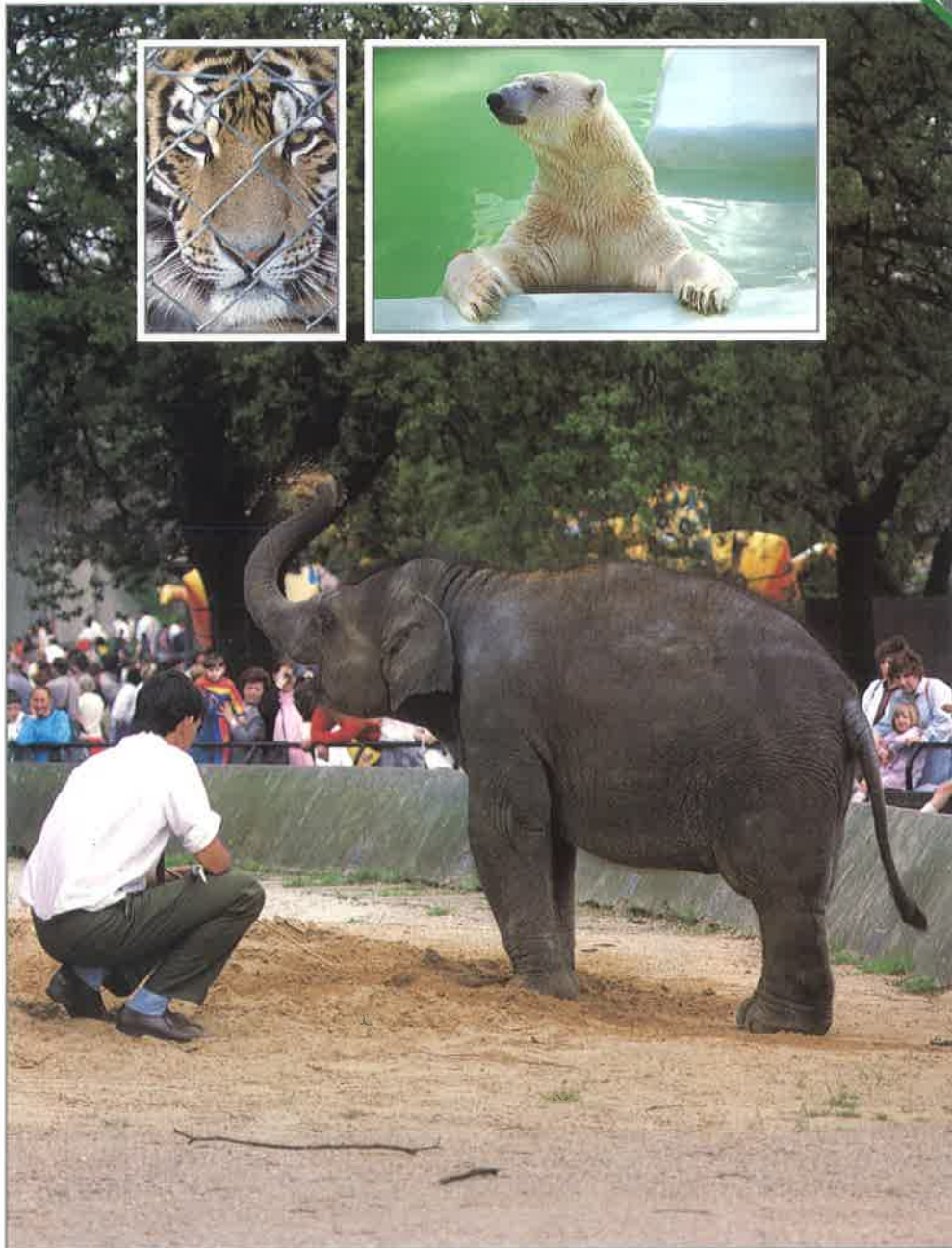


THE ROLE OF ZOOS

GROUP 11: CONSERVATION



Zoos have played an important role in conservation by serving as sanctuaries for threatened species. Some animals bred in zoos have been reintroduced into the wild.

ARABIAN ORYX

The Arabian oryx became extinct in the wild in 1972, but the Phoenix Zoo in Arizona began to breed it successfully. In 1982 and 1984 the first oryx bred in captivity were reintroduced into the wild in Oman. The Arabian oryx now breeds in the wild, but it remains endangered.



Right: The world population of Arabian oryx is probably little more than 100.

PERE DAVID'S DEER



The last wild Père David's deer died out in China in 1900. Fortunately, there were deer in zoos around the world, and a breeding herd was established in England. In the 1970s several deer were given to the Beijing Zoo, and in 1987 a number were released into the wild.

Left: Today about 1,500 Père David's deer live in zoos and about 40 in the wild.

PRZEWALSKI'S HORSE

Also known as the Mongolian wild horse, Przewalski's horse is the last truly wild horse. Hunting caused its extinction in the wild in the 1940s, but a breeding program in zoos has allowed it to be reintroduced in nature reserves in the USSR and Mongolia.



Right: Captive breeding at zoos saved Przewalski's horse from extinction. There are now more than 600 of these wild horses.

Today most zoos try to provide their animals with an environment that is as close as possible to their natural surroundings. Many zoos also try to educate their visitors about animal behavior and the importance of conservation efforts.

CHANGING ZOOS

Zoos have been around for centuries. The Chinese had one 3,000 years ago, and the ancient Egyptians kept lions and baboons in their temples.

As recently as 50 years ago, most zoos were little more than bare cages holding animals for public viewing. Some of the 700 zoos in the world

today still keep their animals in bare cages.

Scientific research, however, has enabled many zoos to create at least a seminatural environment for animals. The best zoos provide each animal with surroundings that allow it to follow its normal behavior patterns.

CONSERVATION

The presence of some species in zoos has saved them from total extinction when they died out in the wild. Other species such as the gold lion tamarin are more numerous in zoos than in the wild.

Captive breeding is an important tool in the fight to conserve endangered species.

The rare Rothschild's mynah has been successfully bred by zoos around the world and is now being reintroduced in its native habitat, in the woodlands of Bali. Zoos exchange or lend animals to reduce the dangers of inbreeding and maintain a healthier population of the species.

Front cover insets: Large animals like the Siberian tiger (left) and polar bear (right) may be replaced by smaller animals in zoos.

Right: In many zoos visitors can watch animals such as this sika deer fawn being fed.



Right: At the Copenhagen Zoo children use audio-visual aids to learn how rabbits see and hear.



Left: Keeping animals in aquariums poses problems. Many do not breed successfully; whales and dolphins die much younger than in the wild.

Right: Big cats such as the clouded leopard often do not adapt well to life in a zoo. Boredom and lack of space can lead to unnatural behavior.



THE FUTURE

The zoo of the future is likely to keep much smaller animals than elephants and lions. Marmots and meerkats naturally form colonies that can easily be shown in zoos.

Displays of night-active animals, in which day and night conditions are reversed, are popular. Other animals such as zebras and various reptiles are likely to remain in zoos because they are easy to keep and feed.

Some animals, however, become distressed in zoos, where they cannot exercise their instinctive behavior. Often their energies are redirected into unnatural and repetitive activities. Big cats may pace constantly in a figure eight, and elephants frequently walk in their own footprints.

Right: At San Diego National Park the animals roam while visitors watch from towers.



RESEARCH

Zoos play an important role in teaching the public about animal conservation. Posters and signs help to explain conservation problems. Contact with the animals promotes concern for their problems.

Many zoos have education departments that give schoolchildren information and first-hand experience not available in the classroom. Zoos also provide an opportunity for scientists to study animals.

EDUCATION

To be successful, captive breeding requires a thorough knowledge of the animals involved. It was discovered that cheetahs would not breed if kept together all the time. This knowledge led to the birth of 100 cubs over 20 years at a zoo where none had been born before.

Research has not solved all the problems. The giant panda population in China is severely threatened by the loss of a suitable habitat and of its food source, bamboo. About 100 pandas live in zoos around the world, but few successful matings have occurred, for reasons scientists do not fully understand. The techniques of "test tube"

fertilization and artificial insemination, in which the male's sperm is collected and artificially introduced into the female, offer hope.

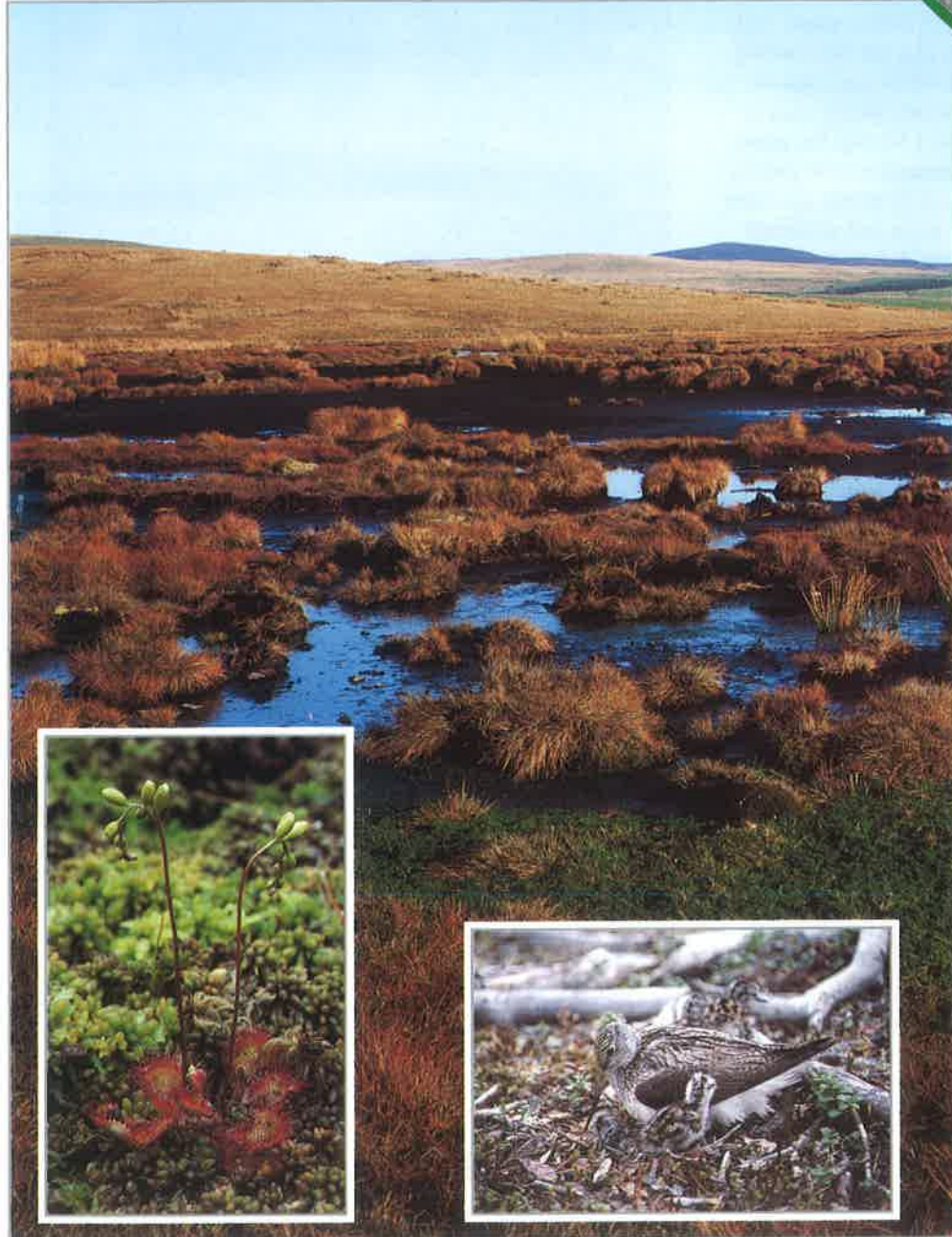
Research has revealed more about the conditions in which different species will thrive. Until recently it was thought that the practice of using some animals to give rides or to perform tricks was unnatural and even harmful. But it was discovered that these activities can enhance an animal's general well-being by preventing boredom.

Some animals are given toys and even television to prevent boredom. Monkeys may have to solve puzzles in order to get at their food.

CONSERVING PEAT BOGS

CARD 22

GROUP 11: CONSERVATION



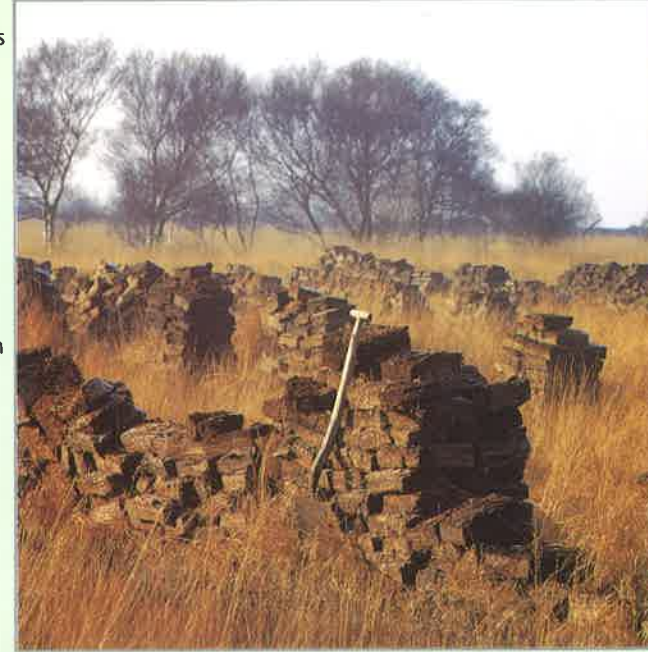
Peat bogs are mysterious places that hold clues to our past. They are also a haven for a variety of plants and wildlife, as well as a source of the peat moss used by many gardeners.

KEY FACTS

THE THREAT TO PEAT BOGS

Peat bogs are as vulnerable as they are valuable. In the 1840s Great Britain had 120 peat bogs covering about 3,700 acres. In 1978 only 34 sites totaling 500 acres remained. Since then, more bogs have been lost and all the surviving sites are damaged.

The main culprit in the loss of bog sites is forestry. Large plantings of pine and birch drain water from the bog. Another major threat comes from farmers who reclaim the land for grazing or treat it with fertilizers, which destroy the delicate organic balance of the growing surface and kill the bog.



Right: Hand-dug peat for gardening dries in the sun.

THE NEED FOR CONSERVATION

Peat bogs are complete environments that do not need to be managed. But damaged bogs need protection so that nature can reclaim and restore them.

The first step is to make sure that bogs have adequate water. This requires filling in drainage systems and sealing cut peat through which water can seep. The creation of forests from peat bogs must stop. So, too, must the practice of burning bogs to create grazing land, because fire permanently destroys the fragile ecosystem.



Right: A bog pool in Wales with sphagnum moss floating on the surface (lower left).

For many thousands of years bogs have benefited mankind. The peat they produce is used as a fuel and for growing plants. In addition, bogs have given scientists information about the past that is helping them predict our future.



Left: Peat bricks are cut by machine out of a mossland bog.

Right: An ant trapped by a sundew plant.

Front cover insets: Sundew plants and the green-shank bird live in bogs.

THE VALUE OF PEAT AND PEAT BOGS

For many generations peat was cut, dried, and burned for fuel in Great Britain and other places in Europe. Today, it is used to fuel power stations as well as home fires. It is also widely used by gardeners all over the world.

Peat bogs tell us about the past. By studying bogs, scientists have discovered the reasons for global climate changes over the last 8,000 years. This information may

help to predict future shifts in our climate.

Peat acts as a preservative. Grains of pollen, seeds, and berries that fell into the bog thousands of years ago remain intact, giving clues to the area's history. For example, bodies buried in peat in Denmark centuries ago were found to be well preserved and provided anthropologists with new information about early peoples.



Above: The Dunlin nests at bog edges.

PLANTS OF THE PEAT BOG

There is no oxygen to break down the nutrients in peat, so the bog cannot support ordinary plant life. Instead, it is colonized by plants that get their nutrients elsewhere.

Some bog plants live in *symbiosis* (mutual dependency) with bacteria found on their roots; others eat insects. The most successful bog plant is sphagnum moss, which gets its nourishment from the minerals in rain. The

moss acts like a sponge, soaking up rain. As it grows, it spreads to form a carpet.

When the moss dies, it becomes sphagnum peat, which builds in layers over centuries. The peat fills the hollow it originated in and then rises above the ground like bread dough. It does not dry out but remains saturated, even though the surface may have risen more than 30 feet above the surrounding land.



Right: Nature reclaims a bog.

Below right: Dragonflies thrive in peat bog areas.

HOW PEAT BOGS FORM

The peat bog is a survivor from prehistoric times. For many centuries people have used its peat for fuel and its plants for medicinal purposes.

A damp climate, such as that of Great Britain, is ideal for

forming peat bogs. Bogs occur when dips in the ground become waterlogged. Lack of oxygen in this waterlogged environment causes the vegetation to turn to peat rather than to decompose.



SAVE THE BLACK RHINO

GROUP 11: CONSERVATION

CARD 20

ACTION FILE



Renowned for its habit of charging at intruders, but prized for its horns, the black rhino has been hunted to the brink of extinction in most of its former range in Africa.

CONSERVATION MEASURES

The alarming decline of the black rhino population has led to the implementation of more successful conser-

Right: A Yemeni man displays his rhino-horn-handled knife.

Below: Killed only for its horn, a butchered rhino is left to rot.



vation measures. Armed wardens in the game parks work to protect the rhinos from slaughter by shooting or arresting poachers. Still, the wardens have been unable to stop the steady influx of poachers who enter the game parks along a 150-mile stretch of riverbank.

A more promising method of conservation is to reduce the number of principal markets for rhino products. Great advances have been made through the Convention on International Trade in Endangered Species (CITES). Countries that join CITES agree to control the trade in both dead and living rare animals. When Sudan joined CITES, for example, smugglers were forced to find another air route to transport rhino horn; and when Japan

joined, the flourishing trade in medicinal rhino products into the country stopped.

In North Yemen, the use of



Another conservation measure involves increasing the rhino population by improving their breeding success. The white rhino, for example, was nearly extinct in the early 1960s, but a concentrated breeding program has increased its numbers. In some

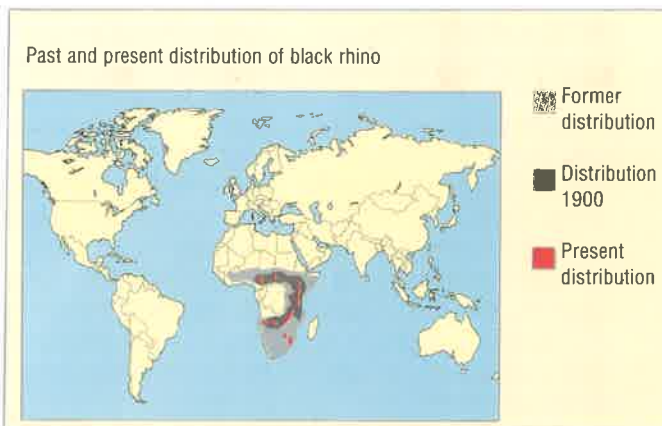


Above: Medicines, including rhino horn, on sale in Sichuan, China.

Left: An orphaned rhino, its parents victims of poachers.

rhino horns to make dagger handles is gradually decreasing. Exporting horn shavings from carvers' shops has been banned, and trade routes through other Arab countries such as the United Arab Emirates are closing.

areas, the white rhino is so numerous that some must be killed every year to protect the food supply. A national park in Bophuthatswana is almost entirely self-supporting through the sale of 10 hunting licenses a year at \$10,000 each.



Throughout their range, rhinos are poached for their horns. In the mid-1980s, the black rhino population in Africa was estimated at 8,800.

Within the last several years, its numbers were estimated at 3,382. The black rhino population continues to decline.



WHY POACH RHINOS?

The decline of the black rhino population continues because poaching is a highly profitable business. There are two commercial uses for rhino horn: as the handles of ceremonial daggers, called *jambia*, for men in North Yemen, and as medicines in Asia.

Ceremonial daggers

When a Yemeni boy reaches adulthood, he is presented with a *jambia*, which he will wear in his belt for the rest of his life. The *jambia* is a symbol of manhood and symbolizes his dedication to the Muslim faith.

A wealthy man will give his son the finest and most expensive *jambia* he can afford, and daggers with black rhino horn handles are the most valuable—and the most expensive—selling for as much as \$50,000.

Medicinal uses

The modern-day use of rhino horn for medicinal purposes follows an ancient Chinese tradition. Contrary to popular belief, it is not used exclusively

as an aphrodisiac; it has a wide range of applications for conditions ranging from hemorrhoids and fevers to skin irritations. The major market for rhino horn is among the large Chinese communities in Indonesia, Malaysia, and Burma, as well as in China itself. The return to traditional medicine in Japan and Korea has also increased the demand.

The horn of the African black rhino is considered inferior to that of the Asian rhino, but since Asian horn has become difficult to obtain, the demand for African horn has risen. A primary source of black rhino horn for the Asian medicinal market is the shavings that are left over from the carving of *jambia* handles.

Above left & right: *Most horn is powdered for use as medicine or is carved into dagger handles.*

Right: *Despite the wardens' best efforts, poachers continue to slaughter rhinos.*

Left: *The rhino's highly prized horns grow to a length of 4 feet.*



THE RHINO'S DECLINE

The black rhino is found predominantly on the plains and in the dry bush country of east Africa. At dawn and dusk, it feeds on the shoots and twigs of low-lying bushes. For the remainder of the day, it rests under shade trees. The rhino often charges without apparent cause, and it is said to be particularly vicious in areas where it has been continually disturbed by man.

The decline of the black rhino population has been drastic. Kenya alone lost 98 percent in just 17 years; in 1970 there were an estimated 19,000 black rhinos; by 1987 there were fewer than 400.

The rhino's prized horns grow one behind the other. They are made of tough fibers secreted from the skin of the nose.

Right: *Black rhinos browse on the east African plain. Black rhinos are actually the same color as white rhinos and are best identified by their preference for browsing rather than grazing.*



POACHING & TRADE

Today most black rhino poaching occurs in northern Zimbabwe's game parks.

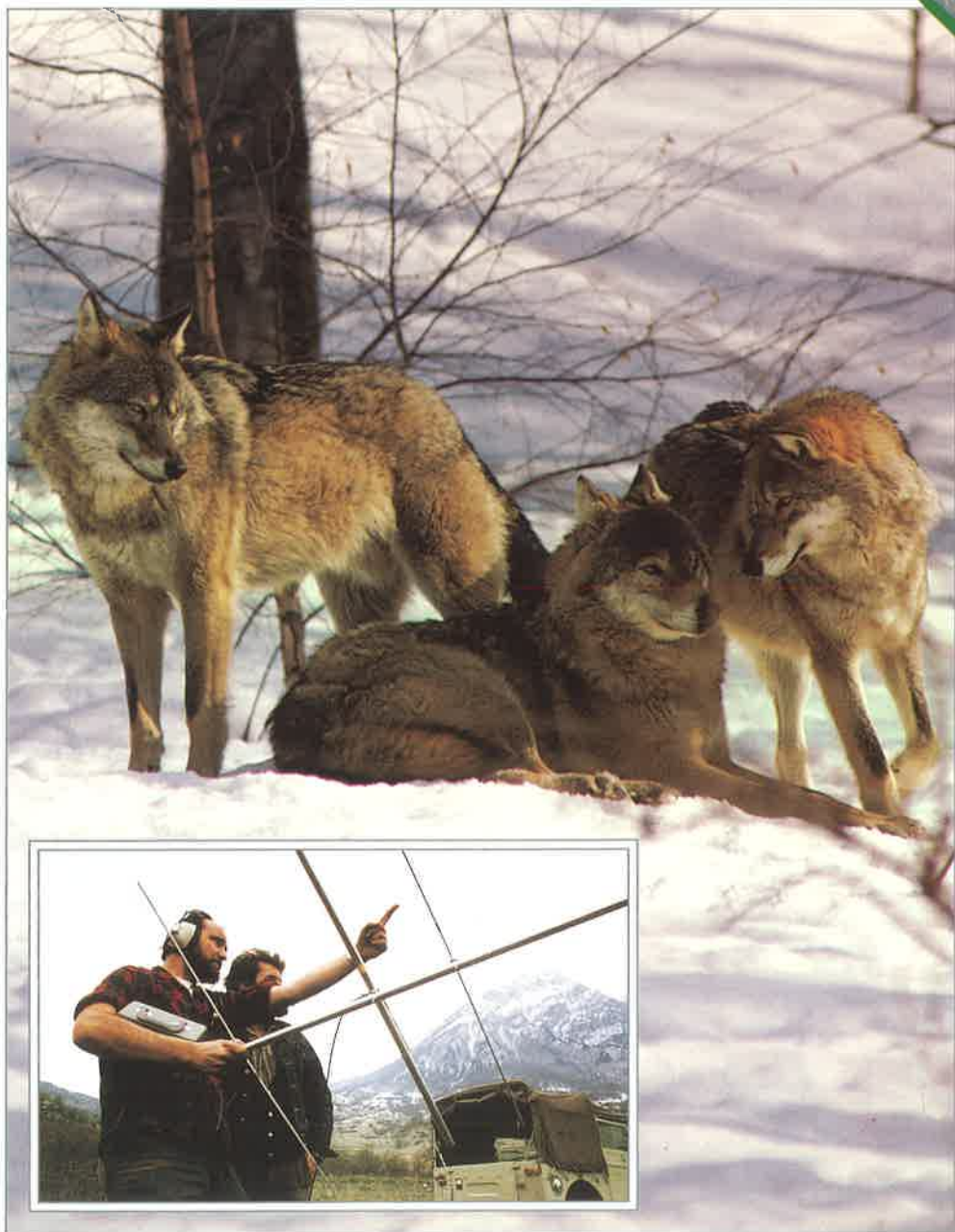
Poachers cross the Zambezi River at night. Armed wardens monitor their movements and ambush the poachers as they enter the game parks. Both sides shoot to kill. Many poachers manage to evade the ambush and kill any rhino they can find.

The rhino horn is smuggled

to Yemen by one of several routes. Some is transported by boat from one of the east African ports such as Mombasa or Dar es Salaam and arrives ashore in Aden or in the United Arab Emirates. Often it is flown to Yemen from the African countries of Somalia or Sudan. The routes are changed at short notice to avoid detection by customs.

SAVE THE EUROPEAN WOLF

GROUP 11: CONSERVATION



Now in danger of extinction, the wolf was once the most widespread mammal in Europe.

THE SURVIVORS

European wolves have managed to survive only in the most remote, mountainous, or densely forested regions.

Only four European countries have substantial numbers of wolves left—the Soviet Union, Rumania, Greece, and Yugoslavia. Wild wolves are hard to count, so exact numbers are not known. Radio tracking is sometimes used. More details are known about the wolf in several other

countries.

Italy: Officially protected, about 250 wolves live in remote mountainous areas.

Projects financed by the World Wide Fund for Nature may enable small numbers of wolves to survive if farmers and herdsman can be persuaded to accept them.

Sweden: In spite of protective legislation, there are only five wolves in Sweden, of which there is only one

breeding pair.

Norway: Wolves are protected to the extent that a wolf may be killed legally only by a farmer protecting his livestock.

Spain and Portugal: In 1985, Grupo Lobo was founded to protect the wolves surviving in the mountains on the Spanish/Portuguese border. Wolves are not popular with local farmers, who claim that they lose many of their domestic stock and deer.

Right: Sheep in the Italian mountains are rarely attacked by wolves. Some dishonest shepherds have been known to slit their sheep's throats in order to receive compensation for a wolf attack.



CONSERVATION MEASURES

The areas where the European wolf can live without coming into conflict with humans are decreasing. There is little effective international agreement about the wolf's conservation. All efforts to preserve the wolf are conducted locally.

To prevent the continued slaughter of Europe's endangered wolves, farmers are compensated for the death of stock. Unfortunately such systems are abused. Lapp herdsman in the north of Sweden, for instance, have often blamed the deaths of

their reindeer on the wolves rather than on poor care.

It will take more than simple legislation to save the European wolf. People must be educated to understand that this animal is not a ruthless predator, but a shy and intelligent creature.



The wolf is a large and potentially dangerous carnivore, so it is difficult to protect. Though opinion polls show that wolves are popular animals that most people agree should be protected, old fears and prejudices still continue throughout the world.

MAN & WOLF

People's fear of the wolf is long standing and may stem from the fact that wolves and people were once in competition for food. When farming replaced hunting, there were domestic livestock to protect, and wolves have been actively persecuted ever since.

The "wolf plague" of Scotland resulted in the extermination of the animal there. The last British wolf died in 1743. Wolves survived in Ireland until about 1770.

Similar waves of wolf persecution on the European continent has driven the few survivors into remote areas far away from human settlement.

Although the wolf is a protected species in most European countries, some hunters see no reason to stop killing wolves for sport and will pay a great deal of money for the privilege.

Right: A conservation worker carries a drugged wolf that he is returning to the wild.



WILD WOLF-DOGS

Wild wolves still survive in significant numbers in Italy, where the increasing shortage of natural prey has forced the wolf into giving up its pack-hunting habits. It has become a lone hunter instead, scavenging for food around villages and farmhouses. Wolves will raid dumps and garbage cans.

Many rural villages have open dumps where the local slaughterhouse disposes of its waste parts and unwanted meat. The wolves feed there alongside feral, or stray, dogs.

These dogs and wolves will mate occasionally and their offspring are often impossible to distinguish from ordinary dogs. These wolf-dogs' deceptive appearance means that they are quite dangerous. Wolf-dogs may wander freely through populated areas, unrecognized as wolves. They are wilder than their feral parents and can be extremely ferocious. They are often infected with rabies.

LIFESTYLE

Wolves live and hunt in packs, which are usually extended families of an *alpha*, or dominant male, his mate, and their offspring. They usually stay within a home range but may wander far outside their territory to hunt.

Wolves hunt and kill game up to 10 times heavier than they are. Wild reindeer, elk, and red deer are their favorite prey. Wolves will also eat much smaller animals such as mice and frogs. With the decline in the number of wild game, wolves have begun to

prey on domestic horses, cattle, and dogs. Starving wolves will even eat potatoes, fruits, buds, and lichen.

The alpha male and female mate between January and March. The cubs are born seven weeks later in a den dug among bushes or rocks. The male brings food back to the den, either by carrying it whole or by swallowing and then regurgitating it for his family to eat. As the cubs grow, the mother and other members of the pack help to feed them.



Left: Wolves in Abruzzo, Italy. They may be among the last in the area unless attitudes change and hunting is controlled.

Right: Wolf-dogs live by their wits, scavenging for food where they can. It is often hard to tell their wolf ancestry from their appearance.



SAVE THE ATMOSPHERE

GROUP 11: CONSERVATION

CARD 17



NASA/Science Photo Library

Man's activities are adversely affecting the earth's atmosphere. Man-made chemicals are depleting the ozone layer and the use of fossil fuels is causing global warming.

ACTION FILE



WHAT IS BEING DONE?

In the United States, Congress is considering passing a law that will require automobile emissions to be reduced by 50 percent. Also, it will become mandatory that all power plants significantly reduce their consumption of fossil fuels by the year 2000.

The building of more nuclear power plants could also provide us with a source of non-polluting energy. But to reduce global warming by even 20-30 percent before the year 2050 would require the building of hundreds of nuclear plants.

The only long-term solution appears to be the use of renewable and non-polluting sources of energy.

Above: Rainforests, which absorb carbon dioxide, are being burned down at the rate of more than 230,000 square miles each year.



R. Hunt/Survival Anglia

Right: Hope for the future: children planting trees.

THE MONTREAL PROTOCOL

Representatives around the world met in Montreal in September 1987 to discuss ways in which to forestall further ozone layer damage. It was agreed that the production of chlorofluorocarbons (CFCs) be reduced by 50 percent.

It is now believed that CFC production must be cut by 85 percent to prevent further damage. Furthermore, CFCs can exist in the atmosphere for over 100 years and, until they are broken down, the ozone layer cannot stabilize.

WHAT CAN YOU DO TO HELP?

Despite the enormity of the problem, there is much that each of us can do to help reduce the greenhouse effect and restore the ozone layer. Preserving the rainforests is the most significant step. Trees absorb carbon dioxide, the gas which most greatly contributes to global warm-

ing. When forests are cut down, a greater percentage of harmful carbon dioxide remains in the atmosphere.

- Deforestation must stop. Support conservation groups that work to prevent countries like Brazil from destroying rainforests. Stop buying tropical hardwood.

- Conserve energy to minimize the use of fossil fuels.
- Do not buy aerosols.
- Eat less meat, particularly hamburgers. Fast-food chains are contributing to deforestation in South America by purchasing land on which to raise cattle. The hamburgers' packaging also contains CFCs.

Though scientists have known that global warming has been increasing over the last century, they thought that the change would be gradual. But it was recently discovered that the atmosphere can change quickly, and it is believed that climatic conditions have already been altered.

The sun is a star that emits huge quantities of radiation. Its rays enable life to exist on earth.

For millions of years, the atmosphere remained in balance. But in the course of the last 100 years, man has seriously disrupted it.



THE OZONE HOLE

Ozone is a special type of oxygen. It is constantly being created and destroyed in the stratosphere as ordinary oxygen reacts with ultraviolet radiation produced by the sun. The ozone protects the earth by absorbing much of the harmful ultraviolet radiation.

The delicate balance of the ozone layer has, however, been upset by the use of man-made chlorofluorocarbons (CFCs). The molecules

of these synthetic compounds have smooth surfaces, so the other compounds found in the lower atmosphere cannot combine with them and break them down.

CFCs float up into the stratosphere where, in the cold vortex of air over the North and South Poles, they are able to break down and release chlorine, which in turn destroys the earth's protective ozone layer.

The ozone layer performs a vital function filtering out ultraviolet radiation.

Greenhouse gases hold in some of the heat reflected by the earth's surface.

GREENHOUSE GASES

Approximately 30 gases contribute to the greenhouse effect. The most damaging gas is carbon dioxide, a result of burning wood, coal, oil, and

gasoline. Chlorofluorocarbons also have a damaging effect on the atmosphere. Methane and nitrous oxide have damaging effects as well.

Man-made carbon dioxide comprises 35% of the harmful gas in the atmosphere.

Methane adds 15%, and nitrous oxide nearly 10%, to the harmful combination of gases.

THE GREENHOUSE EFFECT

There are a number of heat-retaining gases, called greenhouse gases, that keep the earth warm. Without them, it would be so cold that the oceans would freeze. As fossil fuel use has increased over the past century, so has the volume of greenhouse gases

in the earth's atmosphere.

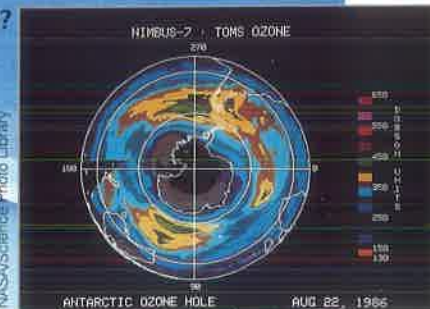
It is estimated that the average global temperature will rise two to four degrees over the next 50 years. An increase of just two degrees would make the earth the hottest it has been in the last 120,000 years.

WHAT WILL HAPPEN?

If the earth warms up and the icecaps begin to melt as predicted, the sea level will rise five feet by the year 2030. Low-lying countries and regions such as the Nile Delta and the Gulf Coast of the United States will be submerged. Many islands will disappear completely. New York, London, and Paris will suffer severe flooding.

Weather patterns disturbed by the effects of holes in the ozone layer will be further upset by temperature changes, causing destructive storms.

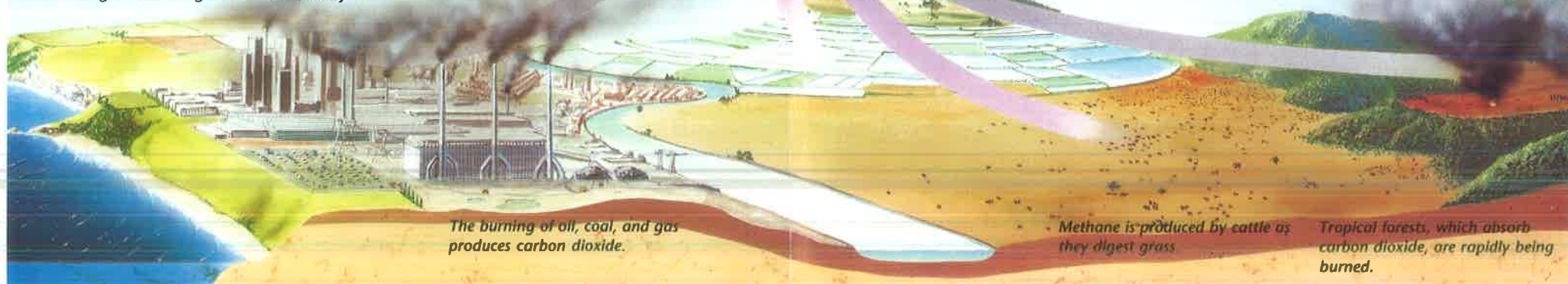
Many areas of the world, such as the American Southwest and the Sahel region of central Africa, will experience severe drought conditions, while North Africa and Europe will become much wetter.



A satellite map depicts in black the hole in the ozone layer over Antarctica. First seen in 1980, the hole has grown each year.

These climatic changes will cause disaster in the agricultural regions of the world. Increased levels of radiation due to the depletion of the ozone layer will also affect agriculture by adversely affecting plant growth.

These changes will also increase the incidence of skin cancer in humans.



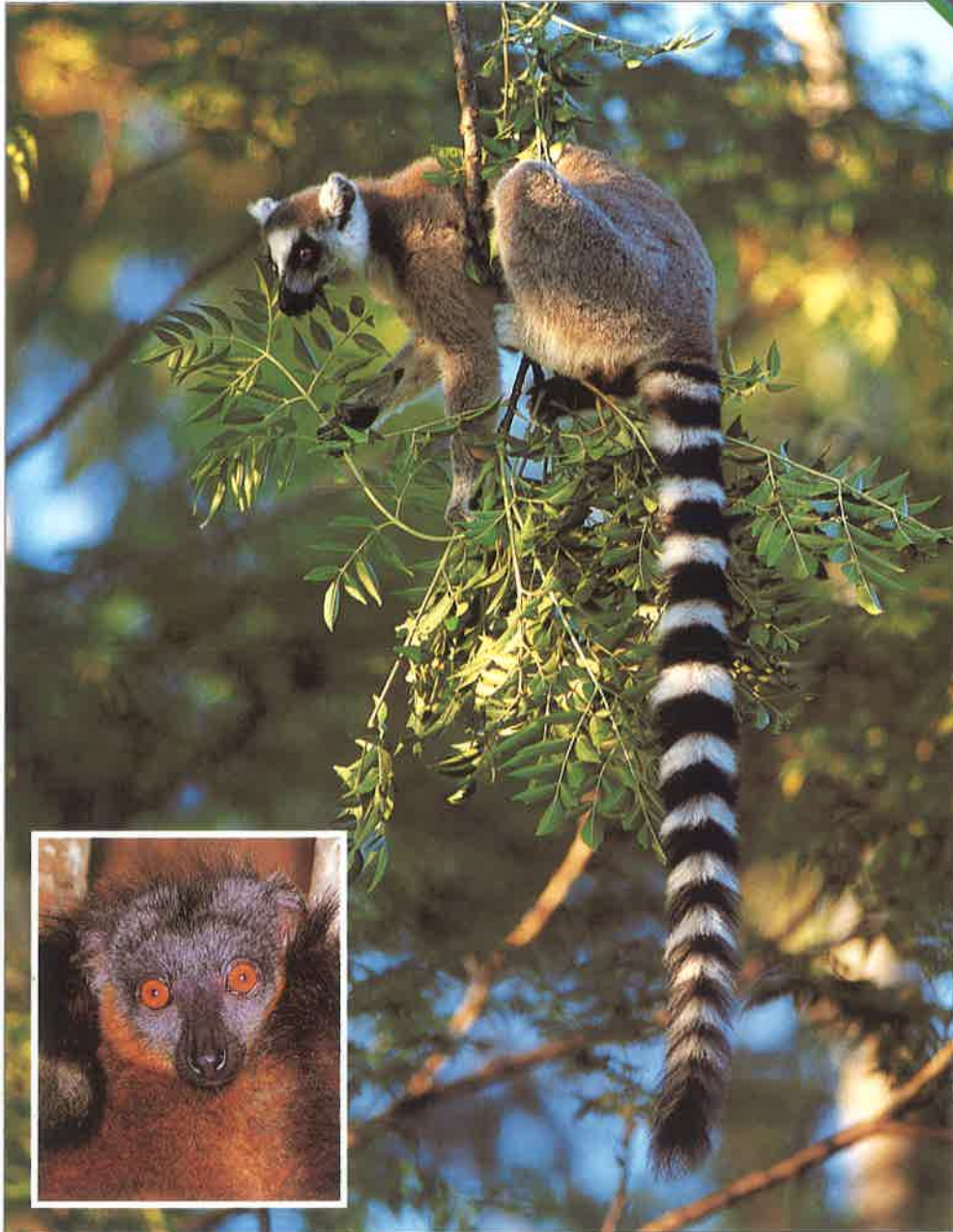
The burning of oil, coal, and gas produces carbon dioxide.

Methane is produced by cattle as they digest grass

Tropical forests, which absorb carbon dioxide, are rapidly being burned.

SAVE THE LEMURS

GROUP 11: CONSERVATION



Since prehistoric times, the different species of lemur on Madagascar—relatives of monkeys and other primates—have evolved in isolation. But they are now in danger of extinction.

HOW THE LEMUR EVOLVED

The island of Madagascar has five very different climatic areas. Each area is divided by wide, fast-flowing rivers that isolate the various populations of immigrant lemurs from each other. As a result of isolation and varying climates, each group of lemurs has developed differently. This variation in development is part of the normal process of evolution. In addition, the developing lemur populations thrived because there was no competition for food from other animals and no threat from predators.

In Africa, where the lemur originated, the early lemurs evolved into monkeys. On Madagascar, the lemur evolved into many different species of lemur whose adaptations were determined by environments.



CONSERVATION MEASURES AND PROBLEMS



Conservation groups are working to protect the forests of Madagascar, which will in turn safeguard what remains of the lemur's habitat.

Recently the World Wide Fund for Nature has recognized the importance of preserving Madagascar's remaining wildlife habitats, including those of the lemur. The program is seeking to raise money for the establishment of an environmental action plan that will form nature reserves on the island. Still, progress in establishing the reserves has been slow.

THE NEED FOR MORE HELP

Existing laws to protect the lemurs on Madagascar are difficult to enforce. Many villagers are isolated and unaware of the lemurs' plight; as a result they continue to destroy the lemurs'

forest habitat.

Also, Madagascar is a poor country where human life expectancy is approximately 40 years. So the establishment of schools and hospitals has a higher priority than

saving the lemurs.

Without the help of wealthier nations to pay the costs required to establish and maintain a wildlife conservation program, the lemur's future remains uncertain.

Approximately 40 million years ago, several lemurs, floating on fallen trees, crossed the widening sea channel between their African habitat and the island of Madagascar. The lemur continued to evolve and developed into more than 40 different species. Many of these species are now extinct.



MADAGASCAR'S LEMURS

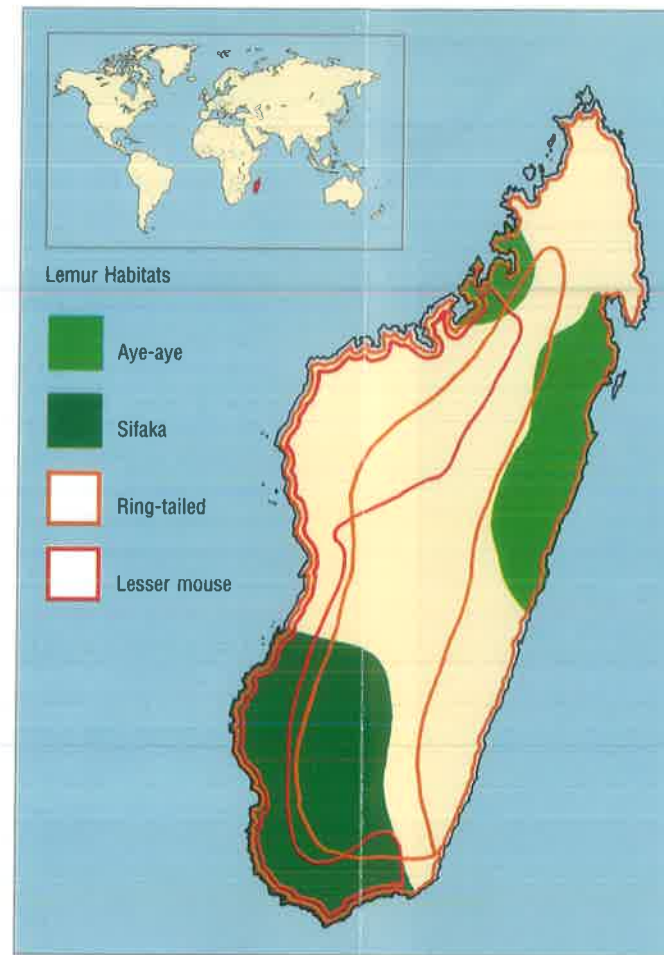
The island of Madagascar is 900 miles long and 375 miles wide. It lies in the Indian Ocean, near the east coast of Africa. Madagascar is the only place where true lemurs are now found in the wild.

Scientists believe that 14 species of large lemurs became extinct shortly after humans arrived on Madagascar 1,500 years ago. Bones found in caves show that lemurs were an important source of food for the early human inhabitants. Today people in Madagascar still

eat lemurs.

Most lemur species are endangered because of loss of habitat. The human population of Madagascar has risen sharply during the last century, and the rainforests on which the lemurs depend for survival are being cleared for farmland. Because the soil is poor, the land is abandoned after several years of cultivation, and more rainforest is cleared.

Most of Madagascar's rainforest has been destroyed within the last century.



Right: The ring-tailed lemur carries its tail erect like a flag. It uses scent secretions to mark both its tail and its territory.



The Ring-tailed Lemur, *Lemur catta*: Troops of ring-tailed lemurs live in the sparse, dry southern forests. Although the males are as large as the females, the females lead the

group and defend their territory from rival lemurs. When water is scarce, the females and young drink first to ensure continuation of the species.

Right: The aye-aye has a bony middle finger that it uses to extract insect larvae from tree bark. It protects this finger by walking on its wrists.



The Aye-Aye, *Daubentonia madagascariensis*: The nocturnal aye-aye has sensitive ears, a bushy tail, and teeth that never stop grow-

ing. The aye-aye population numbers less than 200, but the animal is still killed by villagers who believe that it brings bad luck.



Left: The word "sifaka" comes from the call the lemur makes to warn other lemurs of danger.

The Sifaka, *Propithecus verreauxi* and *P. diadema*: Like many lemurs that are active during the day, the sifaka basks in the early

morning sun to raise its body temperature. Pairs of sifakas groom each other, both to clean their fur and to strengthen social bonds.

Right: The lesser mouse lemur is in less danger of extinction than other lemurs. This is partly because the lesser mouse is too small for people to eat.



The Lesser Mouse Lemur, *Microcebus murinus*: The lesser mouse lemur is the smallest of all primates. It is more common than other types of lemur, but it is rare-

ly seen because it is nocturnal. It sleeps in a nest made of plant fibers, leaves, and hair, and it spends the cold, dry season in an inactive state.