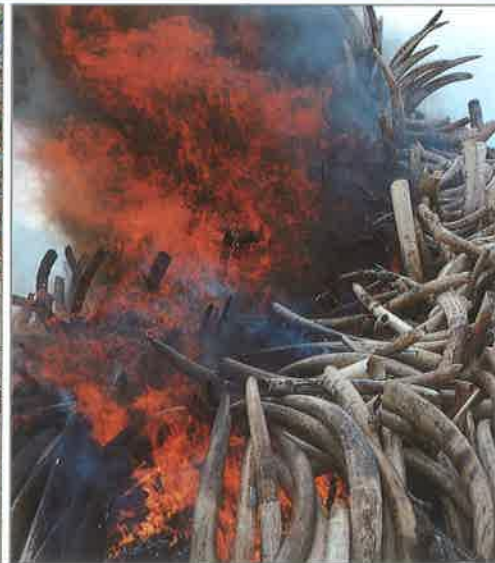


SAVE THE AFRICAN ELEPHANT

CARD 8

ACTION FILE

GROUP 11: CONSERVATION



The threat facing the African elephant is now critical: drought, starvation, land development, and the ivory trade are bringing this noble animal closer to extinction.

The survival of the African elephant depends on three conditions: safety from poachers, availability of habitat, and public awareness of the elephants' plight.

STOPPING THE IVORY TRADE:

The majority of conservationists agree that the most important step in protecting elephants is to stop the illegal commercial ivory trade. The Convention on International Trade in Endangered Species of Fauna and Flora, or CITES, monitors trade in all endangered species and their products and, before the commercial trade ban in 1989, sought to control the legal ivory trade.

Enforcing the ban on the commercial trade of ivory is very difficult for several reasons. The value of ivory increased so drastically in the



1970s—reaching the price, in weight, of gold—that it is now used illegally as hard currency. Also, traders smuggle uncut ivory from the killing grounds, usually through African countries that are not members of CITES, so false papers may be supplied in place of legal CITES permits.

Still, despite the persistence of ivory traders, the regulations are becoming more

effective. Between 1985 and 1988, the annual turnover of the ivory trade fell from 700 to 200 tons.

ESTABLISHING GAME RESERVES

Elephants have more protection from poachers if they are in game reserves, such as the Kruger National Park in South Africa. Highly trained and fully armed game wardens are needed to watch over the reserves, to monitor herd movements, and to patrol the borders where poachers enter the reserve illegally.

Above: Game wardens set out to guard against poachers. Both sides shoot to kill.

Right: Ivory products in Gabon, Africa, awaiting sale. Carving sweatshops abound, which supply local as well as overseas demand.



HOW CAN YOU HELP

The most important thing you can do is to refuse to buy or accept ivory in any form, and to explain why to retailers and friends. By educating the people around you about the role of the ivory trade in the destruction of African elephants, you can help ensure their preservation.

The African elephant is hunted for its ivory tusks, and it is rapidly vanishing from almost all of its native habitats. There were 1,200,000 wild African elephants in 1982. By 1989, this figure had fallen to just 609,000.

ELEPHANTS & THE IVORY TRADE

The African elephant has been hunted by past and present civilizations both for its meat and for the ivory of its tusks. Two different grades of ivory can be found in Africa: bush elephants have shorter, more curved tusks that are softer; the tusks of forest elephants are longer, straighter, and harder.

Throughout centuries, ivory has been used in a variety of ways—for knife handles, billiard balls, bangles, spear tips, and fish hooks.

As trade routes were established throughout Africa in the Middle Ages, elephants were increasingly hunted for their

Front inset left: Tusks being removed from a carcass.

Front inset right: Burning illegal ivory in Nairobi.

POACHERS

Poaching is a serious problem, and many poachers are more intent than ever, despite severe penalties, on obtaining ivory. In addition to killing the elephants with firearms, grenades, or poison-tipped arrows, poachers also lace watering holes with insecticides, killing the elephants and

ivory. Traders on camels transported tusks across North Africa and, in the 18th and 19th centuries, slaves were used to carry the raw ivory from central, southern, and western Africa to coastal ports for export to Europe and the Far East.

In the 20th century, some of the heaviest elephant losses occurred between 1970 and 1977, when Kenya lost more than 60,000 of its 120,000 elephants, chiefly through slaughter and poaching. Such great losses prompted many African countries to ban any commercial ivory trading. Some people argue, however, that a commercial ban will simply increase the black market value of ivory, and thus increase illegal trade.

any other animals that come to drink there.

Poaching teams enter the protected areas after dark. They work fast to avoid being shot by the game wardens that guard the park borders. To remove the tusks from an elephant carcass, they must hack away much of its skull.

HABITAT LOSS

Elephants are sociable animals. They form close family units led by a female, called a cow. Bulls leave the family group when they mature, returning only to breed.

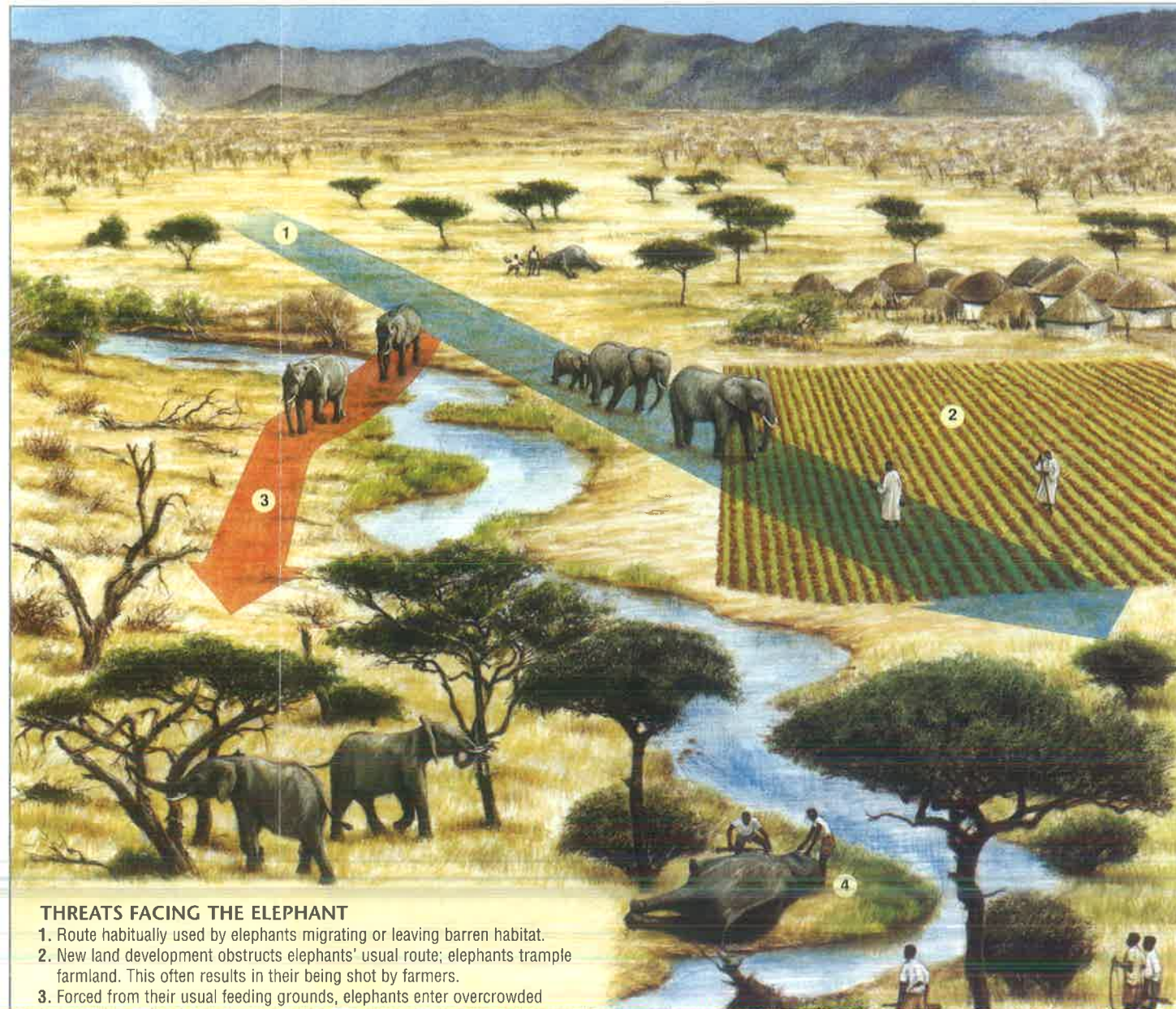
Elephants naturally forage over a huge area. Prolonged

drought or loss of habitat may force families to migrate in large herds—sometimes over hundreds of miles—to find new feeding and watering grounds. In the process, they often move onto developed farmland and trample crops,

making them pests to farmers. Attempts by local conservation departments to drive them back to their former habitats usually fail. In 1974, four-fifths of Rwanda's elephants were shot because they were uncontrollable.

Land development increases continually, and is used for growing crops, which infringes upon the elephant's habitat, as do new housing and roads.

Still, space remains for elephants to roam in the wild, provided the poaching stops.



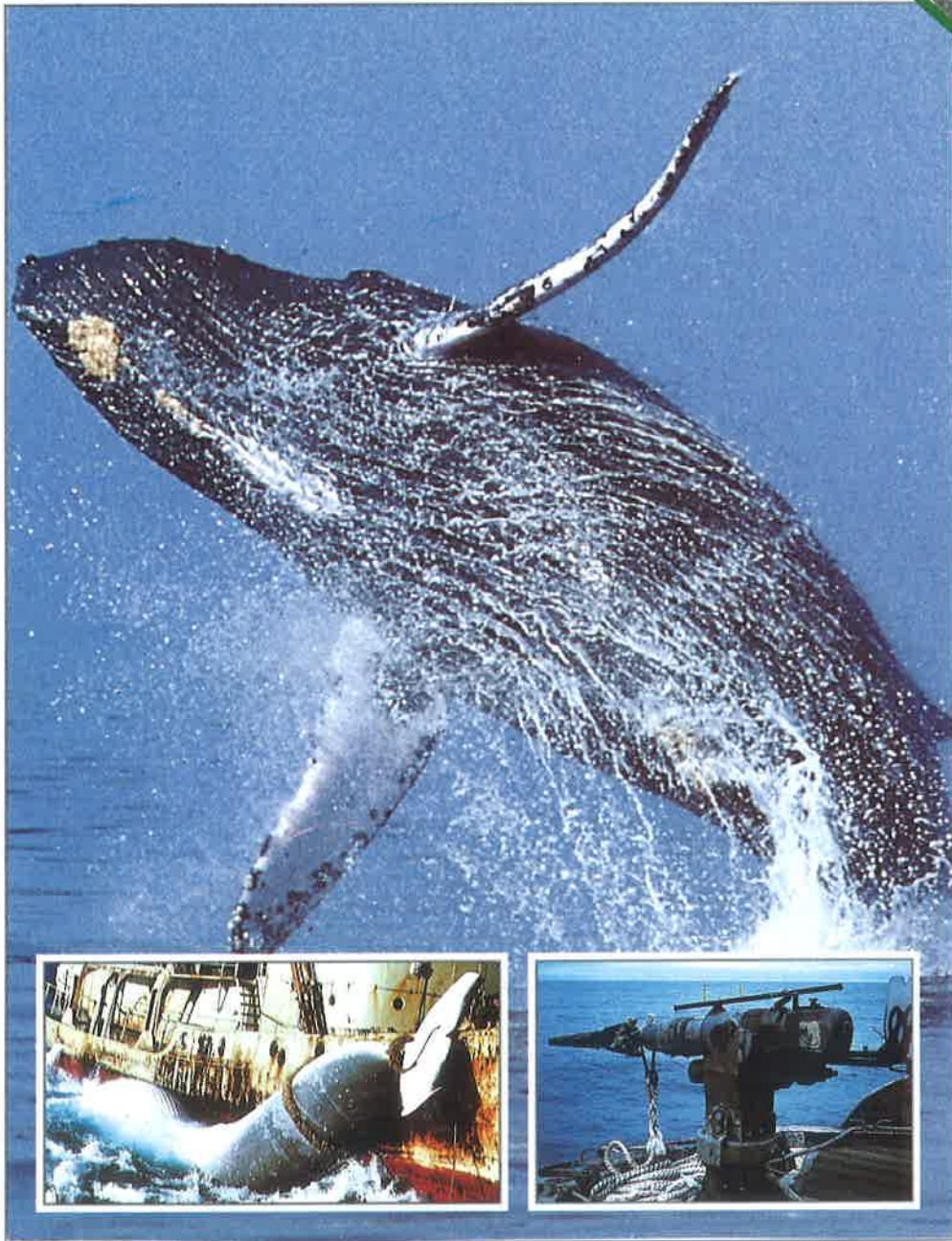
THREATS FACING THE ELEPHANT

1. Route habitually used by elephants migrating or leaving barren habitat.
2. New land development obstructs elephants' usual route; elephants trample farmland. This often results in their being shot by farmers.
3. Forced from their usual feeding grounds, elephants enter overcrowded

SAVE THE WHALES

CARD 7

GROUP 11: CONSERVATION



Although there is an international ban on commercial whaling, whales are still hunted under the pretext of "scientific research." Moreover, several countries are campaigning to lift the ban.

ACTION FILE

KEEPING WATCH

Under the current International Whaling Commission ban, a whale may still be killed for subsistence or scientific purposes. As part of "scientific whaling," Norway, Iceland, and Japan kill a few whales to monitor the number and population structure of a species. But conservation groups like Greenpeace try to study whales' behavior and numbers without killing them.

Accurate information about whale populations is important so that a species is not hunted to the point where it is unable to recover. Whales are vulnerable because they mature slowly and do not reproduce rapidly.

Counting whales is not easy, however. Although some species have distinctive markings by which individuals can be recognized, others do not. In the past stainless steel marker darts were lodged in a whale's blubber. When whalers caught the



whale, they used the tag to find out about the individual's age and movement. To make population estimates, they compared the number of whales that had been tagged to the proportion of darts recovered. Today, there are "spaghetti tags" (darts with streamers) that let whales be monitored without being killed.

Above: Conservation activists from Greenpeace try to harass whalers on the high seas.

Another method counts the whales along a particular imaginary line—a *transect*—drawn across the sea. Using sightings from the sea and air, the population density of a particular region can be estimated.

ACCIDENTAL DEATHS

Each year more whales die accidentally by being trapped and drowned in fishing nets. One study estimated that 3,000 harbor porpoises are killed every

year by nets set for cod in the North Sea.

In the Pacific, yellow-fin tuna fishing has killed six million or so spinner and bridled dolphins

since the 1960s. Tuna often follow dolphins, probably because they benefit from dolphins' use of echolocation to find prey. Dolphins are easier to see than tuna, so fishing boats often set their long nets around both.

As a result of public outcry, today there are special nets with gates through which captured dolphins can be released. Consumer boycotts have led some companies to print the words "dolphin friendly" on cans with tuna caught by means that do not hurt dolphins.



Left: U.S. law requires that fishing boats release dolphins before hauling in the nets put out to catch yellow-fin tuna. But this law is often difficult to enforce.

Whale hunting has aroused passionate opposition from many people. The reasons for this outcry are not just that these animals are slaughtered in an inhumane manner and that they have been driven to the brink of extinction. Another factor is that these mysterious marine mammals may possess an intelligence comparable to our own.

WHALE HUNTING

Stone Age rock carvings suggest that people hunted whales for food as early as 2200 B.C. They hunted slow-swimming coastal species, such as the right, bowhead, and gray whales. A few groups like the Inuit of Greenland and North America still practice *subsistence hunting*—hunting whales for food.

Whaling became big business during the 17th century when the demand for whalebone and whale oil increased. Humpback and sperm whales were hunted in large numbers. Just when the stocks of these species began to fall, the explosive harpoon gun was invented. This weapon and

the development of fast steam-powered ships allowed whalers to hunt fast-moving rorquals, such as the blue whale.

In 1905 whaling fleets moved into Antarctica's waters, making South Georgia the whaling center of the world. The introduction of massive factory ships let the slaughtered whales be processed at sea. During the season of 1930-31, about 30,000 blue whales were killed and processed. As a result of increasingly efficient killing, the blue whale had virtually disappeared by the 1950s. Hunters then turned to smaller species, such as the fin, sei, and minke whales.

WHALE CONSERVATION

The International Whaling Commission (IWC) was established in 1946 to manage the declining whale stocks. It lifted an existing ban on hunting the humpback whale and permitted a quota of 1,250 to be killed. Quotas were then set for other species, but they were often ignored.

During the 1970s many conservation groups realized that, unless action was taken, many whales would soon become extinct. In 1972 the International Union for the Conservation of Nature and Natural Resources (IUCN) and the United Nations General Assembly proposed a 10-year ban on whaling, but the IWC rejected it. Three years later, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

gave complete protection to a number of species, such as the gray, blue, humpback, and right whales. But the hunting of other species continued until 1986, when the IWC responded to international pressure and limited commercial whaling.

Although international trade in whale products can be controlled, the exploiting of whales by individual countries, such as Japan and Norway, cannot. The IWC ban on hunting whales is essentially voluntary. Norway, Japan, and some former Soviet countries still have large whaling fleets and are pressing for the resumption of commercial hunting. Only continued public pressure backed by economic sanctions will ensure protection for all whale species.

SEA MAMMALS

Whales constitute one of three groups of warm-blooded mammals that are specially adapted to sea life. The 80 or so species are split into two groups based on the way they feed.

Toothed whales have mouths lined with sharp teeth that they use to eat fish and marine mammals. This group includes the sperm and killer whales as well as dolphins and porpoises.

Baleen whales have mouths lined with rows of keratin plates through which the whale strains seawater and extracts tiny sea creatures. Baleen whales include the minke and blue whales.

A notable feature of all whales is the size and structure of their brains. An adult sperm whale's brain is the largest of any animal, weighing up to 20 pounds. Sci-

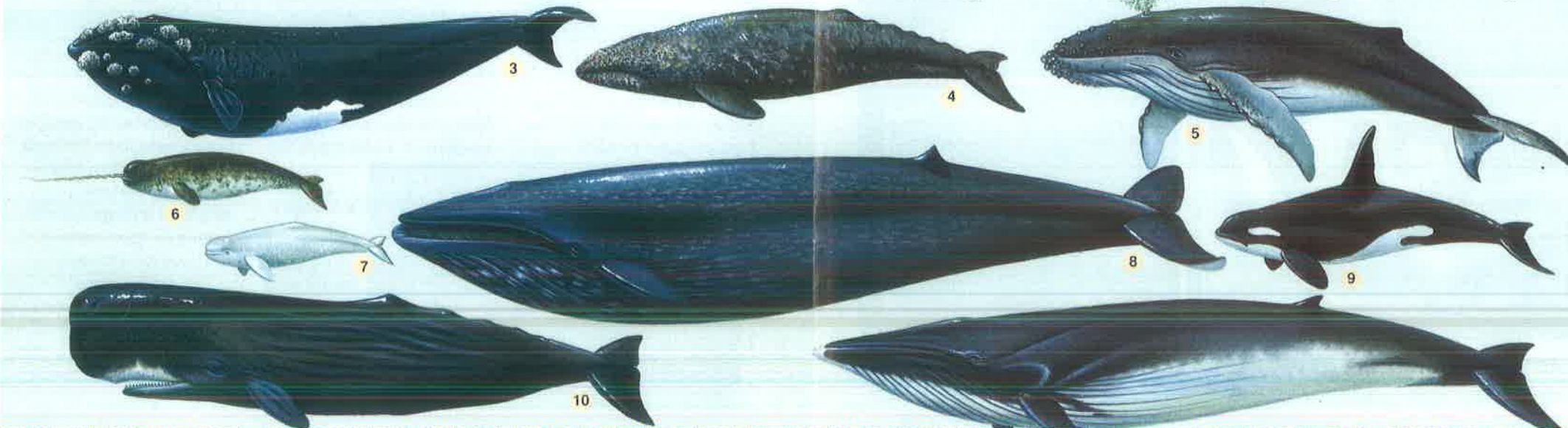
entists are interested in the development of a whale's *cerebral cortex*, the section of the brain where thought processes take place. Although in many whale species part of the cerebral cortex is small, the *neocortex* (external gray layer) is well developed. But it is not known if this means whales are intelligent.

STATUS OF SPECIES

| | | |
|----|----------------|----------------|
| 1 | Minke whale | Not threatened |
| 2 | Pilot whale | Not known |
| 3 | Right whale | Endangered |
| 4 | Gray whale | Vulnerable |
| 5 | Humpback whale | Endangered |
| 6 | Narwhal | Not threatened |
| 7 | Beluga | Not threatened |
| 8 | Blue whale | Endangered |
| 9 | Killer whale | Not known |
| 10 | Sperm whale | Vulnerable |
| 11 | Fin whale | Vulnerable |

Front inset left: *Whales become easy prey when they come to the surface to breathe.*

Front inset right: *Using the explosive harpoon gun, whalers are now able to hunt the faster species of rorqual whales.*



ACID RAIN AND ITS EFFECT ON WILDLIFE

CARD 5

ACTION FILE

GROUP 11: CONSERVATION



Air pollutants from the fuels we burn are destroying forests, killing wildlife, and poisoning the soil. The contaminants are released into the atmosphere, and, in turn, fall to the earth as acid rain.

ACID RAIN — THE GLOBAL FACTS

The term "acid rain" was first coined in Britain to describe conditions in Manchester 100 years ago. Today, Britain releases almost as much sulfur dioxide into the air as does all of western Europe combined. Forests and watercourses in Britain have been adversely affected by acid rain.

The number of countries that are suffering from the effects of acid rain continues

to grow. Sweden's lakes have acidified, and 4,000 of them have completely lost their fish stocks. In Norway, an estimated 60 percent of fish stocks have been lost because of acidified lakes. In Canada, an estimated 48,000 lakes are currently threatened.

In the United States, acid rain poses a severe threat to both fish and waterfowl, especially on the East Coast.



Many buildings are being destroyed by acid rain.

WHAT IS BEING DONE?



Above: Lime towers in Sweden dispense lime to help neutralize acidic water in lakes.

Right: Here, bright green plant life at the lake's edge indicates a high acid level.



Acid rain and its effects have become an internationally important political issue. As a result, the following actions have been taken:

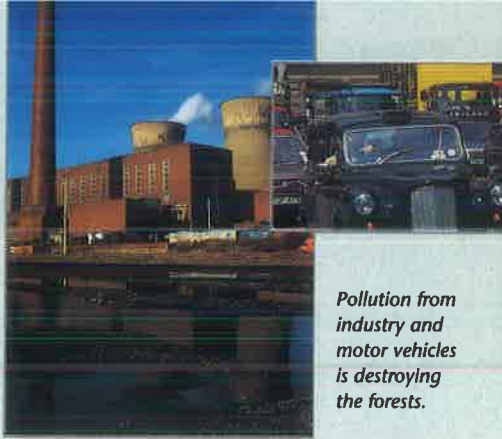
- In the United States, higher pollution standards require that all new cars are equipped with catalytic converters that remove 96 percent of carbon monoxide and hydrocarbons from the exhaust.
- As a short-term solution in Sweden and Germany, lime is spread over lakes and trees to neutralize the acid.
- The oil industry has spend millions of dollars adapting refineries to produce unleaded gas. One-fifth of all cars can now run on lead-free gas without modification.
- Japan requires that its power plants reduce nitrogen oxide emissions by as much as 75 percent.

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US P 6001 11-103 PACKET 3R

All rainfall has a natural acidity, but pollution increases it more than 1,000 times. The term acid rain can be misleading because acid can also be transported by snow, hail, fog, gas, mist, clouds, and even dust.



Pollution from industry and motor vehicles is destroying the forests.



Right: The pH scale measures levels of acidity and alkalinity. The higher the acid content, the lower the pH number.

THE CAUSE OF ACID RAIN

Millions of years ago, vast forests spread across the earth. When the huge trees died, they decomposed and gradually became coal and oil.

These fossil fuels are now burned in enormous quantities in order to generate electricity, and release vast amounts of pollutants into the air.

WHAT IS ACID RAIN?

Gasoline-powered vehicles and coal- and oil-burning furnaces release sulfur dioxide, nitrogen oxide, and hydrocarbons into the air. These contaminants are known as *primary pollutants*. Sunlight reacts with these pollutants to form ozone, which, in turn, reacts

with sulfur and nitrogen oxide to produce sulfuric acid and nitric acid.

These sulfuric and nitric acids are stored in the droplets of water that make up clouds. In this form, the acids are carried great distances by the wind, and fall as acid rain.

Pollutant gases from industry and motor vehicles are released into the air. Some have a direct and damaging effect on nearby trees and buildings. Sunlight causes a chemical reaction on others, producing sulfuric and nitric acids.

DYING FORESTS

Millions of acres of forests have suffered from the effects of acid rain. Coniferous trees (cone-bearing evergreens) seem to be the hardest hit. Sulfur dioxide kills many trees by depleting the nutrients in the soil. Even slight damage to trees can easily kill them because it reduces their resistance to frost, fungi, and deadly pests.

Studies conducted in the United States indicate that even in forests that show no external signs of acid rain damage, pollution is limiting their growth.

These acids are incorporated into clouds, fog, gas, hail, snow, mists, and dust.

POISONED WILDLIFE

Huge quantities of fish have died in Norway, Sweden, Scotland, Canada, and the eastern United States. Most have been killed by aluminum released into the water by acid rainfall. This, in turn, has affected fish-eating birds, such as the osprey, black- and red-throated divers, common tern, and goosander. These birds, along with the insect larvae on which they feed, are now absent from many streams in which they were once common.

Aluminum also causes songbirds like the blue-throat, reed bunting, and willow warbler to lay eggs with thin

shells, reducing their breeding success. Dead eggs and young found in surface water indicate that many aquatic vertebrates, including several species of frog and toad, are dying as well.

Top right: The healthy embryo of a spotted salamander. Below right: The deformed embryo of a spotted salamander, raised in water with typical acid rain content.

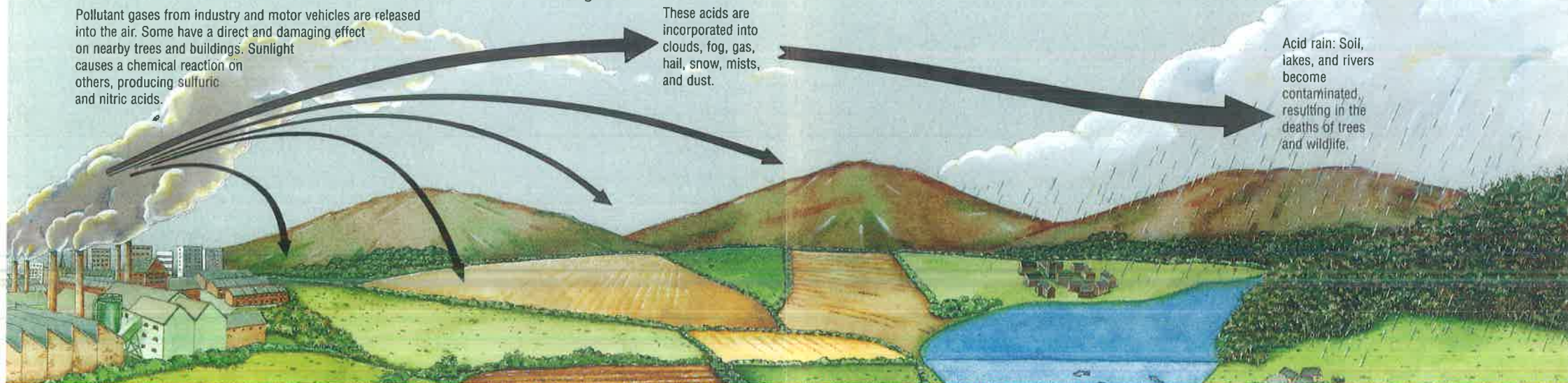


- 10.5 milk of magnesia
- 8.3 sea water
- 7.0 neutral
- 6.6 milk
- 5.0 unpolluted rain
- 4.0 beer
- 2.3 lemon juice

All rain is acidic (pH 5.0). Polluted rain, however, can be twice as strong.

ALKALINE

ACID



HELPING WILDLIFE IN WINTER

CARD 3

ACTION FILE

GROUP 11: CONSERVATION



G. Brimacombe/The Image Bank
R. Vaughn/Ardea

Winter can be a difficult time for wildlife. The food supply of many animals disappears completely or is buried by snow. Fortunately, we can all do something to help.

| ANIMAL | WHAT YOU CAN PROVIDE |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chipmunk | Seeds and nuts (8) |
| Fox | Table scraps and cat food (9 & 11) |
| Raccoon | Daytime sleep sites, such as holes under sheds (23) |
| Deer | Fresh hay in sack (1) |
| Rabbit | Some winter vegetables left in the ground or fresh greens put out near gaps in the fence (2 & 7) |
| Gray squirrel | Nuts and bird table food (4 & 8) |
| Bat | Bat boxes on the eaves of the house or in trees (18) |
| Ground-feeding birds: magpies, starlings, blackbirds, crows | Kitchen scraps, such as cheese, pork rinds, fruit (11). Fresh water daily, especially when natural supplies are frozen (6) |
| Blue Jay | Fruit and mealworms (4 & 12) |
| Perching birds: Woodpeckers, sparrows, etc. | Bird table with peanuts, sunflower seeds, mixed seeds, fruits, berries, and bread (4). If you have the time, you can make a bird cake from a mixture of flour, water, corn, millet, meal, nuts, and canary seed bound together with chicken grease and allowed to harden. It can then be broken into pieces and scattered on the lawn or strung up from the bird table. |
| Cardinal | Seeds and live bait (8 & 12) |
| Owl | Large roosting box (14) |
| Common frog | Damp, undisturbed areas and ice-free pond (20 & 3) |
| Common toad | Dry, undisturbed vegetation (19) |
| Lizard | Logs or stones where they can hibernate (21 & 22) |
| Grass snake | Leaf litter, dry ditches |
| Slow worm | Holes in ground, undisturbed areas of vegetation for hibernation (16 & 19) |
| Winter plants for birds: Holly, birch, sumac, Virginia creeper, mulberry. | |

NEST BOXES
One of the best ways to help attract birds and mammals to your backyard is to provide suitable roosting sites. You can buy or build birdhouses; their design and position will determine which species they attract. Some birds prefer open-fronted boxes. Smaller birds prefer the security of a box with a small hole, which may be lined with metal to discourage woodpeckers. Larger nest boxes may attract owls.

Animals survive winter in different ways.

Some species migrate to warmer climes; others

hibernate. But for those animals that struggle

through it, winter can be a cold, miserable time,

and many of them die unnecessarily.

WHY WILDLIFE NEEDS HELP

The widespread destruction of hedges and woodland, the draining of ponds and marshes, and the clearing of the land in the country have altered animals' habitats, causing many of them to depend on backyards for food

and shelter, especially during the winter months.

Still, rather than rely on preservation groups to help these animals, there are simple things that everyone can do to enable them to survive the harshness of winter.

PROVIDING FOOD

Feeding birds is an easy way to help them survive through the winter. They will eat commercial bird seed or almost any type of table scraps. But once you begin feeding them, the birds will come to depend on the food you provide. Also, when you place food on the ground, be sure to leave it out in the open, away from cover, where a cat may be lying in wait to attack.

Many smaller birds prefer to feed from bird tables. Nuts, raisins, fruits, and shredded coconut are highly nutritious foods for birds and are readily available in stores.

You should also provide the

birds with fresh water, especially when their natural supplies are frozen. Simply fill a shallow bowl and place it near the bird table. If you have a birdbath, you can float a plastic ball in it to keep the water from freezing.

Badgers, foxes, rabbits, and deer can be fed from yards in more rural areas. Squirrels, too, often visit backyards to take food from bird tables.

Even if you do not have a yard, you can still help. Whenever you go for walks, take extra food with you. The animals will appreciate having some extra food during the long winter.

PROVIDING SHELTER

In addition to providing food and water, you can also make your yard more welcoming to wildlife in a number of other ways. Large bird houses placed in high trees will provide roosts for owls and

other birds. Undisturbed compost will provide a protected resting place for hibernating grass snakes, and a woodpile will provide a secure space for toads and many insects.

Backyards cover millions of acres, providing a new, growing habitat for wildlife. It is essential that we all make our yards welcome places for wildlife, especially in winter.

Food & Water

- 1 Hay sack
- 2 Winter vegetables
- 3 Ice-free pond
- 4 Bird table with nuts and scraps
- 5 Birdseed
- 6 Birdbath
- 7 Vegetable scraps
- 8 Nuts
- 9 Milk
- 10 Firethorn with berries
- 11 Kitchen scraps
- 12 Larvae
- 13 Cotoneaster with berries

Shelter

- 14 Roosting box
- 15 Compost pile
- 16 Leaf mold
- 17 Nesting box
- 18 Bat box
- 19 Long grass
- 20 Damp reed beds
- 21 Stones and rubble
- 22 Log store
- 23 Dry hideaway under shed



OIL POLLUTION AND ITS EFFECT ON WILDLIFE

CARD 2

ACTION FILE

GROUP 11: CONSERVATION

MAJOR TANKER DISASTERS



The Torrey Canyon. Land's End, Great Britain, March, 1967. First of the huge oil spills. The *Torrey Canyon* ran aground and unleashed 116,000 tons of oil on nearby rocks and beaches. Birds died by the thousands. The puffin population on the Sept Isles off of France was virtually exterminated.

The Amoco Cadiz. Brittany, France, 1978. Following engine failure, the *Amoco Cadiz* was wrecked on Brittany's rocky coastline. Thousands of migrating seabirds were killed as they landed on the oily water. Numerous oyster beds were destroyed as well.



The oil-covered beaches of Brittany following the Amoco Cadiz oil disaster were the scenes of widespread devastation to animal life.

The Exxon Valdez. Alaska, March, 1989. This huge super-tanker was mistakenly steered onto the rocks along the Prince William Sound. Exxon, the State of Alaska, and federal government agencies were

slow to get clean-up equipment on the scene. The delay allowed 232,000 barrels of oil to spread over a large portion of the sound, a pristine area previously rich in all kinds of wildlife.

WHAT CAN BE DONE?

Some of the worst oil pollution is caused by the cleaning of ships' oil storage tanks at sea. Stricter policies regarding this type of activity must be enforced. Every year, a quantity of oil equal to the amount spilled by the *Torrey Canyon* is released in the North Sea through the disposal of petroleum products—both at sea and on land.

A vast amount of oil seeps into the oceans by way of sewers and rivers. One way people can reduce oil pollution is by returning used motor oil to the garage for recycling, rather than pouring it down the drain or burying it in the yard.



Cleaning up after an oil spill is a somewhat futile effort; the terrible destruction to wildlife has already occurred. Disasters like this could be avoided if governments enforced stringent anti-pollution legislation.

Contamination of the oceans by oil spillage is not a rare occurrence. It is happening all over the world every day, fouling coastlines, killing animals, and destroying fisheries.

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The oceans seem so vast, it is easy to assume that nothing we do has any effect on them. This is far from the truth. Oil pollution, which is due almost entirely to human carelessness, is destroying coastlines, wiping out seabird colonies, and killing and contaminating marine life.

EFFECT ON WILDLIFE

Migrating seabirds like puffins, guillemots, and razorbills are particularly at risk from oil pollution. During migration, they look for areas of calm water on which to rest or hunt for fish. Oil-covered seas appear calm to the birds, and they land on the water by the thousands, only to become trapped in the sticky substance and die of starvation. The birds that do not become trapped usually die as well. As they try to remove the oil from their feathers with their bills, the birds ingest the highly toxic substance, which kills them within a few days.

Oil that has washed ashore on beaches where seals and sea lions breed and haul out (rest on shore) can harm these

animals as well. While they may survive being somewhat covered with oil, animals that are caught in the oil slick generally die.

An area that is especially rich in wildlife is Alaska's Prince William Sound. As a result of the *Exxon Valdez* oil spill in 1989 (see back cover), thousands of sea otters have died and 10,000 more are currently at risk. When oil coats their fur, otters are unable to swim or maintain their body temperature, and they either drown or freeze to death.

Marine animals killed by oil are in turn eaten by other species. Thus, the poisons work their way up the entire marine food chain.



Left: Oil pollution at sea causes widespread devastation, contaminating marine life and poisoning all that eat it. These dead sharks were found in a polluted tidal pool.



Left: Covered in oil, this guillemot was unable to fly and died a lingering death. Many thousands of sea birds have suffered the same fate.

HOW OIL SPILLS HAPPEN

In 1987, more than 3.5 million tons of oil were released into oceans around the world. Only 28 percent of the spillage was accidental; the remaining 72 percent was caused by deliberate, illegal actions.

The sources of oil spillage are quite diverse:

Washing tanks at sea:

Much illegal pollution is caused by the cleaning of oil tanks at sea. After cleaning the tanks, the tankers then dump the polluted water, mixed with oil residue, back into the ocean.

Oil well blowouts: Blowouts occurring at oil well heads release huge amounts of oil and gas into the ocean. The drilling vessel IXTOTI released more than 400,000

tons of oil into the Gulf of Mexico over a period of nine months after its well exploded in 1978.

Tanker accidents: The most publicized of the oil spills are those caused by tanker accidents. There have been hundreds of accidents involving the spilling of millions of tons of oil.

Big oil spills, regardless of the way they occur, reflect poorly on the oil industry. The clean-up cost alone is enormous, and compensation for damages can run into millions of dollars. Despite the best clean-up efforts, once an oil spill occurs, it cannot be prevented from causing major damage to the environment and wildlife.



Left: It takes all types of equipment, from chemical sprayers to pitchforks and hay, to disperse or blot up as much oil as possible after a spill.

Right: Inflatable oil booms are often used to surround and contain oil and prevent it from reaching the shore.



CLEANING UP

The problem of how to completely and effectively clean up oil spills has yet to be solved. The effectiveness of the techniques currently used depends on weather conditions and the location of the spill. Rough seas can be helpful in breaking up oil slicks, but they can also churn the oil and seawater together, forming a substance that is harder to disperse than crude oil itself.

Crude oil is a complex, highly variable mixture of more than a thousand different chemicals. In most seas, the highly toxic light hydrocarbons, which are generally refined into gasoline and jet fuel, soon evaporate, reducing some of the risk to marine life. However, in freezing Arctic and Antarctic

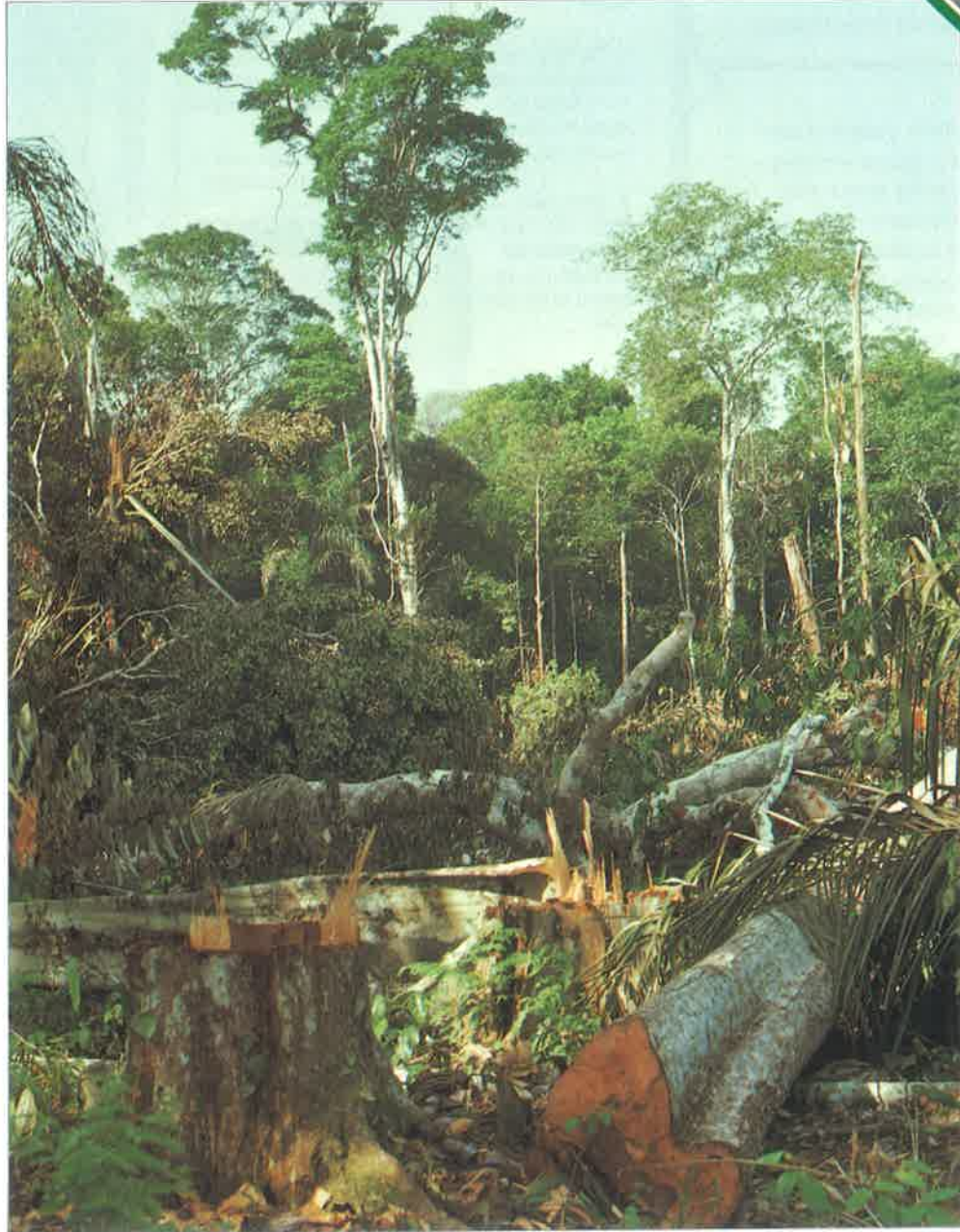
waters, the process of evaporation is slow due to the extremely low temperatures; consequently, there is more danger to wildlife. Under these conditions, the oil must be burned.

In calm waters, long, floating booms can help to contain the oil so that it can be pumped off the surface of the sea into holding tanks. After as much of the oil as possible is removed, dispersant chemicals are sprayed by air on the remainder of the spill. The chemicals break down the oil into tiny particles, which are further broken down by bacteria that feed on some of the hydrocarbons contained in oil. Still, much of the residue will eventually wash up on beaches.

SAVE THE RAINFOREST

GROUP 11: CONSERVATION

CARD 1

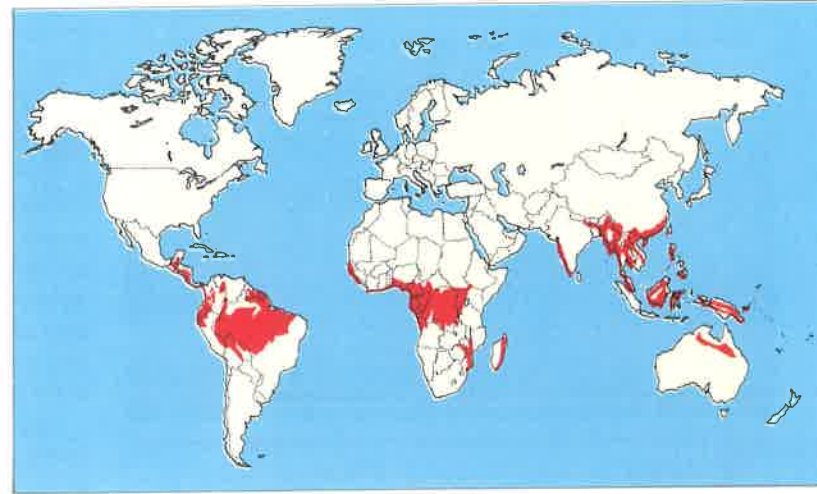


The tropical rainforests are home to the greatest variety of animals and plants on earth. Yet, at the present rate of destruction, there will be little remaining by the year 2035.

ACTION FILE

DISTRIBUTION

Rainforests occur mainly in the Amazon, the Guinea-Congo region of Africa, and in the Malay Archipelago. They also occur from the Western Ghats of India to the tropical islands of the Pacific. There are also rainforests in Madagascar and the Mascarenes.



THE NEED FOR ACTION

An estimated 71 million acres of rainforest are being destroyed each year. At this rate, there will be no forest remaining by the year 2035. More than 10 percent of the vast Amazonian rainforest has already been destroyed.

So much of the forest has been burned that observers recall a wall of fire thousands of miles in length. Planes at the airport in La Paz, 5,000 feet up in the Andes, have been grounded because the smoke was so dense.

This destruction continues on an enormous scale.



Above: More than 10 percent of the Amazon has been destroyed.



Left: Wood from the rainforest is also used to make charcoal for supply to factories.

WHAT YOU CAN DO

Some rainforest exploitation is necessary to provide farming and ranching land for impoverished local populations. But we must do everything we

can to see that it is done responsibly. We can:

- Support conservation groups in their fight to preserve the rainforest.

- Boycott retailers who sell cheap beef products and tell them why you are not buying their goods;
- Not use tropical hardwoods.

The destruction of the tropical rainforests will not only wipe out thousands of different species that live there, it will also disrupt the earth's atmosphere—a disaster for all forms of life, including mankind.



THREATS TO THE RAINFOREST

There are more people on earth today than at any other time in history. They need both food and the land on which to grow it. Rainforest is being destroyed as people clear land to make room for housing and farming.

Almost all of the remaining

rainforest is found in Third World countries. These poor nations see the forest as a valuable resource to be sold for profit. In some countries, the sale of timber can finance much-needed hospitals and schools, as well as aid in economic growth.

Logging: To meet the demand for mahogany, teak, meranti, and ebony, at least 11 million acres are logged each year. These hardwoods take hundreds of years to mature, so they are not replaced readily.

Cattle ranching: There is a huge market for cheap beef in the United States. Much of the beef comes from cattle raised in the rainforest of South America. The land is bought by entrepreneurs and is burnt to the ground to provide grazing pasture. After a few years, the land becomes overgrazed and the cattle ranchers must burn another area.

Mining: Open cast and strip mining of bauxite has destroyed trees and topsoil in Brazil. Although it is required by law to reforest damaged areas, most companies do not.

Soil erosion: Topsoil can take 1000 years to develop, yet it can be destroyed in fewer than 10. Left unprotected by trees, the soil is washed into the rivers by heavy rainfall.

River pollution: Deforestation upstream threatens fish populations along the entire river.

Floods and disease: As the rainforest is destroyed, the climate changes. The forest no longer holds moisture, so rain rushes down the river system, causing flooding. When rain does not fall, drought occurs.

WHAT IS IT?

Occupying 4 million square miles of the wettest land in the world, the evergreen tropical rainforest is a complex habitat. Its animal and

plant communities coexist in a unique balance with a climate that they largely create themselves. Nearly all life is concentrated in the treetops.

ALL LIFE AT RISK

The rainforest is vital to man's survival. The plants it contains are used for both food and medicine. One in 10 of the most commonly used medicines are derived from plants of the rainforest.

More importantly, the earth's atmosphere is sustained by the oxygen and carbon dioxide exchange that takes place when plants convert sunlight into energy. The rainforest, with its many plants, plays a huge role.

As the rainforest is burned, millions of tons of carbon dioxide are released into the air. This upsets the balance of

atmospheric gases and contributes to global warming—known as the greenhouse effect. The rainforest also helps to regulate rainfall and wind currents by absorbing much of the harmful solar energy. Its destruction would affect weather patterns throughout the world.

The continued destruction of the rainforests will not only kill plants and animals, but will adversely affect the earth's atmosphere. Rainforests absorb a great deal of solar energy. If they are destroyed, the earth will likely experience global warming.

HOW THE RAINFOREST WORKS

1. The rain is first caught by leaves.
2. The water then trickles down stems to the forest floor, where it is absorbed into the soil.
3. Some water drains into rivers and streams, but the majority is absorbed by the tree roots.
4. A tree can transport water from its roots to 215 feet up its trunk.
5. The trees' leaves form a canopy that collects moisture. The moisture then evaporates to form clouds containing more than 264 billion gallons of water, which fall as rain once again.

It is believed that the rainforest contains half the world's plants and animals.

Below: Tree frogs mate in a Costa Rican rainforest.



Below: The orangutan of Southeast Asia is now a seriously endangered species.



Below: The boa constrictor of South America.

