending on their age, the gorillas use different sleeping quarters: As neonates, they sleep in a normal baby bed. Once they begin to climb, they can sleep in the roofed play-pen during the day, but stay in the cages fixed to the walls of the enclosures during the night. These cages are made of stainless steel bars and have a soft floor cover. If an infant gets tired, they can sleep here without being disturbed by conspecifics, but still be in close contact with them. They are used as sleeping quarters up to an age of 2 years. The older infants spend the night in the so-called night dens (see outline of the nursery) and get used to the routine of moving between the main enclosure and a separate unit through a sliding door. This prepares them for their life in another zoo. During the day, they very much like to take a nap in the hammocks made out of used fire hoses. Strips of paper, wood-wool and towels or cloth are offered as bedding material and for play.
keep humidity at a high level of 60 - 70%. Air temperature is kept at 22 to 25° Celsius. Fresh air comes through a window in the roof. In the summer, more than half of the roof can be opened for ventilation.

**Contact with keepers:** We have seven keepers (at present 6 women and one man) trained to work in the nursery and taking turns. If necessary, one of them is on night duty, whereas two others take over during the day, staying at least from 6 a.m. to 6 p.m. We try to keep the number of persons who are in direct contact with the young apes limited, because that seems better for their development than a constant change of caretakers. Therefore, direct access to the nursery gorillas is strictly forbidden for media people, VIPs or any other strangers. This also helps to keep the risk of infections low. As foster mothers, the keepers are not only responsible for feeding the animals, but also for cleaning, diaper changing, playing, tickling, hugging, caressing, protecting, consoling, entertaining, and educating.

At least once in the morning and once in the afternoon, a keeper joins each gorilla peer-group in the enclosure. If the gorillas want physical contact, they approach the keeper to play or to be caressed. The keeper calls the animals by their names while playing with them. The young apes have to learn to follow certain orders, like to come to the keeper to get their milk bottle, if the keeper calls them, and hand the bottle or cup back to the keeper after finishing their drink. They learn to let the keeper put baby oil on their hands and feet twice a day so that their skin does not become chapped. As all these "rituals" are repeated daily and by every keeper consequently, the gorilla infants quickly learn what they are expected to do. We feel that a trustful relationship with the keepers and the permanent contact with conspecifics are the best basis for a normal social development of hand-reared gorillas and for their future integration into family groups.

**Contact with conspecifics:** Gorillas normally arrive in the nursery between the age of a few days and a few months and are introduced to conspecifics as soon as possible. The way in which the introduction is done depends on their age and character. The older the infants are on arrival, the more time and patience it takes. The infants' physical and mental stage of development differs, as does their temperament. One of the most difficult cases we had was the confiscated young male Gugas, who was wild-caught, smuggled to Portugal, and then transferred to our nursery. He did not trust any human and bit the keepers when he arrived. It was amazing to see his behaviour change gradually. One and a half years later he left the nursery as a normal and happy gorilla and was successfully integrated into the group of Belfast Zoo within only a few days. It is also always amazing to see how careful and gentle the older ones are, when they first meet a gorilla baby. They investigate it with their lips, they try to take it in their arms, but they get a shock when the baby holds onto their hair. Supervised by their trusted keeper they learn how to handle a baby, as they would normally learn it in their family group. Both parties, the older infants and the babies, profit from this experience. The older the youngsters become, the better they learn to get along with each other, and the more the keepers retreat. Younger infants are only left alone with older conspecifics, if the keeper feels it is safe. If groups are mixed and the doors between the enclosures are opened, the keeper stays with the infants at first, trying to give every animal the same amount of attention and affection. At the appropriate time, the keeper will leave the room and watch from outside. This time span is extended gradually. It helps a lot to put different objects to play with in the enclosure to keep the gorillas occupied.

**Veterinary care:** The guidelines on veterinary care have recently been updated. This was done by John Lewis of the International Zoo Veterinary Group in cooperation with the Wilhelma Zoo’s vet, Wolfram Rietschel, who is at the same time the gorilla EEP’s and the great ape TAG’s veterinary advisor.

**Transfer to a new home:** After three years in the nursery, the gorilla infants are independent, self-confident and well-balanced enough to join adult gorillas. The EEP species committee decides where they should be sent. Not only genetic aspects are important for the choice of their new home. We have to look at the availability of an adult gorilla who is willing to support the infant, at the avail-

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*Nursery head keeper, Elke Kastner with Kissa, Kivu and Kiondo, as the public looks in from behind the glass.*

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ability of potential playmates, and—in the case of a hand-reared female—for the availability of a female who will be a good model for maternal behaviour. When the time of transfer comes, the transport crate is stuffed with wood-wool and cloth (security blanket!). The crate has a handle or something similar to hold on to for the gorilla. Moreover, it has an opening or a window so that the keeper can see the animal and talk to them as soon as they wake up from anaesthesia. The keeper can also provide food and something to drink through this opening. The gorilla should always be accompanied by a trusted keeper on the way to their new home. After arrival at the new home, our keeper stays with the young gorilla until they accept milk or food from the new keeper, which normally happens within one day. A supply of milk and food the animal is used to should always accompany the shipment. The diet will often be changed in the new zoo, but the gorilla should gradually get used to it, because everything else is also new to them.

As soon as the animal knows the new environment a little better and has gained confidence in the new keepers, the introduction to the other gorillas can begin. Our keeper will discuss the best way to proceed with the new keepers, and is often still present when the first introductions start. Various factors have an influence on the duration and success of the integration process:

- the size, age and social structure of the group, the character of each individual, the reproductive status of the females (females in estrus might react aggressively), and especially the availability of an adult who is willing to protect the new infant and allowed to do so by the other group members;
- the age and the character of the gorilla to be integrated;
- the size and structure of the enclosures (first contact must be possible through a fence or railings so that the keepers can see how the gorillas react to each other and then decide to whom they first introduce the hand-reared individual);
- the number of connecting doors between different enclosures and the possibility for the new gorilla to retreat from the others (i.e.: through a selective sliding door);
- the experience, understanding, and patience of the keepers.

Depending on all this, it is not possible to predict how long it will take to fully integrate a hand-reared go-

Current Nursery staff with some charges.

tilla into a group. It may take 2 days but it may also take one year or longer. If the integration of one of our hand-reared gorillas into an established group works out well, if the young gorilla gets into social contact with the different members of the group including the silverback, if he/she reaches sexual maturity and mates, if he/she sires or gives birth to the first offspring and, finally, - in the case of females - if she rears her baby herself, then we consider our hand-rearing methods as ultimately successful.

Discussion: To date, twenty-two of the 27 female gorillas hand-reared at the Wilhelma Zoo have reached sexual maturity. Eight of these took care of all their offspring. Six of these eight females had had a model for maternal behavior in the group, before they gave birth, but two had never observed a mother rearing her baby. So having a model is not an indispensable condition for mother-rearing own offspring, even if it raises the chance to do so.

Mora, reintegrated into the Wilhelma’s family group, did not take proper care of her first baby, which was therefore hand-reared. Her second offspring died after 3 days with the mother. But Mora took good care of her third baby, until it was kidnapped by the silverback after 3 ½ months (shortly after this, Mora had to be euthanized because of leukemia). Neema rejected both babies she delivered so far, which might be caused by the fact that she is under pressure from a higher ranking female. Dafina took care of the three babies she delivered so far for a few days (6 weeks in one case), before rejecting them. Her mother, Dina at Stuttgart, has shown a similarly bad rearing behavior. She took care of her babies for a few days (16 days was the longest time span) before she left.
them alone, clearly showing that she was “fed up” with this tiring job. Our female Undi (wild caught and imported from Africa as an infant, just like the two other Stuttgart females Dina and Mimi) reared her daughter Amani for 10 weeks, before she gave up and handed the job over to the keepers. It was clear that both Undi and Dina knew how to rear, but they did not like to do so. In contrast to them, Mimi never took care of her offspring, not even for a few days – until she gave birth to her ninth offspring, the male Maayabu (“Wonder”) in 1988. She perfectly reared this baby, as if she had always done so. We have no idea what caused this change. Mimi also reared her tenth offspring (daughter Mutasi) and currently rears her eleventh baby (daughter Shira). The remaining 10 (out of 22) female gorillas of breeding age hand-reared at the Wilhelma Zoo have not reproduced so far. In some cases (Momo, Ukiwa, Sheila, Grace) there are hints that the problem may lie in the males they are paired up with.

To date only 8 or 9 out of the 25 male gorillas hand-reared at Stuttgart (in some cases for a very short time span only) have reached sexual maturity and were/are in a breeding situation (5 others were transferred to bachelor groups, one was castrated). Four of them have sired offspring (Hobbit, Golo, Obsus, and presumably Mojoko) so far. Four others (Efata, Yangu, Jitu, Gugas) have been seen mating, but so far without result. One (Makokou) was never seen mating. To recap, approximately half of the gorillas of both genders who have been hand-reared at the Nursery at Wilhelma and live in a breeding situation, have not reproduced so far. A questionnaire on the problem of non-reproductive females and males in the gorilla EEP has recently been circulated and will hopefully help us to better understand the causes – and find suitable solutions.

At this time (January 2005), we do not yet have the data for reproductive and maternal success of gorillas hand-reared at other places, so we cannot compare the data for gorillas hand-reared in peer groups at our nursery with the data for gorillas reared singly. However, the Primatology Working Group of the Cologne Zoo did an analysis of the long-term development of the European ape populations. According to that study, 30% of the historical European gorilla population (1950-2002) consists of hand-reared individuals. The population steadily increased in size and will continue to grow, they say, the proportion of non-reproductive individuals, as well as the proportion of hand-reared and mother-reared females, who do not rear their offspring, remains high. So, what seems more important than the general discussion on hand-rearing, versus leaving the baby in the group even if that costs its life, is research and discussion on the best methods for hand-rearing (and early introduction) and on the causes of bad reproduction and rearing behavior in the whole captive population, not only in hand-reared individuals.

The reproductive and maternal success of a gorilla not only depends on the time spent and experiences gained at the nursery, it also may depend on experiences gained before and after arrival to/departure from the nursery. Some factors with a possible effect on reproductive and maternal success have been mentioned earlier (like the factors which influence the integration process, or the chance to observe mating and rearing behavior in other gorillas) and need much more attention and research. Some ethical issues also remain under discussion:

- Should the sex of a gorilla baby play a role for the decision if we risk his/her life to give the mother every chance to rear? Should we take a higher risk, if the baby is a male?
- Should the genetic background play a role for this decision? Should we take a higher risk, if the baby comes from a so-called over-represented line?
- Is euthanasia (if allowed under national law – which is different in different European countries) preferable to hand-rearing in general, or to the risk that a baby neglected by the mother might be maltreated and killed by other group members?
- Is euthanasia preferable to hand-rearing a male infant who would otherwise have to spend the rest of his life in a bachelor group?
- Or is castration a better option, meaning the male could stay in a normal family group?

Problems like these probably cannot be solved by strict guidelines. But it is the responsibility of gorilla holders (species committee members, ape TAG members) to deal with them. While a lot of questions cannot be answered for the time being, we have decided to change something in the nursery of the Wilhelma Zoo. At present, the nursery building is separate from the great ape house so that the hand-reared infants cannot see the adult gorillas. They leave the nursery as self-confident young gorillas, but of course they have not learned the whole spectrum of
gorilla etiquette. Sometimes they dare too much and charge the silverback, instead of showing more appropriate submissive behavior. This is not a problem for a relaxed, socially experienced silverback, who will teach the newcomers their limits without getting too aggressive. However, there have been cases in which an infant was severely attacked and bitten by an adult male or female in such a situation. If they do not have the comfort and support of another group member at such times, they may be very intimidated for a long time. Maybe a better way to teach them the missing lessons is to let them learn by observations.

We are planning a new ape house including naturalistic outside exhibits and a nursery integrated into the enclosures for the family group. In the future, if hand-rearing of a gorilla baby is necessary and early reintroduction to the natal group is not possible, we can rear them in a group of conspecifics and in constant contact to adults (see, hear, smell, even touch through wire mesh).

Since our family currently consists of five socially experienced adult females, a very playful silverback, and three mother-reared infants, it might even be possible to socialize nursery gorillas with individuals of the family group. It will hopefully facilitate their group integration at other zoos, and maybe they will also profit from watching gorilla family life (including maternal behavior) from their early childhood on.

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All photos courtesy of Stuttgart’s Wilhelma Zoo.

Silverbacks: Scotty, by Heidi Genter; Lash, by Perry Beliz; Max, by Geoff Creswell
New Gorilla Zoo in the Netherlands
Tjerk ter Meulen, Limburg, The Netherlands

In April 2005 GaiaPark Kerkrade Zoo in the Netherlands will open its doors to the public. This new park is a combination of a zoo and a theme park and is named after the Greek goddess “Gaia,” which stands for the connection between everything that lives or has lived on the earth. The zoo is located in the southern Dutch province of Limburg, a part of the country that was extremely cold in the ice age, but was also included in the tropical zone during the Carboniferous period. This historic information about Limburg is used as the basic story line in the education of the visitors to the park, and the different ecosystems that are displayed in the zoo.

Entering the park, the visitors first walk into the “Limburg area,” which is a copy of a typical old style (beginning of the last century) Limburg village with all kinds of old but also rare Dutch farm animals. From this point the visitors can choose different routes to walk, e.g. via ice age, the tundra, Europe and back to Limburg. Or you can go through the “coal mine,” the Carboniferous via Amazonia and Congo back to Limburg. Finally visitors can take the “dino route” via Cretaceous to Namibia back to Limburg. Visitors can also go a long way around the whole zoo, but then choose specific animals to see without so many historic themes.

Every area has its own animals. Europe is represented by Prezwalski horses, wolves, otters but also by suslick and aur-ox. Tundra has wolverine and reindeer in an mixed exhibit with musk-ox and snow hare. Namibia has mixed savannah animals, but also carnivores like the African wild dog and cheetahs. Amazonia has a big walk through aviary for all kinds of birds and another walk through area for squirrel monkeys. Lowland tapis, capybaras and capuchin monkeys also represent Amazonia. Congo has pygmy hippos, bongos, red river hogs, mon- goose and, last but not least, gorillas!

The gorilla building is situated between two “green zones,” which is one of the reasons the roof will be planted with thousands of Hedera plants, so that in a couple of years the building will be one with the surroundings. The visitors walk on a path with the same woodchip bedding as the gorillas. Visitors can see the gorillas through large windows on both sides. On one side they can see the animals in their indoor enclosure, and on the other side they can see them outside. The visitors are more or less walking in a tunnel between the inside and outside gorilla enclosures, creating the feeling that they are a “part” of the exhibit.

There are two ways that the gorillas can go from their inside enclosure to the outside enclosure, and vice versa. There is a tunnel above the visitors as well as a door at a lower level. The way the building is designed, the public can always see the apes, and the apes, on the other hand, can always choose if they want to spend their time inside or outside!

The inside 200m² enclosure is separated into 5 big areas for the gorillas. The height usable for the gorillas is approximately 4 to 5 metres. For the gorillas there is a balcony which they can climb up on via tree trunks and ropes. Between the tree trunks there are platforms where they can relax. From these platforms it is easy for them to go to the balcony. These platforms can furthermore be easily used by the keepers who have to clean the balcony. The tree trunks which are used to make the climbing structure are chestnuts over 6 metres long and a diameter ranging from 20 to 35 cm.

The different enclosures are separated by ¾ walls and ¼ glass. The building is half round, enabling the public and the gorillas to look from one enclosure into the other, but also allowing the gorillas to sit out of sight. Twelve hydraulic sliding doors allow the different parts of the enclosure to be closed off when necessary. There are sliding doors approximately half a meter above the bedding and there are some on the balcony so the animals can go up and down and walk around without a dead-end. As
added safety measures, there are also small windows on these high sliding doors in the balcony, so the keepers can check on the animals. On the concrete floor there will be about 40 centimetres of woodchips and bedding, and of course the gorillas have straw to make nests and to entertain themselves. One of the five parts of the enclosure can be used as a separation cage and has an extra fenced wall with a roof on 2.4 metres, so this can be used for darting or other (medical) treatment. The gorillas will go through this cage every day so it will be a part of their daily routine. In this part there is also a sliding door to an extra outdoor enclosure of approximately 40 m², so if an individual has to be separated for a long period of time, they are able to go outside.

The outside enclosure is an island of 3000 m², surrounded by a water moat of approximately 1.6 metres deep, and a width ranging from 5 to 8 meters. The island has different ground levels which gives the animals the opportunity to spend time alone, if they want to be out of sight from the public and the other animals. On this island there are trees surrounded by electric fencing so the gorillas will not tear them down. There are also trees they can climb in and which give them a nice view over the “Congo.” In some places there are “beaches” and these are perfect places for the public to see the gorillas. There is a little area where the public can see the gorillas, while the keepers give a talk and feed them several times a day.

Together with the gorillas, another primate species will be kept in this enclosure. At the moment we are not sure yet which species it will be but most likely a monkey, like a guenon or a mangabey species. For the monkeys there are 3 smaller cages with a total of 40 m² and the same height as the gorilla enclosures. From these enclosures the monkeys can go to the gorilla enclosures via a tunnel inside the building, and there is also a way to the outside enclosure that the monkeys can use to come on the island directly. Of course in the future we will learn if it works out well with the two species together, but nowadays there are lots of examples of mixed species exhibits with gorillas and another primates. Since our building can be separated into several smaller enclosures it is possible to give access to different enclosures for the different species.

We think that it is certainly possible to keep a group of at least 10 gorillas in this building, but of course this is not what we will start with. As soon as we are finished with the enclosure, we will receive 3 gorillas from Apenheul Primate Park (Apeldoorn, the Netherlands). Our silver back will be Makula, the 15 year (born 10Feb90) oldest son of Apenheul silverback Bongo. Makula’s half-brother M’tonge will also join him at GaiaPark Kerkrade. He is 6 years old (born 23Feb99) and mothered by Tsimi. After Tsimi died in October 2001, Makula took care of him (see photo above) and that is why it was decided they should stay together. Last, but not least, our only female, Irala, will come. She was born (30Apr85) in Krefeld (Germany) and came to Apenheul in 1997, where she raised one son. In Apenheul these three individuals already live separated from the group, so when they arrive in their new “house” they hopefully will soon calm down and find their place. Of course we hope for more gorillas to arrive shortly as in this situation Irala is the only one who can decide if the group will grow or not!

For more information, please see www.gaiapark.nl

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Update from article by Leo Hulsker, which appeared in the June 2003 Gorilla Gazette.

In August 2002, four young male gorillas were sent from Howletts Zoo in England to the Schmutzer Primate Centre in Jakarta, Indonesia. The four were: Kumbo (7) Kihi (7) Komu (5) and Kidjoum (4.5). Three keepers accompanied them on the three-day journey – Darma Jaya Sukmana and Dwi Suprihadi from the primate centre (who had both been learning about gorilla husbandry at Howletts) and myself. We had access to the hold throughout the journey in order to monitor them and to give them food, water and fruit juice with Diazepam to help reduce the stress of the flight. Upon our arrival in Jakarta, they were loaded on to a truck and given a police escort to the zoo bypassing the usually grid-locked Jakarta traffic.

Their new enclosure consists roughly of 10,000 m² of grass, shrubs and trees surrounded by a water moat, with an inside yard and sleeping dens modeled on the gorilla house at Howletts. I stayed with the gorillas for two months, to help with the transition from their old way of life to life in a tropical climate with many new sights and smells, before returning to England, leaving them in the capable hands of head keeper Darma and his staff.

Two years later, having left Howletts, I began working here at the Primate Centre and found the four boys doing incredibly well, looking fit and healthy and completely acclimatized to the heat and humidity – after all, it is the same climate as central Africa. We are so used to seeing gorillas in Europe and North America that we can tend to forget they don’t originate from there. The enclosure has matured as well; the undergrowth has become thick and luxuriant offering shade and shelter from the elements as well as sight barriers from each other and the public. The trees have grown to a height of over 10 meters and also offer considerable shade, as well as climbing opportunities. As the enclosure is so large there has been minimal habitat destruction; in fact the trees and shrubs need to be cut back regularly to prevent them from growing across the moat or shorting out the electric cables on the wall of the house.

After a morning drink of fruit juice and a handful of peanuts to allow for a visual health check, the gorilla’s morning forage is spread around the outside enclosure and hidden up some of the trees. They are most active in the morning and late afternoon when it is cooler, often spending the hottest part of the day resting in one of the two artificial caves. They receive two scatter feeds of mixed fruit and vegetables usually at 12 p.m. and 3 p.m., but the times and places are varied to prevent it becoming too routine. Currently, they are all given their last meal of the day individually in the sleeping dens, which enables the keepers to monitor the amount of food for each individual and observe the animals while they eat.

There are two main seasons here, the dry season from April to October and the wet season from November to March. The gorillas seem to enjoy the thunderstorms and often display or just run through the undergrowth as the rain begins but shelter in the caves when it gets heavy. Kidjoum particularly enjoys playing in the ponds and streams and has twice walked into the moat up to his neck to retrieve food that had fallen in. At the moment, there is no serious struggle for dominance as they are all still pretty young and were all brought up together in the same family group. There is occasional tension between Komu and Kihi, but so far it consists mainly of posturing and sporadic quarrelling.
Obviously, the tension between the males will increase as they become more mature but the size and design of the enclosure should help alleviate a lot of it. There is ample room to feed all of them out of sight of each other in the outside enclosure alone. This, plus the inside areas should give us enough leeway to manage them in the future. Also, we don’t have a problem with individuals being left out in the cold for feeding or even overnight. The temperature doesn’t drop below 25°C at night and there are plenty sleeping areas with unlimited nesting material. In conclusion, the gorilla move to the Schmutzer Centre has been a great success, despite reservations from some people in the zoo community.

For each of the three scatter feeds, they get:
• 2.5kg of root vegetables: sweet potato, beetroot and bengkuang (local vegetable similar to kohlrabi)
• 2.5kg of greens: lettuce and a variety of local greens
• 3kg of mixed fruit and veg: lengkeng, sweet pepper, salak, markisa, star fruit, sapodilla, mango, guava, sweet corn and onion.

For the evening individual feed: 2.8kg mixed fruit and veg. from a selection of banana, orange, apple, tomato, mango, melon, papaya, pineapple, cucumber, sweet corn and boiled potato.

Occasional treats are: Whole coconuts, boiled soya beans, bread, honey, sunflower seeds and a wide variety of seasonal fruit e.g. rambutan and mangosteen.

Above, left, Chart showing weight gain from date of arrival to present time (February 2005). Above, right, recap of diets. Below, left to right: Kumbo, Kihi and Komu. Bottom left: Kidjoum. Photos courtesy of the author.

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Brevard Zoo Hosts the 5th ZACC Conference
Beth Armstrong, Merritt Island, Florida, USA

The Brevard Zoo hosted the Zoos & Aquariums: Committing to Conservation conference, January 26th - 30th, 2005. Two hundred plus people were in attendance, with over 50 zoos and 13 countries represented. The program included lectures by several great ape researchers (see below). Wendy Mills of the Pan African Sanctuary Alliance gave an overview of PASA, and various other people gave lectures on education programs related to great ape programs. The conference resulted in immediate financial support for The Goualougo Chimpanzee Study and Marc and Isabel Acrenaz’s orangutan project in Malaysia. Houston Zoo will host the next ZACC conference in 2007. For a full listing of the conference abstracts, please see the Brevard Zoo website: www.joinbrevardzoo.com or contact Beth Armstrong at elynn57@aol.com (for more contact information for Beth, see page 63).

Left: Mbeli Bai researcher, Thomas Breuer; Beth Armstrong, Brevard Zoo; Becky Rose (Field Conservation Coordinator, Columbus Zoo); Mary Rose (Docent and Sulatanu Fund Donor, Columbus Zoo); Goualougo Chimpanzee researcher, Dave Morgan.
Right: Rob Shumaker of the Iowa Great Ape Trust and photographer, Ian Nichols.
Photos courtesy of the author.

- Environmental Education Tools: Suitcases and Art Images: Beth Armstrong – Brevard Zoo, Florida
- Kinabatangan Orang-utan Conservation Project: Results of a Seven Year Collaboration with American Zoos: Marc Ancranez – Kinabatangan Orang-utan Project, Malaysia
- Partnering with Sanctuaries to Deliver Educational Messages in Africa: Tammie Bettinger – Disney’s Animal Kingdom, Florida
- Can Awareness Campaigns Contribute to Conservation? Theatre and Chimpanzee Conservation: Cristophe Boesch – Max Plank Institute, Germany, Ivory Coast
- The Mbeli Bai Study: The Importance of Baseline Research, Capacity Building and Conservation Education in the Conservation of Western Gorillas and Other Large Mammals: Thomas Breuer – WCS, Nouablae Ndoki National Park, Republic of Congo
- Zoos Supporting Chimpanzee Conservation Projects in Uganda from 1996-2004: Debby Cox, Jane Goodall Institute, Uganda
- Building Conservation Partnerships: The Art of Listening: Charlene Jendry – Partners In Conservation (PIC) Columbus Zoo, Ohio
- Red Ape Encounters: Orangutan Community-based Ecotourism: Sahlin Lias – Kinabatangan Orangutan Project, Malaysia
- Saving Ndoki’s Chimpanzees: Insights from the Goualougo Triangle Chimpanzee Research and Conservation Project: Dave Morgan – WCS, Republic of Congo
- Conserving Gorillas: The Role of the Dian Fossey Gorilla Fund International and its Host Partner, Zoo Atlanta: Tara Stoinski – Zoo Atlanta/DFGFI, Georgia
Conservation Suitcases for Sanctuaries
Beth Armstrong, Merritt Island, Florida, USA

The Brevard Zoo of Melbourne Florida, the Columbus Ohio Rotary Club and the Ft. Hayes High School Interact Club, have partnered to create and fund environmental teaching suitcases for primate/ape sanctuaries in Africa. In 2004, two suitcases were sent to Limbe Wildlife Centre in Cameroon and CERCOPAN in Nigeria. Each suitcase contains an assortment of hand and finger puppets, books, games, puzzles, laminated posters and maps (for a full listing of contents see next page). These suitcases can be used both on-site and off-site in a classroom setting, village meeting or through local nature clubs. In addition to the teaching suitcase, the Interact Club created and funded arts & crafts supply suitcases which have been sent as well. In 2005 the Columbus Rotary Club was able to secure an additional $3,000 that the Brevard Zoo will match in order to create 7 more suitcases (Total: $6,000). Each suitcase costs approximately $900 to make (including shipping costs). These suitcases are extremely effective and well received as the letter below illustrates. If you would like additional information about the suitcases please contact Beth Armstrong (contact information is on page 63).

Dear Beth,

CERCOPAN has received the wonderful educational suitcase from the zoo. Thank you so much for all of this. It is really a great package, the puppets are particularly thrilling, and the crayons etc will go a long way towards our community program with the educational coloring books. The CERCOPAN Conservation Club (a particularly dedicated group of young people who meet at CERCOPAN every Thursday and help with outreach) are really looking forward to incorporating the puppets of rainforest animals into a drama production for primary schools. We will be sure to send pictures for you, and should have some soon of children coloring in Ika Esai Primary School. Thanks once again from everyone at CERCOPAN, particularly the education team: Jerry and Michael.

Sincerely, Zena Toose, Director, CERCOPAN, Nigeria

Left: Students shop for items to fill Conservation Suitcases, which bring a lot of excitement to kids in Nigeria and Cameroon.
Photos courtesy of the author.
A popular design for a zoo exhibit is a containment wall surrounding a central, raised area for the animals. There is, however, an inherent problem in this design with any animal that can move reasonably fast. Although the wall may be completely secure from a standing jump, a running jump is a completely different matter. A recent escape at Dallas was classified as a once-in-a-lifetime leap, but physics shows that if the animal is moving quickly enough, it can easily jump over a wall that would otherwise provide secure containment.

If a gorilla was traveling at 10.9 mph, it would take exactly one second to cross a 16' trench. Of course as soon as the gorilla leaves the ground, it starts falling, where the distance fallen is calculated as  \( d = \frac{1}{2}gt^2 \). In 0.866 seconds, the animal would fall twelve feet and hit the ground some two feet from the wall so they are well contained under these conditions (see Figure 1). But it makes a HUGE difference if the animal is traveling substantially faster than that.

The fastest instantaneous speed ever recorded of a human was 12m/s (about 26mph). At a speed of 25mph (and we are reminded not to try and outrun a gorilla!), an animal would be airborne for 0.436 seconds before it hit the wall. In those 0.436 seconds, the animal would fall only 3 feet - so their feet would only be 3 feet below the top of the wall and the animal could therefore easily escape (see Figure 2). If they also jumped upwards 3 feet as they leapt off the edge of the trench, they would actually sail right over the wall without even touching it. To provide the same containment as in Figure 1, the trench would now have to be some 33’ across. Note that the height of the wall (above the trench bottom) is not relevant here as the animal never hits the ground. In Figure 2, it makes no difference (other than psychologically) if the wall is 30’ high and the trench is 30’ deep.

So the point is that the horizontal velocity is vitally important in determining how high the wall has to be at the other end of the trench. I think someone underestimating the horizontal velocity of a running animal might well not understand that the wall would have to be much higher than they would otherwise guess. It’s also clear that raising the height of the wall or lengthening the trench is probably a poor solution—the correct solution would be to be to make sure that the animal cannot run off the edge of the raised mound—either by using bollards, shrubs or appropriately placed boulders to block them.


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Makoko Arrives in Johannesburg

Based on articles by Sherree Russouw 20Jan05 and Tabisa Mntengwana 14Feb05 at www.joburg.org.za. Reprinted with permission.

He took one furtive step. Then another. Then Makoko, the gorilla from Germany, put his feet on African soil for the first time. The 19-year-old gorilla was finally released from a 45-day quarantine at the Johannesburg Zoo on Thursday, 20 January 2005. A large contingent of journalists eager to get their first look at Max the gorilla's younger - and leaner - successor, greedily snapped photos of the camera-shy gorilla. Makoko - named after a river in Central Africa - arrived at the Johannesburg Zoo from the Munster Zoo in Germany in early November and has been in quarantine since, kept in a two-room quarantine facility to protect him from illness. When he ventured out for the first time on Thursday, it seemed as if the young gorilla was not at all prepared for the large crowd gathered outside his enclosure.

Every few minutes, Makoko would peer curiously at the people from behind a cluster of rocks and suddenly dart back into the quarantine facility. "He is so used to being locked up in the quarantine facility and that is why he keeps on going back to those rooms," explains zoo curator Dominic Moss. "The rooms still seem safe to him for now. It will take time for him to get used to people." Even though he disappeared into his rooms, Makoko was not entirely out of the public eye. Two CCTV surveillance cameras inside the quarantine facility offered views of him gobbling fruit and tickling himself playfully before the novelty of the crowd inevitably drew him outside again.

While the young male will make his public debut at the zoo this weekend, the real challenge is for Makoko to be introduced to the widowed Lisa. The zoo chose a romantic day for their first date - Valentine's Day (February 14th). The lonely pair, who've been neighbours since Makoko's arrival, have already had the chance to smell each other and have caught glimpses of each other through a mirror installed in their respective enclosures.

The 34-year-old Lisa has been waiting patiently for seven months to meet the European toy boy 15 years' her junior. Her long-time partner Max, who shot to fame in 1997 after taking on a criminal on the run from police, died of old age in May 2004. The zoo is hoping that the pair will breed - efforts to get Max and Lisa to breed were unsuccessful. But only time will tell whether Makoko will be a replacement for Max, says zoo chief executive Jenny Grey. Makoko is "very different" to Max, says primate curator Philip Cronje, adding he has his own unique personality. Cronje has been the only person to have constant contact with Makoko while the gorilla has been in quarantine and Cronje jokes that both man and animal "have had enough of each other." Says Cronje: "Makoko has settled down very well. He is actually very playful. He likes to laugh. He has this habit of standing up and bouncing up and down when he stare at him, which can be quite irritating when he does it for half an hour. But he loves to play."

14Feb05: The couple at the Johannesburg Zoo started Valentine's Day in a very slow and reserved manner, as they sit on two separate rocks. Makoko, 19 years old, is the new groom for 34-year-old Lisa, widowed since May last year. They met face-to-face for the first time this morning. Makoko is determined to make this relationship work. He makes moves to show Lisa that he is smitten. But Lisa is playing hard to get as she hides behind rocks in the gorilla enclosure. "People expect gorillas to rush things and be all over each other but it's not like that with animals. They take their time to fall in love and this is a perfect day to do that," says zoo curator Phillip Cronje.
Columbus Zoo Nursery Gorilla Introductions

In late 2004 two successful gorilla introductions were completed. In mid-November seven-month-old 0.1 Dotty was introduced to 41 year-old Pongi (wild-caught 0.1), once that bond was formed, Pongi and Dotty were then introduced to 40 year-old 1.0 (wild-caught) Mumbah. All went well and they have been together ever since.

In August surrogate mom Sylvia passed away, her adopted infant Moana had been with her for the previous eight months. At the time of her adoptive mother’s death, Moana was about 3 years of age. Moana was introduced to 22 year-old 1.0 Mac, who became her protector. The remaining group members were then introduced, 0.1 Nia was 10 years old at the time and and 1.0 Joe was 6 years old.

Due to the 24-hour hands-on care of the nursery staff, as well as infants being exposed to conspecifics for extended periods of time on a daily basis and selecting surrogate (mom and Dad) based on their interest, infants are more easily integrated into gorilla troops at the Columbus Zoo. If you would like additional information please contact Dan Nellis or Barb Jones at the Columbus Zoo.


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Left: Debbie, wildborn 1965 to 30Aug03, as drawn by her caregiver, Roby Elsner.
Center: Brooks, 20Sep83 to 17Mar05. Photo courtesy of Cleveland Metroparks Zoo.
Right: Caesar, 01Jun77 to 04May04, drawn by artist Chisato Abe of Japan.
Deadline for the next issue of the
GORILLA GAZETTE
is December 15, 2005!

For articles for the next Gorilla Gazette, please send documents (preferably in Word format) by email or hard copy, including photos with captions to the following addresses. If emailing photos, make sure they are in JPEG formats; otherwise original photos can be scanned and returned to author if mailed. Documents may be faxed to (USA) 706-374-4491.

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Left: "Gorilla Workshop Doodles" by Richard Johnstone-Scott. At the Calgary Gorilla Workshop, Richard drew these "doodles," which he was ready to throw away, until some sharp-eyed person, put them in the silent auction. Jane Dewar bid and won them (for a huge sum, all to help conservation!), and shares this and the other "doodles" on the enclosed CD rom with the Proceedings from the Gorilla Workshop, so everyone else can enjoy Richard's talent!
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