

Section 5 — Ape Conservation

OVERVIEW

Apes are endangered, and face significant threats to their survival. Deforestation due to agriculture, infrastructure development and industry is decreasing and fragmenting ape habitat. Poaching, and in particular, the unsustainable bushmeat trade, is the primary threat to many ape species today. Additionally, disease has had a significant effect on ape populations. However, zoos are making significant contributions to ape conservation through field research, public education, captive management of ape species, and support for field conservation. Further, there are actions we can take as individuals to contribute towards ape conservation.

All wild apes are endangered or critically endangered. In fact, in the IUCN (World Conservation Union) report, “Primates in Peril: The World’s 25 Most Endangered Primates— 2004-2006,” four ape species were included:

- Eastern gorilla (*Gorilla beringei*) – Democratic Republic of Congo, Rwanda, Uganda
- Cross River gorilla (*Gorilla gorilla diehli*) – Nigeria, Cameroon
- Hainan black-crested gibbon (*Nomascus nasutus hainanus*) – China
- Sumatran orangutan (*Pongo abelii*) – Indonesia

It is difficult to census wild ape populations because of the remoteness of some populations. As a result, reported population estimates often vary. It is clear, however, that the estimated populations listed in Table 6 represent a small fraction of the wild ape populations just one century ago.

Basic Conservation Definitions from IUCN

- Vulnerable** (Threatened): probability of extinction in the wild is at 10% within 100 years
- Endangered:** probability of extinction in the wild is at 20% within 20 years or 5 generations
- Critically endangered:** probability of extinction in the wild is at 50% within 10 years or 3 generations

Table 6. Population estimates for wild great apes as of 2002

Great Ape Species	Estimated total of wild populations
Bonobos	15,000
Chimpanzees	200,000
Gorillas	100,000
Orangutans	48,000

The most pressing factors impacting ape populations are related to human activity.

Deforestation

Forests are being cleared for agriculture, industry (including logging and mining), infrastructure building, and tree harvesting. Ape habitats are being cleared of trees and plant materials, and being invaded by development and agriculture. These changes have several major effects:

- Reduction in total habitat— limits available resources.
- Increase in **edge effect**— new forest perimeters are created and exposed. The “edge” is associated with the boundary area between disturbed land and natural habitat. The increase in edge can lead to changes in habitat diversity, including increased wear on forest perimeter, and increase in presence of opportunistic, invading species.
- Habitat fragmentation— isolates populations, limits gene flow between populations (necessary for sustaining genetic diversity and health), can cause changes in resources.
- Increase in human presence and interaction with apes— invites disease, provides poachers with easier access to ape populations.
- Increases transfer of disease between and among ape populations

Poaching and Bushmeat

Apes have long been victims of poaching practices. Poaching is the illegal killing of an animal, or removal of the animal from its habitat. Poaching is for profit: captured juveniles are valuable in the exotic pet exchange, adult kills can be valuable as trophies for collectors. Apes are also hunted as **bushmeat**.

Hunting for bushmeat as a sustainable part of family subsistence has been a traditional practice in Africa for centuries. But with the increased, unsustainable demand on the bushmeat trade, wild ape populations are in extreme peril at the hands of these poachers. Bushmeat is often seen as a delicacy and is consumed from villages to large cities, not just in Africa but in London, Paris and New York as well. Kills through the bushmeat trade are also used in cures and treatments. Today, economically depressed rural and urban families see bushmeat as a valuable food and trade item. However, the commercial scale of the trade, made easier by modernized hunting methods, and increased road access, is unsustainable. It will not only lead to the demise of ape populations (as well as other species), but it will damage the sustainability of entire ecosystems by wiping out essential populations of animals.

Industry in particular is playing an important role in the increase in the bushmeat trade, including logging, oil, and mining companies. Such companies have built roads that increase access into isolated ape habitats, and decrease cost of transporting bushmeat to commercial centers. Additionally, logging company employees are some of the primary consumers of bushmeat. As a result, this unsustainable practice has become more profitable, and more appealing to economically depressed individuals.

There is significant inadvertent damage in poaching and bushmeat hunting. Traps intended for other animals targeted in the bushmeat trade often injure or kill great apes, and because of their social nature, individual apes who try to defend or protect targeted apes are often injured or killed in the process. The handling or consumption of bushmeat is also responsible for the passage of disease to human populations including Ebola, and is thought to be the origin of the AIDS pandemic.

Pet Trade

Apes as exotic pets have always been popular, and many captive populations today originated from individuals brought into captivity through the exotic pet trade. However, the trade is incredibly hazardous for all involved from the apes to the humans. Many captured apes do not survive the transfer from the wild to captivity and many others are killed or injured inadvertently in the effort to capture a particular individual. It is estimated that six to eight orangutans die for every orangutan baby that is sold illegally. The smuggling process is usually miserable for the captured apes who must suffer through unbearable conditions, exposure to disease, confusion, and the loss of family and home. Humans who take on apes as exotic pets have an enormous burden as apes are long-lived, susceptible to human disease and have strong wills and strong bodies.

Infectious Disease

Infectious diseases such as polio, measles, and scabies have significantly affected wild ape populations. Most recently, gorilla and chimpanzee populations have been devastated by Ebola, the virulent disease that is deadly in humans at epidemic levels. In 2002-2003, there was a drastic die-off in wild gorilla and chimpanzee populations. Recovered carcasses revealed Ebola infections. Though the Ebola virus is not new, it has reached epidemic levels in ape species because of the ease of disease transfer as a result of decreased habitat due to deforestation. Further, Ebola has also been found present in some bushmeat, spreading the disease into human areas. Infectious disease is becoming an increasing threat to wild ape populations, and in response, the Great Ape Health Monitoring Unit (GAHMU) was formed to collect data and provide veterinarian support in the wild.

What are Zoos Doing to Help Apes?

Zoos work to understand and advance ape conservation in the wild, as well as in captivity. Modern zoos are committed to conservation and education. Many zoos have international research programs through which crucial data and support is collected for ape conservation. The Association of Zoos & Aquariums (AZA) hosts the Bushmeat Crisis Task Force (BCTF), a consortium of conservation organizations and agencies working towards understanding and ameliorating the bushmeat crisis. Zoos also encourage action and change by inspiring visitors through conservation education, helping to form knowledgeable, committed agents to the cause of ape conservation.

Within zoo grounds, apes are carefully bred and cared for by trained staff. Captive breeding of apes is managed by the AZA's Species Survival Plan (SSP), to maintain healthy, self-sustaining and genetically and demographically diverse populations. SSP includes not only managed breeding, but also research, reintroduction and public education.

Captive apes living in zoos act as ambassadors for their wild brethren. To encourage a meaningful connection with captive apes for visitors, and to make the learning experience as authentic as possible, it is ideal for the captive apes to act as their wild ancestors. It is, of course, also in the animals' best interest to have opportunities to behave as close as possible to their wild forms, allowing for their natural behaviors and instincts. This is made possible in captive environments through a **behavioral enrichment** program. Behavioral enrichment is an approach to animal husbandry that is designed to encourage species-specific behavior in captive animals. A successful behavioral enrichment program keeps an animal appropriately stimulated mentally and physically, and provides an animal with opportunities for choice.

Behavioral enrichment programs for captive apes should be holistic. They may involve naturalistic habitat, social interaction with each other, social interaction with keepers, objects to manipulate and inspect, controlled use of sounds, smells, or textures, food enrichment, activity enrichment, and opportunities for choice. Take, for example, the orangutans at Woodland Park Zoo. The orangutans live in naturalistic settings with a variety of vertical enrichment options including trees to climb and suspended hammocks. They receive social interaction from keepers, interact with one another, have opportunities to observe visitors, manipulate objects such as burlap blankets, and receive food enrichment.

Ape enrichment at Woodland Park Zoo



Ryan Hawk

Orangutan using vertical enrichment (tree)



Mat Hayward

Gorilla using object enrichment (burlap)



Beyond Apes: Looking at Other Primates

Golden lion tamarins are critically endangered. By the early 1970s, this Brazilian primate had a wild population as low as 200. Habitat destruction and the pet trade threatened the golden lion tamarins with extinction. However, a unique conservation program started in 1984 has been helping to steadily increase the wild population, which today numbers around 1,000. The National Zoo, in partnership with Brazilian government and conservation agencies, and with the cooperation of the North American zoo community, has been training zoo-born golden lion tamarins for life in the wild. These tamarins learn to walk on and move through real trees, hunt for food, and develop their instincts. After going through this “monkey boot camp” as a gateway, the tamarins are then carefully reintroduced into protected forest areas in Brazil. Learning to survive in the wild can be difficult for captive-born tamarins, but their wild-born offspring have a remarkable 70% survival rate.

Tamarins selected for reintroduction are chosen to increase the genetic diversity of the wild Brazilian population, contributing to the strength of future tamarin generations. The reintroduced tamarin population, along with their offspring, now number over 400—and two of those tamarins were born and raised at Woodland Park Zoo.

The golden lion tamarin reintroduction project serves as a successful model for careful captive breeding management, reintroduction, and protection in the wild.



Ryan Hawk

What Can I Do to Help Apes and Their Habitats?

- Make informed decisions when buying wood and other natural products that may be derived from unsustainable industries
- Educate yourself and others on ape conservation issues. Speak out to friends, family and local organizations and interest groups.
- Join conservation organizations and movements, such as Woodland Park Zoo
- Support government and international efforts, including United Nation’s Great Ape Survival Project (GRASP)
- Contact your government representatives and demand their support of wildlife protection

5.1: What are the different human perspectives on the issue of ape conservation? (C,K,R,S,V,W)

Materials: one copy of party card per group (see following two pages). Optional: computer, Internet, and library access.

Objective: The student will be able to role-play in order to reflect on a range of cultural and economic perspectives. The student will be able to analyze moral and ethical issues related to conservation.

Procedure:

- Hold a discussion in class about the role of people in wildlife conservation issues. Can students think of any wildlife conservation concerns in your region? Who are the people involved in the issue? How do your students feel about the issue as residents of the affected region?
- Now discuss the ape conservation crisis. Is it an important issue? Why? Decide what groups of people are involved, and how the issue concerns them. Consider industry (such as logging), locals (such as farmers), conservationists, researchers and government officials. How do your students perceive the roles of these interest groups?
- You will now work with students to host a mock radio show in your classroom on the subject.
- Assign each student to one of the following four interest parties: logger, farmer, conservationist or government official.
- Give each interest party group their corresponding card. The cards provide a brief background on their party and will help them to develop the group's viewpoint.
- Give each group the same set of questions that the host will use during the show.
- Each group must select one member to be the speaker on the show.
- Allow each group 10 minutes to review their card together, gather the main idea and talking points, and prepare their speaker to answer the questions. (You may additionally encourage students to further research their party's interests using appropriate resources and technologies.)

THE SHOW:

- It is time for your students to role-play. You may act as host of the radio show, or assign the task ahead of time to a student. Have the host introduce the issue and its importance. You may want to set out expectations of guest behavior as well.
- Using the prepared questions, interview the four speakers regarding their viewpoint.
- After each group has presented, hold a discussion period during which groups may "call in" and ask the speakers questions, challenge their viewpoints, or debate a topic. The students in the audience should be allowed to answer questions on behalf of their group's speaker as well.
- At the end of the mock radio show, ask students to assess their experience with role-playing. What party do they most identify with? How do they feel about the party they represented? Do they understand it? What resolutions can they propose that satisfy the interests of all parties, including apes? Does role-playing affect the way they see the perspective of others?

Assessment Criteria: The student is able to state an informed case for a given perspective. The student is able to engage in discussion and debate, recognizing differences and commonalities among the arguments, and reflect on alternative perspectives.

Extensions

- Students can write a persuasive essay as a member of their interest party
- Try this activity as a traditional debate

Skills used in this activity

- Role-playing to understand perspectives
- Public speaking
- Team-building
- Analysis of moral and ethical issues in conservation

Loggers

Many developing nations face economic troubles, including high debt from loans from developed nations. Industries such as logging provide developing nations with a means for making money and providing jobs. However, they also destroy significant segments of habitat. Timber, especially expensive hardwood made from large rain forest trees, is a profitable business. While most logging industries in developing nations are unsustainable (this means they cannot be continued into the future because they are wasteful), they are great money makers, and thus remain common.

Possible points in support of logging

- It provides jobs for unemployed community members
- It yields high profits for developing nations
- There is an international demand for expensive hardwood, and the only way to supply it is through logging
- Technology, support and funds do not yet exist for alternatives to logging
- Other nations, including the USA, have done with their forests as they please. Why can developing nations not do the same?

Possible points against logging

- It destroys habitat at alarming rates
- It provides easier access into forested areas for poachers
- It cannot be sustained into the future
- Loggers are some of the most frequent consumers of bushmeat, which includes the meat of apes

Farmers

Though many developing nations of Africa and Asia are becoming increasingly urban, agricultural life still dominates. Small-scale farms are numerous on these continents, and many support the daily subsistence of locals. However, with increasing human populations, more land is being cleared for agriculture, and thus encroaching on more wild habitat. Also, especially in some African countries, poor soils and irrigation make these farms sustainable for only a few short years, and once the cleared land is depleted of nutrients, new land is cleared.

Possible points in support of local agriculture

- Agriculture has been a lifestyle in these areas for thousands of years, and supports local subsistence
- Agriculture can be reformed through better management, and sustainable farms can be managed
- Agricultural exchange in the market is an important part of economies of these nations
- Low impact, sustainable farming can promote healthy soils and maintains important genetic diversity within crops and livestock.

Possible points against local agriculture

- Much of today's agriculture in these areas is poorly managed and unsustainable (that means it cannot last through the future)
- Some agricultural methods, including slash-and-burn in which habitat is torn down and burned to clear lands, damage the habitat
- Expanding agriculture means shrinking wild habitat
- Wild animals, including apes, can act as pests to farmers. In turn, some farmers trap and kill these perceived pests, regardless of their conservation statuses.

Conservation Biologist

Apes are endangered, and face significant threats to their survival. Deforestation due to agriculture and industries such as logging decreases and fragments ape habitat. Such loss of habitat not only affects ape species, but all other species involved in the affected ecosystem as well. In many developing nations, human habitat and ape habitat overlap. It is impossible for human activity to not have an affect on the future of apes. However, the relationship between humans and apes does not have to be a bad one. Conservation biologists and other field researchers collect data in the wild to help better understand ape species and their threats to survival. Some conservation biologists work to preserve habitat for endangered species, and others help the conservation cause by working within their communities to encourage more sustainable farming and industry.

Possible points in support of conservation

- Conserving wild ecosystems helps to prevent loss of biodiversity (the existence of many different species in one place)
- There is still much to learn about our closest living relatives, the apes. By conserving wild populations, scientists can continue their important research on them.
- Many conservation programs assist local people with developing sustainable lifestyles. This can include better agricultural technologies, more education, and more access to information.

Possible points against conservation

- Some conservation programs restrict local people's access to protected land, and may restrict other perceived rights, such as hunting. Some people find this unfair, noting that the land belongs to the local people as well as native wildlife.
- Conservation programs require money, time and effort. It can be difficult for local people and struggling governments to maintain these programs.

Government Official

Government officials are often left with the challenge of balancing the different needs of the invested parties while resolving conflicts in order to serve best their constituents. Government officials are responsible for the development of their countries, and must consider economic gains made possible through industry and agriculture. However, development comes in many varieties — some may bring quick but unsustainable economic gains, and others may require time and investment to bring about sustainable but slower economic gains. Tourism can also contribute toward the development of a nation, and ecotourism is a model of tourism that incorporates conservation into the industry. Many governments are cooperating with global treaties and international conservation organizations to protect land areas and advance wildlife conservation. This sometimes requires governments to put in restrictions and controls to land access rights for locals as well as industries.

Possible points in support of conservation

- Government supported sustainable development, including regulations in agricultural and industry, can lead to slow, but more secure economic development for a nation.
- Government officials can gain international goodwill by cooperating with global treaties and conservation organizations.

Possible points against conservation

- Officials faced with international debt and a depressed economy may see unsustainable industry as a quick solution to current problems.
- Investing in conservation restricts land for development, which may limit a government's plans for national economic growth.
- Concerns with re-election and/or maintaining offices may encourage officials to favor interest parties that can contribute money or other support to them.

Host Questions

1. What interest party do you represent?
2. How does the conservation of apes affect you?
3. What are your main concerns?
4. Do you support ape conservation?
5. Are you willing to cooperate with other groups to advance ape conservation?
6. What do you propose is the best way to advance ape conservation while still serving your needs?

5.2: How can zoos educate visitors on the bushmeat trade crisis? (C,R,S,W,E,A)

Materials: one copy per group: “Background information on the bushmeat crisis,” computer, Internet and library access, poster board (optional)

Objective: The student will be able to research and extract important information, and translate this information into an educational graphic panel with text. The student will be able to role-play as a zoo employee, in order to enact the potential role of zoos in conservation.

Procedure:

- Break students into groups of four to five students. Students should pretend to work for a zoo that is involved in international conservation. Students will design an educational graphic panel about the bushmeat trade crisis. This panel will be used by their hypothetical zoo to educate visitors about this major conservation issue.
- Give each student group a copy of the “Background on the bushmeat crisis” handout.
- Encourage students to use appropriate technology and resources to research additional information about the bushmeat trade crisis. (Recommended: www.bushmeat.org). They must integrate the information they find in order to create text for their panel, covering:
 1. What is bushmeat?
 2. What is the bushmeat trade crisis?
 3. Why is the trade unsustainable and illegal?
 4. What drives the bushmeat trade?
 5. How are industries involved? What can industries change to better the situation?
 6. Take action: Who can help? How?
- Students may present the text as bullet points under clear headings, or as blocks of text. Remember to encourage them to make the panel as reader-friendly as possible. Have them consider what they would want to see if they were reading a panel at a zoo.
- Students can use charts, graphs, photos and drawings to complete the panel. They may also choose to include resources for more information.
- Ask students to turn in a complete bibliography, including Web sources, for their panel.
- The panel can be presented as a poster, a computer document, or in another format that allows for easy readability.
- Have students present and display their panels (in class or as a hall display for other classes to see).

Assessment Criteria: The student utilizes multiple resources and technologies. The student creates a readable, informative panel that addresses all emphasized topics in a format appropriate for use in a zoo.

Extensions

- Students pretend to be zoo visitors.
Which group’s panel is the easiest to read?
Most informative?
What combination of elements is ideal?
- When visiting Woodland Park Zoo, examine the graphic panels.
Are they easy to read? Interesting?
What changes would you recommend?

Skills used in this activity

- Collaborative research and design
- Researching using multiple resources and technologies
- Synthesizing essential information
- Role-playing
- Designing an informative poster
- Examining ethics of industry and society in relation to conservation

Background information on the bushmeat crisis

The Crisis

The bushmeat crisis is the unsustainable, illegal, commercial trade in wildlife for food.

While people have hunted and fished for millions of years, overhunting and overfishing have grown to crisis levels around the world. In Africa, elephants, forest antelopes, gorillas, bushpigs, chimpanzees and many other species are overhunted, threatening to silence the forests. Health scientists note that bushmeat hunting may pose a health risk by exposing humans to new infectious agents, including Ebola and AIDS-like viruses.

The Cost of Life

In many developing countries, the bushmeat trade is driven by economics. Growing urban populations have created a demand for bushmeat. With few job opportunities, commercial hunters and traders supplying bushmeat can make a profit, especially where there is little regulation. This leaves less food for poor, rural communities that depend upon wildlife for their subsistence.

Into the Forest

Timber, oil and mineral companies build roads into remote forests to remove natural resources to supply international demand. Bushmeat hunters use these roads to bring wildlife to urban markets. Industries and consumers must take responsibility for their impact on the natural world. Some companies are beginning to work with African governments and conservation organizations to protect wildlife in tropical forests.

What can you do to help stop the bushmeat crisis?

TAKE ACTION: Together, we must support efforts to solve the bushmeat crisis by protecting wildlife, raising awareness and working to develop African economies.

- Choose wisely when buying wood, seafood and other natural products
- Learn about the bushmeat trade and speak out on wildlife issues
- Join conservation organizations that work in African countries
- Ask corporations to protect wildlife in Africa
- Contact your government representatives and demand support for African wildlife and protected areas
- Sign the Bushmeat Promise at www.bushmeat.org

Adapted from: Jarrett, P., N. Bailey, K. Buck, N. Nastold, M. Gianelloni, C. Hubbard and A. Sullivan. 2003. "Bushmeat Signage" in Bushmeat Education Resource Guide, eds. N. Bailey and A. Groff. Washington, DC: Bushmeat Crisis Task Force.

Section 6 — Summary

Apes are our closest living relatives, and they are in danger of extinction. Many believe the study of apes can provide important links to understanding the origin of some human behaviors. Certainly the tool-use, hunting bands, and complex social politics of great apes suggest some behavioral connections, and may shed light on the capacities of our common ancestor.

Studying apes on environmental, physical, behavioral and conservation levels reveals the adaptive strategies of this taxonomic family. There are numerous connections to find between these levels: tooth shape and diet are connected, habitat loss affects range and diet, tool-use relates to enhanced cognition and dexterity, long gestation and slow maturation affect the ability of a population to recover from conservation threats, and so on. Some connections may be only partially understood, uncertain, or even undiscovered. Protecting apes and their habitats is the only way to guarantee the preservation of our relatives, and the opportunity to continue to learn about them and from them.



Mat Hayward

Gorillas at Woodland Park Zoo

6.1: How are the environmental, physical, and behavioral characteristics of a primate species related to each other? (R,S,W,A)

Materials: Per student: computer, Internet, and library access, poster board or oak tag (students may obtain this material on their own)

Objective: The student will be able to research a primate species and report essential data. The student will be able to apply critical thinking skills in order to determine relationships between environmental, physical and behavioral characteristics within a species.

Procedure:

- Allow students to choose a primate species for their research. Students will individually create a poster that presents essential information about their species, and demonstrates thoughtful connections between characteristics.
- The student will have to use appropriate resources and technology in order to research essential information for inclusion on their poster. With this information, the student should create a poster that contains the following sections:
 1. Title of Poster
 2. Student Name
 3. Species Name
 4. Species Taxonomy
 5. Conservation status
 6. Wild population, if available
 7. Physical characteristics
 8. Behavioral characteristics
 9. Habitat and Environment
 10. Photo or illustration of species
 11. Resources
- In addition, the student is to represent relationships between the following:
 1. Physical characteristics – Habitat and Environment
 2. Habitat and Environment – Behavioral characteristics
 3. Behavioral characteristics – Physical characteristics

Example of relationships for orangutans		
Physical characteristics	↔	Habitat and Environment = Long outer fur that acts as a raincoat – rain forest
Habitat and Environment	↔	Behavioral characteristics = Frequent rain – use broad leaves as umbrellas
Behavioral characteristics	↔	Physical characteristics = Arboreal – great upper body strength and long arms

Assessment Criteria: The student produces a readable, well-organized poster that contains accurate, referenced data. The student makes informed connections between the categories of characteristics.

Extensions:

- Present and display posters
- Apply the same methods of examining a taxonomic group to a non-primate taxonomic group. Consider, for example, wolves or bears in terms of connections among identifiable characteristics.

Skills used in this activity

- Researching using multiple resources and technologies
- Synthesizing essential information
- Designing an informative poster
- Deducing relationships among physical, behavioral and environmental characteristics

Suggested Poster Format

Title of Poster
Student Name

Species Name
Species Taxonomy

Conservation status
Wild population

Physical Characteristics

Photo or Illustration
of species

Habitat and Environment

Relationship

Relationship

Behavior

Relationship

Resources