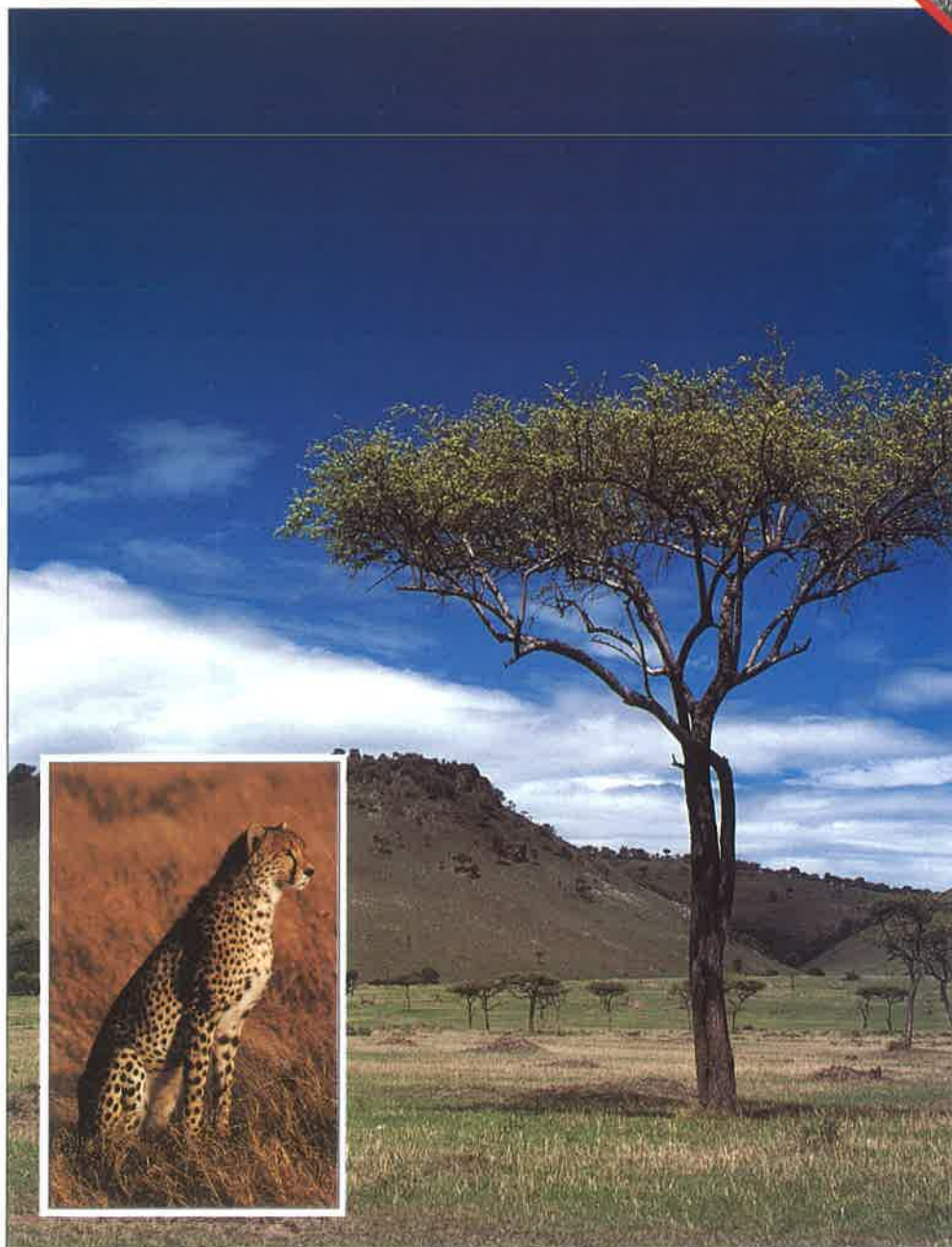


THE AFRICAN SAVANNAH AND ITS WILDLIFE

CARD 7

GROUP 10: WORLD HABITATS



The African savanna—with more than 40 kinds of browsing or grazing animals—is popular with naturalists. But it is also where predators and prey constantly battle for survival.

ACTION FILE

MAMMALS

Grant's and Thomson's gazelles, wildebeest, impala, anubis and western baboons, vervet, chimpanzee, common jackal, African wild dog, striped polecat, ratel, African civet, common genet, white-tailed mongoose, spotted hyena, African wild cat, lion, leopard, cheetah, aardvark, African elephant, Grevy's zebra, white rhinoceros, warthog, giraffe, giant eland, and buffalo.



Above: Several gecko species live in the savannah. A Bibron's gecko feeds on a moth.

BIRDS

Ostrich, vulture, red-billed hornbill, bustard, secretary bird, hoopoe, golden sparrow, African hawk and fish eagles, and peregrine.

Reptiles and amphibians

African python, black mamba, Egyptian cobra, puff adder, and skink and gecko species.

Insects

Dung beetle, African migratory locust, grasshopper, termite, moth, fly, bee, wasp, scorpion, and tick species.

INSECTS

There are three groups of insects on the savannah: locusts and grasshoppers, termites, and ants.

Grasshoppers and locusts are a valuable food source for lizards, snakes, and many mammals. *Plagues*, or sudden increases in the numbers of locusts, are a constant threat. Large swarms can ruin vast areas of vegetation in minutes.

Termites play a vital role in the life of the savannah. They help to aerate the soil and increase water penetration.

Some species build hills that may be over 20 feet high.

Other common insects are



wasps, bees, and the many ticks that live on the mammals of the African savannah.

Above: Swarms, or plagues, of locusts destroy vast areas of vegetation in the savannah.

VEGETATION

One-third of Africa's land surface (4 million square miles) is made up of savannah.

The vegetation of savannah lands is well adapted to

a climate that alternates between heavy rainfall and months of drought: acacia trees have needlelike leaves to minimize water loss, and baobab trees are able to

store water in their swollen trunks. Grasses, too, have adapted to make the most of what little water is available through their extensive root systems.

The African savannah covers about one-third of Africa's land surface. It ranges west and east from Senegal and Guinea to the Indian Ocean, covering the plains of the Sudan and the high plateaus of the Great Lakes region. It also spreads across the high and low veldts, or grasslands, of South Africa.



REPTILES & AMPHIBIANS

Snakes and lizards are plentiful on the savannah. Geckos, skinks, African pythons, and monitors are the most common lizards. Many snakes are extremely poisonous.

Right: The poisonous black mamba snake lives in southern Africa.



MAMMALS

Many of the world's largest predators—and their prey—can be found in the African savannah.

More than 40 kinds of *browsing* (eating parts of shrubs or trees) or *grazing* (eating grasses) animals live here, including giraffes, ele-

phants, and many species of antelope. These *herbivores* (vegetation eaters) each prefer specific foods, so there is no competition among them for the available plant life. For example, the gazelle eats low, lush grasses, while the hartebeest prefers the

dry plant stalks that are rejected by other animals.

The dominant predator is the lion, followed by the other big cats. Sometimes herbivores will browse or graze within sight of a *pride* (group) of lions, but they are constantly on guard. The grazing animals

know that the lions could awaken hungry at any moment and attack.

Zebras often graze with the wildebeest, a favorite prey of the *carnivorous* (meat-eating) lion. When the lion attacks the wildebeest, the zebras are able to run away.

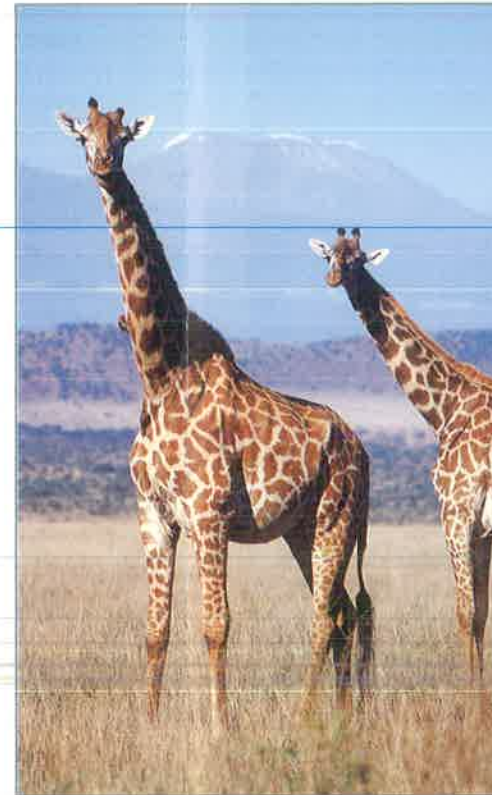


Left: Zebras are sociable animals and live in herds of 5 to 20, but they gather by the hundreds during the dry season.



Below left: The lion is the chief predator on the savannah.

Right: Giraffes graze and browse the savannah. Here, Mount Kilimanjaro can be seen in the distance.



BIRDS

Birds thrive on the savannah, eating the plentiful insects, reptiles, and small rodents.

The most common birds are the ground-living species: ostrich, bustard, and sand grouse. Scavengers such as the vulture hover nearby. The easiest way to locate a car-

nivorous mammal's kill is to look for the vultures circling overhead, waiting for their chance to finish the meal.

The small, black-faced diorch lives in flocks numbering in the thousands. It feeds on seed and may ruin local cereal crops.



Left: Vultures feed on the remains of a wildebeest.

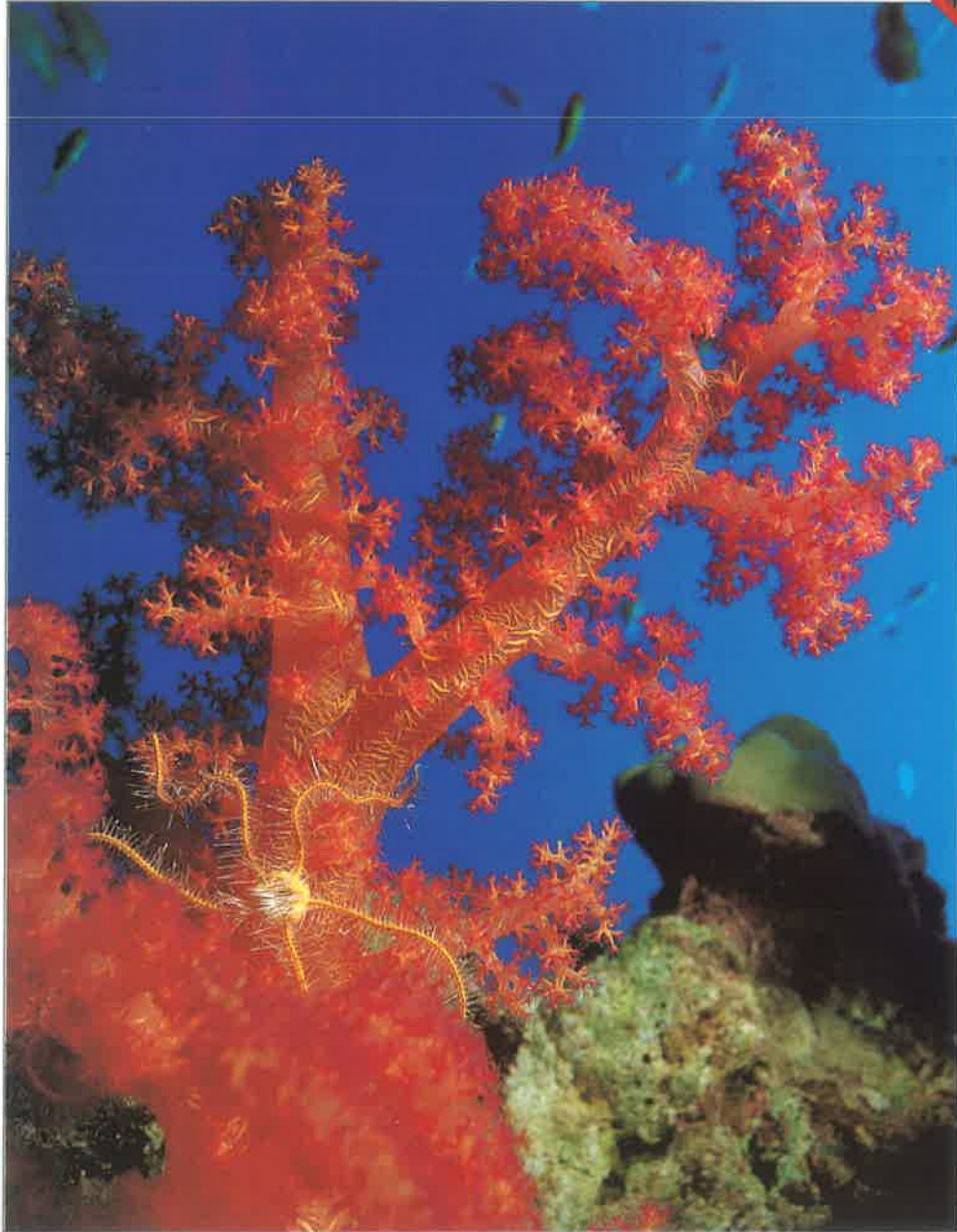
Below: The flightless ostrich is only one of the many bird species on the savannah.



WILDLIFE OF THE GREAT BARRIER REEF

GROUP 10: WORLD HABITATS

CARD 6



Built by tiny marine animals, Australia's Great Barrier Reef is so large that it is visible from the moon. Within it lives a variety of life as vast as that found in a tropical rainforest.

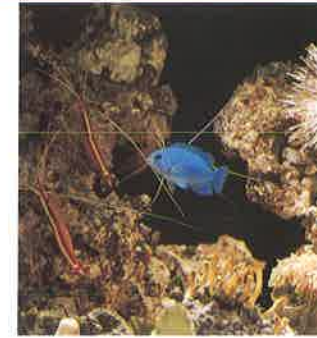
LIFE AMONG THE CORAL

COOPERATIVE FISH

Many species of reef fish maintain symbiotic (mutually dependent) relationships with each other. Groups of small reef fish seek out the larger wrasse and certain shrimps, and then feed on their parasites and diseased tissue. The greatest benefit to the small fish is a guaranteed supply of food.

Pairs of alpheid shrimps dig and maintain tunnels that are shared with pairs of gobies. The sharp-sighted gobies flick their tails against the shrimps' antennae to warn them of danger. All four animals then hide in the burrow together.

Right: A blue damselfish is cleaned by shrimps.



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FISH OF THE GREAT BARRIER REEF

Right: The Queensland grouper can grow to half a ton in weight. Groupers have been known to stalk skin divers. This Queensland grouper can be seen skulking around the edge of a reef, waiting for a meal to swim past.



A wide variety of animals live on the reef, from very small, drifting jellyfish to huge sharks. Sea turtles breed here in greater numbers than anywhere else in the world. Dugongs, marine relatives of elephants—similar to the manatee—are found here, and birds, such as the reef heron, spear fish here.

The reef contains 400

species of coral, 200 species of cowrie shells, and probably as many as 2,000 species of fish (about one-tenth of all known species).

Many animals burrow and bore into the solid reef itself, including sponges, worms, bivalve mollusks, and sea urchins. Snails and sea slugs actually eat the reef.

Other animals eat the living

coral. Parrotfish bite off small chunks with their sharp, beaklike front teeth and grind the coral to extract polyps.

Starfish turn their stomachs inside out and secrete digestive juices onto the polyps. They then eat the partially digested food. The crown-of-thorns starfish is capable of eating a square yard of coral in a single day.

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The Great Barrier Reef is actually a system of reefs that are parallel to the northeast coast of Australia. It extends for 1,250 miles, from Lady Elliott Island, off southern Queensland, to the Gulf of Papua, in New Guinea.

ORIGINS & FEATURES

The Great Barrier Reef began growing some 18 million years ago. The present growth phase started about 8,000 years ago and is building new layers upon older ones.

The reef occupies an area of about 90,000 square miles; its distance from shore varies from 10 to 125 miles. The main barrier contains more than 2,100 individual reefs, and about 540 islands closer inshore that have fringed reefs.

The reefs lie close together in the north and the south; in the central section, they are generally widely scattered. The northern section shelters the mangrove trees that grow in

the many mangrove swamps.

The Great Barrier Reef Lagoon, generally about 325 feet deep, lies over a silt-covered plain and is sheltered between the shore and the reefs. The seaward edge of the reefs, or the reef slope, is exposed to the full fury of waves and storms and drops sharply for thousands of feet to the seabed.

The seaward side of the Great Barrier Reef has the most active coral growth. It also suffers the greatest losses from the elements, however. Much dislodged material is eventually cemented back into place to form rock.

HOW CORAL REEFS FORM

Coral reefs are made up of thousands of tiny anemone-like creatures called *polyps*. They embed themselves in cups of limestone, which they secrete from their outer skin cells.

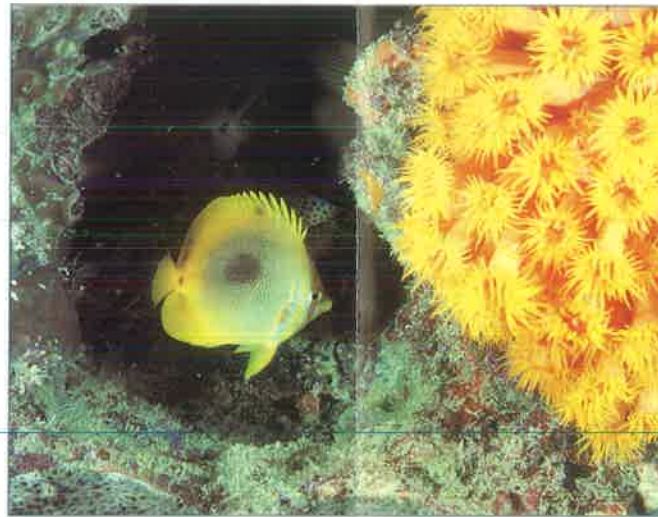
Every year, the reef expands upward and outward as the polyps reproduce. Each polyp is connected to its neighbors by strands of living tissue, so the reef is "tied" together.

Pink seaweeds, called calcareous algae, are also important reef builders, adding lime-

stone to the structure. Other red algae at the edge produce a substance that cements areas of sediment together.

In time, a huge structure is formed that contains only a thin veneer of living coral on the surface of many layers of empty limestone skeletons.

Each species of coral has its own growth pattern that results in a variety of reef shapes, from mounds to structures resembling fans, branches and antlers.



Above: A coral fish started by a diver swims for cover.

Left: The deep-water gorgonian coral has intricate patterns.

Right: Blue damselfish patrol the reef in search of food.



Left: Live polyps of hard coral combine with seaweed to produce limestone, which slowly builds new and variously shaped layers of coral on top of old. This may then be covered with colorful, soft corals—polyps without skeletons.

COLORS OF THE REEF

Much of the coral, which is formed by the skeletons of dead polyps, is white, but live polyps are often brightly colored. Such relatives as sea fans and sponges also display hues of red, orange, pink, yellow, purple, and green.

Fish that add to the display are blue and yellow damselfish, pink, purple, and yellow wrasses, red and white sea slugs, green brittle-stars, and blue starfish. The range and brilliance of these colors are confusing to predators.



THE KALAHARI DESERT AND ITS WILDLIFE

CARD 5

GROUP 10: WORLD HABITATS



Nigel Dennis/NHPA



Philip Penry/Frank Lane

A seemingly uninhabitable inland basin, parts of which are more than 100 million years old, Africa's Kalahari desert supports one of the richest collections of wildlife in the world.

KEY FACTS

THE KALAHARI'S WILDLIFE

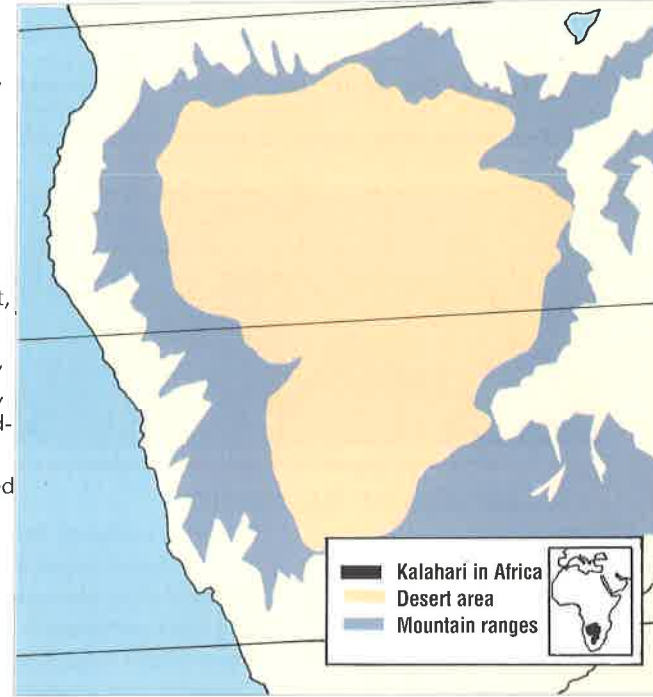
MAMMALS: Elephant, zebra, hippopotamus, wildebeest, lion, springbok, gemsbok, buffalo, baboon, cape fox, African hunting dog, meerkat, spring hare, pygmy mouse, fruit bat, gerbil.

BIRDS: Avocet, barn owl, Egyptian goose, reed cormorant, fish eagle, egret, flamingo, heron, pygmy goose, kingfisher, ostrich, oxpecker, green pigeon, crowned crane, stilt, white-headed vulture, sandpiper.

REPTILES: Crocodile, Long's reed frog, sand lizard, python, egg-eating snake, striped snake.

INSECTS: Ant, ground beetle, mayfly, scorpion, brine shrimp.

FISH: Catfish, mouth brooder, African pike, tiger fish.



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HOW SALT PANS ARE FORMED

Salt pans are dry lakes that occur where water evaporation exceeds the rainfall. They are found in various parts of the Kalahari and are the flat-test of all land forms.

Salt pans are ever-present

features of arid and semiarid environments. They are formed over a period of many years through a cycle of rainfall and subsequent evaporation of the water. The minerals and salts contained in the

water become more concentrated the longer the water remains stagnant. However, once the water evaporates, only the minerals and salts remain, forming a hard, cracked surface.



Left: The Kwang salt pan in Gemsbok National Park covers a vast area.

Anthony Bannister/Oxford

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The Kalahari extends for some 160,000 square miles and is part of southwestern Africa's tableland. Its vegetation becomes sun-bleached during the dry season, but recovers with astonishing speed in the rainy season to provide food for wildlife.



Natural Science Photos

FEATURES OF THE DESERT

Although it is known as a desert, the Kalahari is more accurately described as semidesert, or *thirstland*, since its average rainfall is higher than in true deserts. The Kalahari is a vast plateau, 1,650 to 5,000 feet above sea

level, with a relatively flat surface that has an occasional hill and some rocky outcrops. Salt pans occur particularly in the drier southern Kalahari region. In some areas, erosion-resistant termite nests have formed islands.



C.T.Stuart/Natural Science Photos

Left: A beautifully marked gemsbok, one of the species of gazelle found in the Kalahari desert.



KP-M/Premaphotos Wildlife

Left: A herd of springbok shares the desert with wildebeest.



KP-M/Premaphotos Wildlife

Left: The rains produce a variety of vegetation—flowers, fruit, and plants—in the otherwise barren ground.

CLIMATE

Unlike the Sahara, Africa's vast desert to the north of the equator, the Kalahari has a wet summer season that sustains a rich variety of wildlife. Only during the wet season is food abundant.

The rainy season lasts from October to March, the southern hemisphere's summer. Throughout the Kalahari, rainfall is erratic. As much as 17 inches of rain falls in the north and east, and less than half of

this amount falls in the southwestern region. The month of April signals the beginning of the dry season. Even the areas that receive the most rainfall are almost completely dry by September.

Temperatures in the Kalahari can soar up to 116° F in the southern region. As in all deserts, temperatures can drop dramatically at night, and it is not unusual for ground frosts to occur.

VEGETATION

The Kalahari's vegetation varies from tall savannah woodland to scrub areas and grassland. In the northern region, sycamore, fig, African ebony, and baobab trees are numerous. As the land becomes drier to

the south, the trees become more widely spaced and smaller than the trees found in the north. Grass grows in occasional patches. Most of the Kalahari, however, is covered with

scrubby vegetation. In the hottest regions, only plants with deep or tuberous roots are able to survive. Wildflowers grow throughout the entire desert during the rainy season.

MIGRATING WILDLIFE

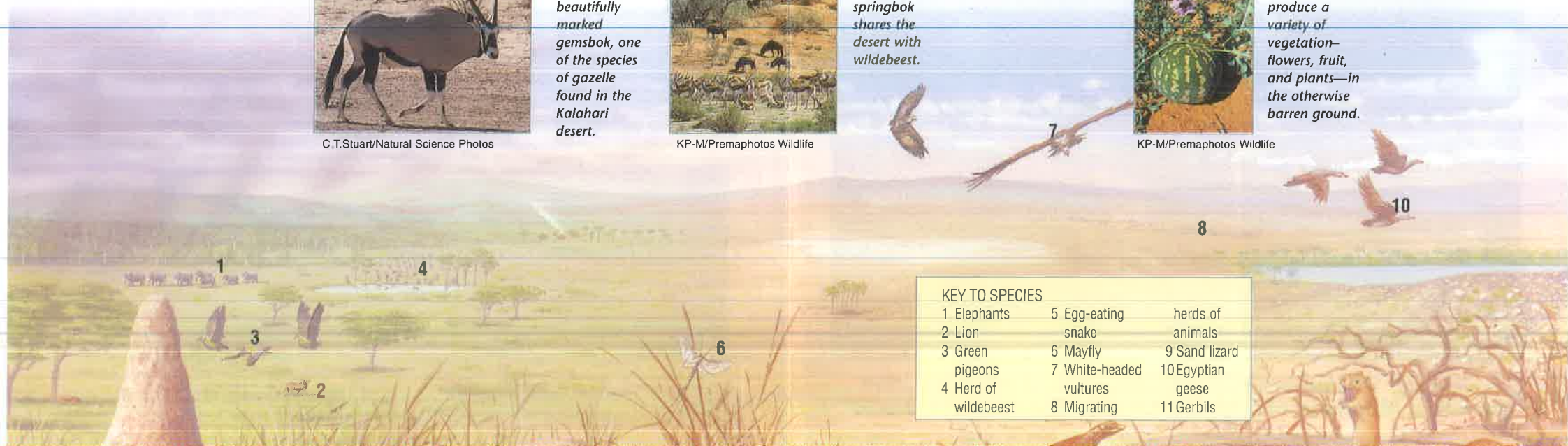
The Kalahari's rainy season is a time of marked change in the desert, and signals the great influx of migrating wildlife. Water cascading down from the highlands of Angola floods the Okavango River in the north, which in turn overflows

to form an expansive and marshy delta. The watercourses are rich in fish during the rainy season, and attract birds that feed on the fish. Although many of the lakes and lagoons dry up during the winter droughts, those that remain

become home to crocodiles and hippopotamuses. The changes in climate and conditions bring huge, seasonal migrations of buffalo, elephant, springbok, wildebeest, and zebra—all in search of fresh grazing pastures.

DID YOU KNOW?

- A definition of a desert is an area that receives fewer than 10 inches of rainfall annually.
- When the Boers crossed the Kalahari from the northeast Transvaal province in 1878, 250 people and 9,000 head of cattle died due to the extreme climatic conditions.
- The Kalahari's mouth brooder fish holds its eggs in its mouth until they hatch. After hatching, the young still seek safety from predators in their parents' mouths.



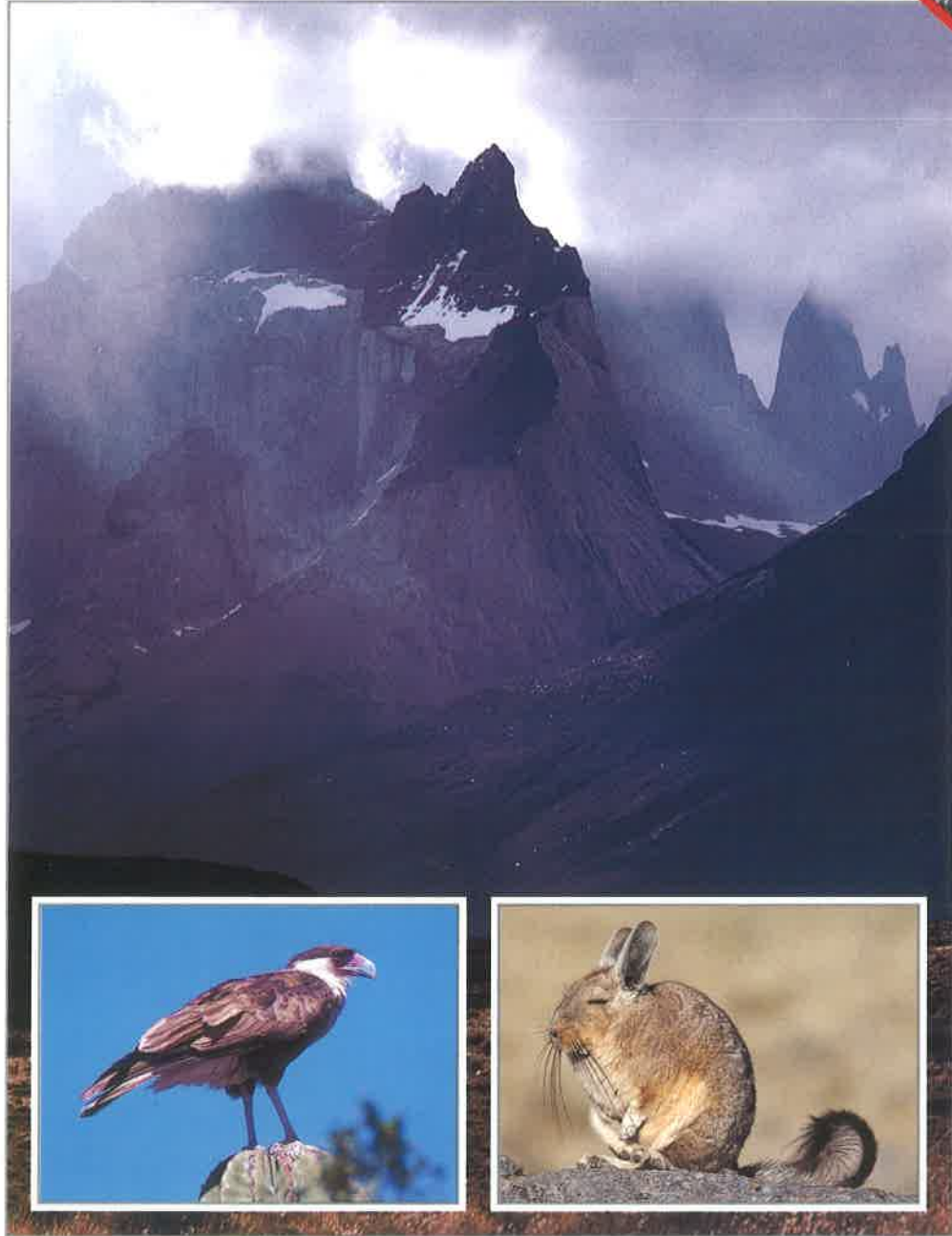
KEY TO SPECIES

1 Elephants	5 Egg-eating snake	herds of animals
2 Lion	6 Mayfly	9 Sand lizard
3 Green pigeons	7 White-headed vultures	10 Egyptian geese
4 Herd of wildebeest	8 Migrating	11 Gerbils

THE ANDES MOUNTAIN RANGE AND ITS WILDLIFE

CARD 4

GROUP 10: WORLD HABITATS



The mighty Andes form the longest mountain range in the world, extending almost 4,500 miles along the western coast of South America from northern Colombia to southern Chile.

KEY FACTS

LANDS OF ICE AND FIRE

The Andes mountains are full of contrasts: the northern climate is hot and humid, while winds in the southern ice areas reach 100 miles per hour. The Andes have some of the most treacherous landscapes in the world.

Ecuador, the land of volcanos, includes Mount Sangay, with its almost constant gush of lava, ash, and steam. Mount Cotopaxi's highest crater is encrusted with glaciers. When Cotopaxi erupted in 1877, molten lava melted the ice and caused

200 miles of flooding. The fjords and geyser fields of southern Chile and the glaciers of the Patagonian ice cap give way to the freezing, wind-lashed wastes of Cape Horn and Tierra del Fuego (land of fire).

Right: The Andes start in the Colombian cordilleras and end on the Patagonian ice cap.

Right: The rainforests of Ecuador.

Below: Tatio geysers in the desert, Chile.



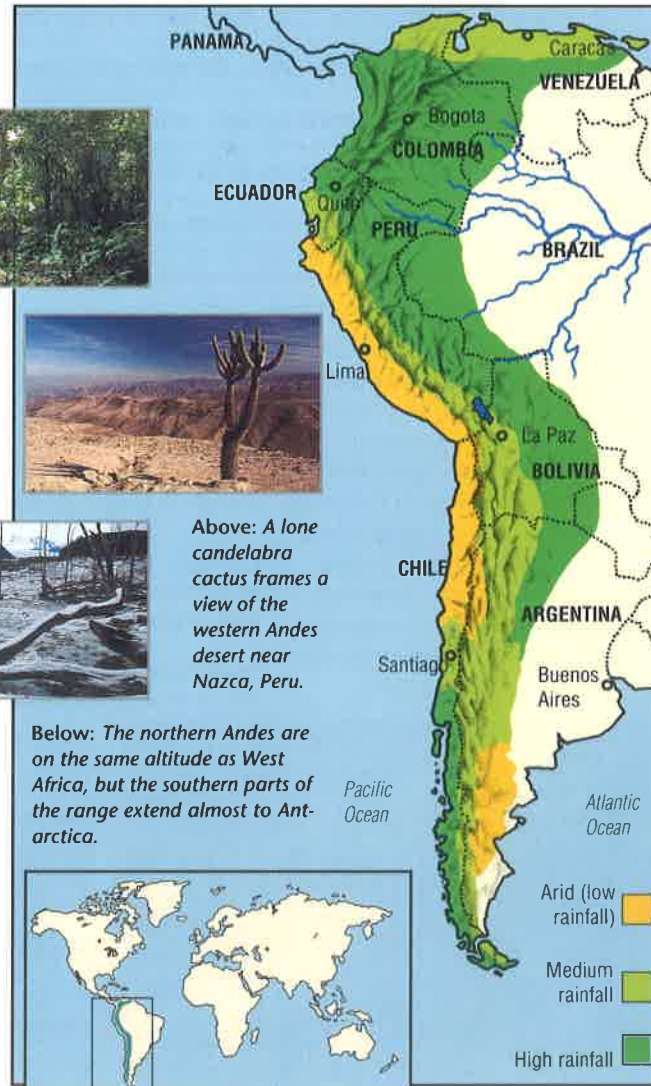
Right: Frozen beech trees, Patagonia.

Below: The Paine Towers in Chile.



Above: A lone candelabra cactus frames a view of the western Andes desert near Nazca, Peru.

Below: The northern Andes are on the same altitude as West Africa, but the southern parts of the range extend almost to Antarctica.





The Andes' forbidding peaks tower over a wide range of habitats. Rain falls in some places at a rate of 16 feet per year, giving rise to steaming rainforests. Elsewhere in high, semidesert plains, mammals rely on extra-large lungs to survive the thin mountain air.

THE ANDEAN RAINFOREST

The temperate forests and tropical rainforests near the equator have the most exotic plant and animal species in South America. The dimly lit steaming rainforest floor smells of decomposing vegetation. Liana vines grow up tree trunks that also support parasitic fungi, orchids, and air plants. Wildlife live in the jungles' trees over 100 feet above the forest floor.

Cries of animals and bird-song fill the forest. The howler monkey's call can be heard as far as three miles away. In southern Chilean forests, the huet-huet bird has a song that sounds like its name. Few bees live in the forest, so the red flowers attract mostly

hummingbirds.

More than three million species inhabit the rainforest, including marsupials, frogs, jaguars, parrots, and Chile's rarest mammal, the opossum.

Leeches can grow to two feet here. Chile also has a forest of araucarian pine—known as monkey puzzle trees. More than 70 insect species live in the trees.



Left: Howler monkeys swing through the forests at the northern end of the Andes.

Above right: Scarlet cock-of-the-rock in the eastern Andes.

Right: An army of leafcutter ants at work in the jungle.



DESOLATE PLAINS

High, arid steppes range from Chile, Argentina, and Bolivia through Peru up to Ecuador. On the southern plateau, called the puna, sand-laden, stinging winds bend the sparse vegetation into strange forms, and nights are bitterly cold.

Lizards, rodents, and birds equipped to retain body heat live among the thin vegetation under harsh conditions.

The Andean condor, the world's largest bird, feeds on carrion. With its huge wing span reaching up to 10 feet, it soars on mountain thermals and glides long distances

Front inset left: A relative of the falcon, the Audubon's caracara feeds on carrion.

Front inset right: The viscacha lives on the dry Andes plains.



Top left: Puya plants, Peru.

Left: The tinamou of Argentina can barely fly.

Right: Vicuñas graze in front of El Misti Volcano, Peru.

searching for food.

Pumas, antlered deer, and relatives of the camel—vicuña, llama, alpaca, and guanaco—live on the high steppes. Now protected, the vicuña was

hunted almost to extinction for the soft, fine wool on its hide.

Other animals, like the chinchilla rodent, have also survived large-scale hunting.



A LIVING DESERT

Many cacti live in the Atacama desert, including the giant candelabra cactus of Peru. Strangely, in summer, far from any sign of water, thousands of honey-scented Calandrina, malvilla, and yellow ananuca plants bloom briefly.

The desert sand extends to the Pacific shoreline. The tropidurus lizard and oasis hummingbird hunt crustaceans and worms from weeds exposed by the receding surf.

Mist created by winds blowing over the cold sea current shrouds the coastal desert. Sparse vegetation grows near heavy mist, but winds suck much of the moisture from the ground and carry it over the peaks to fall on the other side.

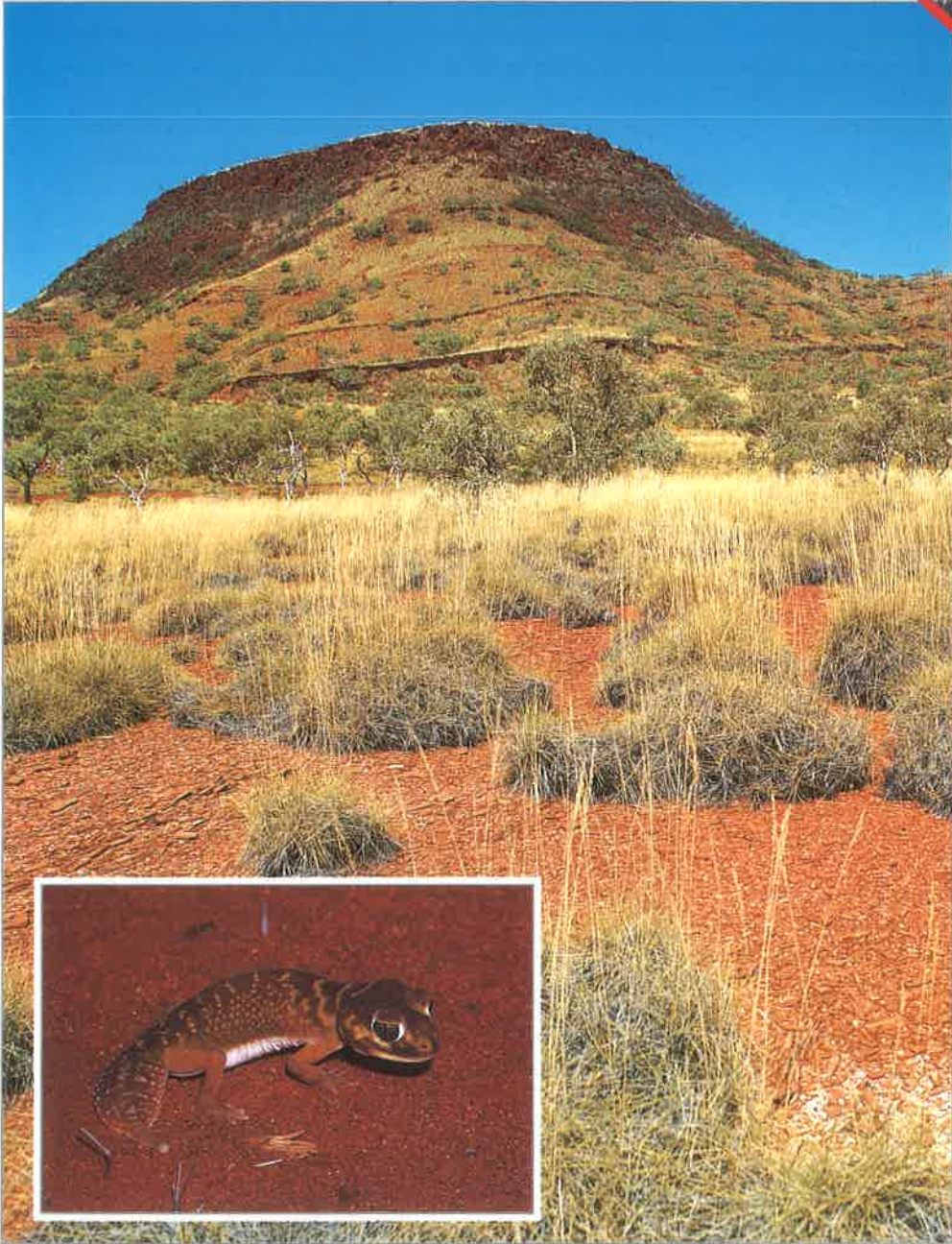
DID YOU KNOW?

- South American tribes make cigarette holders from the Andean condor's bones; and they eat its eyeballs, believing it will improve their sight.
- The solidified front of a lava flow from an Andean volcano can reach 1,600 feet.
- Off Cape Horn, giant kelp seaweed grows to 300 feet in water 150 feet deep.
- South America has twice as many bat and rodent species as Africa and more freshwater fish species than any other continent.
- The alerce tree in Chile lives for more than 2,000 years.
- The Peru-Chile Trench, under the Pacific Ocean off the western South American coast, is, in some areas, as deep as the Andes are high.

THE AUSTRALIAN OUTBACK AND ITS WILDLIFE

CARD 3

GROUP 10: WORLD HABITATS



A vast expanse of bush and arid desert, the Australian outback may be inhospitable to people, but it is home to a huge variety of extraordinary plant and animal life.

KEY FACTS

PLANTS: Eucalyptus, acacia, desert oak, spinifex, dryandra bottlebrush, ghost gum.

MAMMALS: Mostly marsupials; include the western gray kangaroo, red-necked wallaby, southern potoroo, honey possum, wombat, koala, echidna, duckbill platypus, wallaroo, dingo, banded anteater, mulgara, dunnart.

REPTILES & AMPHIBIANS: Carpet python, death adder, tiger snake, king brown snake, knob-tailed gecko, pygmy spiny-tailed skink, goanna, moloch, frilled lizard, waterholder frog, freshwater crocodile, estuarine crocodile, tortoise.

BIRDS: Emu, purple-crowned lorikeet, rainbow lorikeet, kookaburra, galah, lesser sulphur-crested cockatoo, New Zealand honeyeater, black swan, tawny frogmouth, lyrebird, bower bird, rufous bristlebird, chestnut-rumped heathwren, orange-bellied parrot.



Above: *The honey possum has a long snout to help it gather nectar from flower heads.*



Above: *The thorny devil is a harmless but ferocious-looking Australian lizard.*



Below: *The frilled lizard expands its frill to scare off predators.*



Above: *The Mangles kangaroo paw has developed a long, thin beak, ideal for collecting nectar.*

FEATURES AND HABITAT

The continent of Australia covers an area of 3 million square miles. Two-thirds of that land mass are known as the outback. This huge expanse of brush is composed of a wide variety of Australian desert grasses, such as spinifex, and plants that belong to the *Acacia* genus. These plants

require little water to survive and are thus well adapted to the arid outback conditions.

The outback is dotted with occasional rivers and swamps, which widen the variety of animal and plant species in the region. It stretches across most of the country, from the Great Dividing Range in the

east, to the coastal rim along the far west.

The average daytime temperature in the outback is 86°F and there is no specific rainy season. The climate is characterized by long periods of drought that are only occasionally broken by violent rainstorms and floods.

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Australia has been an island for the last 45 million years, and its wildlife has been able to evolve independently of other life forms. Consequently, many of the animals found in the outback are unique and cannot be found anywhere else in the world.



Left: *The gray kangaroo is one of the best-known marsupials of the Australian outback.*

Front inset: *A knob-tailed gecko is one of many lizards found in central Australia.*

Below right: *The beautifully colored rainbow lorikeet will breed after the rainy season.*

REPTILES & AMPHIBIANS

A variety of snakes inhabit the outback. Some, like the carpet python, are harmless to man, while others, such as the death adder, tiger snake, and king brown snake, are deadly.

There are also many lizards in the outback. They include

geckos, skinks, goannas, and the frilled lizard. The frilled lizard expands the frill around its head in order to scare off predators. The knob-tailed gecko has huge eyes and uses its tongue like a windshield wiper to clean them.

One of the most interesting lizards is the moloch, commonly called a thorny devil. This curious creature is studded with horns and spikes to deter predators. It has adapted to the scarcity of water by surviving on as little

of it as possible. At night, it absorbs dew through its skin, where it passes to the mouth to be drunk.

Frogs have adapted surprisingly well to the outback's climate. They mate only in wet conditions, so that the tadpoles have time to develop enough to survive the next dry season. One species, the water-holding frog, fills its body with water, burrows deeply into the mud, and lives underground inside a mucous cocoon until the next rains.

The outback rivers and swamps are homes to two different types of crocodile: the small, freshwater variety, and the large and dangerous estuarine crocodile of the inland rivers and lagoons.



MARSUPIAL MAMMALS

Of the 223 mammal species of Australia, more than half are *marsupials*. Marsupials are animals that carry their young in a pouch, usually located on the front of the body. With the exception of the opossum of North and South America, marsupials are found only in Australia. The best known of these animals include kangaroos, wallabies, and koalas.

Food is so scarce in the outback that many mammals have adapted specially to make the most of the natural

resources. The honey possum is one example. This marsupial is so dependent on nectar for survival that it has developed a long, slender, beaklike snout that fits inside of flowers. It also has a brush-tipped tongue like those of nectar-eating birds.

The mulgara is a *carnivorous* (meat-eating) marsupial that has adapted to its environment to the extent that it survives without having to drink water. It obtains water from the bodies of its prey.

Many *herbivorous* (plant-eating) marsupials can get all the water they need from the leafy vegetation that they eat. In fact, the koala's name is the *Aborigine* (native peoples) word for "no water."

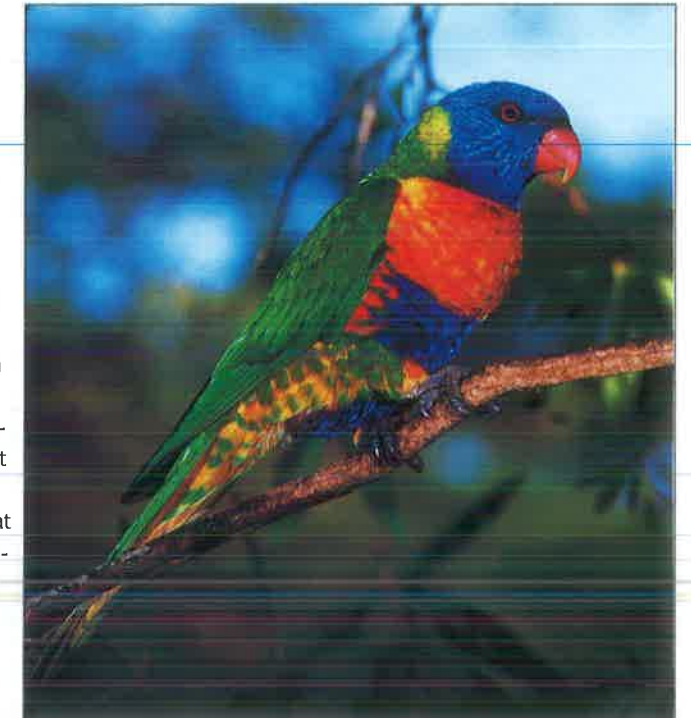
The duckbill platypus and the echidna are monotremes; that is, they belong to the lowest order of mammals and lay eggs like reptiles and amphibians. Yet, they have fur, a stable body temperature, and produce milk with which they suckle their young.

BIRDS

Australia's largest and most unusual bird is the emu. With its long legs, short toes, and light body, this flightless bird can reach a speed of 45 miles per hour when it is pursuing its prey.

The colorful budgerigar, another native of the outback, has become one of the most popular pet and aviary birds in the world.

Many of the birds in the outback are honeyeaters. To adapt to this food source, they have developed long, thin beaks that make feeding easier. To accommodate the birds and to make pollination easier, many outback flower species have also adapted and taken on a more tubular shape.



THE ARCTIC TUNDRA AND ITS WILDLIFE

GROUP 10: WORLD HABITATS

CARD 1



D. Redfern/Planet Earth Pictures

M.W. Gorasnick/Arctic

The Arctic tundra—the land of the midnight sun—is a vast, frozen wasteland at the top of the world. Surprisingly, it supports an abundance of animal and plant life.

KEY FACTS



LAND ANIMALS

Polar bear, wolf, musk ox, Arctic fox, hare, ground squirrel, wolverine, weasel, and lemming.



SEA ANIMALS

Walrus, fur and harp seals, and beluga and other whales.



BIRDS

Raven, ptarmigan, diver, snowy owl, whistling swan, snow goose, red or gray phalarope, Sabine's gull, shore or horned lark, snow bunting, oldsquaw, skua and king eider ducks, and Arctic tern.



PLANTS

Arctic willow, juniper, Lapland rhododendron, purple saxifrage, mountain avens, Arctic white heather, broad-leaved willow herb, woolly lousewort, moss campion, Arctic lupine, cotton grass, mountain sorrel, scurvy grass, bearberry, and lichen.



■ Area of the tundra.

AREA OF THE TUNDRA

From the northern edge of the circumpolar belt of *taiga* (coniferous forests) to the ice and snow surrounding the North Pole.

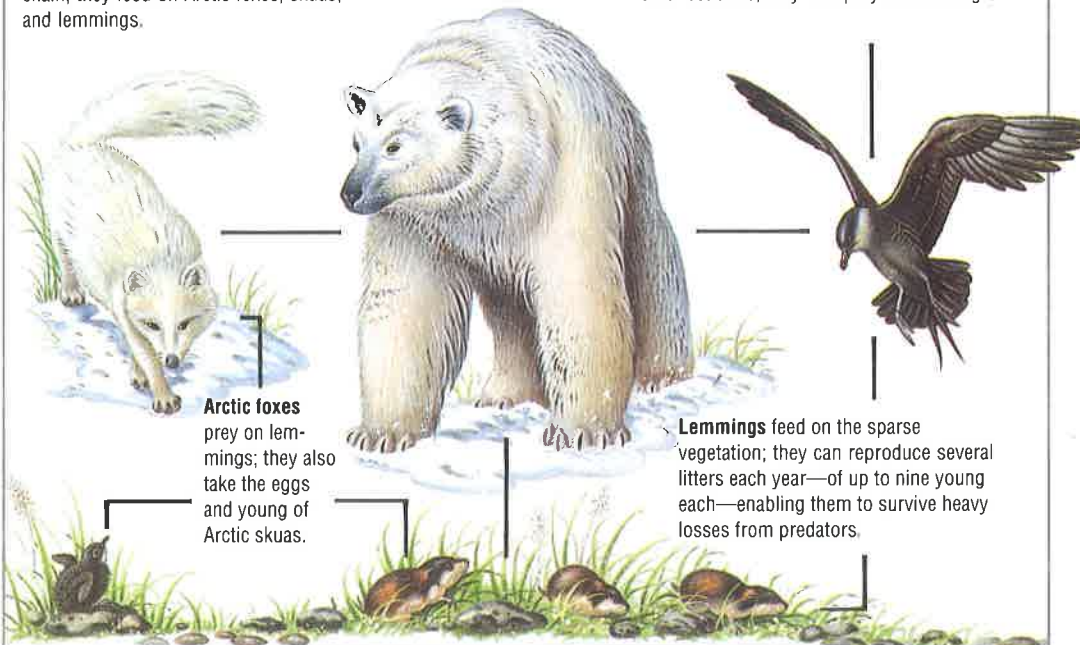
WILDLIFE NOTES

Most animals are year-round residents of the tundra or its waters; caribou and many birds migrate south in the winter.

ARCTIC TUNDRA FOOD CHAINS

Polar bears are at the top of the food chain; they feed on Arctic foxes, skuas, and lemmings.

Arctic skuas are plunderers, stealing fish from other seabirds; they also prey on lemmings.



Arctic foxes prey on lemmings; they also take the eggs and young of Arctic skuas.

Lemmings feed on the sparse vegetation; they can reproduce several litters each year—of up to nine young each—enabling them to survive heavy losses from predators.

Brian Hawkes



From the air, the Arctic tundra looks lifeless; in fact, the region abounds with living things.

The tundra is also one of a few relatively unspoiled wild areas left on earth.

CLIMATE

The tundra stretches from the northern edge of the *taiga belt* (coniferous forests) to the ice and snow surrounding the North Pole. It is one of the world's smallest climatic zones.

For most of the year, the mean monthly temperature is below freezing. The winters are long and severe, although some areas have only light snow cover. Summers are short, with temperatures just above freezing.

At Point Barrow in northern Alaska the sun is not visible for two months in midwinter, but it shines non-stop for about two months in midsummer. Icy winds blow constantly.

This harsh climate limits tundra vegetation mainly to lichens. They grow on rocks and permafrost ground, breaking down the surface and creating soil. This gives other plants and shrubs a meager place to grow.

DID YOU KNOW?

- Mild weather can be more dangerous to tundra animals than cold. When snow thaws and refreezes, it locks up vegetation and prevents animals from feeding.
- The ground squirrel is the tundra's only true hibernator.
- A musk ox can live on about one-sixth of the *fodder* (feed) needed to feed a cow.
- Each year the Arctic tern migrates from the Arctic Circle to the Antarctic and back again: a 21,750-mile round trip.

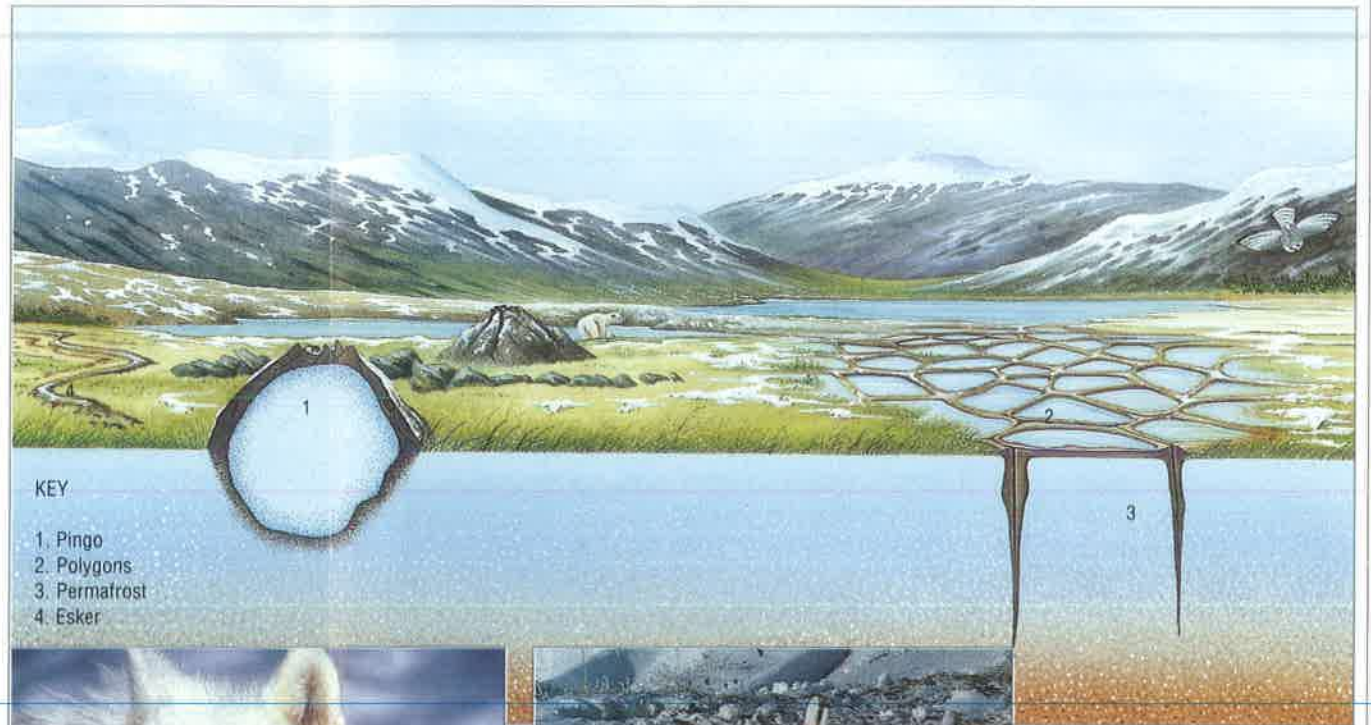
SPECIAL FEATURES OF THE TUNDRA

Pingos are domes that develop when shallow tundra ponds or lakes dry up. Permafrost moves in under the bed and forces the soil up.

Polygons are geometric ground designs that result from repeated expansion and contraction of tundra soil as it freezes and thaws. A common feature is the frost mound covered by meadow grasses.

Permafrost occurs where subsoil remains frozen all year. If the insulating layer of vegetation is damaged, permafrost ground is exposed and begins to thaw, seriously upsetting the ecology of the tundra's

surface. *Eskers* are low ridges of sand, silt, gravel, and other glacial debris left behind by extinct rivers. Eskers provide some protective shelter for foxes and wolves.



Above: The wolf's white fur provides warmth and camouflage.



Above right: The Arctic hare's white coat is a mixed blessing: perfect camouflage in winter, conspicuous in summer.



Right: Lemmings tunnel under the snow to find food.



Right: Snowy owls nest on the ground. They feed mainly on lemmings.

Lanceau-Nature

P. Morris

A. Lindau/Ardea

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