



10th - 12th Grade EdZoocational Adventure Guide

Theme: World Wide Web

Grade level: 10th-12th

DESE Standard: BI-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals in some species, (2) the emergence of new species over time, and (3) the extinction of a species.

Overview: The environment of a species may be changed by nature or man. Both types of change can create variation in species population. The changes could prove favorable and a species thrives, resulting in more offspring being produced or surviving to adulthood. The changes could favor only individuals of a species with a certain trait. Only the individuals with that trait survive to pass on the trait to future generations; until the entire species now has the adaptive trait. The changes could prove entirely unfavorable to a species and an entire species could be lost. Primates of the world are only found around the equator: typically from the Tropic of Cancer to the Tropic of Capricorn. There are 376-524 different species of primates (depending on how you classify them) with more being discovered every year. With all primate species living in tropical areas, this variety can only be explained by environmental impact on each species. Various threats have affected the species populations independently, thus resulting in distinct species within a similar habitat. Some thrive, some adapt, and some die.

Activity: The activity page provides students with a brief description of three other primate species not found at the Little Rock Zoo. Using this information (or allowing for further research in class), allow students to determine what possible effect the listed threat might have on each species.

Activity Extension: Research and discuss how humans might diminish each of the listed threats. Are there any human impacts responsible for these threats; even those considered natural disasters? Consider how Arkansans might help species in other nations.

10th - 12th Grade Tour Guide

This self-guided tour takes your class along a path to exhibits with primates from around the world. This path does not cover the entirety of the zoo, but is meant to accentuate the lesson narrative.

- As you enter, head toward the left, past the dome. The lemurs are on the right.
- Remind students that calm, quiet guests see more animals. Loud noises send them into hiding making them harder to find.
- **Lemurs**- Lemurs face extensive threats in their habitat as they are only found off the continent of Africa, on Madagascar. Blue-eyed black lemurs and black and white ruffed lemurs are both critically endangered and rely heavily on the tropical forests that Madagascar provides. Ring tails are more flexible in their habitat- ranging from forests to rock canyons, but still remain endangered. Lemurs face a variety of threats particularly slash-and-burn agriculture. This means burning large areas of trees for planting crops. They estimate that every year $\frac{1}{3}$ of Madagascar burns due to this type of farming.
- **Chimpanzee**- Western chimpanzees, like Mikey live in western Africa in open grasslands mixed with forests. Western chimpanzees face many threats including deforestation, poaching, and disease. One of their biggest threats is poaching for bushmeat (this just means the meat of African animals). This combination of threats make the western chimpanzee critically endangered.
- **Gorillas**- Western gorillas, like Alice, can be found inhabiting the dense and remote tropical rainforests of Cameroon, the Central African Republic, the Democratic Republic of Congo, Equatorial Guinea, Gabon, Angola, and the isolated lowland swampy forests of the Republic of Congo on the African continent. Gorillas face many threats including poaching, deforestation, climate change and disease. Human diseases like Ebola are catastrophic to gorillas. Disease, combined with poaching, has produced a 60% decline in gorillas over the past 25 years, leaving them critically endangered.
- **Pygmy Slow Loris**- Pygmy slow loris are found in eastern Cambodia, Lao PDR, and east of the Mekong River in Vietnam. There have been rare sightings in China. Their habitat ranges include rain forests, evergreen forests, and even bamboo plantations, areas with an abundance of leaf coverage. Being the only venomous primate, pygmy lorises are hunted heavily for medicinal uses. Some believe that their venom can help heal broken bones, open wounds, and even injuries during child birth. With the combination of illegal pet trade and habitat loss, pygmy lorises are endangered.
- **Colobus and Lesser Spotted Guenon**- Colobus and Gueons both face many threats living in Africa. Guenons are an arboreal species that have been sighted in Ghana, Ivory Coast, Liberia, and other parts of the west coast of Africa. Colobus primarily live in the canopies of the trees and are the most arboreal African monkey. They can live in various areas from the savannas to the swamplands. Guenons are near threatened from a variety of threats, including overhunting for the pet trade and bush meat. Colobus are vulnerable from a variety of threats, including hunting for their beautiful fur.
- **Gibbon**- White handed gibbons like Paddy and Twila, live in the tropical rainforests of southern and southeast Asia. Gibbons are arboreal species, inhabiting the canopies of a variety of forests within their habitat range. White gibbons face many threats including hunting, the pet trade, and deforestation. Being an arboreal species, living in the canopies becomes problematic when trees are cleared for human development- including roads. Due to these threats, gibbons are labeled as Endangered.
- **Siamang**- Siamangs like Crash, are found in the mountain and lowland forests of Sumatra. They can even be found in areas of Thailand and Malaysia. Siamangs are arboreal and live in areas heavily dense in leaves and figs. Siamang's two biggest threats are habitat loss and the pet trade. With these combined threats- Siamangs are considered Endangered.

How are animals affected by threats?

	<u>Western Pygmy Marmoset</u> <ul style="list-style-type: none"> • 3-5 oz • Western Amazon Basin in SA • Vulnerable • Tree sap, gum, fruit, insects, etc. • Monogamous; troop of 2-6 individuals 	<u>Rhesus Macaque</u> <ul style="list-style-type: none"> • 11-17 lbs • Habitat spans over 11 Asian countries • Least concern • Omnivore—plants, fruit, seeds, insects • Avg. 30 individuals—male, female, and offspring 	<u>Aye-Aye</u> <ul style="list-style-type: none"> • 5 lbs • Variety of habitat types along the right side of Madagascar • Endangered • Omnivore—insects, fruit, nuts • Mostly solitary
Flood			
Drought			
Deforestation			
Global Warming			
Fishing			
Hunting			
Human Encroachment			
Disease			

INSTRUCTIONS

Use this field journal to explore how animals are affected by threats while on your visit to the Little Rock Zoo!

On your tour, think about how different animals might be affected by different threats:

1. For each animal listed at the top, read the biological history provided.
2. Read each threat listed on the left side.
3. Write how each animal might be affected by each threat based on their biological history.

CONNECTIONS:

Pick a local animal and think about that animal's biological history. Consider how each threat might affect that animal. Write a summary on the back of this page.



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