

Shifting the Balance

This tour is targeted to 4th grade and above

Why is the animal endangered?

- **HICOP**
 - **Habitat Change**
 - **Invasive species**
 - **Climate change**
 - **Over exploitation**
 - **Pollution**
- Does the animal possess anything that humans might want? (fur, bones, tusks, horns, meat, good pets, etc.)
- How much and what kinds of things would this animal eat? Does this affect how much land the animal requires in order to survive?
- Is the animal's habitat valuable to humans?
- How often does this animal reproduce? How many young in each litter? Do the young require a lot of parental care and for how long?
- Have exotic species been introduced to the area and do they prey on the native species or compete for resources and space?

How can you help to save endangered species?

- Protect against overhunting/poaching and the use of bushmeat
- Make better choices: look for eco-friendly products; support ocean-friendly seafood on the "Seafood Watch Chart"
- Recycle, reduce, reuse, replenish
- Use cloth bags for groceries
- Seek out and spread the word about conservation issues
- Support conservation organizations through contributions and volunteerism. The goal is to empower local communities to take over the management of their own resources and their lives

Endangered animals at the SF zoo:

Primates: most give birth to single live offspring and have tended to have a longer period of parental care. They have longer gestation periods and a longer lifespan.

Lemurs (black, blue-eyed black, red ruffed & ring-tailed) - These animals are all endangered and are found only on the island of Madagascar. The blue-eyed black lemur is listed on the 25 most endangered primates in the world. Approximately 92 percent of Madagascar's reptiles, 68 percent of its plant life and 98 percent of its land mammals, including lemurs, exist naturally nowhere else on Earth. Lemurs eat predominantly fruit and are an important seed disperser through their droppings. Each species is found in a particular habitat. The black lemurs live in the rainforests of northwest Madagascar and tend to raid crops in their surroundings and are often killed as a result. The black and white ruffed lemurs live in the eastern rainforest canopy and use their longer snouts and tongue to reach deep inside flowers to retrieve nectar. They are essential pollinators to the flora of Madagascar. The red-ruffed lemurs are only found in undisturbed primary forests in a remote area of northeast Madagascar. Ring-tailed lemurs are more semi-terrestrial and are found in the semi-arid brush and scrub forests of south, southwest Madagascar.

It is estimated that 90% of Madagascar's rain forests have been destroyed. Deforestation, unsustainable agriculture and erosion fueled by human population growth all jeopardize the island's unique habitats. Old growth forests are being burned to make charcoal that is sold by the local populace for the equivalent of \$1.00/bag and a slash and burn technique is being used to clear land for agricultural purposes. The majority of the world's vanilla, which is a flavoring derived from orchids of the genus *Vanilla*, comes from the "Madagascar-Bourbon" vanilla, which is produced in a small region of Madagascar. Uncontrolled logging of the precious woods ebony and rosewood contributes to the deforestation and as logging roads are making the lemurs more accessible more lemurs are being killed as bushmeat. Some lemurs such as the black and white ruffed as well as the red ruffed lemurs are part of the pet trade.

With the low economy of Madagascar, few resources are available for programs to protect lemurs and there are few options for people who live there. There are parts of the Madagascar, which have been set aside as protected areas for the large number of unique plants and animals, and there are movements to expand those protected lands. Fortunately, however, all types of lemurs are protected by CITES, which makes it illegal hunt or capture lemurs for trade, except for scientific research, and to breed in zoos. These laws are well enforced, and the lemur has been a long-time focus of conservation efforts. In addition, the Malagasy people are being educated about why it's necessary to ensure the survival not only of the lemurs, but also its other indigenous life forms. In an effort to bring money into the country while also preserving the environment, ecotourism has become a new source of profit. Money is brought into the country and visitors get to see this beautiful and diverse part of the world. You can contribute to groups working to improve the economy of Madagascar. You can do your part by buying products made from sustainable wood such as bamboo.

Mandrill – Mandrills reside in an extremely small distribution range of Equatorial West Africa. They stay chiefly on the ground, eating grooming and playing, although they may sleep or rest in low trees. Mandrills eat mainly fruits, leaves and insects, but they invade nearby plantations to forage for food when their own supplies are scarce during the dry season.

The mandrill's natural predator is the leopard but their most critical threat is the bushmeat trade. Mandrill meat is considered a delicacy in Gabon. Mandrills are also threatened by habitat loss for agricultural purposes. Mandrills' habitat is also very rich in oil and other mineral resources. As a precondition for mining and exploitation of the resources the forests are destroyed. The opening up of this region created an infrastructure, which made shipment much easier and more lucrative to kill more Mandrills. Conservation organizations are working to protect mandrill habitat from this bushmeat trade and illegal logging.

François leaf or langur monkey – This species is a native of Southeast Asia, China, Laos & Vietnam. This long-tailed primate spends some time on the ground, but its true home is high in the treetops. They are mainly folivorous and have a multi-chambered stomach with cellulose-digesting bacteria to help them break down all the fibrous leaves. François' leaf monkey has declined because of habitat loss, due to expansion of agriculture, fuelwood harvesting, warfare and logging; and because of hunting for food and Oriental medicine.

Although adequate laws exist in Vietnam, enforcement is poor leading to continued trade and hunting of langurs. National Parks do exist within the historical range of this species but logging and fuelwood gathering inside and outside the park has compromised much of their natural habitat and will no longer support healthy langur populations.

Chimpanzee – Chimpanzees share an estimated 98% of their genes with humans. The chimpanzee is thought to be territorial. There are dominance hierarchies throughout the troop, however these may be changing all the time. Rank depends on size and age but also relationship.

Habitat destruction from logging and mining, as well as poaching for the pet trade currently threatens chimpanzees to extinction. Poachers want only the baby chimpanzee. In order to take the baby they usually kill the mother and are only successful if the baby survives the fall. If not, they look for another baby chimp and try the process again. Primatologist Dr. Jane Goodall estimates that for each wild infant chimp taken as a pet, ten other chimps are killed - one mother and several relatives killed protecting the baby. Once captured, the chimps are put into small wooden crates to be shipped out of Africa. Many infants die on the journey.

Animal parts are also used as souvenirs and chimpanzees have also been used on a large-scale for biomedical research. The number one threat is the bush meat trade in which 6,000 chimpanzees per year are killed and eaten by humans.

Western Lowland Gorillas - These animals inhabit the lowland tropical rain forests of Africa. Most of the gorillas' range is now included within national parks or reserves but humans have continued to encroach on the rainforest where gorillas live by clearing for agriculture, providing grazing land for their livestock and gathering wood for fires and their homes. Gorillas are being used as bushmeat and their heads, hands and feet are sold as souvenirs. Gorillas are susceptible to diseases such as the Ebola virus.

Coltan, a mineral used to make cell phones is found in mines near where gorillas live. The gorilla's habitat is lost when the land is cleared for mining. Also the miners have to be fed and there is an increase in the bushmeat trade. By recycling your old cell phone, you reduce the need for this mineral and thus help maintain the gorilla's habitat.

Political instability in countries containing gorilla habitat make protection very difficult. Poor economies mean fewer resources to support and enforce gorilla protection and the establishment of reserves. Because gorillas reproduce slowly losses to the population are felt even more. Local education and selective logging and reforestation practices are two answers.

Establishing national parks and reserves within their natural habitats best protects the apes. These areas must be large enough to support the different ape troops, each of which needs their own territory.

Cats:

Snow Leopard - These animals are solitary and live high in the mountains of central Asia. It's thick coat keeps it warm and the long tail can curl around and protect it's nose from the cold and also helps the snow leopard minimize water loss by humidifying the air they breath with what they breathed out. The coloring of the snow leopard matches the background of the rocks and snow, providing excellent camouflage.

The snow leopard is being hunted for it's luxurious coat as well as its bones for use in Asian medicines. They are being killed when they threaten domestic animals. Global warming impacts the snow leopard. As the snow line moves upward there is less vegetation available for prey animals resulting in less food available for the leopard that lives just below the snow line. Humans are encroaching into their leopard's habitat by clearing land for farming. As prey populations of wild sheep and goats decrease, the elusive leopard is forced to hunt domestic cattle, goats and sheep.

You can help reduce global warming by recycling, using energy efficient light bulbs, re-using things instead of buying new and avoiding products containing palm oil. You can support organizations that educate farmers in methods of protecting their domestic animals without killing snow leopards and promote fake fur.

Sumatran Tiger - These animals are found only on the Indonesian Island of Sumatra. They are solitary animals that typically hunt at night, stalking their prey slowly and patiently before attacking. Tigers eat whatever they can catch. Sumatran tigers live anywhere from lowland forests to mountain forest predominantly in the island's national parks.

The tiger has been hunted for their beautiful pelt but also due to the conflict with people over livestock predation. Palm oil is made from a tree that is grown on big plantations and is used to make food items such as margarine, cookies, crackers and baked goods. Large stretches of forest where tigers live are cleared for palm oil plantations. You can do your part to protect the siberian tiger by not purchasing products that contain palm oil.

Fishing Cat - There appears to have been a severe decline in the fishing cat population throughout much of its Asian range over the last decade. In 2008 they were put on the IUCN red list. Fishing cats are widely distributed but concentrated primarily in wetland habitats, which are increasingly being settled, degraded and converted. Over 45% of protected wetlands and 94% of globally significant wetlands in Southeast Asia are considered threatened. Threats to wetlands include human settlement, draining for agriculture, pollution, and excessive hunting, wood-cutting and fishing. In addition, clearance of coastal mangroves over the past decade has been rapid. The depletion of fish stocks from over-fishing is prevalent and is likely to be a significant threat. Fishing cat captive breeding programs have been established but haven't been considered very successful.

Hoof-stock:

Greater one-horned rhinoceros - These animals live in tall grass and reed beds in swampy jungles of Northeast India, Bhutan and Nepal. Their diet consists of grass, reeds and twigs.

The rhino's horn is made of keratin, which is the same protein that forms the basis of hooves and fingernails. People are encroaching into the rhino's habitat by building their homes there and grazing their domestic cattle.

The horn is believed to have medicinal properties and is used for handles of daggers in Yemen. The horn is highly valued in traditional Asian medicines both to alleviate cold symptoms and as an aphrodisiac and will fetch more than twice its weight in gold on the black market. It is the most sought after horn in the world by Asians. To combat poaching, a reserve in Nepal has a large force of armed guards – approximately two guards for every rhino within the park. In Asia, the use of substitutes for rhino horn, such as the water buffalo horn is advocated by doctors, pharmacists and conservationists mainly because of the rising cost of the horn, trade limitations and limited supply.

Black rhinoceros – Black rhinos are found on the savanna and use their prehensile lip to browse mainly on trees and shrubs. It is found mainly in sub-Saharan central and eastern Africa and have suffered a severe reduction in their numbers due to habitat loss couples with poaching. Black

rhinos are hunted for their horn, which are then made into ceremonial dagger handles in several Middle Eastern countries as well as being used in traditional Asian medicines and as an aphrodisiac. Thanks to increased anti-poaching efforts the black rhino is slowly but steadily increasing.

Chacoan Peccary - Scientists believed these animals were extinct until a living population was reported in 1972. In 1996, the Chacoan peccary is classified as endangered by the IUCN. Chacoan peccary herds are decreasing as a result of habitat loss and fragmentation due primarily to increase in the number of ranches, oil exploration, road construction, and uncontrolled hunting.

Eastern Mountain Bongo— Eastern Mountain Bongos are found in the highlands of Kenya in tropical forests with dense undergrowth, up to an altitude of 12,800 feet. The wild population is declining due to habitat loss, illegal logging and they are sometimes eaten as bush meat. With mountain bongo populations decreasing, eighteen bongos from U.S. zoos were sent to the Mt. Kenya Wildlife Conservancy in 2004. These animals were used to establish a breeding herd for the possible release of future generation into the wild.

Birds:

Waldrapp ibis – These birds are found mostly in Morocco with a few still in Turkey and Syria. It was once widespread across the Middle East, northern Africa and the European Alps but vanished 350-400 years ago. The only breeding colonies in the wild are those in Morocco. The waldrapp ibis lives in barren semi-desert slopes or rocky habitats with sparse vegetation, often but not always close to running water. It feeds on insects, reptiles and small mammals. They are colonial nesters.

The Waldrapp ibis is critically endangered because of the very small remaining population. Their habitat is being lost due to intensive agriculture pressures, pollution through the use of pesticides and uncontrolled hunting. They were hunted for its meat and plumage.

Reptiles:

San Francisco garter snake – This rare subspecies of the garter snake is found in scattered wetland areas on the San Francisco Peninsula from approximately the northern boundary of San Mateo County south along the eastern and western bases of the Santa Cruz Mountains. One of the largest populations of this species is located directly west of the San Francisco International Airport and has been studied in relation to the airport's impacts and expansion plans. The snake's preferred habitat is densely vegetated pond near an open hillside where it can sun, feed, and find cover in rodent burrows. Temporary ponds and other seasonal freshwater bodies are also homes to the San Francisco garter snake. Adult snakes feed primarily on California red-legged frogs, which are also an endangered species. Newborns and young depend heavily upon Pacific treefrogs since they are small enough to fit into their growing mouths. San Francisco garter snakes are one of the few animals capable of eating the toxic California newt without getting sick or dying.

The San Francisco garter snake was one of the first species to be listed as endangered after the Endangered Species Act was passed. These snakes have become endangered due to their habitat loss from agricultural, commercial and urban development and habitat fragmentation. They were preyed upon by introduced species, such as the adult bullfrogs, which eat not only the garter snake but also their primary food source the California red-legged frogs. Illegal collecting is being done for the pet trade and for breeders. You can help save these wetland areas by conserving water and choosing your pets wisely.

Komodo Dragon – This species is found on four volcanic Indonesian islands of the Lesser Sunda group. Komodo dragons are part of the monitor lizard family and are the largest living species of lizard. They are unique among lizards, as they are the top carnivores in their isolated environment. Komodos were listed as an endangered species on June 14, 1976 due to their limited range and the small number of wild specimens. They are protected under Indonesian law and the Komodo National Park was founded in 1980 to aid protection efforts. There are thought to be fewer than 6,000 remaining.

A main conservation effort is habitat protection within the park, however, low funding means fewer park ranger patrols. Even protected areas are at risk. Outside the park, human population growth has led to a reduction of dragon habitat, and the poaching of rusa deer, one of the dragon's favorite prey, has led to drastic population reduction and even localized extinctions.

Glossary:

Appendix I: All species threatened with extinction, which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to further endanger their survival and must only be authorized in exceptional circumstances.

Appendix II: All species which although not necessarily now threatened by extinction may become so unless trade in specimens is subject to strict regulation in order to avoid utilization incompatible with their survival, or other species of related and similar forms which might be confused with the susceptible species and make possible trade in the first-mentioned types.

Appendix III: All species which any signatory party (country) identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the cooperation of other countries. This list may include species, which in other countries are not even considered vulnerable and thus are not otherwise on any list for protection, but in some country of their origin are deemed to be in need of protection from unrestricted trade.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Operates by listing appropriate species in one of three Appendices; see **Appendix I, II, III.**

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are taxa whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Species Survival Plan (SSP): was developed in 1981 by the AZA to help ensure the survival of selected species in zoos and aquariums, most of which are threatened or endangered in the wild. A SSP seeks to strengthen and coordinate captive breeding programs so that zoos can help the worldwide effort to preserve vanishing species.

International Union for the Conservation of Nature and Natural Resource (IUCN): dedicated to finding "pragmatic solutions to our most pressing environment and development challenges." The organization publishes the IUCN Red List, compiling information from a network of conservation organizations to rate which species are most endangered.

IUCN Red List: comprehensive information on the status of wild species and their status, distribution, population, habitat, as well as conservation measures taken and those proposed. The IUCN Red List assesses the extinction risk of species.

Vulnerable species: Taxa believed likely to move into the endangered category in the near future if the causal factors continue operating. Included are taxa of which most or all the populations are **decreasing** because of over-exploitation, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously **depleted** and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are **under threat** from serious adverse factors throughout their range.

Rare species: Taxa with small world populations that are not at present endangered or vulnerable, but are at risk. These taxa are usually localized **within** restricted geographical areas or habitats or are thinly scattered over a more extensive range.

Threatened species: any species, which are vulnerable to endangerment in the near future.