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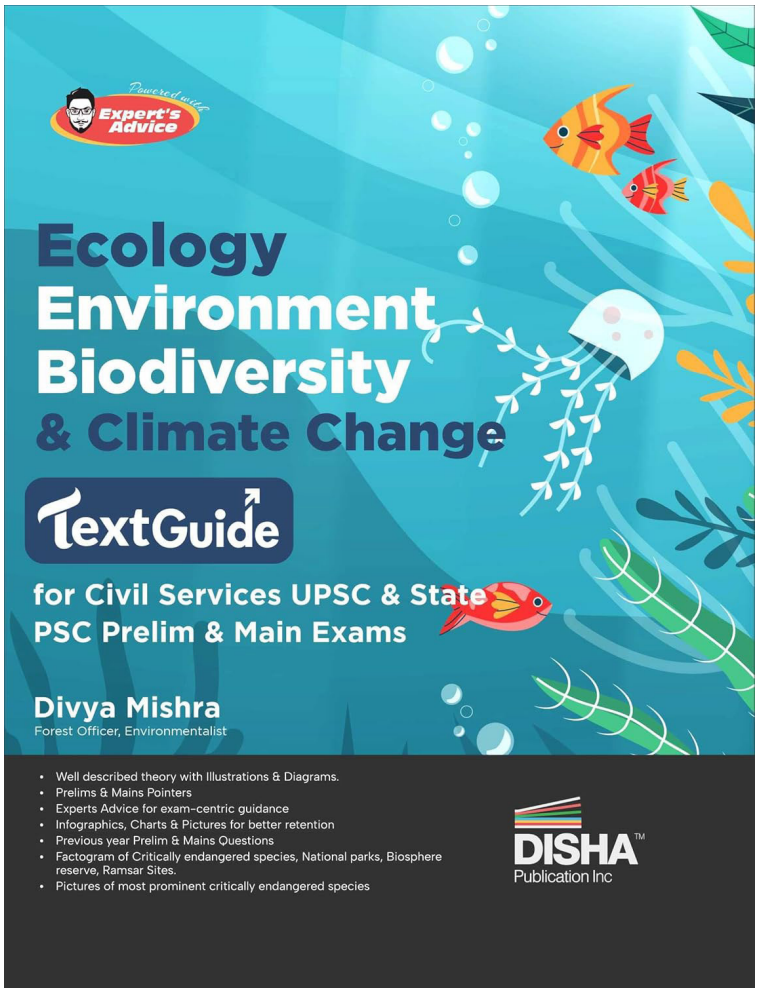
Flora and Fauna

This sample is taken from the "**Ecology, Environment, Bio-diversity, and Climate Change TextGuide for Civil Services UPSC & State PSC Prelim & Main Exams | Previous Year Questions PYQs | powered with Expert's Advice, Prelims & Mains Pointers |**"



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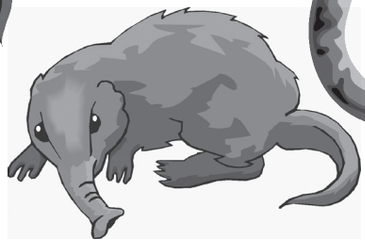
34 Flora and Fauna of India- A Glance



Crocidura Jenkinsi
(Jenkin's Shrew)
Critically Endangered Species in India

Learning Outcomes from the Chapter	Analysis of the Chapter
• Why India is world's most extravagant nation in the wording of its huge swath of organic variety? • Is there a few evaluations propose that at any rate 10% of India's recorded wildlife also, 20% of its vertebrates are on the compromised list? • Edge of elimination like the cheetah, pink-headed duck, mountain quail, and timberland. • Indo-Gangetic Plain extending from Punjab to Assam comprises of alluvial lowlands lying parallel to the south of the Himalayas.	• This chapter includes flora and fauna that are found in India. • It showcases the animal species specially found in India. • From organisms like Langur, elephants, tigers, rhinoceros there are huge number of living organic entities have been portrayed in this chapter.

Issues to Ponder			
• Deciduous forests • Head clamp • Coral reefs	• Biennial plants • Wetlands	• Endemic species • Habitats	• Wallace line • The edge effect

Flora and fauna of India

Indian flora and fauna are representatives of the country's rich biodiversity. Favourable climate has led to the thriving of Indian flora and fauna. India is blessed with mountains, plains, deserts, dense forests, islands, sanctuaries, swamp lands, highlands and several other eco zones. These eco zones differ in terms of flora and fauna, which are scattered throughout the subcontinent. Indian flora and fauna is helpful in promoting tourism in the country. It is considered to be a gateway to explore the striking natural beauty that enwraps India.

Indian Flora

Indian flora consists of a wide variety of indigenous or native plant types, which have economic, religious and cultural significance. Abundance of flora adds resplendence to the pristine Indian nature. The floral wealth of India ranges from alpine to temperate thorn, thick tropical forests to temperate woods, cone-bearing trees to evergreen trees and scrubs to deciduous forests. Indian forests range from tropical rainforest to coniferous forest. Other forest types are sal-dominated moist deciduous forest, teak-dominated dry deciduous forest, babul-dominated thorn forest etc.

There are more than 45000 plant species in India. Indian plants can be grouped into several categories like annual plants, biennial plants, perennial plants, bulb plants, shrubs, herbs, medicinal plants and vines, creepers and climbers. Indian trees can be grouped into gardening trees, timber trees, medicinal trees, evergreen trees, deciduous trees, flowering trees, flowerless trees, coastal trees and sacred trees. The national tree of India is Banyan tree. Mango is officially the national fruit of India, which grows on mango tree. Indian flowers present a delightful sight along with their fascinating fragrance. Lotus is the national flower of India. As per the distribution of flora, the country can be classified into several zones namely, eastern Himalayas, western Himalayas, Indus plain, Ganga plain, Assam, Malabar, Deccan and Andamans.

Mains Related Question (Short)

What is biodiversity and explain the reasons for the decline in India's biodiversity?

Answer: Biodiversity is the variety of natural life and developed species in a given environment. In this interconnected web, every living being is a maker, customer or decomposer. Different life forms, including people, depend for their reality on such jobs.

There are different reasons for decline in India's biodiversity are, Hunting, Forest fires, Poisoning, Environmental pollution, over exploration etc. these are the main reasons for the decline in India's biodiversity.

Estimated Flora in India

The types of flora in India are in accordance with the topography of the land. According to the World Conservation Monitoring Centre (WCMC), 1,604,000 species have been estimated at the global level. India accounts for about 8 percent of the global biodiversity, which covers about 2.4 percent of the land area of the world. The number of flowering plant species in India is over 16,000. Hajra and Mudgal (1997) had reported about 5400 endemic species, among 17000 angiospermous species of India, which comes to 31.76 percent. India is an important centre of agro-biodiversity. It has contributed about 167 species to the world agriculture. It serves as a home to about 320 species of wild relatives of crops. Almost all types of forests ranging from scrub forest to the tropical evergreen rain forest and from coastal mangrove to the temperate and alpine flora occur in India. The tropical moist deciduous forest forms the major percentage of forest cover in India (almost 37 percent). Tropical dry deciduous forest rank second.

Distribution of Flora of India

In terms of physical geography, the mainland of India can be divided into six distinct regions namely, the Himalayas, the Indo-Gangetic Plain and the Peninsular India, the Thar Desert, the Coastal Plains and the Indian Islands. Different types of flora are present in these regions. The physiographic divisions of India and the flora in these divisions are described below.

Indian Flora in Himalayas

Himalayas form a mountain chain along the extreme northern margins of India. It extends in an east-west direction for a length of about 2,400 km. Its width ranges from 400 kilometers in the west to 150 kilometres in the east. It occupies an area of about 500,000 square kilometers in India. Geographically, the Himalayas range from the low-lying Indian plains to the highest mountain peak in India namely, Kanchenjunga in Sikkim. In the Himalayan region, the natural vegetation varies with altitude. Inner Himalayas is rich in chilgoza, oak, maple and ash. In the eastern Himalayan region oaks, laurels, maples, rhododendrons, etc are found. Western Himalayas has conifers like pine. In the north-western Himalayas chir pine are known to grow (except in Kashmir). In the foothills of Himalayas deciduous trees, shrubs, fern and grass can be found.

Indian Flora in Indo-Gangetic Plain

Indo-Gangetic Plain extending from Punjab to Assam comprises of alluvial lowlands lying parallel to the south of the Himalayas. This region is agriculturally very productive and is used to grow crops like wheat and rice. Some of the floral species of this region are soap pod, neem, golden leather fern, mangrove fern, common turmeric, mahua, Indian sandalwood, white sandalwood and Ashoka.

Flora in Peninsular India

Peninsular India comprising of the Central Highlands, Deccan Plateau, Eastern Ghats and Western Ghats, lies south of the Indo-Gangetic plain, the two being roughly separated by the Tropic of Cancer. Along the Western Ghats, deciduous forests are present. In the interior of the Deccan plateau, tropical dry forests and scrublands can be found. South Western Ghats montane rain forests are present in southern Western Ghats at higher elevations. In the dry Telengana plateau, thorny scrub and wild Indian date palm are present.

Indian Flora in Thar Desert Thar Desert is located in northwestern India. The sweltering heat of the sun in this region is responsible for short, stout and underdeveloped trees. Northwestern thorn scrub forest can be found here. Some of the floral species of Thar Desert are Acacia Jacquemontii, Euphorbia Neriifolia, Balanites Roxburghii, Ochthochloa Compressa and Ziziphus Zizyphus.

Indian Flora in Coastal Plains

Coastal Plains are located to the east and west of the peninsular plateau of India. Coastal Plains are divided into the western coastal plain and the eastern coastal plain. The width of the western coastal plain ranges from 10 to 15 km, whereas the width of the eastern coastal plain ranges from 50 to 60 km. Malabar coast moist forests, mangroves, etc beautify the coastal plains of India.

Indian Flora on Islands

There are about 1,208 Indian Islands. The main groups of islands of India are the Lakshawadeep in the Arabian Sea and the Andaman and Nicobar Islands in the Bay of Bengal. The flora of Lakshawadeep comprises of coconut tree, banana tree, species like Scaevola Koenigii, Calophyllum Inophyllum, etc. The flora of Andaman Islands comprises of moist deciduous forests, woody climbers, mangroves, timber, etc.

Indian Fauna

Indian wildlife comprises of about 410 types of mammals, nearly 1301 species of birds and 30,000 types of insects. Further, a broad variety of animals, amphibians, reptiles and fishes are found in India, as per the census estimate. Mammals found in India include lions, elephant, rhinoceros, wild bison, deer, monkeys, wild goats, etc. The national animal of India is royal Bengal tiger. Reptiles include a large number of lizards, snakes, crocodiles, etc. The national bird of India is peacock. Some of the common Indian birds are geese ducks, mynas, pigeons, cranes, pheasants, parakeets and hornbills.

Protection of Indian Flora and Fauna

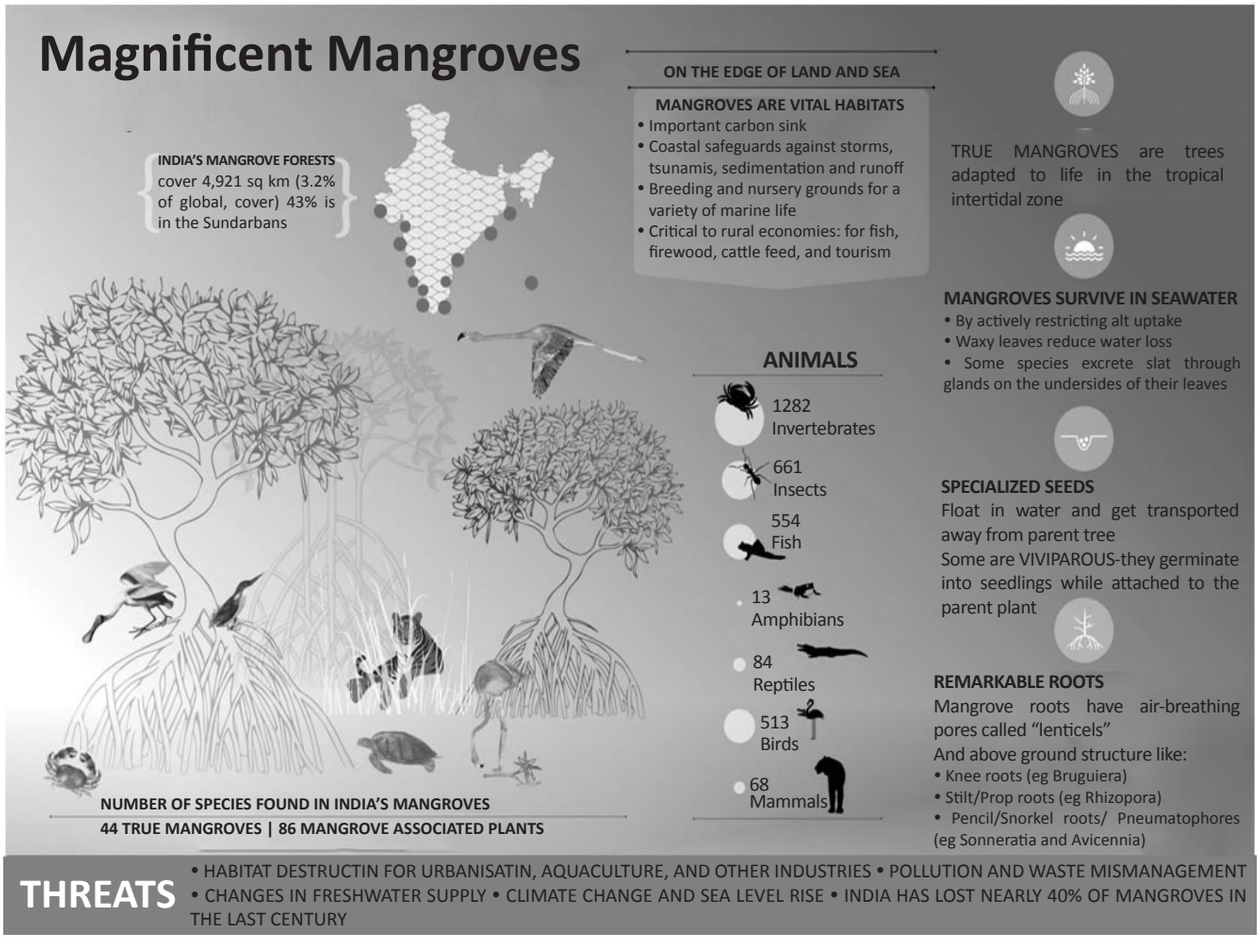
The virgin forests provide perfect habitats to the Indian wildlife. To protect the wildlife, over 120 national parks, wildlife sanctuaries, bird sanctuaries, etc are maintained by the Government of India. These protected areas are known to spread over an area of about 156,700 square kilometers, as of May, 2004. Indian states like Rajasthan, Karnataka, Gujarat, Uttar Pradesh, West Bengal and others are renowned for their national parks. Similarly, wildlife sanctuaries, bird sanctuaries, etc are situated in different parts of India.

UPSC Simplified

Explain the factors that depletion of flora and fauna?

Answer: There are different factors that cause depletion of Flora and Fauna are:

- The forest ecosystem are vaults of a portion of the country's most important timberland items, minerals and different assets that satisfy the needs of the quickly growing modern metropolitan economy.
- Unnecessary utilization of regular assets for satisfying human necessities like wood, barks, leaves, elastic, meds, colours, food, fuel, grub, fertilizer, and so forth. And there are many more like over population, mining activities etc.



single horn averages 10 in (25 cm) in both sexes

Indian rhinoceros

Rhinoceros unicornis

Of all five rhinoceros species, the Indian rhino is second in size only to Africa's white rhino. It is also the one most at home in water—a trait seemingly at odds with its appearance. Its skin is 3 in (8 cm) thick and develops deep folds speckled with lumps, giving it an armor-plated look. Nevertheless, Indian rhinos are good swimmers and like to wallow. They are also surprisingly agile on land, able to turn quickly and charge at high speed. Since they have relatively poor eyesight, Indian rhinos rely on keen hearing and an excellent sense of smell to navigate their surroundings. A semiprehensile upper lip makes them adept at grasping grass stems.

Still at risk

Due to stricter protection laws, Indian rhino numbers have recovered from fewer than 200 in the early 20th century to more than 3,000 in the wild. Poaching, however, is still a problem, despite the fact that the Indian rhino's horn—which it uses mainly for foraging—is relatively small.

- 11 ft (3.4–3.5 m)
- 4,400 lb (2,000 kg)
- Vulnerable
- Grasses, shrubs, fruit

S. Asia (Terai and Brahmaputra basins)

△ **AT PEACE**
Although generally solitary, several Indian rhinos may wallow or graze near each other without fighting if food is plentiful in the area.

▽ **STAY CLOSE**
A rhino calf is vulnerable to predators such as tigers, and remains with its mother for up to two years.

hair only on rims of ears, tip of tail, and as eyelashes

heavy neck folds provide protection

Blackbuck

Antilope cervicapra

pointed hoof

Once India's most numerous hoofed mammal, the blackbuck has become extinct in many areas due to habitat loss and hunting. However, it is recovering in protected areas, and introduced populations thrive in Argentina and Texas. Males are larger and darker than females, and have spiralled horns. Herds may contain both sexes, only females with young, or just bachelors.

- 4 ft (1.2 m)
- 55–77 lb (25–35 kg)
- Near threatened
- Grass, seed pods
- S. Asia

▽ **WARNING LEAP**
A high leap is a danger alert; smaller leaps follow before the herd gallops away at up to 50 mph (80 km/h).

Gaur

Bos gaurus

dewlap under chin extends to forelegs

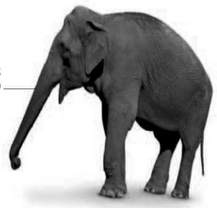
One of the largest, most heavy-set of wild cattle, gaurs mostly live in herds of between five and 12 animals, led by a single bull. Usually active during the day, when humans encroach on their habitat, gaurs become nocturnal to avoid hunters.

- 8–11 ft (2.5–3.3 m)
- 1,430–2,200 lb (650–1,000 kg)
- Vulnerable
- Grasses, fruit, twigs, bark
- S. and SE. Asia

◁ **HAZARDOUS HORNS**
Both male and female gaurs have curved horns that grow up to 24 in (60 cm) long. Unfortunately, these are prized by hunters.

Asian elephant

Elephas maximus



Asia's largest land mammal, the Asian elephant spends most of the day eating up to 330 lb (150 kg) of plant material, including grass and fruit. It also eats cultivated crops such as bananas, causing conflict with humans. About 20 percent of the world's human population lives either in or near the Asian elephant's habitat, forcing these animals into increasingly fragmented areas. Poaching is also a threat, although, unlike African elephants, only male Asian elephants grow tusks, and some males lack them altogether. Females and some males grow "tushes"—small tusks that rarely extend beyond their mouths. Asian elephants also differ from African elephants in that they have arched backs, double-domed heads, and smaller ears.

Males leave their birth group when they are six or seven years old, living alone or in loose groups with other bulls. Females stay with their families, headed by a matriarch, who leads the herd to water and browsing areas. Females stay bonded to family members for life, using their trunks to greet and caress each other.

◁ **HEAVY DRINKERS**
Adult Asian elephants need to drink 18–24 gallons (70–90 liters) of water daily, spraying it into their mouth with their trunk.

▷ **MALES AT PLAY**
Young elephants, particularly bull calves, spend much of their time at play, often charging, sparring, or trunk-wrestling with one another.

- 7–12 ft (2–3.6 m)
- Up to 5.5 tons (5 metric tons)
- Endangered
- Grass, fruit, bark, roots

S. and SE. Asia

Red muntjac

Munitiacus muntjak

▷ **SIMPLE ANTLERS**
The short, simple antlers are seen only in males. The males also have long upper canine teeth and a scent gland under each eye.

The red muntjac is one of few deer that are habitually omnivorous. A solitary animal, the deer supplements its diet of shoots, seeds, and fruit with the occasional bird egg, rodent, or a meal of carrion.

Breeding occurs at all times of the year, with males scent-marking to attract a harem of receptive females. Fights between rutting males involve both butting and biting, leading to frequent injury. Gestation lasts seven months, and the single offspring is weaned early for deer at just ten weeks after birth. Sexual maturity is reached at the age of two.

- 3–4 ft (0.9–1.2 m)
- 44–62 lb (20–28 kg)
- Common
- Leaves, fruit, eggs, carrion

S. to SE. Asia

Terai sacred langur

Semnopithecus hector

Like other species of langur and the related leaf monkeys, the Terai sacred langur (also called the Hanuman langur) feeds mainly on leaves. Its large stomach is separated into two chambers: an upper one, where the leaves are fermented by bacteria, and a lower acidic chamber. This system, like that found in cows and sheep, helps to break down the tough cellulose found in leaves. Because leaves are low in nutrients, langurs have to spend much of their day feeding in trees. However, they can eat many types of leaves and fruit that would be toxic to other species.

▷ **BLACK FACE**
According to Hindu mythology, the langur's face was scorched as punishment for stealing a mango.

- 23–30 in (58–76 cm)
- 37–38½ lb (17–17.5 kg)
- Near threatened
- Leaves, fruit, flowers, shoots

S. Asia

Indian gray mongoose

Herpestes edwardsii

short, rounded ears closed in dusty places

14–18in (35.5–45cm)
1–9lb (0.5–4kg)
Common
Rodents, snakes, frogs, fruit

SW. and S. Asia

The Indian gray mongoose is a dietary opportunist—eating lizards, eggs, and fruit as well as larger mammals such as hares and venomous cobras. Mongooses are so adept at preying on rodents and snakes that they are used as a form of pest control in some areas.

Head clamp

While its molars are used to crush insects, its strong jaws and sharp, protruding canines give the mongoose an edge when fighting snakes, allowing it to clamp onto a snake's head and puncture its skull. Although not immune to snake venom, highly reactive reflexes help them avoid being bitten. Mongooses are solitary except during mating season. Females bear litters of two to four pups up to three times a year.

Mongooses **crack large eggs by throwing** them between their hindlegs **against a hard surface**

▽ **STRATEGIC COMBAT**
Mongooses defeat cobras by agility and endurance–dodging away each time a snake strikes, then biting into its skull once it tires.

Sloth bear

Melursus ursinus

long, rough fur

The sloth bear is a solitary, elusive forest dweller, but the slurping sounds it makes when feeding can be heard up to 650ft (200m) away. These shaggy-looking members of the bear family use their long, curved claws to dig out ants, termites, and other insects, sucking them up through flexible lips and a special gap in their teeth, while closing their nostrils to prevent stings. Like many bear species, they also raid beehives for honey.

Sloth bears mate during the summer months. Females bear one or two cubs, which stay with their mother for up to four and a half years. They are the only bears known to carry cubs on their backs.

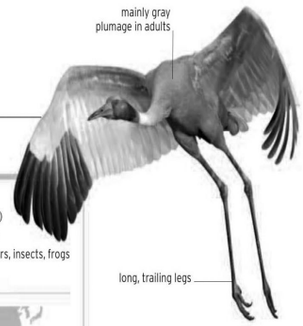
5–6ft (1–1.9m)
110–320lb (50–145kg)
Vulnerable
Ants, termites, fruit, honey

S. Asia

▷ **LONG, MOBILE SNOUT**
Sloth bears use their nostrils to blow dust and earth out of the way before sucking up insects to eat.

Sarus crane

Grus antigone



mainly gray plumage in adults

long, trailing legs

At 6ft (1.8m), the sarus crane is the tallest flying bird on earth. It has dramatic displays: rhythmic bowing leading into two-footed leaps, with head extended and wings half open, while making loud trumpeting calls.

The sarus crane is a declining bird, being confined to wet paddy fields and reservoir edges as marshlands are drained and rice cultivation becomes more intensive. Breeding pairs occupy territories and forage for aquatic plants, insects, and frogs, mainly in natural vegetation, but occasionally in cultivated fields.

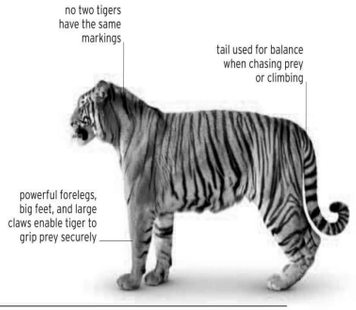
5ft (1.5m)
14lb (6.5kg)
Vulnerable
Roots, tubers, insects, frogs

S. and SE. Asia, N. Australia

△ **TAKING OFF**
Although long legs and broad wings power its take off, the sarus crane uses a steady, efficient action once airborne.

Bengal tiger

Panthera tigris tigris



The tiger is the largest of all the big cats. Five subspecies remain alive today, of which the Bengal tiger is the most common. It is found in a wide range of forest and mangrove habitats in India and Bangladesh. The Bengal tiger's distinctive coat is a deep orange with white undersides, chest, throat and parts of its face, and dark stripes. The Amur tiger (*P. t. altaica*), which lives to the north in the coniferous forests of Siberia, Russia, is the largest of the five. It is the lightest in color and has the longest, thickest coat to cope with the freezing winters. The southernmost subspecies, the Sumatran tiger (*P. t. sumatrae*), is also the smallest, being a good 30 percent smaller and weighing about 50 percent less than its massive cousins to the north.

Ambush attacker

Tigers are chiefly nocturnal but will hunt by day in places where they are undisturbed by daytime human activities. The tiger uses its sense of smell and hearing to detect and track prey. Its great strength and speed mean it can bring down prey that is at least as large as it is, sometimes more so. The Bengal tiger typically hunts hoofed animals, such as gaur, sambar, chital, and wild boar, and stalks them while hidden by the undergrowth. Once the tiger is close enough, it will launch a lightning strike, surging out of cover and using its weight to knock the prey to the ground. The tiger then delivers a deadly bite to the throat, which crushes the windpipe, leading to death by strangulation, or breaks the neck. Small prey are often killed with a bite to the neck. The tiger then hauls the carcass back into the undergrowth to eat. Despite the tiger's great killing potential, only one in 20 ambushes is a success.

Solitary cat

An adult tiger lives alone. It marks out a territory by scratching marks on tree trunks and rocks with its claws and leaving piles of feces in prominent places. The tiger also scent marks by spraying squirts of urine mixed with oils from a scent gland under the tail, and it gives out roars that can be heard 1 mile (2 km) away.

A tigress breeds every two or three years, and changes in her scent will attract a nearby male. The pair roar to each other as they get near and will live together for a few days, mating around 20 times before going their separate ways. Tigresses give birth to litters of up to six cubs, but half of them will not reach two years. Surviving cubs stay with their mother for up to two years, learning to hunt alongside her from the age of six months. They may breed when four or five years old.

△ **SUMATRAN TIGRESS AND CUB**
The smaller size of the Sumatran tiger (*P. t. sumatrae*) is an adaptation to life in the dense undergrowth of the swamp forests of Sumatra.

Tiger **cubs often have practice fights**, gaining the **speed and agility** they will need as **territorial adults**

Great Indian hornbill

Buceros bicornis

This large hornbill relies on forest fruit for food and essential moisture. Fruiting trees attract scores of birds whose droppings, in turn, help disperse seeds throughout the forest. The function of the angular casque is uncertain, but the larger bones in the bill have networks of hollow cavities, combining lightness with strength.

▷ **LIGHT AND SHADE**
Horizontal bands create effective camouflage in the light and shade of a forest canopy.

- 38–47 in (95–120 cm)
- 7 lb (3 kg)
- Near threatened
- Figs, lizards, frogs, rodents
- S. and SE. Asia

Indian cobra

Naja naja

Found in habitats from remote uplands to urban sprawl, the Indian cobra's diet ranges from tiny frogs to large rats. Females lay 12–20 eggs in a tree hollow, rodent burrow, or termite mound, and guard them. Hatchlings can immediately spread their hood and strike with venom.

- 6–7 ft (1.8–2.2 m)
- 5–7 lb (2–3 kg)
- Not known
- Frogs, rats, lizards, birds
- S. Asia

◁ **SPECTACLED HOOD**
This classic "snake charmer" species is also called the spectacled cobra from the markings on the rear of the hood and often on the front as well.

△ **SAFETY ISLAND**
Parents care for the young for the first few weeks, escorting them on their first swims. However, many other crocodilians nurture their offspring for longer periods.

▷ **FISH TRAP**
The gharial's 100–110 teeth are small and sharp—ideal for snagging fish, which are bitten several times to subdue them, then tossed around to be swallowed head first.

EASTERN HIMALAYAS

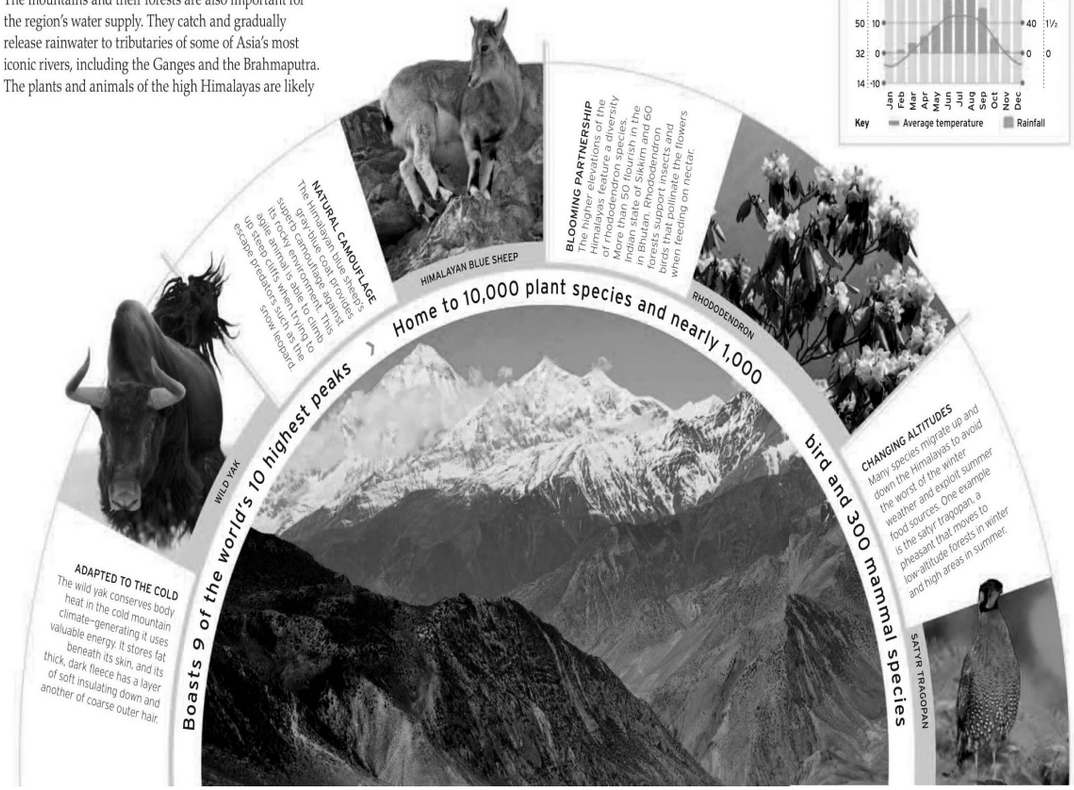
Earth's highest mountains support a variety of rare species

The peaks and steep-sided valleys of the world's highest mountain range are home to varied but vulnerable plants and animals. The lower and middle elevations of the Eastern Himalayas are covered with various types of forest. Depending on latitude and altitude, they might be subtropical or temperate, evergreen, or deciduous. Oaks and rhododendrons dominate the forests, which support a diverse array of wildlife. Even above the treeline, seemingly inhospitable rocky slopes are home to such elusive creatures as the snow leopard and blue sheep.

Vital water regulators

The mountains and their forests are also important for the region's water supply. They catch and gradually release rainwater to tributaries of some of Asia's most iconic rivers, including the Ganges and the Brahmaputra. The plants and animals of the high Himalayas are likely to experience great challenges due to climate change, as the melting of glaciers accelerates and they are forced to adapt to warmer temperatures, if they can.

There are 163 globally threatened species in the Eastern Himalayas, and a quarter of their original habitat remains intact. The challenge for conservationists is to protect sufficiently large areas and corridors between them to sustain animals that range over large areas. The main threat to the forests and their wildlife comes from poaching, collection of wood for fires and charcoal, and habitat loss or damage resulting from agricultural practices.



LOCATION

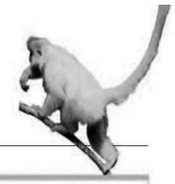
Covers 51,570 miles (83,000 km) of the Himalayas, from eastern Nepal through Bhutan to northeast India and northern Burma (Myanmar).

CLIMATE

The region is temperate, with cool summers and colder winters. Rain falls mostly during summer monsoons; winter snows prevail at higher levels.

Golden langur

Trachypithecus geei



The golden langur's coat varies from cream-colored in summer to burnished gold in winter. This elusive, long-tailed monkey was not recognized as a species until the 1950s, and very little is known about it even today. Golden langurs live in groups of 3–40, and rarely come to the ground, a strategy that helps them avoid predators such as tigers. They are severely threatened by habitat loss.

- 19–28 in (49–72 cm)
- 21–26 lb (9.5–12 kg)
- Endangered
- Leaves, buds, fruit, seeds

◁ **TREETOP DWELLER**
Golden langurs spend most of their time high in the forest canopy, only rarely descending to the ground to drink or lick up mineral salts.

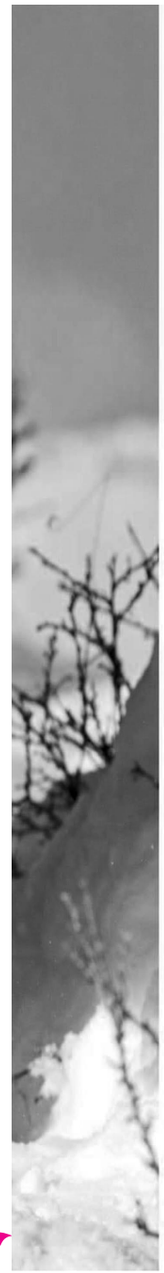
Bhutan takin

Budorcas whitei

During spring, large mixed herds of takin—robust relatives of wild goats—congregate in sunny clearings high up in bamboo forests. As winter approaches, they fragment into fours and fives and head for lower areas. If threatened, they retreat into dense bamboo thickets and lie down.

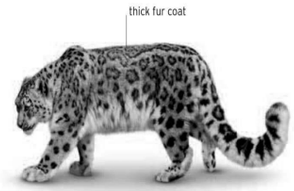
- 6–7 ft (1.8–2.1 m)
- 330–772 lb (150–350 kg)
- Vulnerable
- Forbs, shrubs, trees

▷ **ATYPICAL BODY**
The takin's body shape is said to be primitive compared to most hooved species; it has short, stocky legs and a rounded snout.



Snow leopard

Panthera uncia



To local people, snow leopards are "mountain ghosts" because they are so well camouflaged that they are as good as invisible even at close range. They are the most elusive, most secretive, and smallest of the big cats—and the only one that cannot roar. Snow leopards are among the planet's most endangered species. The estimated 4,000–7,000 remaining in the wild live mainly in the harsh mountain ranges of Central Asia, at elevations of 10,000–16,400 ft (3,000–5,000 m). They are still hunted illegally in "retribution" for killing livestock or for use in traditional medicine and for their pelts.

Fighting the cold

The snow leopard's thick, creamy gray coat dotted with brown and gray-black spots blends in seamlessly with a rocky or scrub-filled landscape, while its dense, white underside hair merges into the snow. Even the pads of its feet are covered with fur, as is the long, thick tail, which serves both as a balancing aid and a furry scarf, wrapping around its body and face when the animal is at rest. Short, rounded ears, also covered in dense fur, minimize heat loss, and a wider-than-average nasal cavity warms incoming air before it reaches the lungs. Short forelimbs and huge, snowshoelike forepaws give snow leopards extra traction in the snow. The longer, powerful hind legs let it leap as far as 50 ft (15 m) while chasing after prey such as wild sheep (argali and bharal) or wild goats such as ibex.

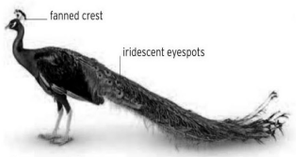
The snow leopard is the **only big cat that cannot roar**

Lone hunters

Aside from the mating season and mothers raising cubs, snow leopards live and hunt alone, traveling far in search of food. Due to the harsh nature of their environment, which stretches across the Himalayas to the Hindu Kush mountains, a snow leopard will patrol an average home range of 100 sq miles (260 sq km), marking the landscape with urine and feces that act as scent signals to other snow leopards. Females have litters of two or three cubs, which stay with their mother until they are 18–22 months old.

△ **ATTRACTING A MATE**
When a female snow leopard is ready to mate, she may climb to a ridge or peak and make long, wailing cries to attract nearby males.

◁ **MISSED OPPORTUNITY**
Although wild sheep and goats are preferred prey, snow leopards eat small mammals such as lemmings and hares–and birds when they can catch them.



Indian peafowl

Pavo cristatus

Peafowl have been collected for ornamental purposes for more than 3,000 years. This, combined with artificial introductions into other parts of the world, has made the peacock's display familiar to millions who have never visited its Asian homeland. Here, peafowl live in open or riverside woodland and close to human habitation, in orchards and cultivated land. Drawing attention with their loud, off-key calls, they may be seen flying into trees at dusk to find a safe roost for the night.

Ground nesters

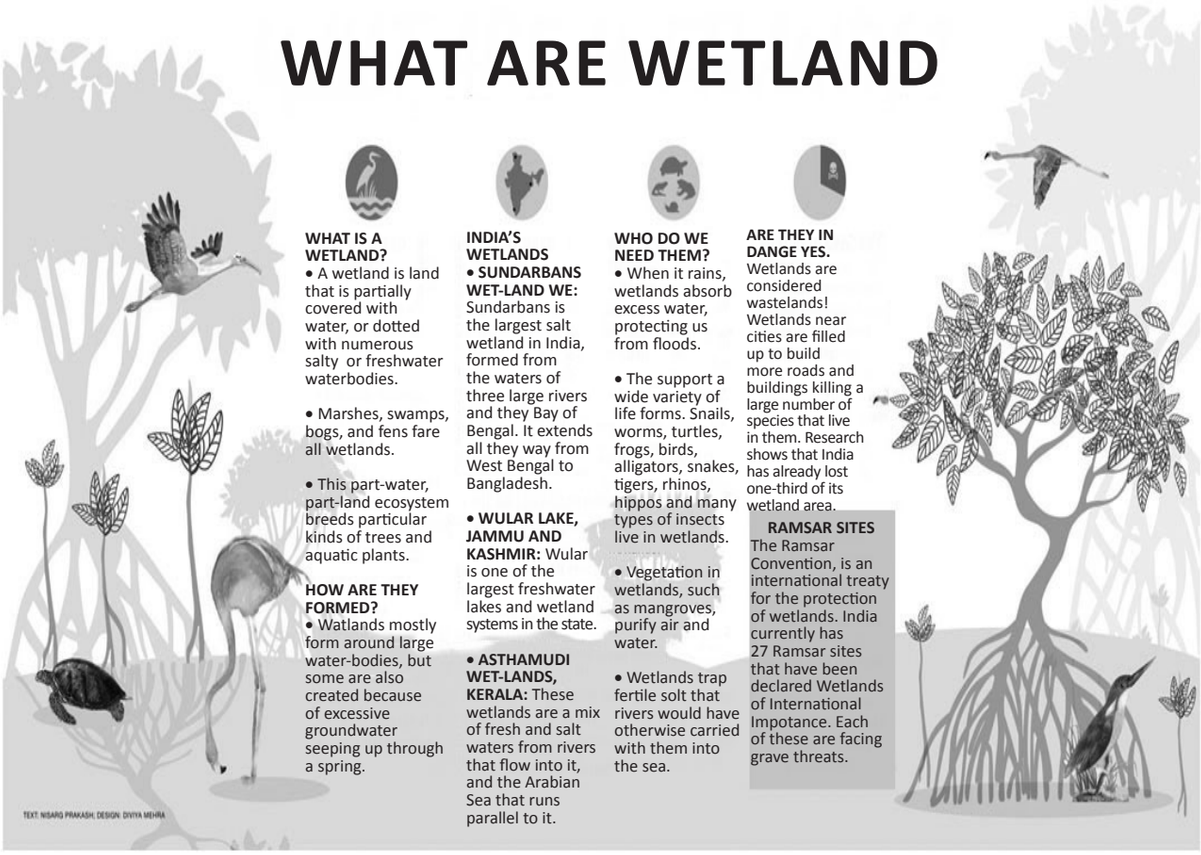
By day, peafowl forage on the ground. Females visit several displaying males at a lek before choosing the one with most eyespots on its tail. Males play no part in nesting or caring for the young. The nests are made on the ground in dense vegetation. Up to six eggs hatch after four weeks, and the chicks quickly learn to find food for themselves.

Peacock blue is one of the **most intense blues** in the world

- 6–8 ft (1.8–2.4 m)
- 9–13 lb (4–6 kg)
- Common
- Seeds, fruit, plants, insects

▷ **IRIDESCENT TRAIN**
The peacock's "tail" is actually a train of elongated feathers supported by a short, stiff tail beneath.

WHAT ARE WETLAND



WHAT IS A WETLAND?

- A wetland is land that is partially covered with water, or dotted with numerous salty or freshwater waterbodies.
- Marshes, swamps, bogs, and fens fare all wetlands.
- This part-water, part-land ecosystem breeds particular kinds of trees and aquatic plants.

HOW ARE THEY FORMED?

- Watlands mostly form around large water-bodies, but some are also created because of excessive groundwater seeping up through a spring.

INDIA'S WETLANDS

- **SUNDARBANS WET-LAND WE:** Sundarbans is the largest salt wetland in India, formed from the waters of three large rivers and they Bay of Bengal. It extends all they way from West Bengal to Bangladesh.
- **WULAR LAKE, JAMMU AND KASHMIR:** Wular is one of the largest freshwater lakes and wetland systems in the state.
- **ASTHAMUDI WET-LANDS, KERALA:** These wetlands are a mix of fresh and salt waters from rivers that flow into it, and the Arabian Sea that runs parallel to it.

WHO DO WE NEED THEM?

- When it rains, wetlands absorb excess water, protecting us from floods.
- The support a wide variety of life forms. Snails, worms, turtles, frogs, birds, alligators, snakes, tigers, rhinos, hippos and many types of insects live in wetlands.
- Vegetation in wetlands, such as mangroves, purify air and water.
- Wetlands trap fertile solt that rivers would have otherwise carried with them into the sea.

ARE THEY IN DANGE YES.

Wetlands are considered wastelands! Wetlands near cities are filled up to build more roads and buildings killing a large number of species that live in them. Research shows that India has already lost one-third of its wetland area.

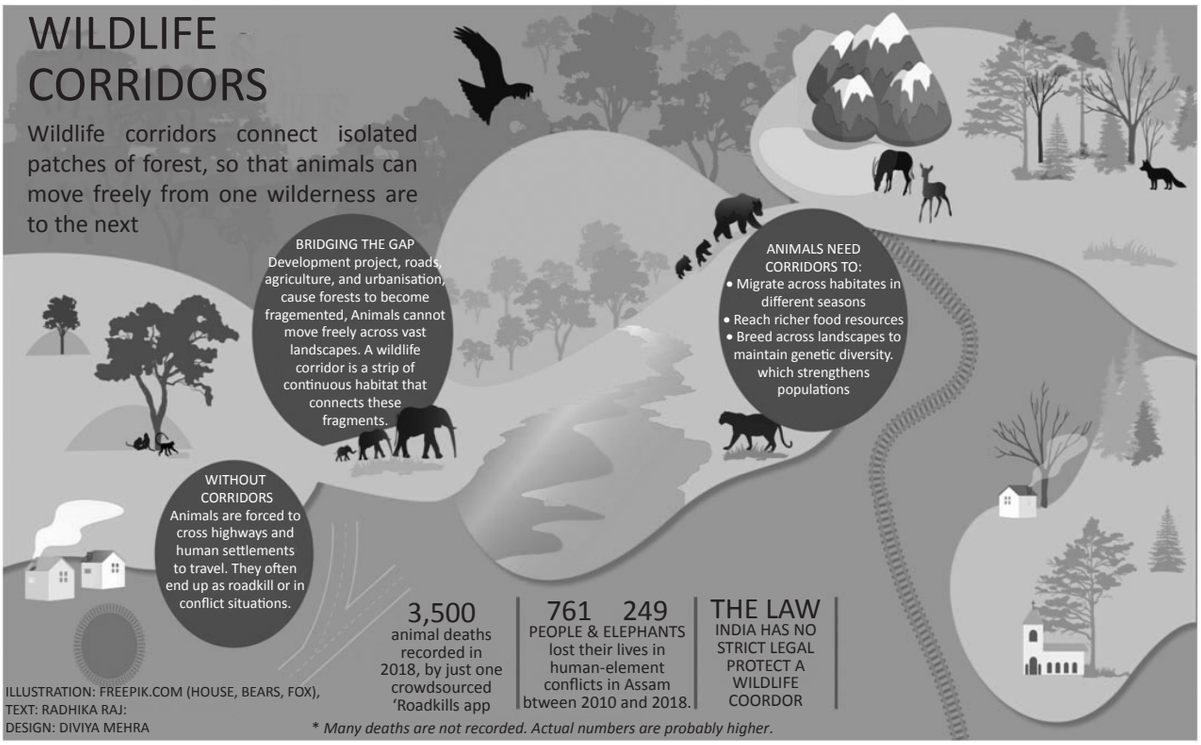
RAMSAR SITES

The Ramsar Convention, is an international treaty for the protection of wetlands. India currently has 27 Ramsar sites that have been declared Wetlands of International Impotance. Each of these are facing grave threats.

TEXT: NISARG PRAKASH; DESIGN: DIVYA MEHRA

WILDLIFE CORRIDORS

Wildlife corridors connect isolated patches of forest, so that animals can move freely from one wilderness are to the next



BRIDGING THE GAP

Development project, roads, agriculture, and urbanisation, cause forests to become fragemented, Animals cannot move freely across vast landscapes. A wildlife corridor is a strip of continuous habitat that connects these fragments.

ANIMALS NEED CORRIDORS TO:

- Migrate across habitates in different seasons
- Reach richer food resources
- Breed across landscapes to maintain genetic diversity. which strengthens populations

WITHOUT CORRIDORS

Animals are forced to cross highways and human settlements to travel. They often end up as roadkill or in conflict situations.

3,500 animal deaths recorded in 2018, by just one crowdsourced 'Roadkills app

761 249 PEOPLE & ELEPHANTS lost their lives in human-element conflicts in Assam btween 2010 and 2018.

THE LAW INDIA HAS NO STRICT LEGAL PROTECT A WILDLIFE COORDOR

ILLUSTRATION: FREEPIK.COM (HOUSE, BEARS, FOX),
TEXT: RADHIKA RAJ:
DESIGN: DIVIYA MEHRA

** Many deaths are not recorded. Actual numbers are probably higher.*

HABITAT FRAGMENTATION

Habitat fragmentation is highest in the tropics. In the rainforests of the Amazon and Southeast Asia.

Severely fragmented: forests of Western Ghats and Central India.


ROADS


POWERLINES


DAMS


AGRICULTURE

DEVELOPMENT PROJECTS BREAK LARGE FORESTS AND NATURAL HABITATS INTO ISOLATED FRAGMENTS OF LAND

WHY IS IT A PROBLEM?

Broken habitats reduce the diversity of plant and animal life in the area. Confined to smaller patches they face a risk of extinction over time.

WHO IS MOST AFFECTED?

- Animals that need large elephants, tigers, mountain lions, jaguars
- Tree-dwelling animals-hoolock gibbons, orangutans
- Animals like migratory wildebeest in Africa

THE EDGE EFFECT

Smaller forest fragments means that more species are forced to live on the edges of forests.
This causes a decline in numbers as many species are sensitive to changes in light, moisture, and temperature.

90% of tropical reptiles and amphibians are affected by the 'edge effect'

HOW CAN YOU HELP?

- Only support those development projects that do not damage the environment.
- Promote creation of animal corridor and buffer zones

Coral Reefs (Phylum Cnidaria) of Indias

Corals are animals related to jellyfish and anemones and possess sting cells (nematocysts)

Coral feefs are biodiverse habitats built by live coral, usually occurring in shallow tropical seas

Types
Coral can be hard, soft, leathery or thorn-like

REEF BUILDER
Reef-building hard coral (Hermatypic corals) produce calcium carbonate skeletons and create massive structures that support entire ecosystems

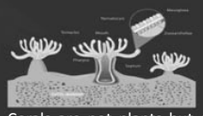
REEF GROWTH RATES

- Branching coral like Acropora grow as fast as 1cm/year.
- Boulder corals like Porites grow less than 1cm/year.

India's total coral reef area = 2,379 square kilometres (<1% of world's coral reef area)

HOW CAN YOU HELP?

- Fringing & barrier reefs-Andaman & Nicobar
- Fringing reefs-Gulf of Mannar & Palk Bay
- Patch reefs-certain areas along East & West Coast
- Platfrorm reefs- Gulf of Kutch
- Atolls & Banks_ Lakshadweep



Corals are not plants but depend on photosynthesis to live. All reef-building corals have algae called zooxanthellae living within their animal tissue. These algae harness the sun's energy, convert it into food via photosynthesis and provide nutrition to the coral in clear, nutrient poor waters.

CORAL REEFS FLOURISH UNDER VERY SPECIFIC CONDITIONS

- Clear water
- Ample sunlight
- Warm temperatures (20-29 degress C)

0.2% of the ocean floor is covered by coral reefs globally yet

25% of all marine life is supportd by corals

REEFS OFFER
Beauty, fisheries resources, coastal protection, carbon sinks, tourism opportunities, and even medicines

THREATS TO INDIA'S CORAL REEFS • Increasing water temperature and sea-level rise induced by climate change • Ocean acidification • Overfishing and destructive fishing • practice • Coastal development • Pollution, solid waste mismanagement, sediment and sewage runoff • Disease and invasive species