



THE LOST SPECIES

e-book of Extinct Animals & Plants



This e-book portrays remarkable animals and plants that have been lost forever during the geological past. Each entry provides a concise discussion of the history of the animal and plant-how and where it lived, and how it became extinct.

The book has been brought out by Pushpa Gujral Science City at the occasion of WILDLIFE WEEK 2020.

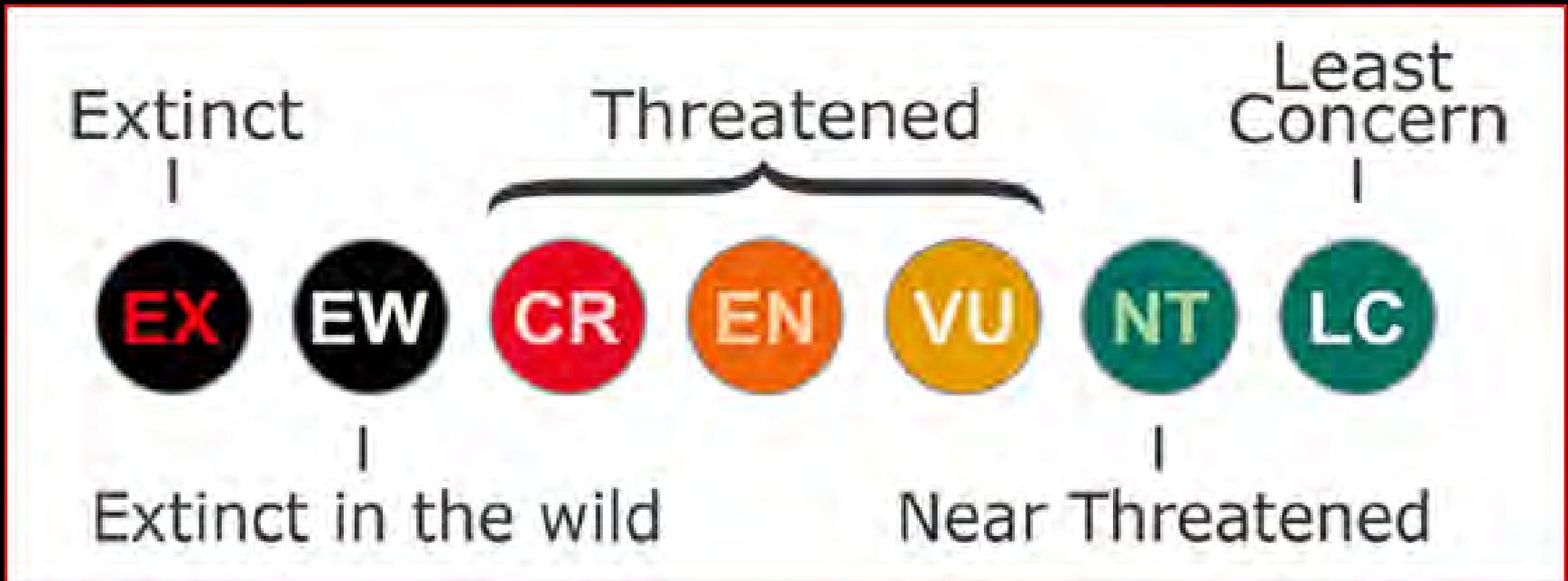
Disclaimer:

The contents of this e-book have been obtained from various sources as quoted in the text for free non-formal public information/education and PGSC has no intention of any violation of copyrights of any agency. The responsibility of correctness of data lies with the respective sources.

CONTENTS

• International Union for Conservation of Nature (IUCN): Species classification1
• Extinct Species & Threatened Species2
• Why every species is important?3
• Does it matter if a few species go extinct?4
• Extinct Animals5
• Vanishing Wildlife in India17
• Extinct Plants23
• References34

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN) : SPECIES CLASSIFICATION



Source: www.iucn.org

EXTINCT SPECIES

An animal is considered extinct when the last remaining member of its species dies out and there is not a single individual left on Earth. Causes of extinction might include an epidemic, extreme climate changes, loss of food sources, destruction of their natural habitats and extensive hunting.

Throughout the planet's history, billions of species have been lost, whether due to natural causes or human activities. Though dinosaurs are the first to come to our mind when thinking about extinct animals, there have been countless others, equally fascinating, species that have been pushed to extinction over time.

THREATENED SPECIES

These are the species which are vulnerable to extinction in the near future. IUCN treats threatened species not as a single category, but as a group of three categories: vulnerable, endangered, and critically endangered, depending on the degree to which they are threatened.



Does it matter if a few species go extinct?

Yes. Biodiversity - the variety of species and their habitats - plays an important role in ecosystem function and in the many services ecosystems provide, like, food, fibre, timber, clean water and air, nutrient recycling, climate regulation, soil formation, pollination, seed dispersal, pest and pollution control, etc. The plants and animals in an ecosystem are dependent upon each other. This is called the ecological web. When one species goes extinct it can have a ripple effect which can adversely impact many more species (which are dependent upon the extinct species), and so on, thus affecting the entire ecosystem. This can have widespread implications for both human and environmental security and the economy. Though extinction is a natural process, however, the rapid loss of species being observed today is estimated by experts to be between 1000 and 10,000 times higher than the expected natural extinction rate. The International Union for Conservation of Nature and Natural Resources (IUCN) is studying extinct and threatened species and has prepared a Red List of Threatened Species. India, Indonesia, Brazil and China are among the countries with the most threatened mammals and birds.

(Source: www.iucn.org)

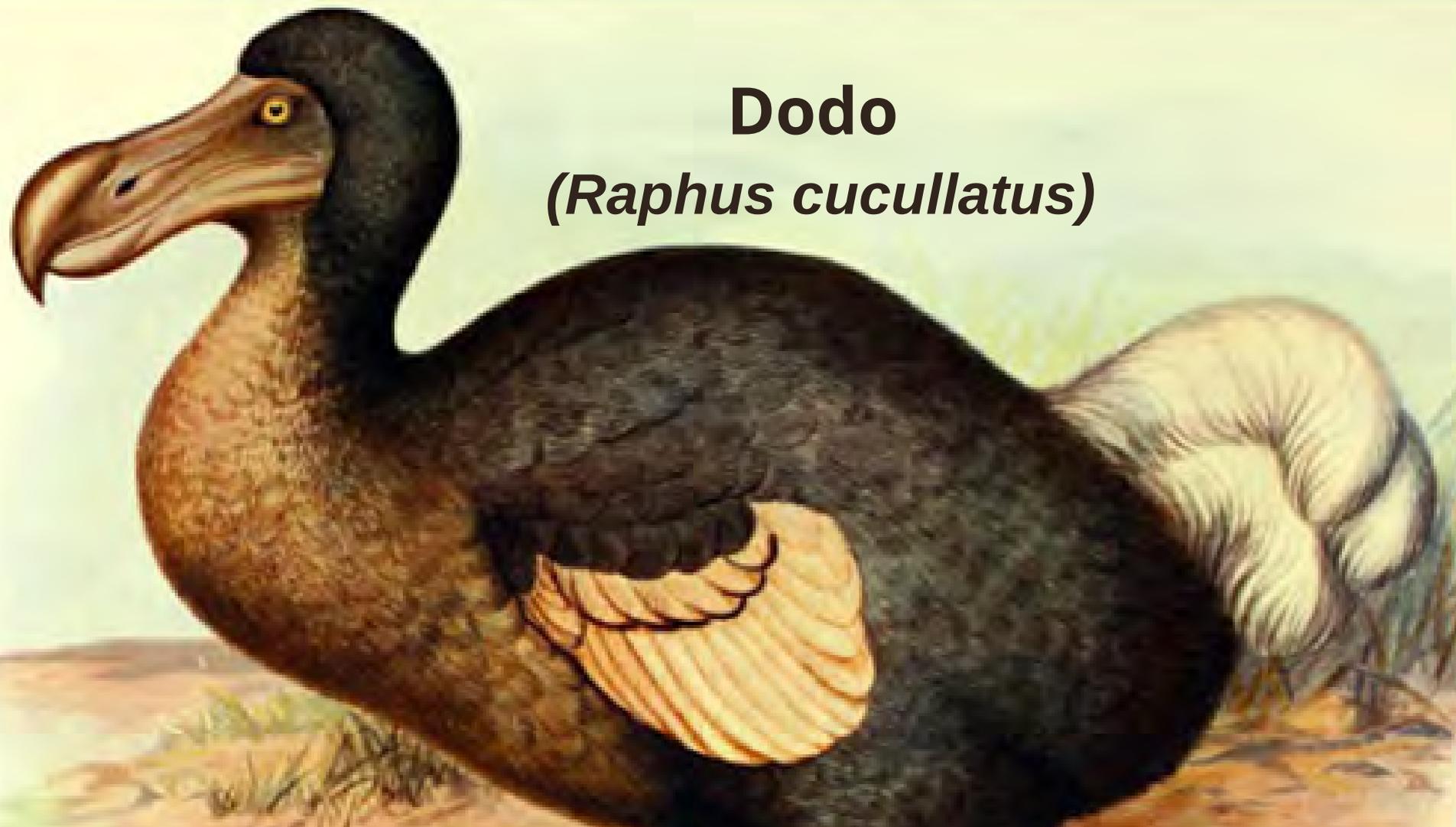
EXTINCT ANIMALS

A detailed illustration of a woolly mammoth, showing its thick, dark brown fur and two large, curved, yellowish-brown tusks. The mammoth is facing left, and its head is slightly turned towards the viewer. The background is a soft, light blue sky.

Woolly Mammoth

(*Mammuthus primigenius*)

Thanks to a number of well-preserved, frozen carcasses in Siberia, the woolly mammoth (*Mammuthus primigenius*) was the best-known of all mammoth species. These massive animals died out around 7,500 years ago, after the end of the last Ice Age. While climate change certainly played a major role in their extinction, recent studies suggest that humans might have also been a driving force in their demise. Extensive hunting and the stresses of a warming climate are a lethal combination, and it seems that even the mighty mammoth could not withstand the human appetite in a changing world.

A detailed illustration of a Dodo bird (Raphus cucullatus) standing on a rocky, sparsely vegetated ground. The bird has a large, dark, hooked beak, a yellow eye, and a black cap-like structure on its head. Its body is covered in dark, mottled feathers, with lighter, brownish-orange feathers on its wings. The tail is large and rounded, with a mix of dark and light feathers. The background is a soft, hazy landscape with green grass and a light sky.

Dodo

(Raphus cucullatus)

Dodo (*Raphus cucullatus*) a flightless, ground-nesting birds was once bountiful on the island of Mauritius in the Indian Ocean. Larger than turkeys, dodos weighed about 23 kg (about 50 pounds) and had blue-gray plumage and a large head. With no natural predators, the birds were unfazed by the Portuguese sailors that discovered them around 1507. These and subsequent sailors quickly decimated the dodo population as an easy source of fresh meat for their voyages. The later introduction of monkeys, pigs, and rats to the island proved catastrophic to the languishing birds as the mammals feasted on their vulnerable eggs. The last dodo was killed in 1681.

Pyrenean Ibex

(*Capra pyrenaica pyrenaica*)



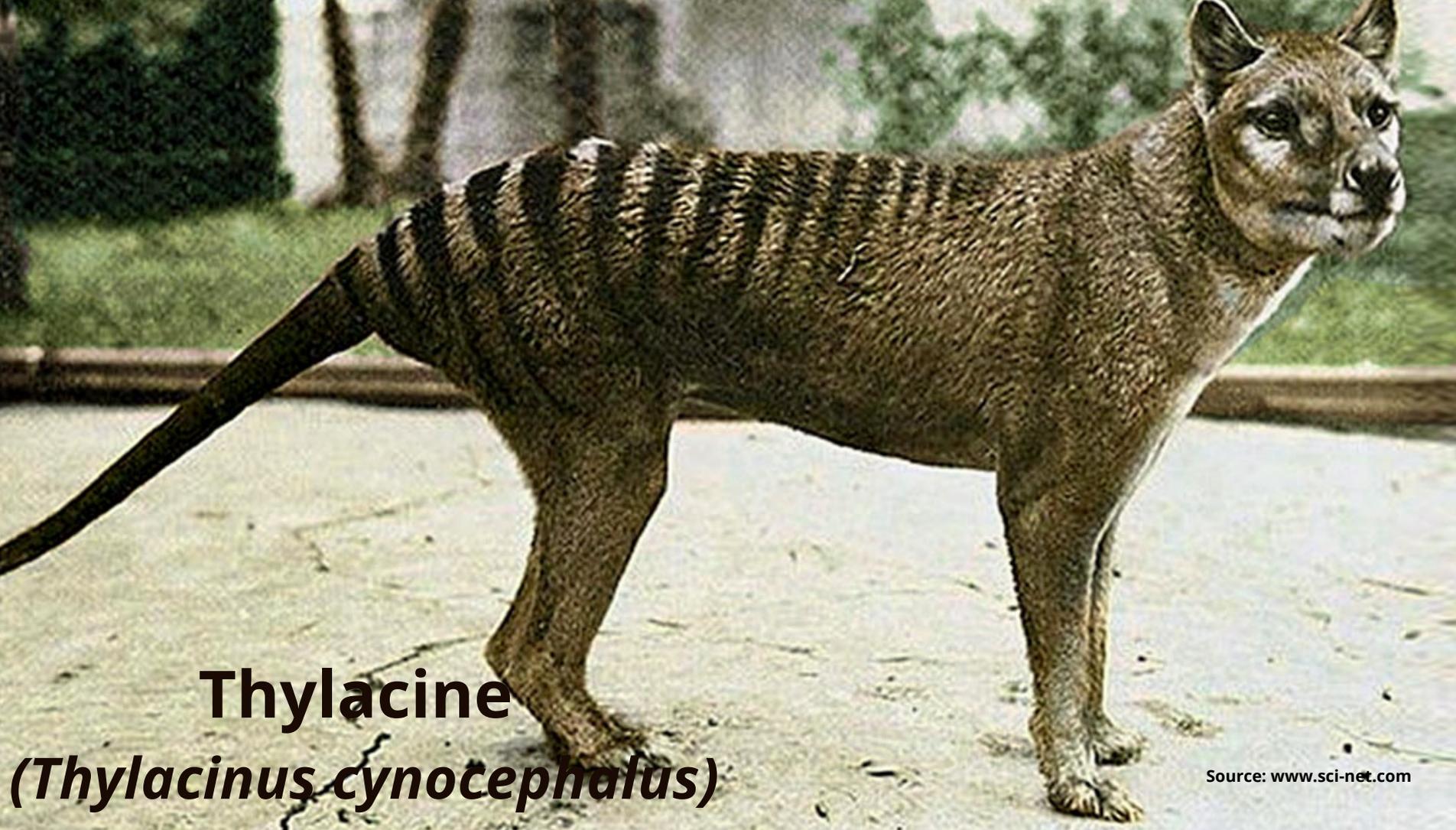
The Pyrenean Ibex (*Capra pyrenaica pyrenaica*) officially went extinct in 2000, before being 'resurrected' nearly a decade later in 2009. Scientists used DNA taken from preserved epidermal samples to create a clone of a female Pyrenean Ibex, which was able to make it through gestation and even birth before dying shortly after of lung deformities. Extensive hunting during the 19th century is one of the main cause of its extinction.

A close-up photograph of a Golden Toad (Incilius periglenes) resting on a large green leaf. The toad is a vibrant, bright orange color with a bumpy, granular skin texture. Its large, dark eye is prominent, and its body is positioned diagonally across the frame. The background is a soft-focus green, suggesting a natural habitat.

Golden Toad

(Incilius periglenes)

The golden toad (*Incilius periglenes*) is not the only species to disappear in the past 40 years, but it might be the brightest. The small toad was last seen in 1989 in a Costa Rican rainforest before being declared extinct in 1994. It is believed that Chytridiomycosis, a fatal skin disease, decimated this toad population that was already vulnerable. Pollution, global warming, and chytrid skin infections led to the extinction of this species.



Source: www.sci-net.com

Thylacine (*Thylacinus cynocephalus*)

Thylacine (*Thylacinus cynocephalus*) is one of the largest known carnivorous marsupials now believed to be extinct. The last known live animal was captured in 1933 in Tasmania. It was the only member of the family Thylacinidae to survive into modern times. It is commonly known as the Tasmanian tiger because of its striped lower back, or the Tasmanian wolf because of its canid-like characteristics. It was native to Tasmania, New Guinea, and the Australian mainland. It is believed that Dingo populations threatened the Thylacine into extinction in addition to over-hunting from humans.

Northern White Rhinoceros

(Ceratotherium simum)



The last two living northern white rhino's (*Ceratotherium simum*) in existence happen to be female as the last male died in March of 2018. Sudan, the 45-year old male was under armed guard at Kenya's Ol Pejeta Conservancy when he passed away from old age and an infection. The two females are also unable to give birth, making the likelihood of introducing a new generation of the species highly unlikely. Scientists are working on using harvested sex cells and IVF to bring forth a lab-created northern white rhino. Poaching has decimated this population and loss of habitat also helped drive the rhino to the brink of extinction.



Quagga (*Equus quagga quagga*)

The Quagga (*Equus quagga quagga*) was native to South Africa and went extinct in the late 19th century. For a long time, the quagga was thought to be its own species before it was discovered that it was closely related to the Plain Zebra and was, in fact, a subspecies of the Zebra. Quaggas were interesting in appearance quite literally looking the mashup between two animals—a zebra in the front thanks to the famous zebra stripes adorning this part of its body, and a horse in the rear due to the lack of stripes in this area. Scientists are trying to resurrect the quagga and have seen some success via reverse engineering by selectively breeding zebras (who carry quagga genes). Humans hunted the quagga to extinction.



Passenger Pigeon (*Ectopistes migratorius*)

Source: www.flickr.com

The Passenger pigeon or wild pigeon (*Ectopistes migratorius*) is an extinct species of pigeon that was endemic to North America. Its common name is derived from the French word *passenger*, meaning "passing by", due to the migratory habits of the species. Estimates say that the passenger pigeon population numbered in the millions—and possibly billions—when the first Europeans began settling in America. Humans hunted the pigeon and consumed it to the point of extinction with the last known bird dying in captivity in the Cincinnati Zoo in 1914.



Zanzibar Leopard (*Panthera pardus pardus*)

Source: www.carnivora.net

One of several subspecies of leopard, the Zanzibar leopard (*Panthera pardus pardus*) made its home on Unguja Island in the Zanzibar archipelago of Tanzania. It's still unclear whether this large cat is technically extinct—there are occasional unconfirmed sightings. The leopard went extinct with the belief that these animals were kept by witches; for this reason, locals aggressively hunted them. In 2018, Animal Planet released footage of what it identified as a Zanzibar Leopard, but those claims have yet to be confirmed.

Po'ouli or Black-faced Honeycreeper (*Melamprosops phaeosoma*)



Source: www.wikipedia.org

A native of Maui, Hawaii, the Po'ouli, or Black-faced Honeycreeper (*Melamprosops phaeosoma*), was only discovered in the 1970s. The birds inhabited the southwestern slope of Haleakala Volcano, Hawaii. But the population declined rapidly, and by 1997 there were only three known Po'ouli left. Efforts to mate the remaining birds failed and the species was formally declared extinct seven years later. Habitat loss, along with disease, predators and a decline in its food source—native tree snails—are all seen as reasons for the bird's demise.

West African Black Rhino

(Diceros bicornis longipes)



Source: www.extinctanimals.org

The majestic West African black rhino (*Diceros bicornis longipes*) was declared extinct in 2006, after conservationists failed to find any in their last remaining habitat in Cameroon. The West African black rhino was one of four subspecies of black rhinoceros. Cause of Extinction: poachers hunted the rhino for its horn, which is believed by some in Yemen and China to possess aphrodisiacal powers, leading to their extinction.

Steller's Sea Cow (*Hydrodamalis gigas*)



Source: www.bbc.com

Unlike its living relatives that inhabit warm waters, the Steller's sea cow (*Hydrodamalis gigas*) grazed in kelp forests around remote islands in the frigid northern Pacific Ocean. This remarkable creature was first identified to Europeans in 1741 by naturalist Georg Steller. Steller served on the Bering Expedition to explore the North Pacific. The expedition shipwrecked in the Commander Islands, and upon discovering the sea cows, the crew began killing them for food. Being enormous, they were often unable to hide underwater, becoming easy targets for hunters for its meat, fat, and hide.

Vanishing Wildlife in India

22 species have gone extinct in India

(Source: The Hindu, July 28, 2019)

- India is home to 6.49% of all the fauna species and 11.5% of all flora species in world.
- According to the data tabled by Ministry of Environment, Forests and Climate Change (MoEFCC) in Lok Sabha (2019), 4 species of fauna and 18 species of flora have gone extinct in India in the past few centuries. The faunal species gone extinct are:
 - Asiatic Cheetah (*Acionyx jubatus*)
 - Sumatran rhinoceros (*Dicerorhinus sumatrensis*)
 - Pink-headed duck (*Rhodonessa caryophyllaceai*) and
 - Himalayan quail (*Ophrysia supercilios*)

It should be noted that these four animals can be found in other parts of the world.

- Factors that led to these extinctions include competition, predation, natural selection, and human induced factors like hunting, habitat degradation, etc.

Asiatic Cheetah (*Acionyx jubatus*)



Source: www.arasbaran.com

The cheetah which was hunted into extinction from India was the Asiatic Cheetah (*Acionyx jubatus*). Iran is the only place which has Asiatic cheetahs today. The Asiatic Cheetah, which once roamed India's vast forests and grasslands, was declared extinct here in 1952, after decades of human intervention, hunting and habitat degradation.

A Sumatran rhinoceros is shown in profile, facing right, amidst dense green foliage. The rhino's skin is a reddish-brown color and appears thick and wrinkled. It has a small, dark horn on its forehead and a larger, more prominent horn on its snout. The background is filled with various green leaves and branches, creating a natural, forest-like setting.

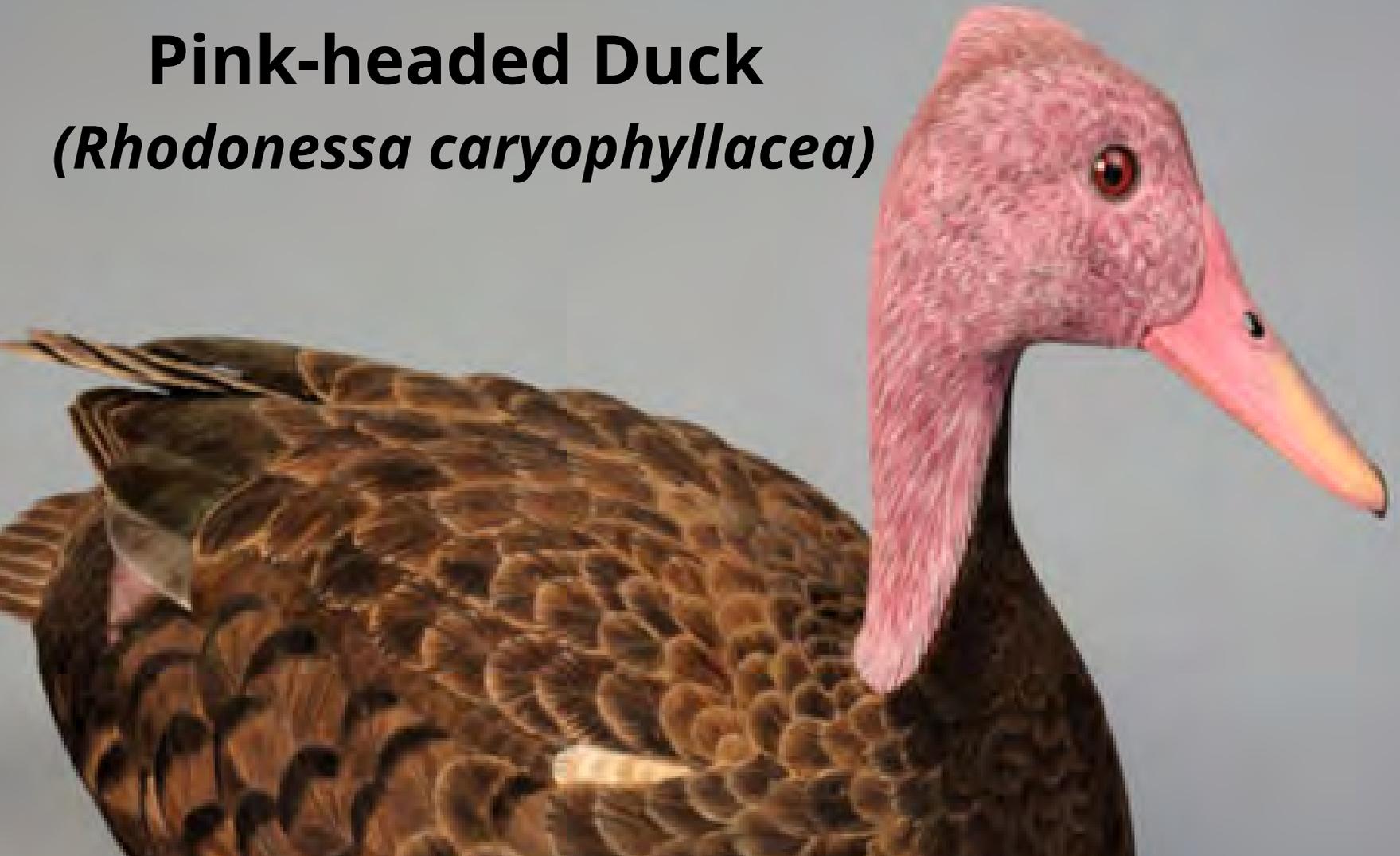
Sumatran rhinoceros (*Dicerorhinus sumatrensis*)

Source: www.wwf.org

The Sumatran Rhinoceros (*Dicerorhinus sumatrensis*) is the smallest and most endangered of the five rhinoceros species. It is now thought to be regionally extinct in India, though it once occurred in the foothills of the Himalayas and north-east India. The last Sumatran rhino in Malaysia passed away in November 2019, making the extremely rare species locally extinct.

Pink-headed Duck

(Rhodonessa caryophyllacea)



The pink-headed duck (*Rhodonessa caryophyllacea*) is a large diving duck that was once found in parts of the Gangetic plains of India, Bangladesh and in the riverine swamps of Myanmar but feared extinct since the 1950s. Males have a deep pink head and neck from which the bird derives its name. Wetland degradation and loss of habitat, along with hunting are the main causes of its extinction.



Himalayan Quail (*Ophrysia supercilios*)

The Himalayan quail or mountain quail (*Ophrysia supercilios*), is a medium-sized quail belonging to the pheasant family. It was last reported in 1876 and is feared extinct. This species was known from only 2 locations in the western Himalayas in Uttarakhand and north-west India. The last verifiable record was in 1876 near the hill station of Mussoorie. Loss of habitat along with hunting are the main causes of its extinction.

EXTINCT PLANTS



Amaranthus brownii

Photo by D.R. Herbst, Courtesy of Smithsonian Institution

This modestly-sized plant of the Amaranthaceae family used to grow on the small uninhabited Hawaiian island of Nihoa, where it was last seen in 1983. Living on a tiny remote island in the vastness of the Pacific Ocean didn't protect it from the invasiveness of our species: humans introduced plants that ultimately led to its extinction, which the IUCN declared in 2018.

Source: www.lifegate.com

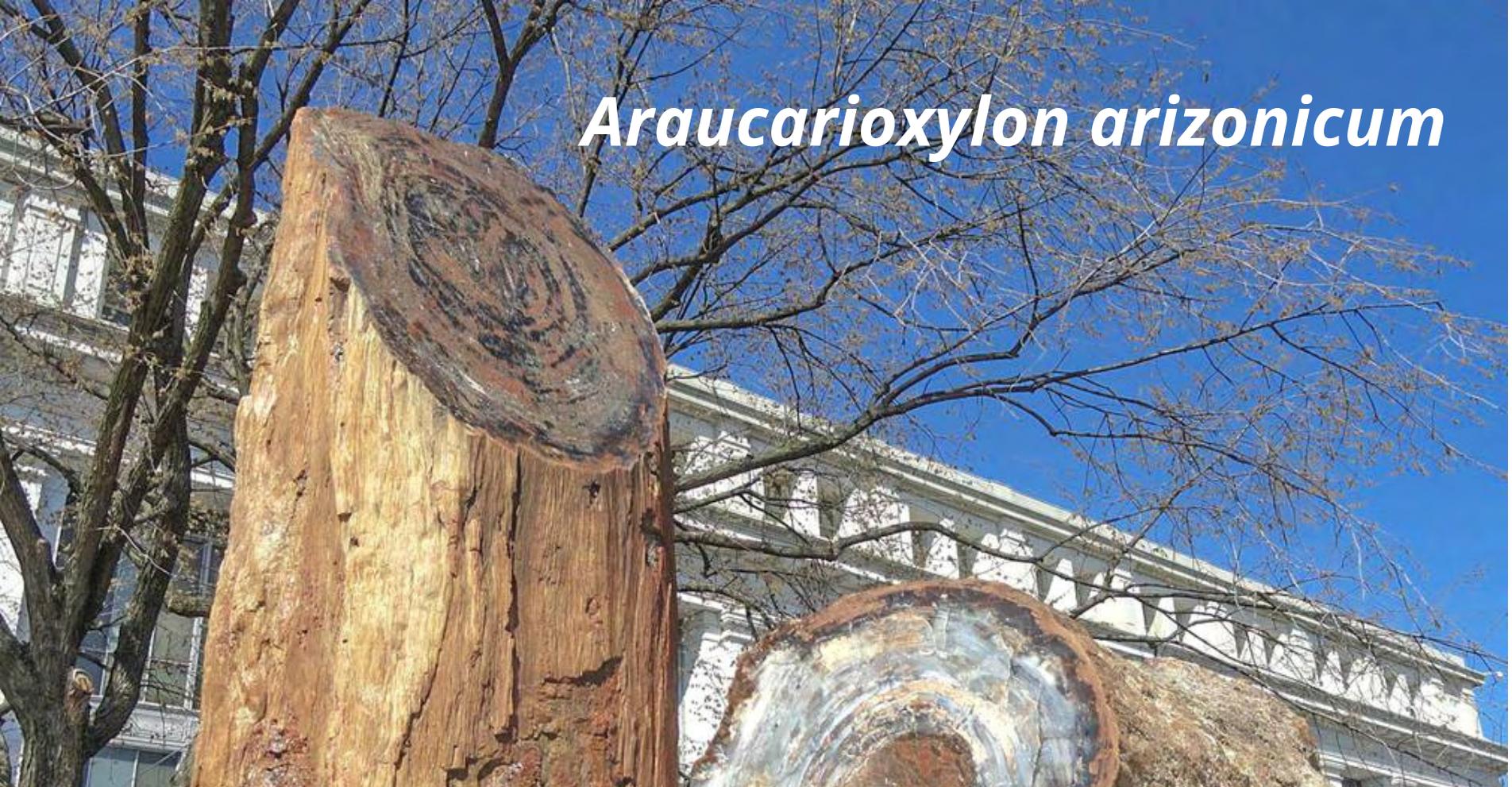
Melicope macropus (*Kaholuamanu melicope*)



The disappearance of this citrus plant, which used to grow in Kalalau Valley on the Hawaiian island of Kaua'i, was caused by the introduction of non-native herbivores such as goats, pigs and deer, which devastated the native vegetation. The species hasn't been observed in the wild since 1995 and was declared extinct by the IUCN in 2016.

Source: www.lifegate.com

Araucarioxylon arizonicum



Araucarioxylon arizonicum is a species of conifer that went extinct about 200 million years ago. It's the state fossil for the U.S. state of Arizona. Petrified versions of the tree can be found throughout the badlands of Northern Arizona in a 378 square kilometer park known as Petrified Forest National Park. The tree was truly remarkable. It had an enormous trunk and is sometimes called "rainbow wood" because of the wide variety of colors that fossilized parts of the tree can provide. Red and yellow colors are caused by iron oxide. Some trees may look purple due to fine spherules of hematite found in the quartz matrix. The tree lived during the Triassic period when Arizona was a dense, tropical area, unlike the desert that it is today. They became extinct between 200 and 250 million years ago. They could grow as tall as 60 meters.

Source: www.tentree.com

Adams mistletoe (*Trilepidea adamsii*)

This shrub inhabited forest margins on New Zealand's North Island. It was last observed in 1954 and may have disappeared due to a combination of factors, namely habitat degradation, the decline of pollinating insects and advent of invasive species such as possums. The IUCN declared the species extinct in 2014.

Source: www.lifegate.com



Saint Helena Olive (*Nesiota elliptica*)



The Saint Helena Olive (*Nesiota elliptica*) stands apart from the other trees on this list for one glaring reason - it went extinct not hundreds of millions of years ago, but in 1994. It was endemic to the island of Saint Helena in the South Atlantic Ocean. The Saint Helena Olive (*Nesiota elliptica*) is not actually a member of the olive family. Rather, it is more closely related to the jujube tree. The last living specimen cultivated in captivity died in December 2003, despite aggressive conservation efforts. The tree became increasingly rare in the 19th century when only 12-15 specimens were recorded on the island. The final wild specimen died in 1994, while the last in cultivation died in 2003. Human encroachment and activity were the cause of the tree's extinction. People, exploiting the natural resources of the island for more than four centuries, had deforested large swaths of the island in order to graze animals like goats. The tree became confined to too small an area, and because of its limited population, was unable to remain genetically viable.

Source: www.tentree.com

Wood's Cycad (*Encephalartos woodii*)

Wood's Cycad (*Encephalartos woodii*) last known wild specimen died in 1916. It is one of the rarest plants on Earth now, cultivated only in captivity. Wood's Cycad is endemic to the oNgoye Forest of KwaZulu-Natal, South Africa. Only a cluster of four specimen were found (1895), and that number fell to a single 3 meter high tree in 1916. It was that year the tree was removed and sent to the Government Botanist in Pretoria, where it later died in 1964. All remaining specimen of the tree are clones of this final trunk. Unless a female specimen is found, it will never naturally reproduce again. It has, however, successfully been hybridized with *Encephalartos natalensis*. The trees can be found in various botanical institutions around the world, but not in the wild. It is not currently known why Wood's Cycad was driven to extinction in the wild. Currently, the only trees are cloned males. Without a viable female specimen, the species will not be able to live on in the wild.

Source: www.tentree.com



Franklinia



Franklinia also became extinct during the era of man, though much less recently. The last known sighting of *Franklinia* in its native range was in 1803. Native to the Altamaha River Valley in Georgia, USA, *Franklinia* is a genus belonging to the tea plant family. It is the only species in this genus. It can be found at over 1000 sites around the world today. Doesn't exactly sound "extinct", right? However, all of these ornamental trees known to exist today were cultivated from seeds collected in the 1770s by botanists John and William Bartram in Philadelphia. The tree looks more like a large shrub than a tree. It can grow up to 7 and a half meters and is prized for its fragrant white blossoms. It grows in a pyramid shape and requires more than a year to develop a single pod of seeds. Some anecdotal evidence suggests that when multiple *Franklinia* are planted near to one another, their seeds develop faster. The cause of its extinction in the wild is not known, but may have been the result of fire, flood, over-collection by plant collectors, and fungal disease introduced with the cultivation of cotton plants.

Cyanea superba



Cyanea superba is a rare plant that, much like the cycad above, is extinct in the wild but is still cultivated in captivity. The date of its extinction is complicated, as different subspecies of the plant became extinct at varying dates between 1932 and 2002. Originally, endemic to the island of Oahu, the two subspecies of *Cyanea superba* were found in the lowland forest habitat of the Waianae and Ko'olau Mountains. Ssp. *regina* has not been seen since 1932, whereas ssp. *superba* was counted at sixty plants in the 1970s. By 2002, all had died. Today, *Cyanea superba* is being propagated in facilities across Hawaii, and the United States army has collected over 50,000 seeds and put them in storage. The cause of extinction is a result of several factors. The plants were forced to compete with invasive plant species and fell victim to habitat destruction as well as consumption by feral pigs, rats, and non-native slugs. Arson is a chief threat to conservation efforts.

Source: www.tentree.com



Kokia cookei

When *Kokia cookei* was first discovered in the 1860s, only three trees could be located. It's a small, deciduous tree known to have existed in the lowlands of western Moloka'i, one of the islands in the Hawaiian archipelago. It was probably widespread at one point, but by the time it was found by western researchers, it was all but gone. At one point in history, the lowlands were probably covered in a dense forest, but Polynesian settlers, beginning in the year 1000 CE, likely deforested large portions of it to make room for agriculture. The *Kokia cookei* seems somewhat resilient to the changes in its native environment, making it perhaps possible that one day it will grow wild where it once resided. It was presumed extinct in the 1950s when the last seedling died, until 1970 when a single specimen was found. This specimen died eight years later in a fire, though not before a branch was taken and grafted onto another related, and also endangered, tree. Today, there exists 23 grafted plants, though no full trees.

Sephora toromiro



Easter Island, where *Sephora toromiro* once grew, is a case study in what will happen to humanity if we don't care for our forests and our natural environment. By the 1800s, nearly all of the island's forests had been eliminated by humans, and the subsequent social collapse was stunning. Humans obviously weren't the only ones who suffered. *Sephora toromiro* was once commonplace and widespread. It is currently extinct in the wild. But maybe not for much longer. Today, efforts are being made to reintroduce *Sephora toromiro* to Easter Island. It is said that all present day toromiro trees, propagated by the scientific project groups working on reintroduction, are derived from the collection of seeds in the 1960s from this single individual tree before it died.

Source: www.tentree.com

References

www.arasbaran.com
www.bbc.com
www.britannica.com
www.carnivora.net
www.csmonitor.com
www.extinctanimals.org
www.flickr.com
www.iucn.org
www.news.cgtn.com
www.petermaas.nel
www.planetofbirds.com
www.researchgate.net
www.sci-net.com
www.tentree.com
www.suewickison.com
www.lifegate.com
www.thehindu.com
www.wikipedia.org
www.wwf.org



Pushpa Gujral Science City
Jalandhar-Kapurthala Road, Punjab
Ph. No.: 01822-501963/64
www.pgsciencecity.org