

the Jane Goodall Institute's

# AFRICA PROGRAMS



## Chimpanzee Sanctuary Manual



Gregoire May 2005, Tchimpounga  
Photo by Debby Cox

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 the Jane Goodall Institute

## Dedication

*To Zoro, Dosi and Kipara*



## Acknowledgements

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## ACRONYMS AND ABBREVIATIONS

AZA	American Zoological Association
BRZ	Brazzaville
CITES	Convention of International Trade in Endangered Species
CoP	Conference of Parties
CSWCT	Chimpanzee Sanctuary and Wildlife Conservation Trust
DRC	Democratic Republic of Congo
IUCN	International Union for the Conservation of Nature
JGI	The Jane Goodall Institute
NSW	New South Wales (State of Australia)
OH & S	Occupational Health and Safety Manual
OIE	International Organisation of Epidemiology
PASA	Pan African Sanctuary Alliance
SSC	Species Survival Commission
SOP	Standard Operating Procedures Manual
UWA	Uganda Wildlife Authority

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# Preface

The Chimpanzee Sanctuary Manual has been developed as part of the Africa Programs strategy to create a uniformed management system for the chimpanzee sanctuaries under the financial and administrative control of the Jane Goodall Institute (JGI)-USA.

The Manual has been developed to provide a comprehensive resource for sanctuary managers, staff and others who care for chimpanzees in captive environments of sanctuaries throughout Africa.

The underlying theme of this manual is to provide professional, high quality care for those chimpanzees unfortunate enough to be taken out of the wild and who may never have the opportunity to return. It is our duty to ensure they have the opportunity to live out the rest of their lives in peace, without fear of harm and in as normal a social and environmental setting as we can provide for them. In providing this care, we must ensure the security and well-being of the staff and of local human communities. As leaders in chimpanzee conservation and welfare, it is important, as members of the Jane Goodall Institute, that we live up to the reputation of Jane Goodall and her passion to protect and care for chimpanzees in whatever situations they may be found.

The manual utilizes information collected from a variety of sources; zoo professionals, field researchers and organisations involved in the care and conservation of the species. Three sources in particular that are worth noting here and should be considered part of the library of all the sanctuaries caring for chimpanzees are:

1. Special Topics Series, Vol 2: 'The care and management of captive chimpanzees', edited by Dr. Linda Brent, Publishers: American Society of Primatologists.
2. The Care and Management of Chimpanzees in Captive Environments', Editors Randy Fulk and Chris Garland, Publisher: North Carolina Zoo, USA.
3. Standards for Exhibiting Primates in NSW: Department of Agriculture, NSW, Australia

The first two sections of this manual are background chapters. Section one deals with the background to the Institute's involvement in captive care of chimpanzees, the differences in captive management protocols between zoos and sanctuaries, the role and involvement of the Pan African Sanctuary Alliance, the laws pertaining to chimpanzee protection and care in African range state countries and the intent of the Institute to reintroduce confiscated chimpanzees back into the wild whenever possible. The second section will provide a brief on chimpanzee ecology and the threats to their survival in the wild. It will also provide a brief section on behavioural ecology and the variations of certain behaviours between the wild and captivity. It will also cover a small section on abnormal behaviour seen in captivity.

Sections three and four will be the back bone of this manual. Section three will cover captive chimpanzee management, including chapters on veterinary care for the chimpanzees; health requirements and protocols for staff; facility design; care of orphaned chimpanzees; integration processes; management of large social groups; special needs for infants; and environmental enrichment. The last section will deal with operational procedures for sanctuaries, including staff training, development and management; operational procedures for sanctuaries, including emergency procedures, record keeping, and data collection; administrative procedures such as official agreements with national governments and those agencies working with wildlife.

This manual is intended to be a working document that will continue to grow and develop over time with additional contributions made by those who will follow in our footsteps as chimpanzee sanctuary managers for the Jane Goodall Institute.

## Section One: Background

### 1.1 The Institute's History with Sanctuaries in Africa

The Jane Goodall Institute was formed in 1977, at the time Jane Goodall's focus was conservation, education and research. Over the years, the institute has become involved in the welfare and care of chimpanzees in captive settings, mainly with zoos and sanctuaries. In the late 1980's while travelling in Africa, Jane Goodall met Graziella Cotman in Kinshasa, Congo. At the time, there were many infants being sold on the streets of Kinshasa, as there are still today. Jane agreed to help Graziella with support to care for these orphans and to work with the authorities to try and put a stop to the killing of chimpanzees in the wild for bushmeat and the pet trade. Later, due to the war, Graziella moved as many of the rescued chimpanzees as she could to the Brazzaville Zoo, located across the river from Kinshasa, where she stayed and helped to manage the ever growing number of chimpanzees being confiscated or rescued. Later, a site outside Pointe Noire in the south west of Congo-BRZ was found and a new sanctuary was created. Most of the chimpanzees were moved to this location in 1994. During this period, a half way house for confiscated and surrendered chimpanzees was being created in Burundi. This was after the Burundian authorities asked Jane Goodall for assistance in caring for the chimpanzees that were being confiscated in Burundi. In 1995, due to the political instability of the country and the continuation of civil war, these 20 chimpanzees were transferred to a sanctuary in Kenya. In 1998, another sanctuary was created in Uganda. This sanctuary is run as a trust between JGI and five other Non Government Organisation's (NGO's). The Institute was instrumental in creating this sanctuary and the formation of the trust to ensure long term financial and managerial support for the sanctuary. Today, there is the possibility of new sanctuaries being created and supported or managed by JGI in South Africa,

Management philosophies of sanctuaries differs from that of zoos. It is important to understand what these differences are. Both have a role to play in the welfare, preservation, conservation of and education about endangered species like chimpanzees. However, understanding that our organisation does not promote the proactive breeding of chimpanzees in captivity for purposes of education, entertainment or research. Rather, the Institute promotes the protection of the species in the wild and the welfare of those taken from the wild with the premise where possible of returning them someday back to the wild.

### 1.1.1 Differences between zoo and sanctuary management practices

It is generally accepted that sanctuaries provide three roles (separately or together) focused primarily on the welfare of individual animals and conservation of wildlife species.

These include:

- ✓ The provision of refuge or safe haven for animals in despair or made homeless through habitat loss, the illegal commercial bush meat trade, or other detrimental activity.
- ✓ Provision of an area for rehabilitation of confiscated orphans or injured animals before release.
- ✓ Protection of an intact area (including all its wildlife), exclusion of other land uses and the removal major threats to their survival (e.g. pest species), hunting etc.
- ✓ Reintroduction of individuals back into the wild where possible.

It is also widely accepted (see publications IUCN, WWF (International) and International Zoo Association, CBSG, UNESCO Great Ape Survival Program) that sanctuaries are not used as sources of stock for zoos but as sources of stock to the wild. Exceptions are made where survival of a species depends on intensive care or breeding conducted best in more confined conditions. It is important to note that while the ultimate goal is to eliminate the need for sanctuaries, it will take a long time for it to be realised.

The **American Zoological Association** defines sanctuaries as a facility that rescues and provides shelter and care for animals that have been abused, injured, abandoned or are otherwise in need, where the welfare of each individual animal shall be the primary consideration in all sanctuary actions. A sanctuary must:

- Be a non commercial/profit organization
- Have no commercial activity involving the animals (including, but not limited to, no sale of animals, animal parts, by-products, offspring, and photographic opportunities)
- Have no propagation of animals in the facility
- Have no unescorted public visitation, and animals shall not be taken from their enclosures or off sanctuary grounds for exhibition or education
- Make sure exceptional standards of lifelong animal care consistent with SSC are provided and ensured.

By comparison zoos provide a public amenity focused on animal and plant display, research, and public education – often aimed at improving the conservation awareness of visitors. The best international zoos support conservation and work with sanctuaries and wild areas to achieve this. Zoos can be commercial operations, acquire specimens for breeding and display, and exchange specimens with other zoos for breeding programmes and exhibition.

### **1.1.2 Special considerations to sanctuary management in Africa**

There are many challenges to creating, managing and supporting sanctuaries in Africa. Particularly chimpanzee sanctuaries when the average life expectancy of an individual is over 50 years. It is imperative that at no time that the sanctuary neglects the need for protection of habitat or wild populations of chimpanzees. In fact, the sanctuary should complement these efforts. In most cases, range state countries for chimpanzees will be unable to actively carry out law enforcement if there is no sanctuary for the authorities to deposit chimpanzees and other primates that are confiscated. Out of the 22 countries that are home to chimpanzees, many are in a state of political instability. Working in such countries presents major challenges such as dealing with unstable political authorities; remote locations; poor communication; war/civil conflict; corruption; poor education and poverty. If sanctuary managers are not careful to ensure that the sanctuary is seen as an economic resource that provides long term employment opportunities; development of local communities and improvement in education to local communities, staff and local authorities, it could be perceived as competition to these resources. We must also be careful that while providing quality care for the chimpanzees, that we can do the same for our staff and local communities. Any sanctuary created in an African country should carry out or promote habitat protection; education and public awareness raising; advocacy for active law enforcement and protection of wild populations of chimpanzees.

### **1.1.3 Cost of care of captive chimpanzees in Africa**

The cost of care of chimpanzees varies throughout Africa and the rest of the world. On average, in the west, the cost per chimpanzees is approximately \$10,000US per year. Depending on operating costs capital costs, and sanctuary location, the cost of total care ranges from \$2,000 (Bukavu) to \$7,000 (Ngamba Island) per year/ per chimpanzee; the average being \$5000 per year. On average, cost of food and staff will be higher with infants than adults, while the facilities for adults will be higher than those needed for infants. For example:

Ngamba Island's average cost for food per chimpanzee is \$500 per year as of 2005:

Tchimpounga's average cost for food per chimpanzee was \$871 per year as of 2005:

The ratio for budgeting for food supplies for chimpanzees in Africa is as follows:

Infants are 100% more than adults. Juveniles are 50% more than adults.

So, on average:

- Adult food cost is \$500US
- Juveniles will be \$750US
- Infants will be \$1000US

The increased cost of feeding younger animals is largely related to the relatively high costs of specialized food items, such as milk products.

Sanctuary operating budgets are generally allocated as follows:

- ✓ 1/3: personnel costs (Salaries; benefits and other personnel costs like uniforms and transportation)
- ✓ 1/3: chimpanzee care (food/medical/husbandry care/
- ✓ 1/3: maintenance of facilities; equipment; vehicle costs and administrative cost like communications.

#### **1.1.4 Reintroduction policy for JGI**

All JGI Sanctuaries as per PASA members are encouraged to manage captive populations in such a way that release back into the wild is possible, in accordance with guidelines established by IUCN. If release is considered, the development of the project and the site selection will need to be taken into consideration from the outset. Guidelines as set by IUCN and agreed to by PASA will be abided by all JGI affiliated sanctuaries when release programs are being considered and/or undertaken.

## **1.2 Laws and Policies Relating to Sanctuary Management in Africa**

Most range state countries for chimpanzees have national laws that protect them. Unfortunately, in many countries, these laws are not adhered to or enforced. In some cases, many of the national law enforcement agencies are unaware of these laws. It is important that sanctuary managers become thoroughly versed in the laws in the country they are working in. Where there are gaps in the law, JGI affiliated sanctuaries must work with government officials to address these flaws. In most cases the biggest hurdle managers will face is the lack of interest exhibited by the law enforcement agency directly responsible for wildlife protection to actively enforce the law with regards to hunting; killing; eating; selling; buying; keeping as pets; using chimpanzees as entertainment or for what ever other purposes chimpanzees are removed from the wild. In most cases, managers will have to take an active role in working with local authorities to train, encourage and assist them in carrying out their duties. The other major hurdle, relating to possible inaction by law enforcement agencies is the judiciary system. Often

the penalties for such acts as killing or selling endangered species such as chimpanzees are so insignificant, the deterrent is not great enough to stop such illegal activities. Educating judges, prosecutors and law makers is very important.

Sanctuaries must have an agreement with the local authorities with regards to the care and management of sanctuaries. Normally, the sanctuary should be registered as an NGO with the government, though other government agreements can supersede this. Normally agreements between governments and non governmental organisations (NGO's) are in the form of Memorandum of Understanding (MoU). These agreements should include the disposition of individuals. Sanctuaries need to ensure they are not placed in compromising positions should government officials may wish to retrieve chimpanzees from the sanctuary to utilise in transactions.

Chimpanzees are protected from international trade under CITES. All range countries for Chimpanzees except Angola are signatories to CITES (See **appendix 1.1**). They are classified as an Appendix I animal. While the international trade is smaller than local trade in infants, it still poses a major threat to the survival of the species. Understanding the rules of international trade is important.

### 1.2.1 CITES

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between Governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

Due to the trade in wild animals and plants crossing borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation. CITES was conceived in the spirit of such cooperation. Today, it accords varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, fur coats or dried herbs.

CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union). The **text of the Convention** was finally agreed at a meeting of representatives of 80 countries in Washington DC., United States of America, on 3 March 1973, and on 1 July 1975 CITES entered in force. (for more information on CITES go to [www.cites.org](http://www.cites.org))

CITES is an international agreement to which States (countries) adhere voluntarily. States that have agreed to be bound by the Convention ('joined' CITES) are known as Parties. Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.

For many years CITES has been among the conservation agreements with the largest membership, with now 167 Parties.

CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the Convention has to be authorized through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering that licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species.

The species covered by CITES are listed in three Appendices, according to the degree of protection they need.

### **Appendices I and II**

- Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
- Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

The Conference of the Parties (CoP), which is the supreme decision-making body of the Convention and comprises all its member States, has agreed in Resolution Conf. 9.24 (Rev. CoP13) on a set of biological and trade criteria to help determine whether a species should be included in Appendices I or II. At each regular meeting of the CoP, Parties submit proposals based on those criteria to amend these two Appendices. Those amendment proposals are discussed and then submitted to a vote. The Convention also allows for amendments by a postal procedure between meetings of the CoP (see Article XV, paragraph 2, of the Convention), but this procedure is rarely used.

### **Appendix III**

This Appendix contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. Changes to Appendix III follow a distinct procedure from changes to Appendices I and II, as each Party's is entitled to make unilateral amendments to it.

A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit. There is some variation of the requirements from one country to another and it is always necessary to check on the national laws that may be stricter, and the basic conditions that apply for Appendices I and II are described below.

### **Appendix-I specimens**

1. An import permit issued by the Management Authority of the State of import is required. This may be issued only if the specimen is not to be used for primarily commercial purposes and if the import will be for purposes that are not detrimental to the survival of the species. In the case of a live animal or plant, the

Scientific Authority must be satisfied that the proposed recipient is suitably equipped to house and care for it.

2. An export permit or re-export certificate issued by the Management Authority of the State of export or re-export is also required.

An export permit may be issued only if the specimen was legally obtained; the trade will not be detrimental to the survival of the species; and an import permit has already been issued.

A re-export certificate may be issued only if the specimen was imported in accordance with the provisions of the Convention and, in the case of a live animal or plant, if an import permit has been issued.

In the case of a live animal or plant, it must be prepared and shipped to minimize any risk of injury, damage to health or cruel treatment.

### **Appendix-II specimens**

1. An export permit or re-export certificate issued by the Management Authority of the State of export or re-export is required.

An export permit may be issued only if the specimen was legally obtained and if the export will not be detrimental to the survival of the species.

A re-export certificate may be issued only if the specimen was imported in accordance with the Convention.

2. In the case of a live animal or plant, it must be prepared and shipped to minimize any risk of injury, damage to health or cruel treatment.
3. No import permit is needed unless required by national law.

In the case of specimens introduced from the sea, a certificate has to be issued by the Management Authority of the State into which the specimens are being brought, for species listed in Appendix I or II. For further information, see the text of the Convention, [Article III, paragraph 5](#) and [Article IV, paragraph 6](#).

When a specimen of a CITES-listed species is transferred between a country that is a Party to CITES and a country that is not, the country that is a Party may accept documentation equivalent to the permits and certificates described above.

### **1.2.2 IUCN Guidelines for the Placement of Confiscated Animals**

Live wild animals are confiscated by local, regional, and national authorities for a variety of reasons. Once they have taken possession of these animals, these authorities must dispose of them responsibly, in a timely and efficient manner. Prevailing legislation, cultural practices, and economic conditions will influence decisions on appropriate

disposition of confiscated animals. Within a conservation context, there are several possible options from which to choose:

- 1) to maintain the animals in captivity for the remainder of their natural lives;
- 2) to return the animals to the wild;
- 3) to euthanize the animals, i.e., humanely destroy them

The IUCN Guidelines for the Placement of Confiscated Animals discuss the benefits and risks involved in each of these options. These Guidelines should be read in conjunction with the IUCN Guidelines for Re-introductions (IUCN 1998). They should also be read with reference to the CITES Guidelines for the Disposal of Confiscated Live Species of Species Included in the Appendices (Resolution Conf. 10.7) and the IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species.

Returning confiscated animals to the wild is often considered the most popular option for a confiscating agency and can garner strong public support. However, such action poses real risks and problems and generally confers few benefits. These risks and problems include, but are not limited to, the following:

1. The mortality of animals released from captivity is usually high. Confiscated mammals and birds captured as juveniles have not learned the skills they need to survive in the wild. Other animals may be weakened or otherwise affected by their time in captivity and, thus, less able to survive. Finally, there is little chance of survival if the animals are released at a site that is not appropriate for the ecology or behavior of the species.
2. Animals released into the wild outside of their natural range – if they survive at all – have the potential to become pests or invasive. The effects of invasive alien species are a major cause of biodiversity loss, as such species compete with native species and in other ways compromise the ecological integrity of the habitats in which they have become established.
3. Having been in trade or a holding facility often in association with other wild animals and, in some instances, domesticated ones, confiscated wild animals are likely to have been exposed to diseases and parasites. If returned to the wild, these animals may infect other wild animals, thus causing serious, and potentially irreversible, problems.
4. In many instances, confiscated wild animals have been moved great distances from the site of capture and changed hands several times, such that their actual provenance is unknown. It may, therefore, be impossible or very difficult to establish an appropriate site for return to the wild that takes into account the ecological needs of the species, the animals' genetic make-up, and other attributes that are important to minimize risks (e.g., competition, hybridization) to wild populations at a release site.
5. In cases where the provenance is known, the ecological niche vacated by that animal may already be filled by other individuals and replacing the animal could result in further undesired disturbance of the ecosystem
6. Responsible programs to return animals to the wild (c.f. IUCN 1998) are long-term

endeavors that require substantial human and financial resources; hence, they can divert scarce resources away from other more effective conservation activities. For the complete reference of IUCN guidelines on confiscated animals, please see **appendix 1.2**.

### **1.2.3 Introduction to PASA and PASA policies on sanctuary management**

#### **PASA Mission Statement**

*PASA member sanctuaries are committed to providing the best possible facilities and care to captive African primates in Africa, while working towards the protection and conservation of the species in the wild.*

#### **Code of Conduct and Policies of PASA**

##### **Preamble**

The Pan African Sanctuaries Alliance (PASA) will act in the best interest of its members, as the integrity, efficiency, impartiality, and fairness of its members must be beyond question.

PASA has a unique obligation to the global community and this demands that sanctuary members and people working for PASA exhibit standards of professional behaviour which will maintain public confidence and trust. The acts of one individual can seriously affect the reputation and standing of the Alliance, by which every member may be affected. It is the responsibility of all members and their staff to be vigilant and aware of the potential for misconduct, and maintain high morals, a strong sense of professionalism, and a commitment to the objectives of PASA.

This Code of Conduct establishes standards of behaviour expected of members and their staff and is a guide to solving ethical issues for those whose work involves caring for primates in sanctuaries situated in Africa. While there are no set rules capable of providing answers to all ethical questions that may arise, this code provides the framework for appropriate conduct in a variety of contexts. It is intended to convey the obligations placed on, and the behaviour expected of, all members and their staff.

PASA members should familiarise themselves with the Code of Conduct, and should ensure that they observe the provisions at all times. Where departure from the code has been suggested, PASA will issue a query, investigation or both. Disciplinary action, as needed, may be in the form of counselling, intervention and / or suspension from PASA.

##### **PASA Sanctuary: Definition**

A PASA sanctuary provides a safe and secure home for African apes and other primates in need. The welfare of the individual and the preservation of the species are of prime importance and are considered equally. The sanctuary operates in the context of an integrated approach to conservation, which can include rehabilitation and reintroduction.

## **PASA: The Code**

### **Core Values**

The PASA Code of Conduct assumes a number of values that require members and all staff to exhibit:

- A concern for the primates
- Integrity
- Transparency
- Fairness
- Conscientiousness
- Professionalism
- Personal and institutional commitment to conservation

**It is the duty of all members and their staff to observe the following requirements:**

- To act within and uphold the local, national and international laws
- To maintain the integrity of PASA
- Not to abuse their official position or connection with PASA for personal gain
- Not to misrepresent their position within PASA

### **PASA: Operational Philosophy**

- That the welfare conservation of the species is paramount, while taking into consideration the individual, and;
- That holistic and long-term approaches shall be adopted as these challenges are addressed

### **PASA: Principles**

- Creating, managing and maintaining primate sanctuaries for the care of primates in need, with priority given to those primates in our respective regions
- Extending to all primates the dignity and respect that they deserve as sentient beings, making informed provision for them to express their natural behaviours
- Assisting in the conservation of wild primate populations and their natural habitats and to undertake activities that promote and support the sustainable protection of wildlife and their habitats
- Developing, through education and public awareness, an understanding and appreciation of African primates and conservation in general, in local communities
- Ensuring that no captive animals – including those in the sanctuaries -- are used for any purpose other than welfare, conservation and education and that the animals shall receive the very best of care
- Agreeing that research that compromises the well-being of individuals cannot be considered. Use of primates as pets and/or for entertainment of any kind is not accepted by PASA and its members
- Forming working relationships with the relevant wildlife authorities in each country of operation and any other relevant institutions

- Striving to continually improve care and husbandry techniques
- That project design, development, implementation and management practice should be based on sound, modern, scientific principles
- Ensuring that the captive population is managed in such a way that reintroduction can be considered in the future, if feasible or appropriate

## **PASA: Policies**

### **A. Animal acquisition policy**

No PASA sanctuary is allowed to purchase or provide compensation to acquire any primate. PASA members must not engage a third party, even a government official, to do so on their behalf. All primates must be confiscated by relevant authorities, surrendered or donated by the person/s holding the animals. PASA members agree to make every effort to educate the person/s in a positive and interactive way.

PASA members agree to provide the best care and facilities as soon as possible for any confiscated primate.

PASA members shall ensure that the relevant legal documentation is obtained to be in legal possession of the primates in their care.

PASA members agree to cooperate with member sanctuaries in the placement of animals in the most appropriate facility for the individual, taking into consideration the species or subspecies, natural origins, the welfare of the individual and possibility for integration into a social group.

PASA members are forbidden to sell, trade, loan or otherwise traffic in primates that have been placed in member sanctuaries, except for situations that are judged to be in the best interests of the primates themselves.

### **B. Primate health policy**

PASA members agree to provide the best possible primate health care to resident primates. Where possible, PASA members will employ/contract a veterinarian with primate health and disease experience, or arrange to have an off-site veterinarian available in an advisory capacity.

PASA members will ensure that at least one staff member trained in primate emergency veterinary procedures (i.e. first aid, escapes, anaesthesiology, etc.) is on site at all times.

PASA members will strive to abide by the PASA veterinary guidelines on primate health care as outlined in the PASA Veterinary Healthcare Manual.

PASA members will ensure that only primates that have cleared all quarantine/veterinary procedures are allowed to be moved to a habitat area from which they may escape and/or come into contact with wild primates.

PASA members should ensure that all staff/volunteers/researchers/visitors that may have contact with the primates have complete health screens including vaccinations and TB testing annually.

### **C. Housing and Husbandry**

PASA members will house all primates in a clean, comfortable, safe and enriching environment. The health and welfare of the primates are PASA highest priority and will not be unnecessarily compromised. Members will keep current on the latest primate husbandry and continually grow in their ability to care for the African primates. Handling primates will also be done with the utmost care and respect for the individual and the group. All procedures will be done with the minimum of stress.

Where possible, PASA members will house all primates in normal social groupings. Isolation of individuals should only be for health reasons. In the case of quarantine, more than one individual should go through quarantine together.

No staff member will be allowed to tease the primates (e.g., withholding of food in front of an individual to make them cry for amusement).

### **D. Captive Breeding**

PASA members will not encourage captive animals to breed unless they are part of a planned release programme in accordance with IUCN reintroduction guidelines. Reversible contraception methods according to the requirements of the animal, and the availability of expertise and equipment, should be used wherever possible. PASA members accept that in some cases, permanent sterilization may be used, but careful deliberation for long-term implications should be considered.

### **D. Euthanasia**

#### Definition:

*Euthanasia means to cause humane and painless death (i.e. unconsciousness is rapidly induced and succeeded by cardiac arrest and clinical death; thereby not subjecting the animal to pain, distress, anxiety or apprehension)*

PASA does not rule out the use of euthanasia. But it should only be used as a final option, after all other options have been considered and either attempted or judged impossible. Euthanasia cannot be used as a management tool. Below are examples of cases where euthanasia may be accepted:

#### Criteria:

- Incurable disease/injury that is likely to cause pain or suffering;
- Disease/injury where treatment is likely to cause unreasonable pain or suffering;
- Disease/injury where treatment will not be effective in restoring the animal to an acceptable quality of life;
- Where the process of aging has resulted in an unacceptable quality of life;

- In the event of presenting an infectious disease risk to the rest of the resident population.

## **E. Research**

PASA supports conservation-orientated scientific research. PASA members are also aware that laboratory conditions do not offer the standard of care of a sanctuary. Eliminating the need for laboratory primates is a PASA goal and members will not consider assisting with research proposals that will in any way create the impression that a sanctuary is a surrogate laboratory.

### ***Research policy is as follows:***

Research involving wild primate populations associated with sanctuaries must be non-disruptive to their social order. This includes no provision of feeding and no habituation of primates where risks from hunting exist now or may in the future.

Biological research will be conducted only in response to member facilities animal management needs, and samples should be taken only during routine examinations.

All research involving biological sampling must have demonstrable health, conservation or genetic benefits to primate captive management and/or wild population conservation. Research cannot be exploratory, nor justified on the grounds of human medical benefit.

No laboratory or researcher can infect/inject other animals experimentally with infectious agents derived from samples obtained from sanctuaries. Sanctuaries must have a memorandum of understanding with laboratories and or researcher's that ensures samples are used ethically, and guarantees the sanctuary the right of pre-publication editorial review.

Behavioral / ethological research that encourages non-natural behavior when animals have reached an advanced stage of rehabilitation should be discouraged. Acceptable research should involve minimal modification of animals and staff daily routine, and should potentially produce results which benefit conservation of the species or the project.

## **F. Staff Health and Safety**

An occupational health and safety program must be part of the overall PASA primate care program. The program must be consistent with regional, national and local regulations and must focus on maintaining a safe and healthy workplace. The specific program will depend on the facility, educational activities, hazards, and environmental constraints. Operational and day-to-day responsibility for safety in the workplace resides with the sanctuary manager and depends on performance of safe work practices by all employees.

## **G. Staff Development**

PASA members will ensure that all staff members are fully conversant in the concepts, principles and philosophies of the project.

Where possible, PASA members will provide adequate in-house and ex-situ training for local staff.

Where possible, PASA members should attempt to build the capacity of the local staff to take on more long-term management responsibilities.

Where possible, PASA members should use national staff in preference to non-national personnel.

## **H. Local Community and Government Relations**

PASA members will ensure that a significant number of staff is employed from local communities. Where possible, PASA members will provide sustainable economic opportunities to local communities (such as labour, purchase of food and transportation, etc.).

PASA members will strive to ensure that local communities are aware of the purpose of the projects, the need for conservation in general, and the need for protection of wild and captive primates and their habitat.

PASA members will ensure that official permission from traditional, local and national government institutions is obtained and, where possible, have NGO / charity / not-for-profit status in the country of operation.

Where possible, PASA members will investigate the long-term plans of governments, companies and communities regarding land-use near the sanctuary/ release sites. Where possible, PASA members will advocate the protection and conservation of these areas to avoid future conflicts.

PASA members should develop guidelines on appropriate behaviour (culturally and politically) when interacting with nationals and ensure that all foreign staff and volunteers/ visitors follow these guidelines.

## **I. Tourism**

PASA has no official policy regarding the promotion of tourism at member sanctuaries. If PASA members decide to encourage tourist activities on a sanctuary-by-sanctuary basis, each should ensure that it is in the best interest of the staff and primates and that the general principles of eco-tourism are followed as per the guidelines in the PASA sanctuary reference manual.

## **J. Release and Reintroduction**

Where possible and appropriate, PASA members are encouraged to manage captive populations in such a way that release back into the wild may be possible, in accordance

with guidelines established by IUCN. If release is being considered, the development of the project and the site selection will need to be taken into consideration from the outset. Guidelines as set by IUCN and agreed to by PASA will be abided by PASA members when release programs are being undertaken.

## **H. Conservation**

Where appropriate, PASA members should act as flagships for conservation of endemic species.

PASA members holding species or subspecies that are not endemic should permanently provide long-term reversal contraceptives to discourage breeding and to ensure that there is no possible opportunity of accidental or deliberate release into the wild. PASA members agree to not only shelter orphaned primates, but also promote conservation issues to ensure their survival in the wild.

## Section Two: Chimpanzee Ecology

### 2.1 Taxonomy and Distribution

#### 2.1.1 Taxonomy and Description

The robust or common chimpanzee is a large ape belonging to the order primates, and the family *hominidae*, which also includes the gorilla, orang-utan, and bonobo (Groves 1971; Wolfheim 1983; Rowe 1996; Nowak 1999). (Chimpanzee males are smaller than the male orang-utan or gorilla (Napier & Napier 1985; Rowe 1996; Nowak 1999). The females have similar body measurements to female orang-utan (Napier & Napier 1985; Rowe 1996; Nowak 1999). The average male head-body length measurement is 850mm (Napier & Napier 1985; Nowak 1999) and weight range is between 40-60kgs for males and 33-46kg for females (Reynolds & Reynolds 1965; Smith & Jungers 1997; Nowak 1999).

The current consent is that there are two species of chimpanzees; *Pan troglodytes* [Figure 1a] and *Pan paniscus* [Figure 1b] (Nowak 1999; Hilton-Taylor 2000; Boesch & Boesch-Achermann 2000; Groves 2001). There are four subspecies of the robust or common chimpanzee; *Pan troglodytes verus*; *Pan troglodytes vellerosus*; *Pan troglodytes troglodytes* and *Pan troglodytes schweinfurthii*, and at this stage no subspecies is recognised for the gracile chimpanzee, better known as the Bonobo or Pygmy chimpanzee *Pan paniscus* (Gonder et al. 1997; Vigilant 2003; Grubb et al, 2003; Butnyski 2003) (Figure 1b). There have been discussions about splitting the West African subspecies (*P. t. verus*) into a separate species due to variation in Mitochondrial DNA, but as yet the population has not been sampled to a sufficient degree to distinguish them as a separate species (Groves 2001; Butnyski 2003). There appears to be differences in the size and weight of individuals across the subspecies, but given the relatively small sample size, clear comparisons are difficult (Smith & Jungers 1997). (They will be referred to simply as chimpanzee in the remaining text)

**Figure 1a : Robust or common chimpanzee (*Pan troglodytes*).**



Photo credit: Jane Goodall Institute

**Figure 1b: Bonobo or pygmy chimpanzee (*Pan paniscus*).**



Photo credit: William Calvin

Chimpanzee pelage is generally black, though individuals with brown pelage have been observed (Reynolds & Reynolds 1965; Nowak 1999), which can go grey with some individuals upon maturity (Rowe 1996; Nowak 1999). Skin colouration varies with age (Rowe 1996 Nowak 1999). Infants are often born with pale skin, which gradually darkens as they become adults (Rowe 1996 Nowak 1999). Though Nowak (1999) states that skin colour is dark at maturity, the author has observed that some mature individuals have maintained pale skin colouration in both *P. t. troglodytes* and *P. t. schweinfurthii*.

## 2.1.2 Distribution & Abundance (Historical and Current)

The historical chimpanzee range was at least 25 countries throughout Equatorial Africa (Figure 3). Today, chimpanzees occur in 22 countries from 13°N to 7°S latitude (Wolfheim 1983; Lee et al. 1988; Teleki 1989, Butynski 2003). The present range covers an area of approximately 2,342,000km<sup>2</sup> (Butynski 2003), but distribution and numbers are poorly known in most areas (Lee et al. 1988; Butynski 2003). There is a vast difference in the geographic and known ranges of the four subspecies of chimpanzees. While data relating to the distribution and approximate number of chimpanzees in some countries exist, many populations have not been surveyed or have only had isolated surveys in some forest blocks as they are of interest to particular conservation organisations (Butynski 2003: Blom et al. 2001; Plumptre et al. 2003a).

While there has been an effort made in the past five years to carry out surveys in many countries, there have been very few countrywide censuses where forests have been extensively surveyed. Ham (1998) carried out a countrywide survey in Guinea, but density rates were not collected, just the verification of chimpanzee presence in various forests throughout the country (Butynski 2003). Tutin & Fernandez (1984) carried out a countrywide survey of gorilla and chimpanzee population in Gabon, but did not survey all forests for verification of density levels. An exception was the study carried out in Uganda by Plumptre et al. (2003a) who employed systematic transect and nest count methods that yielded population numbers, densities, distribution of chimpanzee populations, while also recording anthropogenic threats. A countrywide chimpanzee survey is currently being undertaken by the Wildlife Conservation Society in Tanzania (David Moray pers. comm.).

The West African sub species (*P. t. verus*) is thought to occur in 10 countries in West Africa (Teleki 1989) [Figure 2a]. The current known populations are fragmented and declining in numbers (Teleki 1989; Butynski 2003). Historically, *P. t. verus* were believed to have occurred in 12 countries (Teleki 1989; Butynski 2003). The geographical range was 631,000km<sup>2</sup> (Appendix 1) with an estimated population range from 21,000 to 55,000 (Butynski 2003).

The recent identification of a new subspecies *P.t.vellerosus* by Gonder et al. (1997) includes the population of chimpanzees straddling the northern border of Cameroon and the Southern border of Nigeria between the Niger River and Sanaga Rivers. They have a relatively limited range of 142,000kms<sup>2</sup> (Butynski 2003). The estimated number for this subspecies is between 5,000 and 8,000 individuals.

The range of central African subspecies (*P. t. troglodytes*) range extends across seven countries from Cameroon in the north to the Congo River in the People's Republic of Congo (PRC) (Figure 2b). The largest population of this subspecies is found in Cameroon and Gabon, while substantial populations exist in PRC. Smaller populations are present in Equatorial Guinea, The Central African Republic (CAR), northern Angola and the extreme west of the Democratic Republic of Congo (DRC). The known geographic range is approximately 695,000km<sup>2</sup> (Butynski 2003). The central African chimpanzee population is estimated to be between 70,000-116,000 individuals (Butynski 2003). This subspecies is found in some of the most undisturbed habitat remaining. The eastern chimpanzee (*P.t.schweinfurthi*) occurs in seven countries, with a geographic range of 874,00km<sup>2</sup> (Figure 2c).

**Figure 2a: *Pan troglodytes verus*  
Adult females and juveniles**



*Photo credit: Tacugama Chimpanzee  
Sanctuary, Sierra Leone.*

*Sanctuary, Sierra Leone.*

**Figure 2b: *Pan troglodytes troglodytes***  
**Adult females and males**

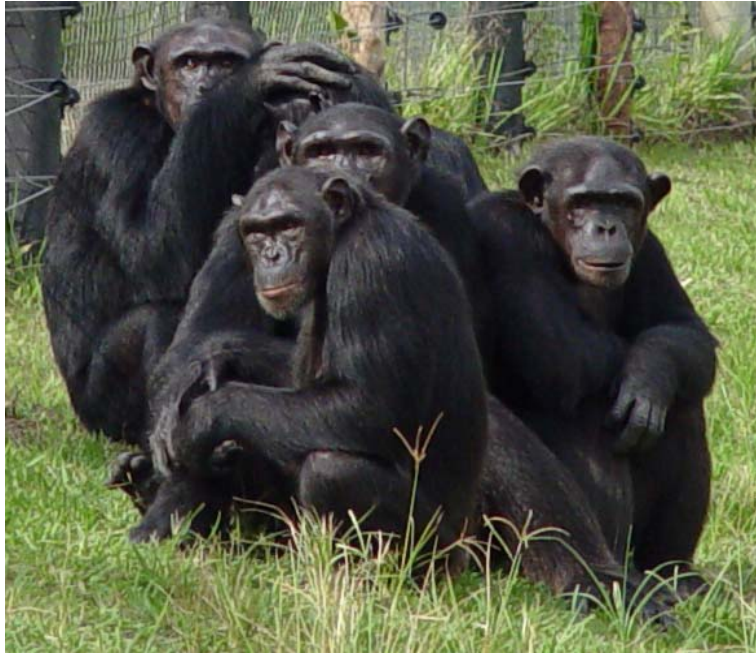


Photo credit: Debby Cox

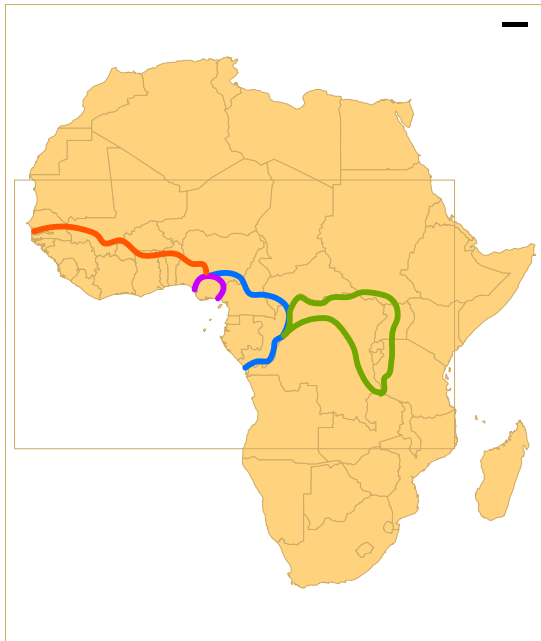
**Figure 2c: *Pan troglodytes schweinfurthii***  
**Adult female (left) and male (right)**



Photo credit: Debby Cox

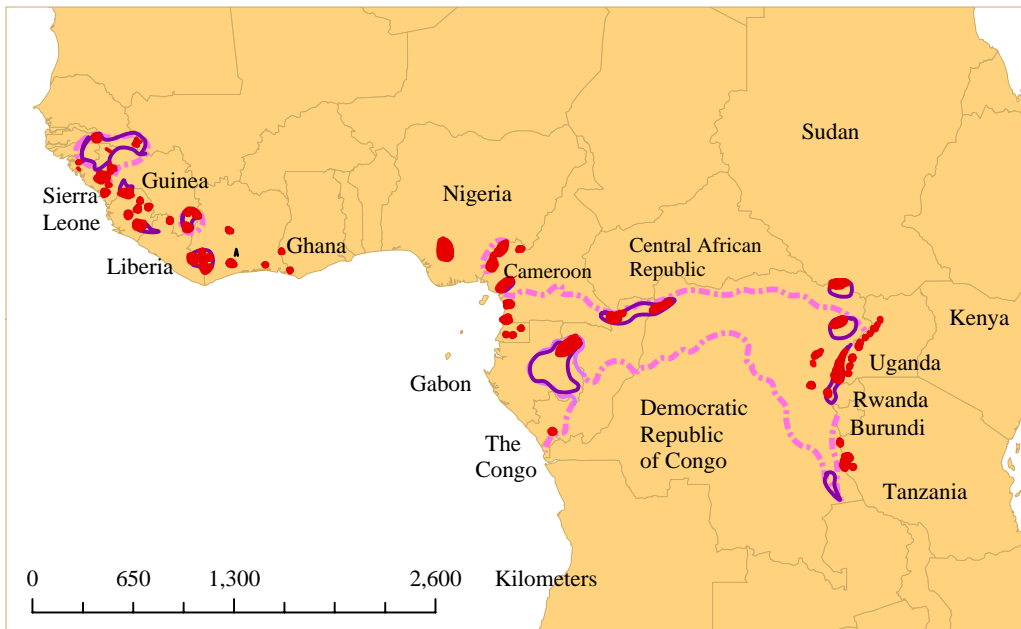
**Figure 3. Historical and Current Distribution of the Robust or Common Chimpanzee (*Pan troglodytes*). (Arnold 2003)**

**Historic Distribution - *Pan troglodytes***



- P.t.verus* - west Africa
- P.t.troglodytes* - central Africa
- P.t.vellerosus* - central Africa
- P.t.schweinfurthii* - east Africa

**Current Distribution - *Pan troglodytes*    Known Probable Possible**



### 2.1.3 Global Status of the Robust Chimpanzee

The robust chimpanzee is listed as endangered<sup>1</sup> in the 2002 *IUCN Red List of Threatened Species* (Lee et al. 1988; Hilton-Taylor 2002), and accordingly, believed to be at risk of becoming extinct within the next five generations (Hilton-Taylor 2002). Under the Convention for International Trade of Endangered Species, robust and gracile chimpanzees are listed in Appendix One, affording the species full protection under this convention against the commercial trade of this species (Rosser et al. 2001)

Butynki's (2001 & 2003) estimates for robust chimpanzee populations (see Table 2) suggest an increase in the number of chimpanzees in the wild. This increase is due to the recent work by field biologists in previously unsurveyed forest areas (Blom et al. 2001; Plumptre et al. 2003a; Dupain et al. 2004). The largest estimated populations, such as those found in Congo (DRC) and Gabon, still need to be surveyed intensively (Lee et al. 1988). Due to continued civil unrest in Congo (DRC), it is not likely that a countrywide survey will be carried out in the near future. This leaves a range estimation of over 100,000 individuals, but there may be a variation of as much as 35% of the total estimated population (Butynski 2003). One must be careful not to assume that if the total number of individuals within a country is recalculated to be higher than previously thought, that the conservation status of the population has improved. In Uganda, current population numbers are estimated to be 4,000-5,700 individuals, based on a countrywide survey by Plumptre et al. (2003a). Local authorities and journalist reported incorrectly that the population had increased, when in fact it had never been surveyed, the past calculations were just guesses by scientists in the field. Also while the population may seem higher, when the population numbers in individual forest blocks are considered it would appear that only four populations are genetically self-sustaining if allowed to remain intact and no threatening processes diminish their survival prospects (Plumptre et al. 2003a).

### 2.1.4 Conservation Issues affecting the populations

Currently the immediate threats to the survival of the robust chimpanzee species is habitat destruction and predation by humans (Lee et al. 1988; Nowak 1999; Boysen & Butynski 2001; Hilton-Taylor 2002; Butynski 2003; Walsh et al. 2003). Chimpanzees are also affected by habitat change and fragmentation (Chapman & Chapman, 1999; Chapman & Lambert 2000), with genetic loss and inbreeding within such populations expected to become a significant issue in the future (Butynski 2003). Dietz et al. (2000) have already noted the effects of these phenomena in other primate species, such as the Golden Lion Tamarin (*Leontopithecus rosalia*).

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<sup>1</sup> Under the IUCN's definition of endangered, a species is facing high risk of extinction in the wild in the immediate future.

## **Overall habitat loss**

The IUCN's red list of Threatened Species states that 83% of mammal species are directly threatened by habitat loss (Hilton-Taylor 2002). Although equatorial Africa has the second largest contiguous tropical moist forest in the world [1.8million km<sup>2</sup>] (Wilkie & Laporte 2001), the use of satellite imagery to record habitat loss in equatorial Africa suggests an annual loss of 0.9% for west Africa, 0.2-0.6% for central Africa (Wilkie & Laporte 2001) and 1.4% to 15.7% in eastern Africa (Plumptre et al. 2003b). Africa has the highest rate of population growth of any major region (Campbell 2001; Hanks 2001). In west and eastern Africa high human population densities has resulted not only in habitat loss, but also fragmentation of habitat (Butynski 2003; Plumptre et al. 2003b; Walsh et al. 2003).

## **Fragmentation and degradation of forests**

The effects of isolation on small populations are understood in theory (Srikwan & Woodruff, 2000). Soulé (1987) estimated that a minimum of 500 chimpanzees was necessary for a population to have a chance of surviving several hundred years. More recent research has shown that a minimum of 2000 individuals may be needed to sustain populations for several hundred years (Harcourt 2002; Reed 2004; Reed & Hobbs 2004). While there has been little research into genetic diversity within chimpanzee communities and the movement or dispersal of individuals into other communities, we do know that in west and eastern Africa many populations are in numbers at or below this critical level (Ham 1998; Butynski 2003; Plumptre et al. 2003a; Blom et al. 2001; McGrew et al. 2004). It is likely that communities in countries within central Africa, such as those in Cameroon, will soon fall into this category as forests are increasingly degraded and fragmented due to logging operations, and as human populations continue to grow and impinge on habitat (CARPE #6 2001). Predation of chimpanzees by humans is also a major threat to chimpanzees in central and west Africa and the most likely cause of local extinction (Lee et al. 1988; Oates 1996).

## **Human Predation**

The primary reason humans prey on chimpanzees is for consumption (Wolfheim 1983; Bowen-Jones & Pendary 1999; Wilkie & Carpenter 1999a; Peterson & Ammann 2003; Rose 2003; de Merode et al. 2004 Fa et al. 2005). The consumption of chimpanzees has become one of the major threats to their survival along with habitat loss (Hanks 2001; Rose 2001; Tutin 2001; Barnes 2002; Stein et al. 2002; Butynski 2003; Peterson & Ammann 2003; Walsh et al. 2003). The term often used to describe the consumption of chimpanzees and other wildlife is 'bushmeat' (Stein et al. 2002). The current harvest rates of individuals is unsustainable (Wolfheim 1983; Ammann & Pearce 1995; Wilkie et al. 1998; Bowen-Jones & Pendary 1999; Wilkie & Carpenter 1999a; Rose 2003; Merode et al. 2004; Fa et al. 2005). At least 70% of Africans in chimpanzee range countries consume bushmeat on a regular basis (Hanks 2001). In north-eastern Congo, harvest levels are reported to be as high as 5-7% of the population per annum (Bowen-Jones & Pendary 1999), which is higher than the rate of population increase per annum. Barnes (2002) demonstrated that the current harvest rates of primates in West and Central Africa were unsustainable, with monkey populations collapsing within 50-70 years. The increase in bushmeat and in particular the consumption of great apes, has direct relations to the logging industry (Tutin & Fernandez 1997; Oates 1999; Auzel & Wilkie 2000). The use of guns instead of traditional hunting tools such as spears, nets and

snare traps has allowed hunters to kill gorillas and chimpanzees at rates much higher than seen historically (Lahm 1993).

Other evidence of increasing predation/consumption is in the growing number of orphaned chimpanzees being cared for in sanctuaries throughout Africa (Cox et al. 2000; Rosen et al. 2001; Rosen et al. 2002 & 2003; Gossens et al. 2003; IFAW & BCTF 2003). The capture of live individuals for zoos in the past was relatively high (Wolfheim 1983; Lee et al. 1988), but is now considerably lower in comparison to hunting for meat (Rose 2003).

Another threat to chimpanzee long-term survival is a by-product of hunting other species. Hunters regularly use rope or wire snares when hunting antelope in the forests. Chimpanzees sustain injuries and sometimes death from these snares (Muller 2000). In many sites throughout Africa, researchers have recorded snare injuries to chimpanzees (Kortlandt 1962; Ghiglieri 1984; Kano 1984; Hashimoto, 1999; Boesch & Boesch-Achermann 2000; Wrangham & Mugume 2000; Lloyd & Mugume 2000). In some cases the percentage of individuals with permanent disabilities from snare injuries can be as high as 50% of the population (Lloyd & Mugume 2000).

### **Anthropozoonotic Diseases**

Predation of chimpanzees and close proximity to humans brings another threat to their survival in the wild (Rose 2001). Due to their close relatedness to humans, the opportunities for disease transmission are high (Butynski & Kalina 1998; Wallis & Lee 1999; Daszak et al. 2001 & 2004; Leendertz et al. 2004).

Chimpanzees and humans share similar physiological and genetic characteristics and thus share many viruses, bacteria, fungi, protozoa, intestinal and ectoparasites (Wolfe et al. 1998). The transmission and potential for transmission of these diseases have been reported by various authors (Wolfe et al. 1998; Wallis & Lee 1999; Weiss & Wrangham 1999; Walsh et al. 2003; Daszak et al. 2001 & 2004). The most notable transfer of disease between chimpanzees and humans is HIV/Aids (Weiss & Wrangham 1999), and several cases have also been recorded where individuals within communities have contracted and died of diseases such as polio, respiratory infections, Ebola, anthrax and mange (Butynski & Kalina 1998; Wallis & Lee 1999; Daszak et al. 2001; Lonsdorf 2004; Leendertz et al. 2004; Leroy et al. 2004). Many of these transmissions to great apes have been attributed to close contact or proximity to humans that were either members of a local community, field research assistants, protected area management staff, or tourists (Butynski & Kalina 1998; Wallis & Lee 1999). Recent outbreaks of Ebola virus in Gabon and Congo PRC which may have caused the local extinction of chimpanzee and gorilla populations has concerned many conservationists (Wolfe et al. 1998; Walsh et al. 2003; Leory et al. 2004).

## 2.2 Ecology

### 2.2.1 Habitat

Equatorial Africa contains a multitude of landscape ecosystems including multi-strata tropical forest, dry deciduous forest, woodland, mosaic grassland forests, savannah woodlands, savannah, and desert (Wolfheim 1983; Chapman et al. 1999). The robust chimpanzee has adapted to living in a variety of these habitats, including mosaic grassland forests, savannah woodlands and tropical moist forests (Wolfheim 1983). Chimpanzees also occur at altitudes ranging from sea level to around 2,899m in elevation (Groves 1971; Kingdon 1974; Kortlandt 1983; Teleki 1989; Butynski 2003). The tropical zone of Africa is reported to be drier than the tropical zones of Asia and America (Chapman et al. 1999). Only a few regions receive more than 2500mm of rainfall per year. Many of these forests lie close to the equator and therefore receive two rainy and two dry seasons per year. It is suggested that the forests of Africa were fragmented by dry forests or woodland prior to human clearing activities (Chapman et al. 1999). This is one possible explanation for the adaptive nature of chimpanzees, as evidenced by their ability to utilize these drier forests. These habitats are marginal habitats for chimpanzees as sourcing water can limit the ability of chimpanzees to survive (Teleki 1989).

### 2.2.2 Density

The density of the chimpanzee populations in different ecosystems varies greatly across their range. In forests where they are not sharing their habitat with gorillas, the density levels are as high as 2.7 chimpanzees per km<sup>2</sup> (Plumptre et al. 2003a). In forests where they are sympatric with gorillas, there is generally a negative trend in the density levels for chimpanzees (Williamson & Usongo 1995; Ekobo 1998; Van der Wal & Nku 1999; Blom et al. 2001). In Cameroon, for example, where gorillas and chimpanzees share forest habitats, density levels as low as 0.01 km<sup>2</sup> have been recorded (Ekobo 1998). In Central African Republic (CAR), Dzanga-Ndoki National Park has a variation in density levels between chimpanzees and gorillas at 1.6 individuals km<sup>2</sup> for gorillas and 0.16 individuals km<sup>2</sup> for chimpanzees (Blom et al. 2001). The combined area of Dzanga-Ndoki Sanaga and Dazanga-Ndoki NP is 4579 km<sup>2</sup> could potentially support up to 730 chimpanzees, but this has not been confirmed as the surveys carried out by Blom et al. (2001) did not include Dzanga-Ndoki Sanaga. Blom (pers. com) suspects the density levels could be the same in Dzanga-Ndoki Sanaga, but cannot confirm at this time. In comparison, in Uganda, a total forest area of approximately 2,900 km<sup>2</sup> has a chimpanzee population count of 5,000 chimpanzees (Plumptre et al. 2003a).

Tutin & Fernandez (1984) reported low densities of both chimpanzees and gorillas in Gabon, which they suggest may be due to a combination of ecological pressures (such as competition with other species), and hunting. They also reported a variation in density levels between the various habitat types.

### 2.2.3 Diet

Chimpanzees are primarily frugivores (Ghiglieri 1984; Goodall 1986; Isabiryre-Basuta 1989; Nowak 1999; Stokes 1999; Basabose 2002). Fruits make up at least 60% of their diet (Isabiryre-Basuta 1988; Tweheyo & Lye, 2003; Tweheyo et al. 2004), with figs playing a major role not only as a staple (Goodall, 1986; Nishida, 1990; Tweheyo et al. 2004), but also a fallback food (Furichi et al. 2001). Leaves, stems, piths, flowers, vines, seeds, nuts, bark, resin and honey make up 30% of the diet (Kingdon 1974; Goodall, 1986, Newton-Fischer 1999). The remaining 10% is animal protein, which includes eggs, nestlings, insects and small mammalian prey such as monkeys - particularly red colobus (*Procolobus badius*), antelope, baboons, bush pigs (Goodall, 1986; Teleki, 1989; Watts & Mitani 2004) and rock hyraxes (Matsuzawa pers. comm. 2004).

## 2.3 Behavioural Ecology

Chimpanzees have a highly complex social structure with many interesting behaviours (Wrangham et al. 1994) In this section, only those that have direct relevance to chimpanzee conservation will be discussed; namely territoriality, dispersal, locomotion, nesting behaviour and reproductive strategies. While many other behaviours play an important role in their overall survival, those discussed here are those most likely to be affected by human activities or require special consideration from a management perspective.

### 2.3.1 Social Systems

Chimpanzees live in a multi-male social system; one of three main social grouping types recognised in primates (Napier & Napier 1985; Rowe 1996). They have a relaxed form of this type of system, commonly referred to as a fission-fusion society (Napier & Napier 1985; Morin et al. 1994; Rowe 1996; Nowak 1999; Boesch & Boesch-Achermann 2000; Herbinger et al. 2001). They live in communities varying from 20 to over 100 individuals such as those seen in Kibale National Park, Uganda (Kingdon 1974; Watts 2004). The fission-fusion system allows the group or community to disperse in smaller parties that constantly change in size and composition throughout the day (Kingdon 1974; Wrangham 1979; Nowak 1999). This allows them to group, regroup and separate during their daily quest to find food, to maintain social relationships, and to protect their territory (Napier & Napier 1985).

### 2.3.2 Territoriality

Communities defend an area within the forest known as a territory (Nowak 1999; Herbinger et al. 2001). This differs from the home range of an individual, which is not defended but remains within the territory of the community in which the individual lives (Herbinger et al. 2001). Males will form border patrols and walk the perimeter of their community's territory looking for neighbouring community members who might try to invade their territory (Watts 2004; Williams et al. 2004). The main difference between the robust or common chimpanzee and other primate multi-male groups is that in the former the males remain in their natal communities while females may disperse to neighbouring

communities, usually once they have reached sexual maturity (Ghiglieri 1984; Goodall 1986; Wrangham 1979 & 1986; Morin 1993; Rowe 1996; Boesch & Boesch-Achermann 2000). This allows male chimpanzees to form strong bonds and results in close genetic ties (Goodall 1986). As a male-dominant, hierarchical species, these alliances between individuals may allow them to achieve high ranking within the community. Several factors influence territory size, including the number of individuals in the community, habitat quality (with regard to food availability and quality), pressure from neighbouring communities, and population density (Herbinger et al. 2001; Watts 2004).

### **2.3.3 Migration/dispersal**

Adult cycling females, and more commonly adolescent females, show a strong tendency to disperse into the range of adjacent or non-adjacent communities (i.e communities/populations other than their own, that occur beyond their own community home range) (Nishida, 1990; Edroma *et al.*, 1997a). They may leave their natal community permanently, or temporarily when they are in oestrus, and are attracted to high-ranking males in neighbouring communities (Nishida, 1990; Morin, 1993; Nowak, 1999). Males remain in their natal group from birth until death, (but there are exceptions, see Sugiyama and Koman, 1979; and Sugiyama, 1989), or transfer with their mothers into neighbouring communities as juveniles (Nishida, 1990). Dispersal may be influenced by the carrying capacity of the home range, distance to other communities, sex ratios, and the genetic structure of the population (Sugiyama, 1989; Tutin, 1994). Evidence suggests that females avoid mating with close relatives, which may also promote dispersal (see Morin, 1993)

### **2.3.4 Locomotion**

Chimpanzees use various methods of locomotion (Kortlandt 1962; Reynolds & Reynolds 1965). They are both terrestrial and arboreal (Kortlandt 1962; Reynolds & Reynolds 1965; Napier & Napier 1985; Goodall 1986). Brachiation, climbing, bipedalism and quadrupedal knuckle-walking can all be observed in chimpanzees (Kortlandt 1962; Reynolds & Reynolds 1965; Napier & Napier 1985; Nowak 1999). They will feed and rest on both the ground and in the trees, although generally they will travel long distances on the ground (Kortlandt 1962; Goodall, 1986). This habit of travelling on the ground has made chimpanzees and gorillas vulnerable to the snares set by hunters (Edroma et al. 1997; Stokes 1999; Remis 2000; Muller 2000; Munn 2003).

### **2.3.5 Nest Building**

Chimpanzees build nests to sleep in (Johnston 1902; Reynolds & Reynolds 1965; Goodall 1986; Brownlow et al. 2001), normally building one nest each night, unless they reuse a nest from a previous night or occupant (Goodall, 1986; Brownlow et al. 2001). Chimpanzees build arboreal nests and use a foundation of solid side branches or forks, bending, breaking and inter-weaving the branches cross-wise, generally constructing the nest in a circular fashion (Humle 2003). Chimpanzees will occasionally build day nests, as well building nests on the ground (Kortlandt 1962; Goodall 1986; Humle 2003). This nest building habit has proven to be very useful to researchers who have found it to be

the most practical and accurate way of estimating population size of unhabituated chimpanzees (Tutin et al. 1995; Hashimoto 1995; Plumptre & Reynolds 1996; Blom et al. 2001; Plumptre et al. 2003a; Dupain et al. 2004; Matthews & Matthews 2004). Ghiglieri (1984) was the first researcher to use this method of counting nests to estimate the size of chimpanzee populations.

### **2.3.6 Reproductive Behaviour**

Reproduction in chimpanzees is similar to humans (Napier & Napier 1985). At this stage, the average number of infants a female can produce in a lifetime is not known. Chimpanzees are considered to be a K-strategist species, meaning they have delayed onset of reproduction and produce few, large young in which the parents invest heavily. K-Strategists are often unable to rebuild their populations fast enough to avoid extinction following a major decline in population numbers (Morin 1993; Primack, 1993).

Menstrual cycles last on average 39.8 days for young nulliparous females and 33.8 days for older multiparous females (Kingdon 1974; Wallis 1997). Females exhibit their first sexual swellings at around 10-11 years, with an average swelling of 12-13 days (Wallis 1997; Deschner et al. 2003). Duration of gestation ranges from 208 days to 235 days, with an average of 225.3 days (Wallis 1997). Mating is generally promiscuous (Kingdon 1974), although consortship's involving just one male and one female have been recorded (Goodall 1986; Rowe 1996). Inter-birth intervals range from 3-7 years (Goodall 1986, Nishida 1983, Constable et al. 2001). The longest ongoing field study of chimpanzees is Jane Goodall's research station in Gombe Stream National Park, with continuous observation of wild chimpanzee community spanning 45 years. Some of the females that were born at the time of Goodall's arrival are alive and still reproducing. This suggests that wild living chimpanzees may go through menopause at a much later age than first thought. Several female chimpanzees in captivity that are no longer cycling, are all over fifty years of age (Graham 1979; Constable et al., 2001; Hawkins pers. comm.).

### **2.3.7 Mortality Rates**

Current records of wild chimpanzees living over 40 years of age exist (Goodall 1986; Graham 1979; Huffman 1990; Hill et al. 2001), but the average lifespan of a chimpanzee in the wild is much less (Huffman 1990; Hill et al 2001; Leendertz et al. 2004). Hill et al. (2001) reported a much lower level for the average lifespan of chimpanzees over four sites in Africa. Their findings suggest that the average lifespan of chimpanzees is 15 years. Male mortality was higher than females with only 27% of males reaching 15 years while 41% of females were found to reach 15 years. Meanwhile, only 11% of males survived from birth to 40 years while 18% of females survived from birth to 40 years. Hill et al. (2001) suggests that the higher rates seen in males from birth to 15 years may be attributed to disease rather than violence.

### 2.3.8 Mother-infant behaviour

Mothers care for their offspring for an extended period of time and infants are totally dependant on their mothers for 6-7 years (Goodall 1986; Wrangham 1979 & 1986; Morin 1993). Some still require their mothers support emotionally as they mature and become independent (Goodall 1986; Constable et al., 2001). Due to this close physical and emotional relationship between mother and infant, the removal of an infant from the wild to supply zoos, laboratories and animal dealers can only be carried out by killing the mother (Lee et al. 1988). This has contributed to a significant loss of females and infants from in situ populations. Between 1973 and 1978 in West Africa alone, it is estimated that more than 7,000 individuals died from the live animal trade (Lee et al. 1988).

## 2.4 Captive Behaviour and Management Considerations

Variations in behaviour between wild and captive chimpanzees has been observed by many researchers and caregivers over the years (Fulk & Garland 1992). While many of these differences are the same between zoos and sanctuaries, some do vary. Below is a list of those that are either different from wild to captive, or from zoo to sanctuary, and that have management implications.

**Group Size/Composition:** In terms of size; composition and interaction, captive groups have been and continue to be very different from those in the wild. The average community size in the wild is 20-100 individuals. In zoo settings, groups range from 1 to 15 individuals with the average being 4. In sanctuaries, groups are mostly much larger, particularly at maturity, 10-30 individuals being the normal range.

Composition also can be greatly varied from those of wild populations where the normal ratio is 1:2 male to female and a staggered age matrix. In sanctuaries, we predominantly find groups composed of equal male to female ratio or in some cases, higher ratio of females to males and most individuals in the group are close in age within a few years apart. Attention to levels of aggression amongst the males is needed, though in most situations, males housed in multi-male groupings in sanctuaries are doing very well.

**Sexual Maturity:** In the wild, females normally exhibit their first oestrous swelling from 8-9 yrs of age. In captivity, this often occurs several years earlier. Improved nutrition from a captive setting is normally attributed to this phenomena. oestrous swellings in captive settings have been seen as early as 5 yrs of age. This is important for managers to be aware of sexual development phases of the females in the sanctuary in order to maintain the non breeding policy, introduction of contraception to these females at the onset of menarche is necessary.

**Copulatory Behaviour:** Copulation can occur at any point in the female's oestrous cycle. Males may guard females from mating with other males. This can cause tension amongst males, and in some cases consortship behaviour will be observed; the male entices a female to leave the core area and they travel together away from the other community members until her cycle has completed. Consortship has been observed in captive settings, particularly in sanctuaries. This is especially true of young females that

are not on a contraception program. Managers need to be careful to avoid tension among males during these times and take particular note of potential aggressive behaviour between males when staying overnight in holding facilities. Separation of potential combatants needs to be maintained when they are in a restricted area.

It has also been observed that those males that are isolated from other chimpanzees for most of their young life may not copulate with females, even when the females present to them.

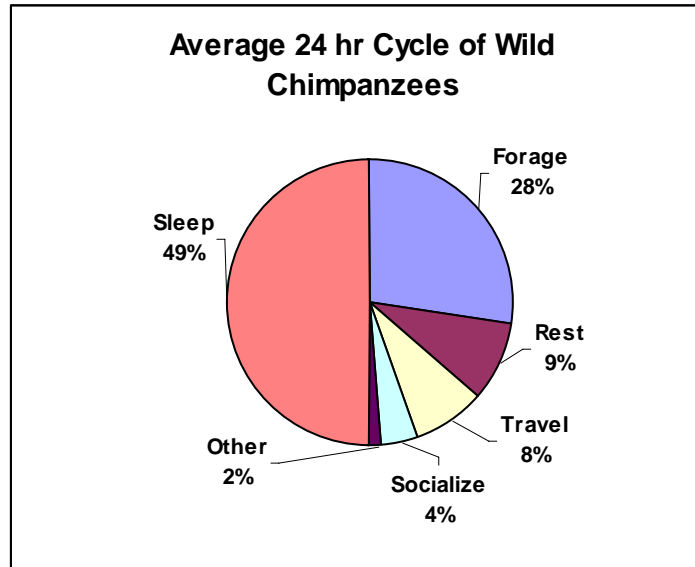
**Maternal Behaviour:** Chimpanzees in captivity have often proven to be good mothers, exhibiting most of the same maternal behaviour seen in the wild. Some females that are hand reared will experience difficulty in rearing an infant. In the case of accidental conception and birth, managers should do all they can to assist mothers if they are experiencing difficulties, but should not pull the infant for permanent hand rearing. In most cases, separation for other group members will be needed for a short period of time. But care must be taken to avoid or minimize stress in the mother that separation from other group members may induce.

**Nest Building:** In the wild and in captivity chimpanzees will build nests if nesting material is made available. Infants start making nests around 12-14 months of age. Therefore, it is very important in sanctuaries for managers and staff to ensure suitable materials are made available for nest building. Hay, grass, branches, shredded paper, hessian (burlap) sacks and old clothes can all be offered for nest building.

**Social Play:** In the care and hand rearing of orphaned chimpanzees it is important to consider social play with others. For the first 6 months of life, infants are observed to have very brief bouts of play with their mothers. The play bouts and duration will increase with age. By three years of age infants play less with their mothers and more with others. Hovat et al. (1980) observed less than 1% of the infants' social play was with its mother after three years of age. Infant chimpanzees demonstrate more social play than do juveniles or adults (Fulk & Garland 1992). Hence the need for other play stimuli for juveniles, particularly if maintained in peer groups.

**Activity Budgets:** Activity levels vary between captive and wild chimpanzees, and will also vary between age groups. Below is a pie chart of the average activity budget for wild chimpanzees over a 24hr period. During daylight hours, foraging and eating comprise of 47-60% of their waking day. In captive environments, feeding will consume less of their time, if not staggered and provided in a foraging regime. Care should be taken, particularly in those sanctuaries where release is being considered, to assimilate as much as possible normal foraging/feeding levels. In large natural enclosures, chimpanzees may be able to find wild fruits, as in the case of Ngamba Island. Not so in smaller enclosures with little or no natural vegetation. Managers and staff should devise a routine to assimilate natural foraging and feeding regimes as possible. Such practices as feeding small amounts often (4-5 times a day), scattering of food over the enclosure, feeding lower calorie foods in higher quantities to prolong feeding bouts, etc. have all proven effective.

Another thing to consider is the amount of time individuals or groups are held in holding facilities. Normal daytime for chimpanzees is daybreak to dusk. Where possible, chimpanzees should be released into enclosures at daybreak and not returned to the holding facilities until sunset.



*Extracted from Brent 2001*

## 2.5 Abnormal behaviour

Defining abnormal behaviour in wild chimpanzees is difficult considering the diverse range of behaviour seen across the four sub species. There are, however, observations of individuals exhibiting types of behaviour that can be considered abnormal (Fulk & Garland 1992).

### 2.5.1 in the Wild

Goodall et al. (1979) reported that an adult females who had visible oestrous swellings, refused sexual contact with any of the males of her community. Additionally, the female's behaviour was more consistent with that of an adult male. She frequently participated on border patrols with the adult males.

Goodall (1986) also reported the unusual behaviour of two females, mother and daughter, who as a team, were observed on three occasions to steal infants from other community females, killing and subsequently eating the infant.

### 2.5.2 in Captivity

Most abnormal behaviour seen in captivity is due to stress or abnormal rearing and prolonged social isolation at critical stages of development. This is most likely to occur in sanctuaries when individuals are rescued at a later phase of captivity (adolescent or adult) or where inappropriate hand rearing techniques are used.

There are two functional systems associated with socialization and development processes (Fulk & Garland 1992). They are, filial or mother-directed and exploitative or other-directed. Behaviours that are mother directed such as clinging or suckling, meet survival needs and also serve to reduce arousal under times of high psychological stress. As infants grow, they tend to reduce interactions with their mother and seek interactions with others and the environment at large. These other-directed behaviours usually serve to increase arousal and tend to occur under conditions of low or moderate stress (Fulk & Garland 1992). Other-directed behaviour becomes dominant at adolescence and adulthood. An environment without a mother or appropriate surrogate mother makes mother-directed behaviour impossible. Lack of this behaviour will inhibit normal development of both the cerebellum and cerebral cortex resulting in permanent deficits (Fulk & Garland 1992).

Lack of social contact and environmental complexity in later stages will also interfere with other-directed behaviours and retard or alter normal behavioural development (Fulk & Garland 199). The same for exploitative behaviour; lack of the appropriate environmental stimuli can alter individuals and cause them to seek other sources of arousal. Alternate stimulation seeking can be expressed but not limited to the following behaviours:

- Pacing
- Rocking
- Head banging
- Self Mutilation

The above behaviours can be viewed as the result of some form of stimulation deficit. This emphasizes the need for sanctuary managers to promote mother-rearing, or in the case of new arrivals, simulated mother rearing techniques by surrogate mothers (human or chimpanzee); to provide appropriate social groupings and appropriate environmental enrichment to promote normal social, behavioural and psychological development (Fulk & Garland 1992).

## Section Three: Chimpanzee Management

### 3.1 Facility Design

Designing facilities for chimpanzees is a complex process, particularly in a sanctuary environment. This manual is to provide the user with guidelines and suggestions on what will work in the African environment, taking into consideration certain constraints such as materials and resources available to managers. This manual should serve to provide managers guidelines in constructing effective and appropriate containment facilities to ensure the safety of staff and visitors as well as the welfare of the chimpanzees.

Due to the nature of the individuals we generally receive in the sanctuaries (orphaned infants that have been traumatised) many of the features of the below facilities are geared towards a higher level of contact between the caregivers and chimpanzees than normally seen in other captive settings such as zoos and laboratories. The reason for this is that individuals will require a lot more one-on-one care than in the other two settings; plus the philosophy of sanctuary management differs from those mentioned above. As per the mission of JGI sanctuaries (to release these individuals back into a wild state where possible), the success of rehabilitation of individuals is determined by the close and safe working relationship between caregivers and chimpanzees.

The main purpose of containment of the chimpanzees is to ensure the safety of both the chimpanzees and humans. Ensuring species specific behaviour is maintained during containment is essential for release programs to be successful; as well as ensuring the time in captivity is as least stressful to the individuals as possible.

#### 3.1.2 Holding facilities

##### **General Considerations:**

The design of indoor or holding facilities is characterized by three dimensional containment. In most cases, sanctuaries will be situated in the Equatorial zone of Africa, where climate control will not be necessary, other than to ensure proper shelter from wind, rain and sun is provided. Those sanctuaries located outside the equatorial zone of Africa, will need to consider temperature control needs of the facilities when the temperature goes below 18°C. Care must be taken choosing heating apparatus to eliminate the possibility of fire in the facility. Especially if nesting materials such as hay or shredded paper is used.

Where possible, all holding facilities should be no less than 3m in height (preferably 4m). A combination of adjoining rooms that vary in size allows for separation of individuals into smaller compatible parties. All rooms should have two (2) chimpanzee access doors, that are on different walls (preferably at different heights). This allows for easy

circulation of individuals and provides escape routes for chimpanzees in time of aggression or integration.

**JGI Policy:**

All transfers of adult chimpanzees from one place to another must be carried out in such a manner that keepers and chimpanzees are not sharing common space. Keepers should not have to enter a chimpanzee raceway in order to access rooms in holding facilities or enclosures.

In general group sizes will vary from 10-40 individuals; each room should be large enough to contain four individuals together overnight i.e. the smallest rooms should be no less than 3m x 5m x 4m (60m<sup>3</sup>). Holding facilities should be designed to have no less than 4 adjoining rooms that allow complete circulation of chimpanzees into all rooms. Combination of varying sized rooms is ideal, as it will allow for easy management and movement of individuals through the building. Use of overhead raceways to allow safe movement of chimpanzees across keeper corridor areas is recommended.

Caregivers should have clear view of all rooms and doors when opening doors or operating raceways for chimpanzees. Clear view of all doors into rooms when entering the building should be considered in the design of the facilities. Avoidance of blind spots is highly recommended. See **appendix 3.1** for examples of holding facility floor plans and photos.

**Materials Used for Containment:**

**Walls:** Bricks or block work and bars or welded mesh panels

**Floors:** Concrete (Satin finish) and or tiles

**Ceilings:** Bars or welded mesh or concrete for ceilings

**Roof:** concrete; iron sheets or tiles

Cost of these materials needs to be considered when designing these facilities. Where possible, solid walls should be used to block rain or wind from entering the facility

**Welded Mesh:** should be no less than 5mm in thickness of gauge of wire. Openings between wires should be no more than 5cm x 8cm.

**Bricks:** Cement blocks or ordinary bricks (double bricked) can be used, render or plaster on the inside will need to be carried out to allow for easy cleaning. High gloss paint that is waterproof is highly recommended if a satin finish render is not possible.

**Concrete:** Anywhere that chimpanzees have access to concrete walls or floors, a satin finish protocol should be maintained.

**Bars:** no less than 12 mm bars should be used for adult chimpanzee containment. Spacing between bars should be no more than 8cm width and 1m length.

## **Specific Considerations:**

### **JGI minimum space requirements for containment of juvenile to adult chimpanzees is as follows:**

Overnight accommodation in holding facility: 16m<sup>3</sup> per chimpanzee  
Daytime accommodation in holding facilities: 32m<sup>3</sup> per chimpanzee.

### **Keeper Doors:**

All chimpanzee holding room doors should open into a secure airlock corridor, not open directly to the outside. Keeper doors must open inwards and two locking mechanisms used on each door. Padlocks must be on every door. Padlocks should not be used as the only locking mechanism, bolts should be used as the primary containment device, with the padlock as the final containment.

Main door leading into the building should be a double door or wide enough to allow a transport crate or wheel barrow to pass easily.

### **Padlocks:**

Padlocks should be customised to work on one locking system per building or for all holding facilities. This will reduce risk in emergency situations if caregivers only need one key to open doors. All shanks of the padlocks that are exposed to the weather should be made of brass; while those in high risk areas should be made of reinforced steel.

### **Recommendation:**

Training of care of padlocks to caregivers and maintenance staff should be carried out to ensure longevity and security of the locks.

**Internal Walls:** Solid walls made from bricks or concrete need to have a smooth finish to allow for easy cleaning. Paint can be used, if high gloss, water resistant paint is available. Otherwise, a satin finish render with oxide pigmentation will suffice. Tiles can also be used if available and affordable.

### **Recommendation:**

Where bars or mesh is used as walls (full or partial), that standardised panels be locally fabricated and used that allows for easy replacement or repairs.

**Watering Mechanisms:** All rooms should have water access. Use of bowls is not advisable due to lack of ability to maintain level of hygiene required. While offering water by hand is done in many sanctuaries, this is really not an acceptable practice for those individuals that are permanently house in holding facilities. The use of 'pig nipples' is affordable and easy to install. **See appendix 3.2.**

**Floors:** Should always slope towards the drains; drains should be external to the chimpanzee access side of the buildings. Floors should always be a hard, smooth surface that is easy to clean. Tiles can be used on floors if they are available and affordable (care should be taken with grout spacing and use of antibacterial grout), otherwise, a satin finish concrete floor is acceptable.

**Drains:** Should be external to chimpanzee access points. Troughs deep enough to avoid flooding and spillage; catchment baskets installed before it enters the soak pit sump to avoid debris entering the soak pit.

**Caregiver Corridors:** Internal corridors between rooms should be no less than 2m wide if mesh or bars are used as walls. If walls are solid, than 1.5m can be used. In places where bars are used on both side of the corridor and chimps have the reaching ability of the full length of their arms, 3m wide corridors should be installed.

**Chimpanzee Access Doors:** In most cases, sliding doors should be used above guillotine doors. Sliding doors should have a roller mechanism in place, rather than just sliding the top and bottom of the doors through a trough system. This is due to rusting and ease of movement and potential back injury to staff. Roller mechanisms should be completely made of steel and not plastic. **See Appendix 3.3** for example of suitable rollers available in Africa.

**Raceways:** Raceways can be used to transfer chimpanzees from one side of a building to another; or to transfer them from a building to another building or enclosure. Raceways in buildings should be made of welded mesh or bars. The height of the raceways should be no less than 900mm and no less than 600mm wide. External raceways can be made of bars or welded mesh or electric fencing. **See appendix 3.4 for examples.**

**Furniture:** All rooms should provide sleep space for all chimpanzees off the floor. These can be sleeping benches, platforms or hammocks. Attachment points for hammocks and rope should be installed in all rooms during construction. Platforms should be no less than 600 wide. Platforms and benches should be arranged at varying heights in each room to allow chimpanzees opportunities to avoid eye contact with co-inhabitants. **See appendix 3.5** for design and photos. Tyres can also be added to rooms large enough to allow for the tyre to swing around without hitting the walls. Tyres should be strung with chain and not rope.

**Recommendation:**

If using rope, care must be taken to avoid accidental hanging due to frayed rope. Ends must be secure at all times. Ends that are accessible to chimpanzees should be melted and secured to avoid unravelling of the rope.

**Enrichment Devices:** Rooms that maybe used for daytime or prolonged containment of individuals should have the ability to house other enrichment devices such as balls; kong toys, logs and swings. Removable toys should be able to be given to chimpanzees without need for transferring them to a new room before offering the toy.

**Recommendation:**

Ensure toys and devices cannot cause harm to others or used to damage the integrity of the containment facility.

### 3.1.3 Enclosures

**General Considerations:**

The design of enclosures is characterized by providing as best as possible a natural environment or at least an environment that allows chimpanzees to carrying the normal range of behaviours observed in the wild. Taking into consideration that this species social society is fission-fusion. Other behaviours that need to be considered when designing an enclosure are locomotion; grooming; feeding; food sharing; foraging; displays; resting; aggression; mating; parental. Again a three dimensional world should be incorporated in this facility.

In most cases, two common containment methods will be used in sanctuaries; electrical fences or water.

In general group sizes will vary from 10-40 individuals; so enclosures need to be built to contain the maximum number of individuals likely to be integrated into a group. Each enclosure should provide shelter from rain and sun. Also provide enough climbing structures (natural or artificial) to allow individuals to escape or avoid each other as well as display the wide range of species typical locomotor behaviour.

**Specific Considerations:****Containment:****Electrical Fencing:**

Fence Height: Minimum height of fence is 8ft, some fences are as high as 12 ft where individuals are known to pole vault over the fence using loose branches found in the enclosure.

Posts: Generally made from eucalyptus poles that have been treated against termites. But metal posts can also be used though not recommended by most fencing contractors due to insulation problems.

Wire: High tension wire that is 20 gauge is recommended. Spacing between wires should be no more than 10cm. **See appendix 3.6** for photos of various fences used in sanctuaries in Africa.

Power Source: Solar Energy is most commonly used and most reliable. An energiser for power to the fence is needed. Size of energise depends of the size of enclosures. See **appendix 3.7** for information on equipment and manufacturers for energisers.

**JGI minimum space requirements for enclosure sizes for juvenile to adult chimpanzees is as follows:**

Enclosure size for Adults: Minimum 5000m<sup>2</sup>(or 500m<sup>2</sup> per adolescent/adult chimpanzee)

Enclosure size for Juveniles: Minimum 1000 m<sup>2</sup>: (or 250 m<sup>2</sup>per juvenile/infant chimpanzee)

### **3.1.4 Temporary holding facilities**

In some cases, the need for temporary holding facilities may arise. This can be the case when a new arrival is an adult chimpanzee and you have not suitable place to maintain it while integration is happening; or an individual who is no longer accepted into a group and is undergoing integration into another group.

In these cases, if the quarantine facility is not in use, it can serve this purpose. If this is not possible and you have only a short period of time to rehouse this individual, you may consider using old transport containers; adapting them (can be done in 1-2 weeks with right equipment and team) into temporary holding facilities. These containers could also serve as quarantine facilities, especially at a release site, since you can transport these containers back out after the release program is complete or closed.

See **appendix 3.8** for photos of such facilities and design features you need to consider.

### **3.1.5 Nursery Facilities**

Infant chimpanzees requirements are based on its age and individual needs. Infants under 12 months of age, require a 24hr caregiver and will spend most of its time clinging to its surrogate mother. Infants should be maintained in a safe environment, that also always for climbing; exploring and play activities with or without other infants.

Depending on if the sanctuary receives many infants in a year or not, will determine the need for a separate facility that acts as the nursery or not. In most cases, facilities such as the quarantine facilities and veterinary treatment facilities can often stand in as good nursery facility.

The main features required for a nursery is:

1. Kitchen facilities (Sink; stove; Refrigerator; workbenches), that are easy to access and easy to keep clean.
2. Easy to clean indoor facilities;

3. Easy access to bathroom (shower and toilet) for staff and in most cases, enables you to dispose of faecal and urine waste of the infants.
4. Outdoor play ground for the infants that is safe from access by older chimps and prevents humans other than essential staff access to the infants.
5. Easy to clean and maintain sleeping area for infants and caregivers.

The main areas to consider is that the facilities must be maintained at a high level of hygiene; ease of disposal of waste and ease of food preparation for the infants, and finally provides security.

### 3.1.6 Quarantine Facilities

#### **Rationale:**

The primary goal of quarantine facilities is to ensure physical and spatial separation (minimum 20m separation) from new arrivals or individuals suspected of harboring an infectious disease and resident animals for a period of time to allow for confirmation through medical examinations/test and treatments that these individuals are clear of possible diseases that could infect others. See **appendix 3.9** for example floor plans.

#### **Carrying Capacity:**

Separate facilities for quarantine individuals that are either new arrivals suspect to have infectious disease is a must for all sanctuaries. The size of the facility and number of rooms needed is dependant on the average acquisition rate of the sanctuary. In most circumstances, 3 holding interconnecting rooms will allow you to quarantine up to six individuals, if they are infants or juveniles or three adults for the normal three month quarantine term for primates. That would mean in one year, this facility could take up to 18 infants; Juveniles and 9 adults, which would be a high acquisition rate for any sanctuary. Quarantine facilities could double as nurseries if acquisition rates are low.

#### **Facility Design:**

Quarantine facilities are usually composed of two physically separate areas:

- The staff area
- The animal holding areas

#### **Staff Area requirements:**

- Storage space for cleaning equipment
- Rest room and a locker room with shower facilities for staff
- A single or double corridor system
- A footbath containing an effective disinfectant must be used prior to entering the quarantine facility

#### **Animal Holding Area requirements:**

The building must meet the requirements for holding an adult chimpanzee; no less than two adjoining rooms of 3m(w) x 5m(l) x 3m(h).

Anterooms should be attached to the holding rooms

Indoor Housing: Complete shelter from the elements should be provided. Lighting in indoor housing must be adequate.

Substrate and Drainage: The animal holding room floors, walls, and ceiling should be impervious to moisture to facilitate cleaning and disinfecting. The drainage system must be totally separate from regular holding areas.

Outdoors Area: Should be connected to the indoor area. Should be physically separated by solid walls at a minimum of 5 m. Should also have mesh ceiling with appropriate cage furniture to allow for three dimensional use of the space by the individuals in quarantine.

Support facilities: There must be an area for carcass disposal. A separate garbage pit should be provided to avoid contaminants getting into the general disposal pit.

### **3.1.7 Veterinary Treatment/Hospital Facilities**

#### **Rationale:**

Dependant on the carrying capacity of the sanctuary, the need for a separate veterinary treatment/hospital facilities maybe be required. On average all residents will have to undergo a annual health check. If you have 40 individuals, that is 40 regular health checks per year; then during quarantine, three health checks per individual (example 5 new arrivals per year equals 15 health checks); then emergency procedures. In general a sanctuary with 40 individuals can be expected to require the facilities of a veterinary unit at least 60 days a year. If the resident number is 100, then 150 days a year the veterinary unit would be required. This does not take into account routine laboratory examinations such as fecal floats.

#### **Basic Design Requirements:**

Facility should be located in close proximity of the holding areas of the resident population while still maintaining quarantine distance of 20m. It is best if the resident chimpanzees cannot see into the treatment room or observe the veterinarians at work. It is also important to consider that a sedated individual should not be aroused by the noise of other companions. Facility needs access to running water and electricity (Solar and Generator-for heavy machinery like X ray machines). See **appendix 3.10**

Main components are:

1. Treatment/examination/operating room
2. Laboratory
3. Office/Records room.

Treatment/examination/operating room: Should be large enough to allow two chimps to be sedated and worked on at the same time; allow for easy circulation around the operating tables for up to 4-6 attendants in the room for observation during training sessions; easy to clean and keep clean; plenty of work benches and storage; plenty of shelving; must have good ventilation and lighting (natural and artificial).

Laboratory: Clean work place that has sinks and bench space for carrying out procedures and enough work space for appropriate number of testing apparatus.

Office/Records Room: Workspace for prolonged sitting for 1-2 people; access to power points for computer; filing and shelving space for records;

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Other items to consider:

Lockable cabinets for dangerous drugs; Refrigerator for preserving specimens; area for carrying out post-mortems ( concrete slab with good drainage and access to water is fine, as long as you can maintain fly control of the site.

## 3.2 Construction Resource Reference

Each sanctuary should compile an inventory and list of materials; supplies and construction experts that can assist in the design and building of facilities for the sanctuary. General things to consider are availability of: Weld mesh; steel bars; welding machines; fencing posts; electrical fencing equipment; good quality bricks; reliable building contractors; supply companies. See **appendix 3.11** for sample of list for Ngamba Island. Use of modular facilities will ease the work load of the construction crew and site manager, as replication of proven facilities will allow for cheaper and quicker construction time.

### 3.2.1 Architectural Design Expertise

An architect with previous experience in designing animal holding facilities is an advantage, but not completely necessary as long as the person is willing to listen and learn the needs of chimpanzee containment from your management team. It is particularly important to have an architect that can adapt to the limitation of materials and expertise in the locations they are working in and take into consideration that sanctuaries are often remote from most common services. Sanctuary managers should also be prepared to consult with other institutions that have similar needs, such as zoos and other sanctuaries. See **appendix 3.12** for contact details of various individuals and institutions that have assisted in the past.

### 3.2.2 Essential Material/Equipment List

Welding Generator: One of the essential pieces of equipment that a sanctuary needs is a welding generator. The machine should be kept in good condition, regularly maintained and that you ensure that someone on staff that can use it appropriately. If need be, you may have to send someone from permanent staff for training if you do not have a welder on staff.

Reliable Solar Energy Source: Ensure battery reserve is enough for power needs for 5 days of no/low sunshine. Low energy use lighting should be in place. Personnel must be trained in the principles of solar power and the need to use the power conservatively and understanding the need to allow batteries to recharge before putting load on them is important.

Reliable Water Supply/Storage: Most sanctuaries are located in remote locations and do not have access to town water supplies. Rainwater collection; wells or a reservoir are the three main sources of reliable water. The disadvantage of rainwater is the amount of storage area needed to cover dry season period, which can be up to 4 months. Wells with a solar pump is a good option if ground water is not too deep. Use of filtration of water for all drinking supplies is advisable. Construction of a reservoir for collection of rainwater and runoff is also an option. If this reservoir can be placed higher than most of the facilities, a gravitation system can be used to transport water to the various buildings.

All holding facilities; veterinary; quarantine; food preparation and amenities block require access to running water.

Managers should carry out a cost benefits analysis to work out the most cost effective system to use at the site.

### **3.3 Chimpanzee and Human Health Management**

Since chimpanzees have a close phylogenetic relationship to humans, they are susceptible to many human pathogens, and have been used as models for human diseases when no other animal species are suitable. Close contact between visitors and chimpanzees may lead to accidental exposure to human diseases. Therefore a good preventative medicine program addresses the health of both the chimpanzees and their caregivers. See preventative medicine control below, for more details in this area. Other areas of importance are quarantine procedures; annual health checks; vaccination programs; and husbandry protocols. All are addressed in more detail below. Behavioural management is also an important part of chimpanzee care program. Environmental enrichment, social group management; positive reinforcement training; intergration processes all affect the health of individual chimpanzees. These topics will be covered in section 3.4 of this chapter. Human health management is also covered below under health monitoring of staff procedures.

#### **3.3.1 Basic Needs for Chimpanzees in Captivity**

Sanctuaries in Africa are unique to many other captive environments for chimpanzees. Most of the chimpanzees that arrive to a sanctuary will be young (under 4 years of age). Many have suffered great trauma, both physical and psychological. They often come from unknown background, so health status of the individuals is often unknown. As all chimpanzees come from the wild, the risk of disease transmission is high. Sanctuary managers have to negotiate between providing adequate care for individuals, while protecting staff of health risks in environments of limited resources. All chimpanzees deserve to be treated humanely with high level of compassion; they need to be provided with shelter; food and water/milk as per their needs and given social contact with humans until they are given a clear health status to allow them to be integrated with other chimpanzees, once they are cleared they should be integrated into a small social group and then gradually integrated into a larger stable community.

Infants require 24hour care and contact with humans until at least 2 years of age; They should have access to other infants for social interaction and should be maintained in a safe environment. Infants should be fed frequently, bottle feeding should be demand driven responsive care, not program driven.

Juveniles and adolescents are highly active and require a stimulating and challenging environment to avoid boredom and to learn the social skills to survive in a community. The social and cognitive development of juveniles is very important for successful release programs.

Adults require a safe environment that is socially very enriching; a balance sex ratio structure is recommended, though not always possible. Care must be taken when managing adults in groups where the sex ratio is biased towards males. Increased levels of aggression can cause trauma and stress to individuals that can result in suppressed immune systems.

Juveniles, adolescents, and adults should be fed a minimum of 4 times per day. The first feeding session should be at day break, the last just before sunset.

### 3.3.2 Quarantine procedures

Quarantine is the separation of newly received chimpanzees from those already in the facility until their health can be evaluated. The purpose of such isolation is to prevent the introduction of infectious disease to the resident population e.g. parasitic, fungal, protozoal, viral or bacterial. In addition, during this period new individuals can become accustomed to their new diets and housing, and baseline medical data can be gathered. Quarantine procedures must be applied rigorously. Chimpanzees coming into the sanctuary usually have had close contact with humans for (often) prolonged periods, so the potential for disease is high. See **appendix 4.5** in the PASA Veterinary Manual for more detailed instructions on quarantine procedures.

The protocols below represent an ideal situation towards which the sanctuary should aim to achieve quarantine protocols:

- Personnel working with quarantined primates must observe established procedures to prevent cross-contamination to resident primates. These procedures include personal hygiene, the use of separate equipment (such as feeding bottles, cleaning brushes etc), footwear and clothing for quarantined primates and the thorough disinfection of all such items after use each day.
- Ideally, staff caring for the quarantined chimpanzees would not work with or have contact with any other chimpanzee during the three months. If this cannot be avoided, at least contact with quarantined primates should always follow contact with resident primates and never vice-versa. (e.g. feed and clean resident primates, then feed and clean quarantined primates, then wash thoroughly)

- All new comers to the sanctuary should undergo three months (90 days) quarantine. In certain circumstances it may be wise to increase this period to 6 months (e.g. for any primates which are known to have been in contact with tuberculosis).
- At the end of the quarantine period, the enclosure should be thoroughly disinfected with an appropriate disinfectant (based upon diseases detected e.g. viricidal). Ideally the facilities should then be unused for a period of 7-10 days.
- Allow for stabilization period before doing first examination. A period between 1 day to 7 days (dependant on the individual in question) should be allowed for "settling in". This will allow the individual time to adjust to its new environment, determine food preferences and behavioral patterns can be assessed and a medical record established.

**Recommendation:**

If medical problems are seen and require immediate attention it should be done immediately.

**Medical Examinations:**

A full physical examination is done under general anaesthesia, three times at one month intervals. These examinations should include:

- Assessment of general health & condition, age, weight, dental health, external parasite burden, previous injuries, etc.
- Individuals should be permanently identified (e.g. subcutaneous microchip transponder or photographs)
- Blood and serum samples should be taken for routine haematology (including screening for anaemia & blood parasites - especially malaria) and serum biochemistry, hepatitis A, B and C tests (serum) and serological testing for SIV (Simian Immunodeficiency Virus) and HIV infection.
- It may also be wise to submit serum to test for a panel of other human and primate viruses. Additional serum should be taken and stored at minus 20° C (preferably -70° C) for future reference. Ideally cells for DNA isolation should be stored (e.g. hair follicles – which can be stored in DMSO for improved long term viability)
- Haematology profile: Complete Blood Count, Fibrinogen; biochemistry profile; Sodium Potassium; Urea CPK; Creatinine Glucose; ALT Total bilirubin; Gamma GT Alk. Phos.; AST Protein; Albumin Globulin; Calcium Phosphate; Cholesterol Triglyceride; LDH CPK; Urinalysis: using a dip stick plus possible submission to laboratory for cytology
- Faecal samples should be examined by direct microscopy and by a floatation technique for internal parasites and cultured for Salmonella, Campylobacter

and *Shigella* on at least three occasions during the quarantine period. Faeces for culture should be collected in transport media using swabs. Samples where parasites have been detected should subsequently be treated, further tests should be carried out during quarantine period. The numbers of helminth eggs per gram of faeces examined is often directly related to the clinical severity of infestation. However, in severe diarrhoea, due to a dilution effect large numbers may not be seen. This is not the case for protozoa. Therefore, in the case of primates with diarrhoea and a high faecal protozoal count, it is wise to consider other primary causes before ascribing the problem solely to the protozoan identified.

- If intestinal parasites are found, a deworming measure should be immediately instated: Ivermectin/Milbemycin/Moxidectin should be administered every 2-4 weeks during quarantine. (Since TB tests are conducted monthly, dosing at this time may be most convenient). (However if lice or scabies are detected then dosing at 2 week intervals is preferred).  
Pyrantel/Mebendazole/Albendazole should also be given early in the quarantine period, (hookworms and ascarids may not be susceptible to Ivermectin//Milbemycin/Moxidectin) and if parasites are confirmed on faecal examination, treatment should be repeated in 2-3 weeks. Praziquantel can be used if tapeworms are confirmed. Deworming every 6-12 months should occur regardless for all chimpanzees.
- **Tuberculosis Testing:** Should tuberculosis be introduced it may be extremely difficult to eradicate and the long-term consequences could be disastrous. Each individual should therefore be tested intradermally for TB on three separate occasions.
  - During the quarantine period, with one month between each test. An intradermal injection of 0.1ml Mammalian Old Tuberculin (MOT) into the skin of an upper eyelid (alternating sides on successive tests) under sedation, and observation of the local reaction at 24hrs, 48hrs and 72hrs. If MOT is not available then PPD (Purified Protein Derivative) may be used as an inferior alternative.
  - A comparative test using 0.1ml of avian tuberculin 25, 000 iu/ml is given intradermally in the skin of the right eyelid and 0.1ml of bovine tuberculin 25, 000iu/ml is given intradermally into the skin of the left eyelid can also be employed. Observation is done at 24, 48 and 72hrs. An increased swelling on the left eyelid (bovine) in comparison to the right eye (avian) indicates a suspicious result. Other sites can be used like the abdomen and the medial forearm. The sites can be circled with an indelible marker
  - There is a possibility of obtaining false positive results; definitive diagnosis is therefore based on repeated positive results and further diagnostic procedures. The intra dermal comparative skin test is however a valuable tool in definitively eliminating those individuals which test negative from further suspicion.

- Other tests for tuberculosis are desirable although not readily available in the field. (These tests include lymphocyte transformation tests (LTT), polymerase chain reaction (PCR) tests for mycobacterial DNA in tracheal washings, culture of sputum and tracheal washings, serum gamma-interferon tests eg PRIMAGRAM, serum ELISA tests for antibodies to mycobacteria and comparative tuberculin skin tests (easy to do but access difficult in the field).
- Incoming individuals that clear these tests are considered free of tuberculosis and can be introduced into the resident group after all other quarantine procedures have been carried out.

• **NB: Intradermal testing of juveniles < 1 year old may not be accurate due to immaturity of the immune system.**

- Primates suffering from the later stages of clinical tuberculosis may skin test negative due to an immunologically depressed state known as anergy. Thus any very thin or weak primates, or one suffering from a chronic respiratory condition should be treated with extreme caution.
  - Primate testing positive: see "Tuberculosis control" section in **appendix 4.5**. The intradermal tuberculin test for tuberculosis is the best available test. In the future it is hoped that more specific tests will be available.
- Vaccinations should be given during the quarantine period provided that the routine haematology/biochemistry described during the clinical examination demonstrate no current disease. It is important not to vaccinate against measles when TB testing.
  - All individuals who die during the quarantine period must be necropsied.

### 3.3.3 Preventative medicine control

Preventative medicine control includes all procedures that will help prevent illness and injury to the chimpanzees residing at the sanctuary. Preventive medicine is most important aspect of a health program for sanctuary residents. An effective preventative medicine program will ensure high survival rate of new comers, as well as long term residents; reduced medical costs and healthy staff.

Areas of importance for maintenance of an effective preventative medicine program are the following:

1. Maintenance of medical and individual records
2. Maintenance of quarantine protocols for all newcomers and sick individuals
3. Routine health screening of chimpanzees, in particular annual health checks and daily observation by caregivers and veterinary staff

4. Maintenance of balance diet and good nutrition, including safe storage of food stuffs and monitoring by staff on individuals ensuring all are receiving their daily nutritional requirements.
5. Routine parasite controls, through quarterly examinations of groups and dosing as required.
6. Consistent vaccination protocol for all residents; including staff and maintenance of these vaccinations.
7. Prevention of trauma, through accidents or aggression within groups. Caregivers need to be diligent in checking enclosures and holding facilities and the furniture to prevent chimpanzees hurting themselves. Caregivers also should be observant of any overly aggressive situations that could cause serious injury to individuals if intervention is not carried out.
8. Minimization of stress by ensuring enclosure size is appropriate for the number of individuals being housed; that group composition is appropriate and levels of aggression seen in the group is normal; ability of individuals to escape aggressive interactions; assurance that new comers are in secure environments both physically and psychologically.
9. Pest control measures are in place to ensure food storage is secure and minimal pests are found in holding facilities; high level of hygiene and diligent measures must be in place at all times.
10. In the event of the death of an individual that a necropsy is carried out to determine the cause of death in order to ensure prevention of further deaths.
11. High standard of sanitation & hygiene for all facilities and personnel should be maintained at all times.
12. Daily observations of residents; staff and facilities will contribute to prevention of illnesses; compromising situations going undetected. It can help to have short section meetings each day to allow caregivers to inform the manager or veterinarian of any concerns or incidences in their group from the following day.
13. Installation of Occupational Health & Safety Manual and program (**see appendix 4.4**)
14. Caregiver knowledge and training: if caregivers are not given the correct training and information on disease prevention methods, than chances are the above measures will not be carried out effectively. Proper training programs for staff and continual training is important. See **appendix 4.1** for caregiver training curriculum.

### 3.3.4 Zoonotic Diseases

Due to the nature of the sanctuaries in receiving chimpanzees and other primates from unknown sources and conditions, there is high risk of zoonotic disease transmission. It is imperative that as sanctuary managers we do all we can in our situation to prevent disease transmission. Some of the serious diseases we need to consider are Tuberculosis; Ebola; Marburg, SIV cpz; and a few others. A list of zoonotic diseases is found in the PASA health care manual; **appendix 4.5**. All managers should be familiar with these diseases, detection methods ; symptoms and methods of prevention.

### 3.3.5 Annual health checks

#### **JGI Policy:**

Annual health checks must be carried on all resident chimpanzees at the sanctuary.

#### Annual Examinations should contain the following:

Utilization of standard examination form as provided in the PASA health care manual, **appendix 4.5**.

1. Weight of individual recorded
2. Establish intravenous access if long procedure (longer than 30 minutes)
3. Regular recording of parameters i.e. TPR, mucous membrane colour, blood pressure and oxygen saturation
4. Full clinical examination. i.e. teeth, ears, eyes, nose, auscultate heart and lungs, abdomen, skin, hair
5. Tuberculosis testing; Right eye - avian tuberculin – 0.1ml ID; Left eye - bovine tuberculin – 0.1ml ID; Right eye – MOT - 0.1ml ID
6. Blood sample using needle or butterfly needle for serology, haematology and or biochemistry; Use gloves and use vacutainer and attachment; Femoral vein; Median cubital vein; Saphenous vein; Collect in EDTA tube, serum tube, citrate; Make smear for examination.
7. Urine sample for multistix examination or further analysis
8. Sample of faeces for examination plus or minus swab.
9. Other diagnostic samples as required i.e. skin/hair/swabs.
10. Radiology/ultrasound if warranted and available
11. Vaccinations: Polio, Tetanus, Measle
12. Deworm for helminths and cestodes • Treat for lice or wash coat if necessary

At the end of the procedures, the chimps should be given a reversal and monitored during recovery by a experienced caregiver or medical personel. Who will continue to monitor vital signs and record on examination form for future reference.

**Post examination duties:** Continued monitoring of individuals for TB results (72 hrs) and transferring of samples to laboratories for testing or storage. Ensure all examination results are properly recorded and filed for easy access.

**Recommendations:**

Normally, it is best to schedule carrying out the annual health checks concurrently over a intensified period of 1-3 weeks. This is to maximize time and labour, as well as cost efficiency with regards to laboratory expenses and transportation costs. Depending on the experience of the vets/ sanctuary personnel and number of qualified persons available; 4-6 individuals can be safely anaesthetized in one day. All examines should be done before midday. No chimpanzee would be anaesthetized after midday, unless in an emergency situation. This allows the individual full recovery before the end of the day.

Preparation of these annual health checks are very important. In many cases, the sanctuary veterinarian should seek outside assistance, or use this opportunity to train local national veterinarians in great ape health issues.

### 3.3.6 Vaccination programmes

There are very few vaccines that are approved for use in wildlife and there is little information available about the safety and efficacy of these vaccines in wildlife. Therefore, it is important to realize the limitations of using vaccines to protect chimpanzees and other non human primates against transmittable diseases.

There are several vaccines that are recommended for preventative measures with Chimpanzees and should be given in proper doses by all sanctuaries where possible. These are:

1. Oral polio (3, 6, 9 mo and 24 mo of age)
2. Human tetanus toxoid (3, 6, 9 mo, then every 3- 5 years)
3. Measles (MLV vaccine; follow human protocol)

Others that are possible if available and considered a risk for the captive chimpanzee population:

1. Hemophilus influenzae (HibTITER)
2. Influenza vaccine annually in autumn
3. Rabies if in high risk area

Vaccines should be updated as appropriate, good records of doses and dates should be maintained for each chimpanzee.

### 3.3.7 Health monitoring of staff procedures

All efforts must be made to minimise the risk of disease being spread from humans to the primates or vice-versa.

### **JGI Policy:**

Before allowing staff to work with chimpanzees or other primates, staff should be tested for the following:

- TB (skin test and radiology if possible)
- hepatitis A, B and C and
- HIV infection
- And vaccinated against
- Polio, tetanus, meningitis; hepatitis A & B.

All staff should undergo tests every six months for tuberculosis (intradermal test), hepatitis B and ideally HIV throughout their period of employment . Annual chest X-rays are also desirable.

In an endemic area many people will test positive on the intradermal skin test for TB. If a staff member who has tested positive exhibits coughing or weight loss at any time, that staff person should be removed from contact with primates and further diagnostics performed.

If a staff member tests positive to TB, then he/she should not be allowed contact with primates. They must be relieved of their duties; placed on treatment and be cleared by the doctors before resuming duties. They should be recalled from working with chimpanzees or other primates and reassigned other duties if necessary.

**NB: HIV+ve people are far more likely to contract TB than HIV-ve people, and hence are at greater risk of becoming carriers or spreading the disease.**

All members of staff must agree upon these issues.

All staff should undergo 6 monthly faecal testing for gastrointestinal parasites and bacterial pathogens. All parasite burdens and pathogenic bacteria should be treated. The first faecal test should be conducted before new staff come into contact with primates. Where this is not possible, staff should be wormed every 3 months. New members of staff should not have any contact with primates for the first two weeks of employment. This should allow sufficient time for the development of most infectious diseases should staff be incubating any at the time of appointment. The two weeks should also allow sufficient time for faecal and blood testing and vaccination where appropriate.

Any member of staff suffering from respiratory symptoms or diarrhoea should not work with the primates until fully recovered. Consider some may shed chronically as a carrier status. Staff suffering from infectious skin diseases such as scabies should also be isolated from primates.

Standards of personal hygiene must be very high amongst caregiver staff, although this may be easier to state than implement! Spitting, urinating or defaecating in the compound other than in the toilets must be strictly forbidden. In order to reduce the possibility disease spread between primates and humans, when handling primates at close quarters (e.g. when anaesthetised) staff should wear disposable gloves and a simple facemask.

Staff should advise any incidence of disease in their family members. E.g. colds, flu, measles, chicken pox. Staff should stay away from primates until the end of the incubation period of the specific disease

Staff should wash hands properly with soap and water before and after preparation of food, entering enclosures, contact with primates and after going to the toilet. Staff should shower at least once daily. Separate feeding utensils and cleaning tools should be used for each enclosure

### **3.3.8 Husbandry and cleaning procedures**

#### **JGI Policy:**

Any sanctuary that is managed or supported by JGI is required to ensure high levels of hygiene is maintained with regards to husbandry and cleaning procedures. This is to ensure wellbeing of the resident chimpanzees and staff. It also ensures standards are maintained that would not compromise the sanctuaries ability to potentially release individuals back into the wild as some point.

The following are procedures that should be maintained by all sanctuaries:

- ✓ All hard-surfaces in enclosures or holding facilities, such as walls, floors and furniture must be washed as frequently as necessary to keep them free from contamination.
- ✓ Benches, shelves; ropes and climbing structures should be cleaned frequently enough to prevent the accumulation of faecal matter and urine.
- ✓ Soil or other natural substrates must be spot-cleaned daily to remove organic waste.
- ✓ Watering devices, feeding equipment and other metal or plastic equipment, if disinfected after cleaning, must be rinsed thoroughly.
- ✓ Chimpanzees must have access to dry areas during and after the cleaning process.

### **3.3.7 Nutrition**

#### **JGI Policy:**

Standard level of nutrition should be maintained in all sanctuaries that are managed or supported by JGI. The PASA health care Manual provides a baseline for the nutritional needs of chimpanzees and other primates. These guidelines should be used in determining a well balance diet for the residents in each sanctuary. Due to the variation in food availability in each sanctuary; managers need to ensure that quality and quantities are adequate for the chimpanzees in their care.

### **Notes on Nutritional Needs of Chimpanzees:**

Energy or 'fuel' requirements for individuals is measured in calories (or joules). The following equation gives a quick estimation of how much energy a chimpanzee needs, depending on its physiological state. This is especially useful when hand raising and feeding infants

#### **Basal Metabolic Rate (BMR)**

$BMR = 70 \text{ kcal (body weight in kg)}^{0.75}$

**Maintenance:** 1.5-2 X BMR

**Growth:** 3 X BMR

**Reproduction:** 4-6 X BMR in the last trimester of gestation and all through lactation

Chimpanzees are primarily frugivores, though they are known to kill and eat other animals from time to time.

### **Malnourished individuals:**

Often on arrival individuals can be in certain stages of malnourishment. It is critical that careful assessment of the nutritional state of the individual is done to ensure the appropriate recovery regime is put in place. The most important is rehydration of the individual then gradual increase in level of nutrients so the individual can adjust and cope with the new feeding regime without undue harm. The PASA healthcare manual(**appendix 4.5**) provides good guidelines in dealing with malnourished individuals. It is also wise to consult doctors who deal with malnourished children if you are unsure of what to do. Refuge doctors are normally a good source of information.

### **Infants:**

Should be on human baby formula milk for up to three years. This should be given as a demand feeding regime for the first 12 months. Infant chimpanzees start to eat solids from 3-5 months of age; so gradual replacement of milk with solids is done over the following 2 years. Provision of solids should be as varied to what is seasonally available; should be at regular intervals (every 2-3 hours); and should be in sufficient quantities that the caregiver can monitor and assess the individual needs/preferences of the infants. Careful recording of what each individual consumes is necessary to allow the veterinarian to assess if each infant is consuming a balance diet; monthly weight recording will assist in monitoring of infants progress and if the diet being provided is allowing normal growth rates.

In introducing new foods to the infants, it is often necessary to eat the food in front of them then offer them a portion of the food, caregivers or the donor of the food, should make food grunts at the same time, to indicate to the infant that the food is good. If the infant is wary of the food, offer small amounts at various times. Do not leave uneaten food for flies to land on. If the food is not taken or eaten by the infant, it should be removed and placed somewhere clean until the next feeding session.

Introducing a porridge for evening meals is good start to solid regime. In most regions, sorgum; soy, maize or millet are the usual base flours used to make infant porridge in Africa.

**Juveniles:**

Juveniles are active and require as much food as per an adult. It is important to maintain a variety of food daily, replacing one or two items different each day to make it interesting for the individuals. On average, individuals should be offered no less than 10 different food items per day. For juveniles if approximately 10% of their body weight is offered per day, it a good baseline for the amount given. Again, monthly weigh ins will assist in measuring if you are giving enough food per day per individual. A variety of fruits and vegetables, as well as a starch base cereal in the form of porridge or dough like consistency is good (Local names: Posho; Ugali; Mele Meal). Four feedings a day is required and access to water at all times is required. See **appendix 3.13** for example of variety and amount required for juveniles.

**Adults:**

Adults are normally less active than juveniles. Thus while they are larger, they may require no more than a juvenile. Care should be taken to monitor the amount of food each individual takes when feeding in groups/communities. Often some individuals, particularly dominant males will dominate the food resources. Care not to allow certain individuals to become overweight while others are not consuming enough. It is wise to have one or two feeding sessions where you are able to hand feed each individual to ensure they all receive the required amount of food. Like juveniles, a porridge or dough like cereal based food it good to give in the mornings or evenings, while during the day fruit and vegetables are given. Again, at least 10 different food items per day should be offered to the individuals. See **appendix 3.13** for a sample diet for an adult chimpanzee.

### 3.3.9 Reproductive management

**JGI Policy:**

The objective of sanctuaries is not to have chimpanzees reproduce in captivity. Hence, all sanctuaries will have to have a non reproductive management policy and procedures in place. There are very few scenarios where sanctuaries should be allowing females to reproduce, such as once adult females have been released back into the wild. Infants born through accidental failure of the reproductive management regime will be given all the support needed, though handrearing if rejected by the mother will not be pursued.

All sanctuaries should operate with the objective that at some stage their chimpanzees may be released into the wild. This means permanent sterilization is not an option for management of reproduction.

**Reproductive cycle of chimpanzees in brief:**

Normally both males and females will mature earlier in captivity than in the wild.

**Females:** First sign of menstruation normally occurs 1-1.5 yrs after the first oestrous swellings occur. In the wild this is usually around 8.5-9.5 years, while in captivity it can be as early as 5.5 years. Pregnancy can occur from the first menarche and so it is important to closely observe young females as they start to mature.

Managers/Veterinarians should consider implanting young females 8-10months after the first swellings are observed. Adult males, particularly the dominant males will pay particular interest in females that are ovulating. Guarding of these females by dominant

males is often observed and if this occurs, managers/veterinarians should check on the status of these females, if they have been implanted earlier.

**Males:** Rapid testicular growth occurs between 9-10 in the wild, but as early as 6-7 years in captivity. Males are usually considered socially mature at 15 years in the wild when weight and dentition have peaked. In captivity this occurs between 8 and 9 years.

**Further References on Reproductive Management and Behaviour:**

1. PASA health care manual in appendix 4.2.
2. The Care and Management of Captive Chimpanzees edited by Linda Brent
3. The Care and Management of Chimpanzees in Captive Environments edited by Randy Fulk and Chris Garland.

**Contraception methods:**

Currently, the preferred method for ease of management is contraceptive implants in females. See **appendix 4.5** (PASA health care manual; section **2.13**) for further information on types of implants; other methods; placements of contraceptives and likely problems that may occur. These implants should be placed into females at the onset of the first mature cycle of the females. This will vary between females and careful observations should be maintained for all females. See **appendix 3.14** for sample of menstrual cycle chart.

### 3.3.10 Transportation requirements

**General:**

It is best to sedate chimps prior to transportation. However, young chimps (less than 3 years) can be crated and transported without sedation. Crates should be strong with a solid bottom to contain urine and faeces. It should be lockable and bedding should be provided. An experienced person (experienced vet if possible) should accompany the chimpanzee during transportation. Emergency anaesthesia/ medical kit should be carried as well as a water spray/ ice cubes in case of hyperthermia. A suitable dose of an appropriate anaesthetic drug should be drawn up and ready for use.

#### 3.3.10.1 Locally

Safety for chimpanzees and humans should be the first priority when transporting chimpanzees either between facilities; from one site to another, or from area of confiscation to the sanctuary.

Infants can usually be transported by hand if under the age of 3 years (if used to being handled and familiar with the caregiver/handler). An experienced caregiver/handler should always be used when transporting locally and the veterinarian should be in attendance during transportation. All juveniles; adolescents and adults must be transported in appropriate transport crates.

Ensure documentation from relevant authorities giving permission to transport the chimpanzee from collection point to sanctuary or quarantine site is on hand while

transporting individuals. If possible, someone from the relevant authorities should be in attendance during the transportation.

Most countries do not require special permits for transporting from one region to another within the country. But, if this is required in the country where the sanctuary is, ensure all relevant permits are in order before travelling between regions' districts or provinces within the country.

### **3.3.10.2 Regionally**

Ensure documentation from relevant authorities giving permission to transport the chimpanzee from collection point to sanctuary or quarantine site is on hand while transporting individuals. This will include CITES permits; veterinary clearance forms and possible other documentation from the country that the individual is being imported, especially copies of airways bills. Ensure you have multiple copies of all documents so that immigration, customs, dept of agriculture or veterinary services can retain copies. If possible, someone from the relevant authorities should be in attendance during the transportation and must be in attendance at departure and landing points.

All individuals should be transported in the same transport crates as per international standards. In some cases, airline companies will allow you to carry infants on board; if you are carrying an infant, it is best to request permission for you to either have the infant with you or that you travel with the infant in the cargo hold.

Be aware that not all planes will have decompression units for cargo and if this is not provided and you are travelling long distance, then you need to travel with the individuals to ensure that the area is not too cold or hot. Ensure while at the airports, that the chimps are kept in a quiet, cool place out of the sun. Ensure you can provide food and water at any time. Best to provide fruit that is high in water content. Someone should be in attendance with chimps at all time.

### **3.3.10.3 Internationally**

Any sanctuary that is managed or supported by JGI that is transporting chimpanzees or other non human primates across international borders will abide by the most recent guidelines set by International Air Transport Association (IATA) Live Animals Regulations. The sanctuary will also follow the Organisation International for Epidemiology (OIE) regulations with regards to quarantine procedures to ensure minimal risk of disease transmission during transportation. The most recent set of guidelines is found in **Appendix 3.15** of this manual. OIE requirements can be found on their website: [www.oie.int](http://www.oie.int).

## **3.4 Captive Chimpanzee Management**

### **3.4.1 Nursery care to orphaned infants**

Infant chimpanzees requirements are based on its age and individual needs. Infants under 12 months of age, require a 24hr caregiver and will spend most of its time clinging to its surrogate mother. Infants should be maintained in a safe environment, that also

provides for climbing; exploring and play activities with or without other infants. Each sanctuary should provide a facility that provides the caregivers with easy access to food preparation area, cleaning equipment and bedroom facilities that allow them to sleep with their charges in as clean an environment as possible. In many cases, a separate bed or sleeping platform next to the caregivers bed will allow the caregiver to sleep comfortably, while still maintaining contact with the sleeping infant. All infants should be allowed to demand feed; setting of strict regimes for bottles is not advisable, as each individuals needs will differ. Each infant should have a primary caregiver; with other caregivers filling in when the primary caregiver is on rostered days off.

### **3.4.2 Peer group housing**

In sanctuaries as opposed to other captive facilities for chimpanzees, it is common to see groups of similar aged individuals. This normally happens in sanctuaries where the acquisition rate is high (2-5 new arrivals per year). For safety reasons individuals are often integrated into groups of similar age and size in order to reduce chances of attacks from older individuals. Peer group housing in most cases is not a major issue, but if the sanctuary is considering releasing individuals back into the wild, then integration into a wider matrix of ages maybe better. Some individuals, particularly young alpha males may require the discipline of an older male. Otherwise, they can become very aggressive in peer groups where there is little competition. Caregivers and managers should be careful to observe such interactions within peer groups. Caregivers can act as adult chimpanzees in disciplinary situations if needed. In most cases, caregivers should be in attendance and watching the interactions between the group members to ensure younger or smaller individuals are not being bullied. Focal commands from the outside of the enclosure are often all that is needed to control bullies. If possible, integration of adult females into younger groups can be useful tool to controlling bully older males.

### **3.4.3 Integration procedures**

Chimpanzees should be housed in social groupings at all times. The only exception is during quarantine if individuals arrive on their own. Maintaining group compatibility; allowing the normal fission-fusion social organisation of chimpanzees and ensuring individuals within the group are happy may require periodic introduction or removal of individuals. Introduction of unfamiliar individuals, particularly into adult groups or closed groups (groups that have not received a new member for a number of years) can be difficult and could elicit aggressive behaviour towards the new individual. Care must be taken when integrating any new individual into a group; or integrating two groups together. The procedure should be well thought out; all caregivers should be informed of what to do in case of an emergency; various scenarios of what could happen should be discussed between all relevant staff; assessment of the individual and the group they are being integrated into should be carried out. Recording of the integration process should be done. This will assist in future integration procedures. Debriefing with staff after the event is important to assess the success of the process; plus discuss possible better methods/procedures that could improve the integration process in the future.

Sanctuaries are unique in the number of new comers they receive and the age groups they have. Below are some guidelines on how to integrate within the different age groups. There is extensive literature on integration processes from other captive

facilities. It is highly recommended that these papers are read by sanctuary managers/veterinarians before carrying out integration if you have no experience in this process. Consulting other sanctuaries and staff is also wise, since more senior staff members will have worked with the chimpanzees for more than 10 years and will have extensive knowledge of the personalities of individuals. See **Appendix 3.15** for papers written on the topic of integration processes.

### 3.4.3.1 Infants/juveniles

Infants and juveniles should only be integrated with age and size similar individuals or females that management know are very good with infants/juveniles. Any integration of an infant/juvenile should be done with the primary caregiver in attendance with the new comer and the group. This will help reassure the individual that they are safe and have an adult to look out for them and reassures the others; the caregiver can also control the interactions between the newcomer and the residents. It is best to do just one or two residents with the newcomer first, once the newcomer is relaxed, playing and confident of itself with the resident individuals, you can start to add one individual at a time, giving 1-2 hours between adding new residents to the newcomer. Often the integration of an infant or juvenile to a peer group can happen in 1-2 days.

If you are integrating an infant or juvenile into a mixed age group; then a much slower process needs to be put in place. You should start with one or two adult females that are very stable and likely to adopt the infant/juvenile. Once a good relationship between the two is developed (can take several weeks to occur); then you can start reforming the group around these individuals. Start with lowest ranking females then move to highest ranking females first; leave males to last. Once all females are integrated with the infant/juvenile successfully, it will need to be decided if you are willing to risk introducing the males. If the infant/juvenile is a female, you may be able to proceed. But first integration through bars/mesh should be done to observe the behaviour of the males to the infant/juvenile. Observers should see no aggressive behaviour through bars or mesh before going to the next level. Infant/juvenile should be confident of itself with the adult males and should also display correct submissive behaviour as well. Integration should take place with the infant/juvenile being able to escape to a safe room where the adult males cannot go. All initial integrations should be done in the holding facilities and not in the enclosures. Doors with adjusting openings will allow infants/juveniles to move freely between the safe room and that where the adults are. When taking the step to try adult males, it is best to start with the alpha male first; leaving the subordinates last. Once the infant/juvenile is successfully integrated with the alpha male and all the females, you can add one subordinate male at a time to the group. This should be done over a period of weeks. It may take a week up to a month between integrations.

Infant males/juveniles should not be integrated with adult males unless you are 100% certain that the males are ok with them. In most cases, males will see unrelated younger males as threats and will attack them. There are cases in sanctuaries where adult males are very tolerant of infant/juvenile males. If you have such males, then by all means go ahead and integrate these young males into a mixed age/ multi-male group. If you are uncertain, then do not try it until the infant/juveniles are large enough to defend themselves. That may mean waiting for 7-10 years.

### 3.4.3.2 Adolescents

If you are attempting to integrate adolescents into a group, again it is best to try for similar age range or a little younger, if this adolescent has been isolated from other chimpanzees most of its life. Adolescent males can be difficult, due to their age group. The same process as for infants should be adopted for this age group. If it is an individual that has no social skills, allow extended period of time with a smaller tolerant group before adding others, to allow the individual to learn the social skills to survive in a larger community.

### 3.4.3.2 Adults

Adults that have been isolated for years require special consideration and are dealt with in the section below. If you are integrating adults that have been living in normal social setting either at your sanctuary or from another sanctuary, then the process is similar to that of infants.

Integration should first be through bars or mesh, where the newcomer can see and interact with all the individuals of the group. Caregivers or researchers should pay close attention to those individuals in the group who demonstrate friendly behaviour towards the newcomer. Grooming is one of the indicators that should be observed on a consistent basis for several days before taking the next step. Often it is best not to have a pre-planned timeframe for when you are going to the next step; only plan who will be the next individual added. Also on the day you are going to add a new individual, try to stay flexible in the timing of opening the doors. Wait until both chimpanzees and humans are calm; quiet and relaxed. Often opening the door between the two quietly, so that neither realise the door is open until a few moments later can allow for an easy and quiet interaction between the two.

Staff on duty should have backup support if the integration goes badly and you have to separate the individuals quickly. Fire extinguishers are good if you need to separate two individuals who are fighting; experienced caregivers must be on all doors leading into the rooms used during integration and the veterinarian should be on duty and aware that the integrations are happening, in case emergency surgery is necessary. All integration should happen early in the day, to give the individuals time to get to know each during the day with observers at all times.

#### **Females:**

Adult females can sometimes be integrated directly with the alpha male first, if she is in oestrous, the alpha male is demonstrating friendly behaviour and she is presenting to him with confidence. Once they have been put together successfully, they should not be separated again. The group should be reformed around these individuals. Adding to this grouping should be gradual, allowing the newcomer to develop a relationship with each new individual added to the group. If an aggressive interaction is observed and the new female is not receiving support from the alpha male or other individuals, further integration should be stopped. The newcomer needs to be given time to develop an ally base before more individuals from the original group are intergrated with her. Males are more likely to be supportive of new females than females are. So you need to ensure the new female has time to develop her relationship with the females, especially if the group

you are integrating her to is large (+15). Integration process can take between 2 months to 2 years to complete in many cases.

#### **Males:**

Adults males should be integrated with all the females first. Once this is done, you can pick one of two females, preferably high ranking to be companions with the new male when you start the integration to the males. Always start with the alpha male, ensure they you have seen friendly behaviour between the new male and the alpha before you place them together. Ensure the females are not in oestrus when doing the integration.

### **3.4.4 Individuals that have been isolated for many years from conspecifics**

Individuals that have been isolated for many years often exhibit higher levels of abnormal behaviours than those living in groups (individuals isolated from infancy show a higher level of abnormal behaviour than juveniles or adolescents). Many such individuals that are placed within the sanctuary are at later stages of development or in some cases middle age, will exhibit social ineptness and in some cases an inability to handle being placed in groups larger than one or two individuals. Apart from social issues, managers may have to deal with other issues such as individuals not willing to leave holding facilities or boxes. It is important to allow resocialization and acclimatization to occur in a timeframe comfortable and stress free to the individual. At the same time, a program to ensure resocialization and acclimatization does take place is needed, otherwise, you may find no progress is made if the individual is left on their own. Most importantly, the need of the individual must be taken into consideration when deciding the program. Providing a secure, consistent environment that allows the individual to accept new items/events into its life is important. Allow them to explore new areas in their own time. Ensure they are very comfortable in that environment before adding a new member to the group. Ensure they are on friendly terms with the individuals you intend to integrate by first allowing communication through bars or mesh.

### **3.4.5 Management of social communities**

The nature of sanctuaries is that the sex ratio will be fairly equal in numbers. This means the formation of not only multi male groups, but also a high number of males in one group will be the norm for most sanctuaries. On average, most sanctuaries will see an equal number of males to females in groups of 20 or more individuals. If these individuals have grown up together, you should have minimal problems, though careful observations by caregivers is extremely important to measure levels of aggression towards individuals, gang attacks on individuals can occur if not monitored properly (especially with young males trying to move up on the dominant hierarchy). It is important that indoor facilities are designed in such a way to allow large groups to break up into smaller units for overnight containment. Individuals should be able to choose where they go when confined into smaller rooms. Caregivers should be diligent in observing all individuals during feeding sessions and should do head counts at least twice a day. By providing enough space, enrichment and careful monitoring by staff, it is possible to manage large groups (30-40 individuals), which include high numbers of adult males. For further reading on the subject, managers should refer to the chapter on

Social management of captive chimpanzees in 'The Care and Management of Captive Chimpanzees' book, referred to in the preface of this manual.

### **3.4.6 Management of isolated individuals**

In some cases sanctuaries will be left with individuals that will not integrate into a larger social group. Management need to ensure they have provisions to maintain individuals or pairs in appropriate facilities and not to be left just in holding facilities all the time. Incorporation of one or two smaller enclosures that allow you to allow individuals or pairs to live in an outdoor enclosure is important. As these individuals are isolated, it is important to maintain a high level of enrichment or stimulus other than social stimulus, since they will lack this. Where possible, these individuals should be able to communicate with the other chimpanzees through mesh or bars, to allow social interaction on their terms. By doing this, you maybe able to slowly integrate such individuals into a larger group over time.

### **3.4.7 Enrichment programmes/activities**

#### **Rationale:**

The primary goal of environmental enrichment is to enhance the life of captive chimpanzees to simulate as much as possible the behavioural repertoire of a chimpanzees in the wild. All captive environments place severe limitations on the type of social life available to chimpanzees. Even in the best of sanctuaries, offering large enclosures and multiple social partners, individuals still do not have the freedom to socialize with or distance themselves from others. While enclosures may be large, they still will not replicate the rich environment of a wild habitat where communities my roam around a forest of several hundred kilometres.

#### **JGI Policy:**

Any sanctuary managed or supported by JGI is required to develop and implement a program to provide enrichment for their resident chimpanzees. Enrichment is equally important for those chimpanzees being released as those who will have to remain in captive for the rest of their lives.

#### **Enrichment Programs:**

There are three types of enrichment that can be implemented with chimpanzees. They are:

1. Naturalistic
2. Structural
3. Social

The Naturalistic and Social programs are the most important components of sanctuary enrichment programs, since they assist in rehabilitating the chimpanzees to exhibit normal behaviour as individuals and communities. For other enrichment activities please see **appendix 3.16**.

#### **A. Naturalistic enrichment:**

This is where the sanctuary provides a natural environment for the chimpanzees. Enclosure should replicate as much as possible a wild situation. Large forested enclosures, that provide natural foods, allow chimpanzees to learn phenology of the forest, learn to orientation and movement through forested areas; learn to deal with other

wildlife such as snakes, birds, small mammals, insects, non palatable or poisonous foods. Feeding four times a day, simulates normal feeding bouts in the wild. Allowing individuals to sometimes sleep in the forest enclosure overnight and deal with rain; nest building etc is also part of naturalist enrichment programs.

## **B. Structural Enrichment:**

Applies to the artificial environment we create to contain the chimpanzees, as well as additional enclosure furniture you may add if the forest enclosure is not sufficient to all chimpanzees to demonstrate the full repertoire of their behaviours.

1. Indoor facilities should be high enough that chimpanzees to feel comfortable and learn to deal with heights. Should also be design to allow 100% use of the internal volume of the indoor facility. Minimum height should be 3m, preferably height is 4m and above.
2. Climbing structures within the holding facility should allow individuals to escape from each other easily.
3. Sleeping benches, platforms or hammocks should be provided in enough quantity that all individuals within the room can be bedded down separately and not expected to share that space with others. Placement of hammocks and benches should be done so as not to cause debris from a higher platform or hammock to fall directly onto one below.
4. Indoor facility should provide good external viewing of surroundings so chimpanzees can observe what is happening in other parts of the sanctuary
5. Other materials for sleeping such as hay or grass or shredded paper or hessian bags should be provided to allow nest building behaviour.

## **C. Manipulative Objects:**

As well as permanent structures, provision of removable objects or tools for the chimpanzees in both the indoor facilities or enclosures is advisable. They can include natural and unnatural objects such as but not limited to:

### ***Natural:***

1. Hammer and anvils are used to allow the chimps to crack open palm nuts.
2. Termite mounds (to allow use of tool to retrieve treats like honey, mustard, peanut butter)
3. Use sticks and twigs to retrieve food that is out of their reach, these foods can be natural or introduced by humans.
4. Wild foods

### ***Unnatural:***

1. Puzzle boxes
2. Painting
3. Kong Toys
4. Balls
5. Plastic bottles filled with food
6. Magazines
7. Jerry cans
8. Frozen food
9. Novel food (foods not given normally)
10. Water in buckets to play with.

#### **D. Social Enrichment:**

One of the most important types of enrichment you are able to provide chimpanzees, apart from a natural environment, is social enrichment. Allowing chimpanzees to express their natural inclinations, such as living in large communities is important. Try to maintain chimpanzees in communities of no less than 15 individuals, but allow them to break up into smaller parties, especially when they are contained in the holding facility. Here the chimps choose who they wish to be with. Also, adult females should be given opportunities to migrate between communities. This type of behaviour is natural in the wild. As is adoption of orphans: when newcomers arrive to the sanctuary, infants should be introduced to suitable adult females within the first few days after quarantine if they are old enough. Often at least one of the females will take over the role of primary caregiver of these infants. This will allow humans to depart from being the main caregiver to these infants. Groups should maintain multi-males in their natural wild communities.

**Forest walks for infants and juveniles:** All infants and newcomers should be escorted by staff into the forest, until you feel they are able to manage this environment without your support. Often adult females can accompany the caregivers on these walks. This is a perfect time to teach them about the dangers of forest life, particularly with poisonous snakes, tree branches that will not hold their weight, orientation in forest, etc. If you do not go with them initially, the infants will fail to explore the forest fully.

#### **E. Evaluating enrichment activities:**

It is useful to evaluate the enrichment devices and activities you provide the chimpanzees. This will help prioritise which activities are worth implementing on a regular basis and how much time and energy is needed to prepare the activity as to how much time the chimpanzees actually spend carrying out such activities. Volunteers are often helpful in planning these activities. A rating system will help staff decide which activities to do in the time they have available to them.

For example: Two of the highest enrichment activities on Ngamba are scatter feeds and plastic water bottles. These activities take on average 2-3 minutes to prepare, the chimps have 5-10 minutes of activity time with them, and it costs nothing financially, so they are rated between 6-7 out of 10.

### **3.4.8 Cooperative training procedures**

#### **Definition:**

Training can be defined as a type of learning. Learning is broadly defined as a change in behaviour resulting from practice or experience. When this practice is dictated by humans, the process is called training.

#### **Rationale:**

There are several reasons that training chimpanzees in the sanctuaries can be useful both to management, but also to relieving stress to the chimpanzees in our care. Veterinary management is one of the main reasons that training is useful but not the only

reason. Group management is particularly important during integration processes, as well as safety, exercise and enrichment for the chimpanzees and for establishing good relationships between the chimpanzees and caregivers.

Training of chimpanzees is carried out in most captive facilities either formally or informally. Most sanctuaries carry out informal training without many caregivers realising they are doing it. What is important is to ensure correct training methods are used to ensure caregivers do not inevitably reward chimpanzees for doing unwanted behaviour rather than wanted behaviour.

***Proper training of chimpanzees can assist with the following:***

**Veterinary Management:**

- Individuals trained to present chest or back and allow stethoscope to touch their skin, this will allow vets to listen to heart and lungs of chimps without restraint or sedation
- Individuals trained to open their mouth for oral inspections of the mouth to examine and check teeth; even allowing cleaning of teeth
- Individuals trained to allow the insertion of thermometer for temperature reading; also allowing fecal samples to be taken
- Individuals trained to allow nasal and ear swabs to be taken
- Individuals present wounds for inspection and treatment
- Individuals trained to present for injections (sedatives; antibiotics) and voluntary blood taking
- Individuals allow closer monitoring and treating of illnesses.

Such training could eliminate the need to sedate individuals for annual health checks, this would reduce costs to the sanctuary; reduce stress to the individual and reduce risk of anaesthesia.

**Group Management:**

- Individuals trained to shift between areas easily on command
- Individuals trained to allow for cooperative feeding which can reduce aggression during feeding session; particularly where you have dominant individuals who monopolize the food
- Individuals can be trained to eliminate inappropriate behaviour, such as poor mothering behaviour; rocking; rock or object throwing etc.
- Individuals can be trained to use enrichment applications which will enhance their lives

For further information on training techniques, caregivers and managers should read the current literature on the subject or seek advice from those qualified.

**Recommended Reading:**

- One good reference book to read as an introduction to training is 'Don't Shoot the Dog' by Karen Pryor.
- There is also a chapter covered in 'The Care and Management of Captive Chimpanzees' edited by Linda Brent which is well worth reading.

Chimpanzees are highly intelligent and will cooperate well with proper training. To carry out training, it is recommended to bring in an experienced trainer to correctly train the staff, otherwise, it is easy for staff to see the wrong behaviour and cause more harm than good. Many zoos have staff trained in these methods and can assist in training sanctuary staff in this process.

**Recommendation:**

Any attempt to train individuals should be done after sufficient training is given to caregiving staff. Training programs need to be planned and time frames need to be maintained, otherwise sloppy training can cause reinforcement of the wrong behaviour and can cause more confusion to the individuals.

## **Section Four: Sanctuary Management**

### **4.1 Staff Management**

#### **4.1.2 Staff development policy**

Any sanctuary that is managed or supported by JGI Sanctuaries shall, from time to time, train its employees to update their knowledge, acquire skills and techniques necessary to improve on the performance of their duties. The training may include the following:

- Full time courses, lasting not more than one (1) year. The course may be undertaken within or outside country of origin of sanctuary
- Part-time courses, preferably evening classes
- On job training
- Study tours, both within and outside of country of origin of sanctuary
- Seminars, workshops, conference, etc. Also both within and outside country of origin of sanctuary

Training shall be arranged and scheduled in accordance with sanctuary training needs.

All Employees engaged in training must sign a contract to serve with the sanctuary for a minimum for two (2) years if the sanctuary still requires their services or up to the end of the contract on completion of training.

The trainee shall be required to submit a report on the course at the end of the training and attach copies of certificates where applicable.

All training programmes are to be approved and permission granted by the sanctuary.

#### **Training Expenses**

- Full sponsorship – the employee is fully sponsored either through sanctuary or external grants.
- Self sponsorship – the employee is fully responsible for the expenses incurred for training.
- Part sponsorship – an employee may be partly sponsored by the sanctuary where sanctuary finds it difficult to sponsor a full course or external grants do not cover full cost.

#### **Career Opportunities**

There may be opportunities to advance employees into higher level positions. Overall job performance will serve as the basis for promotion. Sanctuary Managers will consider ability, work record, supervisory recommendations, longevity, attitude and other contributions given to the sanctuary team in making decisions for advancement.

## 4.1.2.1 Essential qualifications of Staff

### *a. Essential qualifications for senior managers*

#### **1. Sanctuary Manager/Director**

##### **Essential:**

##### **Experience/Qualifications:**

- Able to speak, English and French if in a French speaking country of Africa.
- Basic understanding of great ape health care; and/or willingness to learn
- Experience and/or knowledge in design and construction of facilities for captive primates with emphasis on structural integrity and safety aspects to workers and primates;
- Word processing (including excel, word, powerpoint programmes)
- Experience in public speaking/presentations;
- Ability to write field reports, operational manuals and review scientific grant proposal writing and/or fundraising experience;
- Human resource development (recruitment/performance reviews/training/manual development)
- Accounting, budgeting and financial planning and reporting;
- Ability to compile contractual documents (MOUs, employee contracts, legal documents)
- Strategic planning (workplans and forecasts, evaluation and monitoring of non-sanctuary/project activities)
- Developing strategies aimed at promoting tourism (website, brochures, visitor information, email mailouts, etc) including visitor revenue activities (forest walks, merchandise, fundraisers)

##### **Desirable:**

- Captive animal management experience or qualifications (certificate, diploma, degree level) and/or willingness to learn
- Experience working in a conservation organization
- Drivers license
- Experience in non human primate medicine, in particular Great Ape medicine
- Able to speak one or more of the local languages for ease of communication with staff and local communities

## **2. Veterinarian**

### **Essential:**

#### **Qualifications/Experience:**

- Bachelor of Veterinary Science degree with a minimum of two years clinical experience with domestic and wildlife.
- Knowledge of wildlife care and management.
- Good management and interpersonal skills
- Good written and verbal communication skills.
- Strong proven commitment to conservation
- Able to speak, English and French if in a French Speaking country of Africa.

### **Desirable:**

- Post Doctorate Degree in related wild animal medicine
- Experience in wild animal medicine and pathology, animal nutrition and working in a conservation organization
- Drivers license
- Experience in Non human primate medicine, in particular Great Ape medicine
- Able to speak one or more of the local languages for ease of communication with staff and local communities

## **3. Operations Director/Manager**

#### **Experience/Qualifications:**

- Able to speak, English and French if in a French Speaking country of Africa.
- Captive animal management experience or qualifications (certificate, diploma, degree level)
- Thorough understanding of great apes health care;
- Experience and/or knowledge in design and construction of facilities for captive primates with emphasis on structural integrity and safety aspects to workers and primates
- Project management skills and or experience
- Personnel supervision experience ( not less than 20 people)
- Word processing (including excel, word, powerpoint programmes)
- Experience in public speaking/presentations
- Ability to write field reports, operational manuals and review scientific Grant proposal writing and/or fundraising experience
- Human resource development (recruitment/performance reviews/training/manual development)
- Accounting, budgeting and financial planning and reporting
- Drivers license

### **Desirable:**

- Experience working in a conservation organization
- Able to speak one or more of the local languages for ease of communication with staff and local communities

*b. Essential qualifications for caregivers*

**Essential:**

**Qualification/Experience**

- Minimum qualification to S4 level or equivalent
- Credits in Biology and official national language (English or French).
- Able to speak in Official national language (English/French)
- Experience in conducting educational talks to visitors
- Must be physically fit and strong
- Must provide a negative TB test and general health certificate on an annual basis.
- Must be free of any infectious diseases transmittable to chimpanzees

**Desirable:**

- Training in captive wild animal management
- Experience with captive chimpanzees

*c. Essential qualifications for other staff*

**1. Maintenance Manager**

**Qualification/Experience**

- Minimum qualification to S4 level or equivalent
- Credits in official national language (English or French).
- Able to speak in Official national language (English/French)
- Qualifications in one or more of the following technical fields
  - Electrician
  - Vehicle Mechanic
  - Welding
  - Carpentry
  - Plumbing
  - Masonry
- Knowledge of electrical fencing
- Must be physically fit and strong
- Must provide a negative TB test and general health certificate on an annual basis.
- Must be free of any infectious diseases transmittable to chimpanzees

**Desirable:**

- Experience in construction site management
- Experience in construction of facilities for captive apes
- Knowledge of solar energy, including the ability to install and maintain the equipment

## **2. Education Officer**

### **Qualification/Experience**

- Minimum qualification to S4 level or equivalent
- Credits in Biology and official national language (English or French).
- Able to speak in Official national language (English/French)
- Teaching certificate or Diploma in Education
- Working knowledge of the principles of conservation education
- Experience in conducting educational talks to visitors
- Must provide a negative TB test and general health certificate on an annual basis.
- Must be free of any infectious diseases transmittable to chimpanzees

### **Desirable:**

- Knowledge of chimpanzee ecology and conservation issues regarding to chimpanzees in country of operation
- Understanding of international and national laws pertaining to wildlife
- Understanding of traditional beliefs of chimpanzees and other wildlife in the region of operation
- Ability to create graphic interpretations at the sanctuary
- Ability to develop and implement education programs for school aged children and adults
- Ability to develop educational materials, contribute to website and brochure content
- Computer literacy

### **4.1.2.2 In house training programmes for staff**

#### **Definition:**

All training on site at the sanctuary is conducted either by experienced/qualified staff; volunteers; or consultants. In most cases such training is on-going and repeated from time to time to ensure all personnel are up-to-date with current information or techniques in the relevant fields that affect their ability to perform their duties to the standard required by the sanctuary.

#### **JGI Policy:**

Any sanctuary managed or supported by JGI Sanctuaries shall, from time to time, provide in-house training to its employees. This training is required to update their knowledge, acquire additional skills and techniques necessary to improve on the performance of their duties. The in-house training may include but not limited to the following:

1. Induction training for new employees. This should include the institutions code of conduct and ethics; as well as its ethical stand on the welfare of primates in captive care situations.

2. Captive wild animal husbandry for all caregivers and management personnel (in particular hand rearing techniques; quarantine; preventative medicine; nutrition)  
Example of a training program is found in **appendix 4.1**.
3. Dangerous animal transfer techniques
4. Interpretive guiding to all staff
5. Chimpanzee ecology, social behaviour; captive behaviour; conservation issues
6. Safety Procedures, particularly escape procedures and protocols
7. First Aid training
8. Operational procedures and maintenance for all equipment and vehicles used by sanctuary personnel.

### 4.1.2.3 External training programmes for staff

**Definition:**

All training that is conducted off site at the sanctuary either by experienced/qualified consultants in formal (courses conducted by recognised institutions) or non formal (work experience; field trips; conferences and seminars) atmosphere. In most cases such training is on-going and repeated from time to time to ensure all personnel are up-to-date with current information or techniques in the relevant fields that affect their ability to perform their duties to the standard required by the sanctuary.

**JGI Policy:**

Any sanctuary that is managed or supported by JGI Sanctuaries shall, from time to time, provide external training opportunities to its employees. This training is required to update their knowledge, acquire additional skills and techniques necessary to improve on the performance of their duties. The external training programs may include, but not limited to the following:

1. Captive wild animal husbandry for all caregivers and management personnel (in particular hand rearing techniques; quarantine; preventative medicine; nutrition)
2. Veterinary Medicine (particular reference to wildlife and great ape medicine)
3. Project Management
4. Personnel Management
5. Conservation Education (program development; graphic interpretation; education materials development; interpretative guiding techniques)
6. Financial Management; accounting
7. Chimpanzee ecology, social behaviour; captive behaviour; conservation issues
8. First Aid training
9. Computer training
10. Field survey techniques, particular for those sanctuaries undertaking release programs
11. Fundraising
12. Master locksmith training

#### 4.1.2.4 Performance Evaluation Systems for staff

**Definition:**

Performance evaluation systems are tools that allow management to monitor and assess the abilities of staff to carry out their duties effectively and in accordance with their job titles; terms of reference or contract. Various methods can be utilized, including grading systems; and performance management assessments.

**JGI Policy:**

Any sanctuary that is managed or supported by JGI Sanctuaries shall implement a performance evaluation system for both management and ground staff. Grading systems for such areas as caregivers is highly recommended. A sample of such a system is found in **appendix 4.2**.

#### 4.2 Emergency/Escape procedures

**JGI Policy:**

Any sanctuary that is managed or supported by JGI Sanctuaries shall implement a standard escape protocol procedures as well as an emergency procedures manual in the event of likely disasters.

An example of escape procedures protocols can be found in the Occupational Health and Safety Manual in **Appendix 4.4** for CSWCT.

Types of emergency situations that procedures/policies should be compiled but limited to are:

- Evacuation of expatriate personnel due to war or civil unrest
- Fire
- Infectious disease outbreak in non human primates
- Snake bite
- Serious illness of staff or visitors to sanctuary
- Death of key personnel

#### 4.3 Sanctuary Procedures and Manuals

##### 4.3.1 Standard Operation Procedures Manual

**Definition:**

The Standard Operating Procedures manual is a set of protocols and procedures that are to be maintained and carried out by all employees. The manual assists employees to able to carry out their duties in a standardised manner as per the policies of the organisation.

**JGI Policy:**

Standard Operating Procedures (SOP) manuals must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI.

These manuals need to be updated on a regular basis, with no more than a 12 month interval between updates (recommended to update every 6 months). All updated copies of the manual must be signed by all employees working the sanctuary. Sanctuary Managers are responsible to ensure this is done.

Since each sanctuary will have its own set of requirements with regards to its SOP manual. A sample manual with a table of contents and sample chapters is provided in **appendix 4.3** of this manual. All sanctuaries should develop and implement such a manual within the first year of operation.

### 4.3.2 Occupational Health and Safety Manual

#### Definition:

The occupational health and safety manual is a set of guidelines for protective measures that are followed during routine procedures with or without direct contact between humans and chimpanzees.

The manual aims to:

- *promote and maintain the highest degree of physical, mental and social well-being of employees*
- *prevent illness among employees caused by their working conditions*
- *protect employees in their jobs from risks resulting from factors dangerous to health*
- *place and maintain employees in an occupational environment adapted to physiological and psychological equipment and*
- *adapt work to each person and their job.*

#### JGI Policy:

Occupational Health and Safety Manuals must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI.

Since each sanctuary will have its own set of requirements with regards to OH & S standards and conditions, a sample manual is provided in **appendix 4.4**. All sanctuaries should develop and implement such a manual within the first year of operation. Such manuals should have in place an OH & S committee that reviews the document. All senior members of staff at the sanctuary should be on this committee, as well as local experts (such as doctors/veterinarians) and staff from the Africa Programs and Personnel departments of the USA Office.

### 4.3.3 Record Keeping Policy and Procedures

**Rationale:**

Maintenance of records on personnel; fixed assets; operational procedures; financial management and animal management, including veterinary procedures is extremely important in ensuring successional planning; auditing of the sanctuary and management of the individuals who will reside at the sanctuary.

**JGI Policy:**

A set of protocols and procedures that are standardised within all the JGI sanctuaries with regards to keeping of records will be maintained.

Types of records that must be kept.

**Administration**

1. File copy of all external correspondence
2. File of all memos to staff and other internal correspondence
3. File copy of all trustee meetings
4. Trust deed
5. Any lease agreements
6. Visitor record numbers
7. Release forms and medical records from visitors having contact with chimpanzees
8. Electronic files of all email correspondence
9. Backup file copies of all computers on a weekly basis ( save to server, disks, external hard drives)
10. Records of all fixed assets, including an inventory

**Financial Management**

1. Duplicate record of all purchases and transactions
2. Bank reconciliations
3. List of all major suppliers
4. Payroll slips of all employees
5. Copies of all credit advice notes
6. Copies of all bank statements
7. Copies of all visitor admission slips
8. Inventory of receipt books; visitor admission books etc dispersed

**Animal Management Records**

1. Daily Dairies on individuals
2. Quarterly stories/reports for guardianship programs
3. receipt of individual chimpanzees from the authorities
4. Any CITES permit of those transferred internationally
5. individual Veterinary/health procedures recorded data
6. Update photographic record of individuals

### **Personnel Files**

1. Contracts for Personnel
2. Health records of Personnel
3. Personal details of Personnel
4. Disciplinary letters file
5. Employees Handbook
6. Annually updated photos of all staff members
7. Volunteer and Researchers manual
8. Volunteer and Researcher release form
9. Volunteer and Researchers personal information and medical records

### **Management of Sanctuary**

1. Standard Operations Procedures Manual
2. Occupational Health and Safety Manual
3. Incident Reports
4. Minutes of weekly meetings with sanctuary personnel.
5. Minutes of all other meetings, such as community meetings
6. Financial accountabilities of all transaction
7. Staff rosters
8. Daily diary
9. Veterinary/Health Care manual
10. Update photographic record of the sanctuary

## **4.3.4 Veterinary/Health Care Manual**

### **Definition:**

The Veterinary/Health Care manual is a set of protocols and procedures that are to be maintained and carried out in regards to the veterinary care for all chimpanzees and other animals under the sanctuary care. The manual assists the veterinarian and other employees to able to carry out their duties in a standardised manner that is accepted by outside professionals as per the policies of the organisation.

### **JGI Policy:**

That a Veterinary/Health Care manual must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI. That this manual should be in line with the Manual compiled and adopted by PASA.

Since each sanctuary will have its own set of individual requirements with regards to its Veterinary/Health Care manual, in particular with regards to if the chimpanzees and other wildlife are destined for release or permanent containment in captivity. A copy of the recent PASA Veterinary Health Care manual is found in **Appendix 4.5** of this manual. All sanctuaries should adopt the basic health care regimes of this manual, in particular, annual health checks of all primates in the sanctuaries; disease prevention protocols in particular with regards to monitoring and maintenance of health protocols with employees and others who come into close contact with the primates in our care.

### 4.3.5 Visitor Protocols

**Rationale:**

The Visitor Protocols is a set of procedures and policies with regards to visitors to the sanctuaries. These protocols are in place to maintain the health status and welfare of the non human primates in our care, as well to protect our visitors from possible disease transmission or potential risk of injury through contact with the chimpanzees and other animals in our care.

**JGI Policy:**

Visitors Protocols must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI.

These protocols need to be updated on a regular basis, with no more than a 12 month interval between updates (recommended to update every 6 months). All updated copies of the protocols must be posted for all employees working the sanctuary to view. Sanctuary Managers are responsible to ensure this is done.

Since each sanctuary will have its own set of requirements with regards to its visitor protocols. A of visitor protocols for Ngamba Island Chimpanzee sanctuary is provided in **appendix 4.7** of this manual. All sanctuaries should develop and implement such a manual within the first year of operation. Protocols should take into consideration if the sanctuary is a non release or release sanctuary. Visitors to the sanctuary should maintain the normal distance barrier of 5m from non human primates, unless they are fully vaccinated, undergone a health screening or quarantine period of 10 days if just arrived in country. If the sanctuary is to be a release site or the individuals maintained in that sanctuary are for release, then stricter controls need to put in place to restrict exposure of these individuals to humans and potential disease transmission.

No child under the age of 12 years should be able to come into contact with any of the non human primates in the sanctuary, in particular great apes.

### 4.3.6 Volunteer protocols and Manual

**Rationale:**

The Volunteer manual is a set of protocols and procedures that are given to volunteers to inform and instruct them on the terms of conditions for their participation at the sanctuary. The manual also acts as a source of information that is needed by the volunteer before arriving at the sanctuary.

**JGI Policy:**

A Volunteer and Researcher manual must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI.

These manuals need to be updated on a regular basis, with no more than a 12 month interval between updates( updates are recommended every 6 months). All updated copies of the manual must be signed by all employees working at the sanctuary. Sanctuary Managers are responsible to ensure this is done.

All volunteers must sign a release form; personal information form; emergency contacts form and have read the SOP manual; Employees Manual and the OH & S Manual before working at the sanctuary.

Since each sanctuary will have its own set of requirements with regards to its Volunteers. A sample manual is provided in **appendix 4.7** of this manual. All sanctuaries should develop and implement such a manual within the first year of operation.

### **4.3. 7 Employee Handbook**

**Definition:**

The employee's handbook is a set of policies and regulations that indicate the terms of employment to the employee. The manual assists employees and management in defining the roles and responsibilities of the employee and the organisation to the employee.

**JGI Policy:**

Employee handbook must be installed in all sanctuaries that are fully or partially supported; managed or owned by JGI.

These manuals need to be updated on a regular basis, with no more than a 12 month interval between updates (updates are recommended every 6 months). All updated copies of the manual must be signed by all employees working the sanctuary. Sanctuary Manager or Directors are responsible to ensure this is done.

Since each sanctuary will have its own set of requirements with regards to the employee manual. A sample manual with a table of contents and sample chapters is provided in **appendix 4.8** of this manual. All sanctuaries should develop and implement such a manual within the first year of operation.

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## **Appendices:**

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