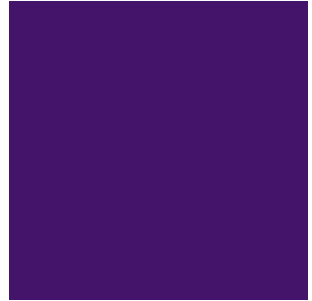


# Chimpanzees

Kate Baker, Ph.D.

Tulane National Primate Research Center



enrichment  
for nonhuman primates





## Introduction

.....

Nonhuman primates maintained in captivity have a valuable role in education and research. They are also occasionally used in entertainment. The scope of these activities can range from large, accredited zoos to small “roadside” exhibits; from national primate research centers to small academic institutions with only a few monkeys; and from movie sets to street performers. Attached to these uses of primates comes an ethical responsibility to provide the animals with an environment that promotes their physical and behavioral health and well-being. Thus, an obligation is entailed that those individuals/institutions caring for captive primates should make every effort to ensure adequate veterinary care and husbandry are provided, that the animals are housed in appropriate facilities, and that as broad a range of species-typical behaviors are able to be expressed by the animals as is possible for the captive environment.

This book serves as an introduction to the basic behavior and environmental enrichment of several species of nonhuman primates that are more commonly used in education, research and entertainment. In many ways, this book is meant to be a “how to” manual; it is not intended to be a broad scientific review of the primate behavior and enrichment literature. The fundamental premise taken throughout each chapter is that for an enrichment program to be effective, there must be a basic understanding of the biology and behavior of the primate species. The species addressed in this series are: baboons, capuchins, chimpanzees, macaques, marmosets and tamarins, and squirrel monkeys. Each species-section can be read as a stand-alone document without need to reference the other sections. This then allows the user to distribute the different sections to personnel caring for the specific animals.

Each section is divided into five parts: 1) Background, comprised of the habitat of the primate, the physical features of the primate, its psychological and/or



social behavior, and its mating and reproductive behavior; 2) Social World; 3) Physical World; 4) Special Cases, describing any age-related considerations and concerns associated with individual housing; and 5) Problem Behaviors. The content of this series has been provided by members of the Association of Primate Veterinarians (APV) and the American Society of Primatologists (ASP) who have special expertise in the species addressed. This book is intended to be a primer because it is, indeed, an introduction to the subject of environmental enrichment for primates housed in a diversity of conditions. A list of references and/or other resources (principally on-line) is provided at the end of each chapter that provide additional guidance. The use of scientific references has been limited, but should the reader desire more information about a specific subject, the links at the end of the sections will provide direction to obtaining additional detailed information. Readers are also directed to the National Research Council publication, the Guide for the Care and Use of Laboratory Animals (1996) and the U.S. Department of Agriculture's (USDA) Animal Welfare Regulations to review the regulatory requirements of the Public Health Service and the USDA for the provision of environmental enrichment.

.....  
ii

The APV and ASP wish to thank the Office of Laboratory Animal Welfare, in particular Ms. Carol Wigglesworth and Dr. Axel Wolff; the U.S. Department of Agriculture/Animal Care, in particular Dr. Chester Gipson; and Ms. Dale Feurer, editor, and Ms. Lori Wieder, graphics and layout production, for their assistance with this project. The authors acknowledge the helpful contributions of Dr. David J. Shepherdson, Conservation Program Scientist, Metro Washington Park Zoo; Ms. April D. Truitt, Director, Primate Rescue Center, Inc.; and Ms. Kathleen Conlee, Program Officer, Humane Society of the United States. Special thanks also go to the chapter authors Dr. Christian Abee, Dr. Kate Baker, Dr. Linda Brent, Dr. Thomas Butler, Dr. Jeffrey Fite, Dr. Dorothy Fragazy, Dr. Jeffrey French and Dr. A. Michele Schuler, and to the reviewers from the American Society of Primatologists and the Association of Primate Veterinarians.

—Kathryn Bayne, M.S., Ph.D., D.V.M., DAACLAM, CAAB  
Editor, Working Group

*This project is dedicated to the memory of Dr. Sylvia Taylor, Veterinary Medical Officer, Animal Care, U.S. Department of Agriculture, who was a proponent of providing enrichment to nonhuman primates and was generous in sharing her knowledge and expertise in this regard.*

# Chimpanzees

## Background

.....

### Habitat

In the wild, chimpanzees live in large forested areas, but they may also inhabit dry savannah and mosaic habitats of grassland-woodland-forest environments, as well as montane forests up to 10,000 feet in elevation. They spend much time in trees and may scatter widely over their territory rather than traveling around in one large group.

### Physical Features

Chimpanzees weigh up to 200 pounds, though the normal average weight for an adult female is 130 pounds and for an adult male is 140 pounds. Chimpanzees may grow to a height of 3 - 5 1/2 feet. Adult males generally are larger than females. Reaching their adult size by the time they are 14 to 16 years old, these animals can live to be 60 years old, with an average life span of 40 to 45 years. Chimpanzees are extremely strong and quick. They are omnivores, eating fruits, vegetables, insects and other animals at times.

### Behavior

Chimpanzees have many ways of communicating with each other. Facial expressions, calls, and gestures reflect their relationships with other chimpanzees and with people. Understanding these methods of communication is essential for having a good relationship with them and staying safe in their presence.

Chimpanzees make noisy shows of banging, hooting, rocking back and forth, and running, hitting or kicking things as they go. This is called a “display” and is normal for them. They do this because they are excited or trying to impress.



*Chimps at play  
(photo by S. Lambeth).*

Displays are common when chimpanzees meet new chimpanzees or people and at the arrival of food. Sometimes chimpanzees will throw feces or spit on people during these displays. Reacting to such behavior (e.g., jumping away, yelling at the chimpanzee) will only encourage it. Walking away slowly or ignoring this behavior will discourage it over time.

It is important to recognize that there is a hierarchical priority among chimpanzees for access to food that must be considered during feeding, foraging activities and access to enrichment foraging devices. Chimpanzees may show their lower status to another chimpanzee by bowing or grunting.

.....  
2

Chimpanzees make different sounds and expressions depending on what they are doing and trying to communicate. They may make a series of small grunts as they eat and a call that sounds like “WHA-OOO” as a warning of possible danger. If frightened or nervous, they will show their teeth and gums. Alternately, when playful, chimpanzees may show a wide-open mouth with the top teeth covered. They also make snorting or panting sounds when they play. Other gestures/vocalizations include an “open mouth grimace” (to express fear), squeal and pant-hoot (to express excitement).

An angry chimpanzee will press its lips together tightly, a warning to stay out of reach. Chimpanzees threaten each other by gesturing forward violently with an arm or wrist, as if shooing another away.

Friendly contact is extremely important to them. Chimpanzees will spend long periods of time grooming each other or simply sitting in contact. Many chimpanzees are very playful as well, tickling, chasing, wrestling, and gnawing on each other.



*Chimps grooming (photo by K. Baker).*

## Mating and Reproduction

Puberty starts at about seven years of age. Male chimps can breed as young as seven to eight years of age. Female chimps in captivity can get pregnant as young as nine years of age. Because menopause is not documented in chimpanzees, females can remain fertile

for decades. Females in estrus, which happens every four to six weeks, have prominent swelling of the pink genital skin that usually lasts two weeks. When in estrus, they may mate many times a day if housed with a male. There is no breeding season. Chimpanzee pregnancy lasts 33 to 34 weeks. Newborns cannot hold on to their mothers, who need to support them so they can nurse. Infants should be able to cling to their mothers without help after a few days. After several months, infants may start riding on their mothers' backs rather than abdomens. Infants will nurse until they are about three years old.

.....  
3

## Social World

.....

In the wild, chimpanzees live in large social groups. These groups share a territory and are hostile to other groups. Typically, a wild chimpanzee will know many other individuals, visiting with them on a regular basis. While wild chimpanzees often spend part of the day alone, they are naturally social animals for whom constant solitude is a hardship.

In captivity, housing chimpanzees in social groups is essential to their quality of life. Young animals learn many lessons from the other, older animals in the group.



*Tolerance of young animals by adult males (photo by M. Bloomsmith).*

However, it is not always easy to form and maintain such groups. One must take great care in introducing unfamiliar chimpanzees to each other, keeping in mind that they are hostile to strangers in the wild. Several steps can be taken to make introductions go more smoothly. First, it is a good idea to let chimpanzees see but not touch each other for a short amount of time. Long periods of seeing but not touching, however, may make them more hostile to each other. Ideally, giving them a day or two of seeing each other should be followed by letting them touch each other but not enter each others' enclosure. This gives them a chance to meet each other and establish dominance more safely than suddenly putting them together in the same enclosure as complete strangers.

Some fighting during introductions is not unusual. A few fights, even those that cause small wounds, are not necessarily cause for separation. The animals need time to establish a hierarchy. It is important to give them time to work this out and reconcile after fights, which they often do. However, if fights become more frequent or more severe over time, then the individuals may indeed be incompatible.



Newly-introduced chimpanzees should be watched carefully for at least a week. It is important to keep things quiet and calm around them, since they will be more likely to attack each other when there is noise, commotion or a stranger nearby. If several chimpanzees are to be introduced into one group, it is best to introduce different combinations of pairs together over several days before putting everyone together. If a male and female are introduced to each other, the introduction will go more smoothly during the time of month when the female has a sexual swelling. The riskiest social introductions involve males meeting each other, or chimpanzees that were housed alone for long periods of time.



*Social curiosity/learning (photo courtesy of S. Ross).*

Even chimpanzees that know each other well may fight on occasion. Fights often look and sound worse than they are. Trying to stop a fight, for example, by spraying chimpanzees with water, will do no good and may make things worse. Separating them and keeping them alone for a while is also a bad idea. They will remember their dispute and may fight even worse once they are reunited. It



*This enclosure provides multiple objects for enrichment to minimize aggression (photo by K. Baker).*

is best to let fights take their course unless they are likely to cause significant harm or are life-threatening. It is important to avoid unnecessary separations of chimpanzee groups, since they will often fight during reunions. Subtle changes in body movements and posture often

.....  
5



*Human-chimpanzee interactions that permit limited contact in a safe manner can be achieved (photo by K. Baker).*

.....  
6

signal that an aggressive encounter is about to take place, especially between males. The male may exhibit slow swaying movements, raising of hackles and an increase in the volume of hooting.

While it would be difficult to eliminate all fighting, it is a good idea to avoid giving chimpanzees things to fight over, such as toys and food. Minimizing competition for food can reduce the number of fights. For example, giving a group one watermelon is much more likely to cause fighting than scattering pieces of watermelon all over the enclosure. Similarly, it is a better idea to give a group of chimpanzees several boxes to play with rather than one big piece of cardboard.

In captivity, chimpanzees benefit from social interaction with people (conducted safely), particularly when they lack companions of their own species. Many captive chimpanzees will want to groom humans, be groomed, or play chase or tickle games. While friendly relationships with people can be essential to chimpanzees with few or no companions, there are significant, potentially lethal, physical risks to people associated with such interactions (e.g., bite wounds, scratches, bruising, and possibly the transmission of infectious diseases), and the best approach in most circumstances is the provision of another chimpanzee.

# Physical World

.....

In the wild, chimpanzees spend much time in the trees. Thus, in captivity, they need climbing structures and comfortable places to sit up high. Fire hose, strong chain, cargo nets, perches, and tire swings all can be used for this purpose. If rope or chain is used, it should be thick and taut enough to prevent loop-forming and possible strangulation. Structures that provide shade and privacy, such as concrete culverts and small lengths of solid fencing, help avoid overheating in hot weather. They also give chimpanzees solitude if they want it and help to reduce aggression by providing visual barriers. Movable structures such as empty plastic barrels are favored resting spots, and chimpanzees can move them to where they want to sit. Barrels cut in half are popular “toys” for chimpanzees. Enclosures that include an outdoor area will provide the opportunity for chimpanzees to engage in the normal variety of behaviors typical for the species. Letting them choose whether to be inside or outside is important, since it appears that chimpanzees like to make some decisions for themselves.

Wild chimpanzees build nests out of branches and leaves. When caged, chimpanzees will benefit greatly from having nesting material such as blankets, straw or hay (though these materials may be allergenic), etc. Tree branches may be used, although be aware that some common trees, such as fruit trees, magnolia, some oaks, and hickory are toxic. Care also must be taken to avoid providing branches that are long enough for chimpanzees to use them to escape from open-top enclosures. In large enclosures, entire uprooted trees have been provided for enrichment.

.....  
7



*An example of a nest built by a chimpanzee in captivity  
(photo by K. Baker).*

One relatively easy way to keep life interesting for chimpanzees is to give them a large variety of healthy foods over time. While the basis of the diet (e.g., commercially prepared feed) should be nutritionally complete, fruits and vegetables, breakfast cereal, eggs, yogurt and other healthful snacks are good supplements. These are best provided as frequent, small feedings, rather than in large quantities once a day. While it is important not to overload chimpanzees on food treats, a sprinkling of “snacks” can help to prevent boredom and abnormal behaviors, particularly if the animals have to move around the enclosure to obtain the snacks (i.e., work for them). In the wild, chimpanzees rarely go very long without eating, regularly snacking on ripe fruits and leaves. Also, the more time-consuming the food is to find and eat, the better it is for the chimpanzee. Foods such as unshucked raw ears of corn and frozen, finely chopped and widely scattered foods help keep chimpanzees occupied. Requiring chimpanzees to climb by placing frozen items on wire mesh ceilings or elsewhere presents a challenge for them and provides exercise.

Another easy way to enrich the chimpanzee’s environment is to provide large, sturdy toys that are sold for children, large dogs and zoo animals. Many vendors sell toys at a lower price than at the local pet store. Rotating toys will maintain the interest of the animals. Providing climbing structures is especially important.

.....  
8

Chimpanzees like to destroy things. Giving them items they can safely wreck, many of which are free or very inexpensive, is a widely used way of entertaining them. A cardboard box can be played in, squashed, ripped, chewed, and finally used for nesting material. Long sheets of butcher paper are very entertaining (butcher paper is easier on drains and easier to clean up than newspaper). An empty plastic soda or milk bottle, perhaps containing a small food treat, pro-

*A food puzzle being used by a chimpanzee (photo by K. Bayne).*



vides a good source of entertainment. Such objects, however, must be checked frequently and removed when they become damaged. Because small objects can lodge in the throat or other part of the intestinal tract, objects introduced for enrichment purposes must be monitored to ensure animal safety.

Chimpanzees are extremely intelligent and will benefit from problem-solving and other mental activities. Inexpensive puzzles and projects can be made out of materials available at a home-improvement store. Even something as simple as a piece of polyvinyl chloride (PVC) pipe smeared on the inside with peanut butter, along with a stick or narrower piece of pipe to insert to get at the food, makes a pleasant diversion for chimpanzees. A PVC pipe drilled with a few finger holes and containing a frozen banana is another easy idea. Other safe and effective puzzles are described on the internet (see online resources listed at the end of the chapter.). Many chimpanzees enjoy finger painting or drawing with nontoxic crayons. Finally, training is great stimulation for the smart mind of a chimpanzee and is fun for people as well.



*A chimpanzee manipulates objects provided for enrichment purposes (photo courtesy of S. Ross). As always, caution must be exercised to ensure animals are not harmed by the enrichment devices.*



*A hand-held mirror provides enrichment to chimpanzees, who are interested in their own reflections (photo by K. Baker).*

Chimpanzees should be housed in an environment that gives them adequate ventilation, shade during hot days, and heat during cold days. Providing a fresh flow of air is recommended if the temperature gets as high as 90° F. They may enjoy the flow of water from a sprinkler placed outside their enclosure so that part (but not all) of their housing area receives some cooling. Chimpanzees should never be exposed to temperatures below 50° F. Even at higher temperatures than this, they will need supplemental heat.

# Special Cases

.....

## Age-related Considerations

Chimpanzees can live for more than forty years in captivity. During the course of their long lifespan, their needs change. Infancy is a critical time behaviorally and will determine whether the animal grows up to be behaviorally normal or have life-long behavior problems. Infants should remain with their mothers as long as possible. In the wild, young chimpanzees need their mothers' care until they are about five years old. Separation from the mother before the age of one or two will result in an adult that may have trouble getting along with other chimpanzees, show a lot of abnormal behavior, and not cope well with changes and stressors. If infants are reared apart from their mothers, exposure to other infant chimpanzees is critical.

At the other end of the lifespan, the needs of chimpanzees change as well. Regular health care through a qualified veterinarian, important throughout a chimpanzee's life, is critical in old age. Aged chimpanzees experience many of the same problems that old people do, including bone loss, joint problems, and undesirable weight changes. Obesity increases the risks of cardiovascular disease and other health problems. Comfortable enclosures with bedding become particularly important. Aged chimpanzees can be expected to be less active, but their needs for a social life and stimulating environment do not diminish.

.....  
10

## Individual Housing

A chimpanzee that must be individually caged due to health problems, severe social problems, the unavailability of social partners, or research reasons will require extra care in the form of enrichment and human interaction. While a chimpanzee may have to be individually caged, it should not be kept alone in a room, unless it is necessary to control the spread of disease. Rather, it should have visual and auditory contact with chimpanzees in other cages.

All the enrichment ideas mentioned above are especially critical for the singly caged chimpanzee. Providing a more interesting diet is another way of reducing boredom, but the fact that individual chimpanzees tend to be inactive means that a lot of attention has to be paid to food quantities and calories to avoid obesity. Freezing fruits and vegetables, or scattering low-calorie items in straw are ways of increasing feeding time without adding too many calories. Singly

caged chimpanzees will make a lot of use of toys and videotapes or live-feed of other chimpanzees (particularly familiar individuals). Very sturdy hand-held mirrors also may provide entertainment. Providing new structures or changing the installation of structures from time to time (e.g., suspending fire hoses in a new position) is another way to vary their environment and induce exploration behaviors. Access to the outside benefits all chimpanzees and provides a great deal of stimulation to singly caged chimpanzees.

## Problem Behaviors

Captive chimpanzees may develop bad habits, including strange behaviors not normally seen in the wild. Some of these behaviors are very harmful to the animal's physical health. The most serious problem behavior is self-biting and self-wounding, collectively referred to as self-injurious behaviors (SIB). Little can be done about this behavior once the chimpanzee is in the habit of hurting itself, although there is some evidence with other primate species that pharmacologic intervention may control SIB. Such chimpanzees need intensive veterinary care and a strong behavioral management program for life.

Other behavioral problems that are difficult to eliminate because they develop early in life can be reduced by enriching the chimpanzee's environment. Examples of these abnormal behaviors include rocking, thumb sucking, eye or ear poking, hair plucking, or odd and pointless motions or postures. Some of the easier abnormal behaviors to eliminate involve strange "eating" habits, such as consuming regurgitated food and feces. Increasing the number of small meals and providing bedding can help to eliminate such behaviors. Adding climbing structures and playthings also can be tried. Positive reinforcement training can be used not only to improve the quality of the chimpanzee's life but to train for behaviors that replace the problem behavior.

Some problem behaviors may be due to physical rather than psychological causes. A sudden change in behavior or the development of a new abnormal behavior calls for a medical evaluation. For example, diarrhea may be a response to psychological stress, in which case changes to the environment might help. On the other hand, it could be the result of bacterial or parasitic infection requiring treatment.

No one technique for dealing with problem behavior is foolproof. Each chimpanzee is an individual. A chimpanzee should be watched to determine the effectiveness of changes made. Several different approaches may need to be tried before a behavior problem improves. Some attempts to fix behavior may backfire as well, so familiarity with the individuals and ongoing observation is essential. For example, one chimpanzee may be unreasonably frightened of something new or different, while another will take to it immediately. Chimpanzees may adjust to something new gradually or avoid it forever. In some cases, the chimpanzee's immediate reaction is different from its long-term response. Observe the chimpanzee to see if it makes use of the enrichment, and if it reduces or eliminates the behavior problem. It is important to keep a record of what changes were made and how the chimpanzee responded.

## Safety Issues

.....

.....  
12 Chimpanzees are fast and strong, so great care must be taken when working with them. Chimpanzees that want to be groomed or tickled can press their backs or shoulders against enclosure mesh or bars for you; there is no need to stick your hand in the enclosure and risk getting bitten or grabbed. Indeed, some chimpanzees will appear to invite such contact, only to quickly turn and try to bite the person. Furthermore, always keep an eye on where their hands are and stay away from their mouths.

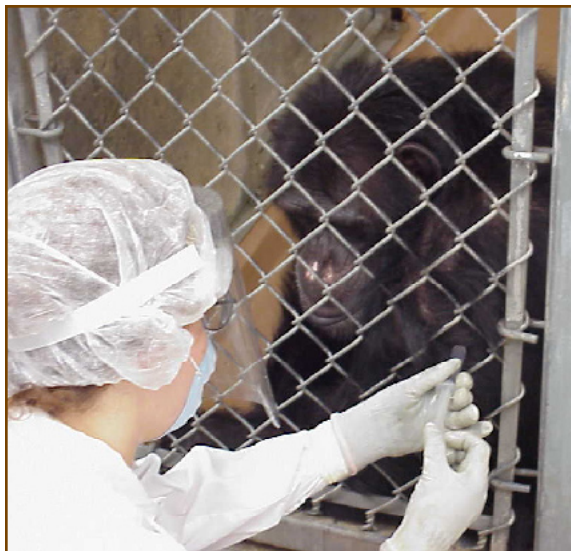
Chimpanzees can be extremely unpredictable. They are known to trick people into coming within grabbing distance by pretending their arms cannot reach out as far as they actually can. If agitated, they may lash out at familiar people to whom they have never been aggressive before.

Chimpanzees can certainly hurt people, and people can inadvertently expose the animals to harm. For example, chimpanzees can catch the same illnesses humans can, so care should be taken not to expose them to people with colds or the flu. Anyone working around chimpanzees should have a tuberculin test every six months or other documentation of being tuberculin negative (e.g., chest x-rays).

An excellent way for people to interact more safely with chimpanzees is to utilize a training technique known as positive reinforcement, in which a desired behav-



ior is linked to something the animal likes. People can positively reinforce chimpanzees by “catching” them doing something desirable (e.g., sitting down, leaning its shoulder against the enclosure barrier near you, etc.), and praising or treating them with a small food reward. By using a specific word or gesture when the chimpanzee performs the desired behavior, people can eventually use the word or gesture to “ask” for the behavior. Because such training takes some level of expertise, one should be familiar with positive reinforcement training techniques, both in general and specific to chimpanzees, before attempting this procedure.



*Through the use of positive reinforcement training, a chimpanzee cooperates with receiving an injection (photo by K. Baker).*

Chimpanzees can be trained to play with or groom each other or to stop stealing each others’ food. Many chimpanzees enjoy learning a variety of commands (e.g., show me your shoulder, bring me your toy). While it may start as a game just to stimulate their minds and have fun, these commands may come in handy unexpectedly. For example, it may be possible to command an injured animal to present the body part for inspection. It may also form the basis for training chimpanzees to cooperate with procedures that would otherwise be very stressful for chimpanzees and people alike.

Like all wild animals, chimpanzees will need to be restrained occasionally for clinical care and transport. However, chimpanzees can be trained to cooperate with procedures. Training can be used to make procedures such as receiving an injection or moving from the home cage to a transfer cage less frightening and stressful for the animal. A chimpanzee trained to cooperate with medical procedures such as heart rate or temperature measurement may not need to be anesthetized for those procedures.

Positive reinforcement training should be employed whenever possible and will result in a positive relationship between chimpanzees and their caregivers. Letting chimpanzees know what is needed of them, and giving them a chance to cooperate, gives them some control over their lives. Threatening or punishing chimpanzees, on the other hand, will encourage them to do unpleasant things to people (spitting, throwing feces) and resist their caregivers at every opportunity.

## Resources

Brent L (Ed). 1997. *The Care and Management of Captive Chimpanzees*. American Society of Primatologists. 252pp.

Maki S, Bloomsmith M. 1989. Uprooted trees facilitate the psychological well-being of captive chimpanzees. *Zoo Biol* 8:79-87.

Reinhardt V. 1997. The Wisconsin Gnawing Stick. *Animal Welfare Information Center (AWIC) Newsletter* 7(3-4), 11-12.

### **Chimpanzees in the wild and in captivity:**

<http://www.discoverchimpanzees.org/chimps/chimps.php> (Jane Goodall Institute Center for Primate Studies)

<http://www.oaklandzoo.org/atoz/azchimp.html> (Oakland Zoo)

<http://www.honolulu zoo.org/chimpanzee.htm> (Honolulu Zoo)

### **Enrichment:**

[http://www.arkanimals.com/ark/e\\_enrichment\\_101.html](http://www.arkanimals.com/ark/e_enrichment_101.html)

<http://www.awionline.org>

### **Training:**

[http://www.awionline.org/Lab\\_animals/biblio/jo-6.htm](http://www.awionline.org/Lab_animals/biblio/jo-6.htm)

[http://behavior.org/animals/index.cfm?page=http%3A//behavior.org/animals/animals\\_chimps.cfm](http://behavior.org/animals/index.cfm?page=http%3A//behavior.org/animals/animals_chimps.cfm)

<http://www.nal.usda.gov/awic/pubs/primates/4n4laule.htm>

### **A useful listserv: ask questions and get answers, exchange ideas:**

<http://pin.primate.wisc.edu/infoserv/forums/pef/>

<http://www.primate.wisc.edu/mailman/listinfo/pef>

### **Primate Organizations:**

American Society of Primatologists, [www.asp.org](http://www.asp.org)

Association of Primate Veterinarians, [www.primatevets.org](http://www.primatevets.org)

International Primatological Society, <http://pin.primate.wisc.edu/ips/>

## Common Names of Chimpanzees

*Pan troglodytes*

*P. troglodytes troglodytes*: Tschego

*P. troglodytes verus*: Common or masked chimpanzee

*P. troglodytes schweinfurthii*: Eastern or Long-haired chimpanzee

*Pan paniscus*: Pygmy chimpanzee, Bonobo, Lesser chimpanzee



# enrichment for nonhuman primates

This series of booklets on enrichment for nonhuman primates was made possible through the cooperation of:

- ~ Department of Health and Human Services
- ~ NIH, Office of Laboratory Animal Welfare (OLAW)
- ~ US Department of Agriculture, Animal Care
- ~ Association of Primate Veterinarians
- ~ American Society of Primatologists

For more information, contact OLAW at NIH  
tel: (301) 496-7163, e-mail [olaw@od.nih.gov](mailto:olaw@od.nih.gov)  
NIH Publication No. 05-5748

Department of Health and Human Services, 2005