



WWF

REPORT

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2015



# IMPACT OF CLIMATE CHANGE ON SPECIES

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## **About WWF**

WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature. The Global Climate and Energy Initiative is WWF's global programme addressing climate change through promoting renewable and sustainable energy, scaling up green finance, engaging the private sector and working nationally and internationally on implementing low carbon, climate resilient development.

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# INTRODUCTION

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The conclusion reached in the most recent WWF Living Planet Report (2014) is unequivocal: the Earth is experiencing a significant and very rapid decline in biodiversity.

Monitoring of over 10 000 populations of vertebrates (mammals, birds, fish, reptiles and amphibians) has found that these populations have declined by 52 per cent between 1970 and 2010.

The International Union for Conservation of Nature (IUCN) estimates that 35 per cent of bird species, 52 per cent of amphibians and 71 per cent of reef-building corals will be particularly vulnerable to the effects of climate change.

In its Fifth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) confirmed that climate change resulting from human activities was aggravating the pressure already exerted by humans on ecosystems and wildlife, thereby driving us directly towards a sixth extinction.

In concrete terms, because this is happening so quickly, many plants and animals do not have time to adapt. The situation is made worse by the fact that many of the species that are already threatened live in regions that are profoundly impacted by climatic disturbances and are made more susceptible through their biology (in other words, their ecological, behavioural, physiological and genetic characteristics).

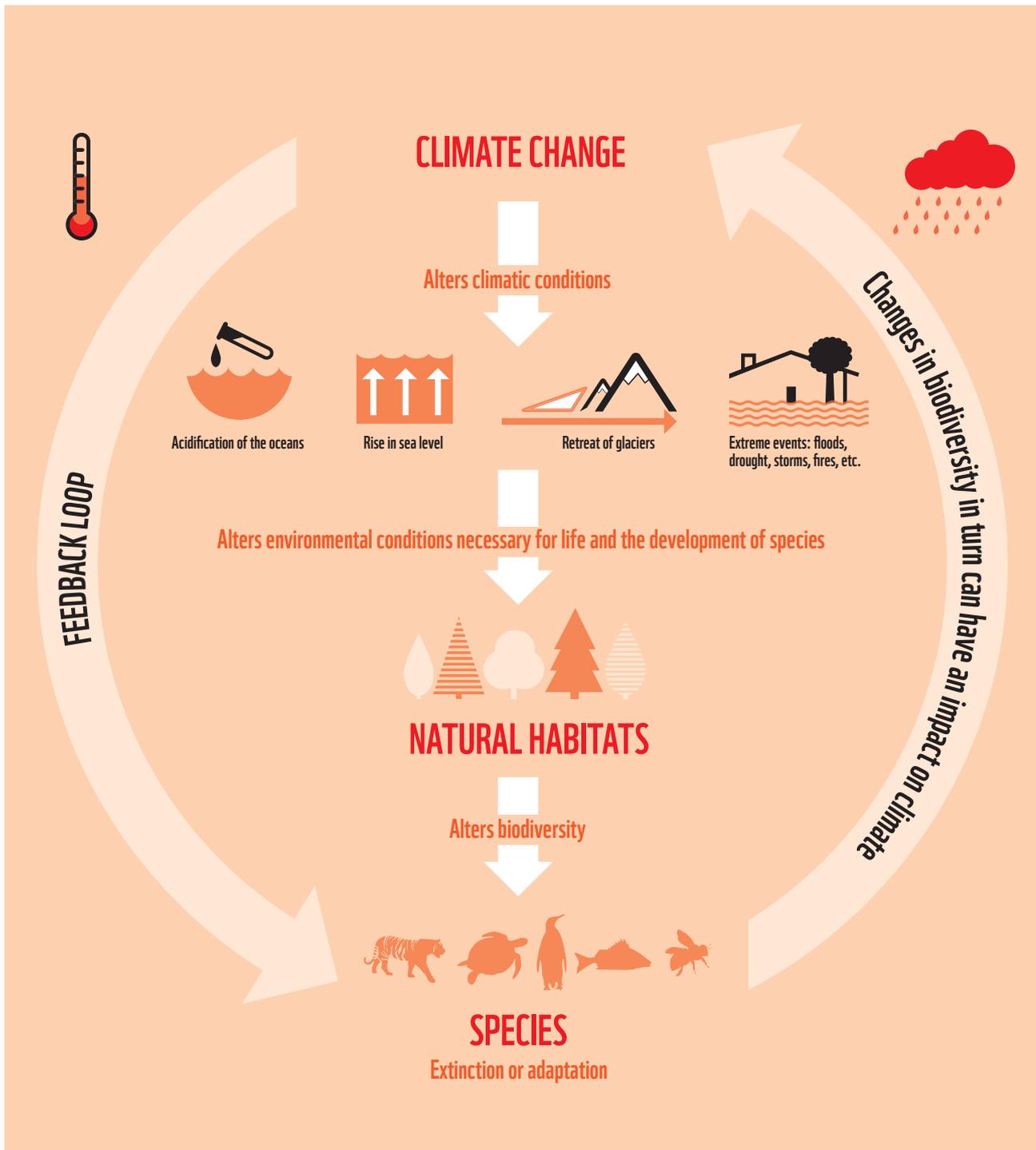
## **Why is this so serious? If in a few years tigers, elephants or rhino become extinct in the wild, why should it matter to us?**

This frequently asked question highlights the lack of understanding of the role played by biodiversity in the way land-based and marine ecosystems function in supporting life as we know it. We need to take into account the fundamental role played, for example, by soil micro-organisms in the carbon, oxygen and nitrogen cycles; by other marine micro-organisms in the absorption of carbon dioxide; and by the fields and forests in the purification of water and the enormous work of pollination done by insects. Behind the disappearance of iconic animals, such as tigers and elephants, lie drastic changes to their environments. The fate of these species is just the visible face of more profound phenomena likely to have a powerful impact on living conditions for humans on Earth.

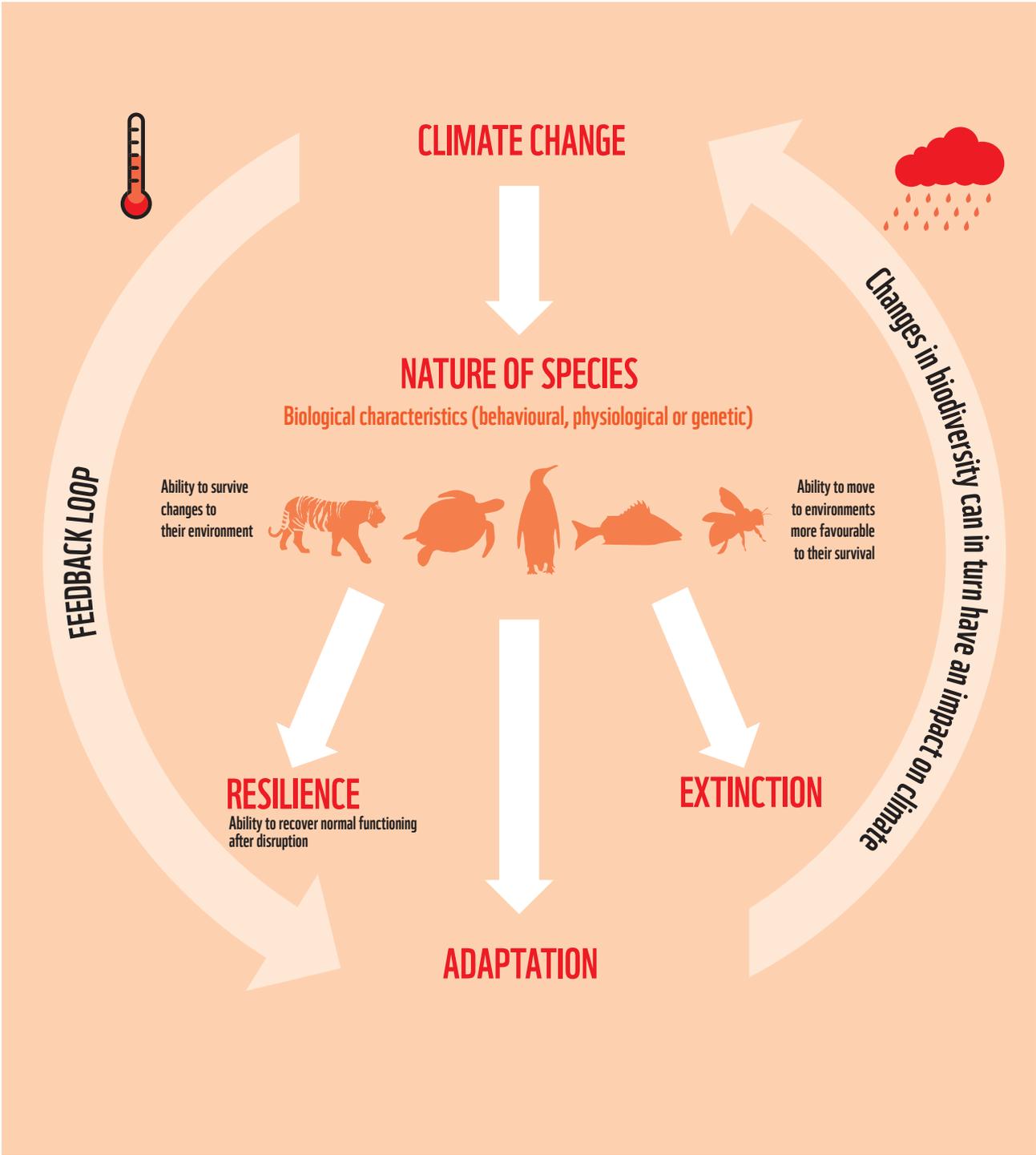
## **Whom does this concern? Who will be most affected?**

As it is impossible to present an exhaustive overview of the impacts of climate change, we have opted to illustrate this through some iconic species that WWF regards as having priority status, and some less charismatic species, that do not always enjoy a very high level of popular support with the general public but which are nevertheless crucial to keeping the planet in good ecological shape.

# WHAT IMPACT DOES CLIMATE CHANGE HAVE ON SPECIES?

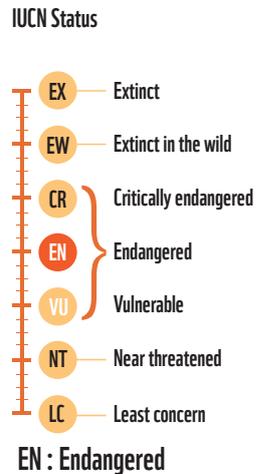


# HOW DO SPECIES RESPOND TO CLIMATE CHANGE?



# THE GIANT PANDA

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## Scientific Name:

*Ailuropoda melanoleuca*

**Common name:** Giant Panda

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Carnivora

**Family :** Ursidae

**Genus :** Ailuropoda

## Classified in Appendix I of CITES

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

China (six mountain regions in three provinces).

## POPULATION

Estimated at 1864 individuals.

## DESCRIPTION

Big round head, vertically slit, cat-like pupils (most other bears have round pupils). Thick, mostly white coat, with black ears, paws and fur around the eyes for protection against the cold of the high-altitude regions where it lives. Six fingers with a “false thumb” which it uses in particular to grasp bamboo.

- size: from 1.2 to 1.5 m;
- weight: from 75 to 160 kg for males and 65 to 130 kg for females

## DISTINCTIVE CHARACTERISTIC

Considerable difficulty in reproducing in captivity. With easy access to food, the male makes little effort, even when it comes to reproduction.

## FOOD

A diet consisting of 99 per cent plant matter, almost exclusively bamboo; up to 20 kg per day. Other plants from time to time and even a little meat (such as carrion).

## THREATS

- **Deforestation** through forestry and other activities that deprive the panda of its main source of food (bamboo forests). Human disturbance of panda habitat includes herb collection, logging and farming which contributes to habitat degradation in some regions.
- **Fragmentation** divides pandas into small groups (out of 33 subpopulations, 24 of them have around or fewer than 30 individuals). The construction of roads and other infrastructure exacerbates habitat fragmentation and also causes habitat loss. The construction of tourism facilities and the rapid increase of tourists in the forest is causing significant disturbance to pandas and their habitats.

# AND CLIMATE CHANGE

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The giant panda is at risk from climate change due to the potential shifting distribution of the bamboo forests which are both its basic food source and its natural habitat, a particular problem given the already fragmented nature of panda populations.

In fact, bamboo has a very specific reproductive cycle compared with other plants. It flowers and reproduces only every 15 to 120 years (depending on the species) and therefore adapts only very slowly to changes in climate.

Researchers have shown that several species of bamboo may vanish from panda habitats as climate change progresses. Although some bamboo species may potentially colonise new climatically suitable areas, some species would experience significant habitat loss. This projected decline in bamboo habitats and species diversity due to climate change would pose a severe challenge to the availability of food for giant pandas.

The impacts may differ greatly between different places – the decline of bamboo forests and diversity would be most drastic in the Qinling, Daxiangling and Qionglai mountains, whereas in the north-west Minshan and Liangshan mountains the forests may increase.

This indicates that conservation planning for pandas must predict and plan for the potential impacts of climate change on the panda's critical bamboo forest habitats.



## WHAT IS WWF DOING?

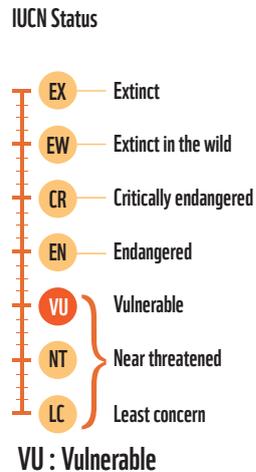
Its current efforts are focused on six landscapes in the Sichuan, Gansu and Shaanxi provinces including:

- The creation of **green corridors** to connect the isolated fragments of habitat and mitigate the impact of roads;
- Boosting **management capacity** in both nature reserves and forestry areas ;
- Supporting **sustainable development opportunities** for local communities which balance socio-economic benefits with conservation;
- The promotion of **sustainable tourism** to minimise the impact on the panda's natural habitat.

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency and by calling for a full stop to unsustainable land use and deforestation.

# THE POLAR BEAR

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## Scientific Name:

*Ursus maritimus*

**Common name :** Polar Bear

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Carnivora

**Family :** Ursidae

**Genus :** Ursus

## Classified in Appendix II of CITES

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

On the coastline and ice-covered seas on the southern border of the permanent ice pack in the Arctic region.

## POPULATION

Between 20 000 and 25 000 animals.

## DESCRIPTION

Largest land-based carnivorous mammal at the top of its food chain. Thick layer of fat and fur which insulates it against the cold.

- size: from 3 to 3.5 m for males and from 1.8 to 2.1 m for females;
- weight: average of 410 kg for males and 320 kg for females.

## DISTINCTIVE CHARACTERISTIC

Webbed feet for swimming; narrow head to fit into ice holes for hunting; black skin under white fur to absorb sun heat. Acute sense of smell to detect seals hidden under snow and ice.

## FOOD

The global distribution of the polar bear is similar to that of ice-dependent seals which provide the bulk of its food source. The most carnivorous of all bears, it also eats fish, walrus and whales.

## THREATS

- **Global warming** is the main threat to polar bears. Their sea ice habitat is melting, and prey is consequently decreasing due to reduced sea ice coverage and thinning of remaining ice;
- In addition, retreating sea ice may lead bears to spend more time on land where conflicts with humans can lead to loss of life for both bears and humans;
- **Pollutants** (such as mercury) stored up by the different species along the food chain, accumulate in the bear's fatty tissues and can cause birth defects and damage the central nervous system;
- **New economic developments** (especially oil and gas development) could cause disturbance, increased conflicts with humans and increased risk of oil spills.

# AND CLIMATE CHANGE

The survival of the polar bear is threatened by climate change. The Arctic is warming at approximately twice the speed of the global average, which is shrinking polar bear habitat by causing the sea ice to melt and remaining ice cover to be thinner. As polar bears are specialised in hunting seals, which rest and pup on sea ice, reduced sea ice means its hunting period is shortened with the result that it has to fast for longer.

And the thinner ice is more likely to drift at the mercy of winds and currents, carrying the bears into unknown territory, thus forcing them to swim in the open sea to find hospitable ice floes or get back to dry land. Polar bear drownings will likely increase with further loss of sea ice. Equally, conflicts with humans are increasing because the bears are coming closer and closer to areas of human habitation in their quest for food.

The survival of the bear cubs is also threatened by the premature break-up of the sea ice. When mothers emerge from their dens with their cubs they need access to sea ice to find their main food source, the ice-dependent seals. Changes in rainfall patterns may also lead to the collapse of the den roof before the females and their cubs have left, thereby exposing them to the harshness of the elements and to predators.

Like that of the polar bears, the life cycle of the seals, their chief prey, is heavily impacted by the melting of the sea ice. No other regular part of the bear's diet provides as many calories as the seal.

A study conducted by the United States Geological Survey showed that if the reduction of sea ice continues at its present pace, the surface of the optimal summer habitat of the polar bear will have contracted by 42 per cent by the middle of the 21st century. Some scientists predict that by mid-century, the global polar bear population may have been reduced by up to two thirds due to the loss of sea ice habitat. The foremost measure to safeguard polar bears, and the entire Arctic sea ice ecosystem, is to halt the emission of greenhouse gasses from fossil fuels. For this, drastic measures need to be taken on a global scale.



## WHAT IS WWF DOING?

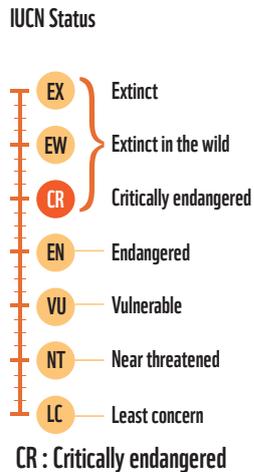
- Advocating for governments and businesses to take ambitious and urgent action to **reduce green house gas emissions** and switch to renewables and boost energy efficiency;
- Identify and protect critical polar bear habitats (e.g. denning and feeding grounds and migration routes), and advocating for their conservation; specifically advocating with governments and industry to **keep new oil and gas development out of the Arctic**, and to minimise industrial impacts;
- Supporting various **research projects** to ensure appropriate polar bear management;

- **Collaborating with local communities** to prevent conflicts between humans and animals and to create opportunities for sustainable development.

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency and by calling for a full stop to unsustainable land use and deforestation.

# THE SUMATRA ORANGUTAN

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**Scientific Name :**

*Pongo abelii*

**Common name :**

Orangutan of Sumatra

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Primates

**Family :** Hominidae

**Genus :** Pongo

**Classified in Appendix I of the CITES Convention**

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

On the island of Sumatra (Indonesia), in certain low-altitude tropical forests (between 500 and 1 500 m).

## POPULATION

6 624 individuals.

## DESCRIPTION

Bright eyes, great diversity of expressions, almost human facial appearance.

Reddish coat, hands and feet both suitable for grasping, aiding their life in the trees.

Long robust and flexible fingers allowing the animal to maintain a good grip as it moves around.

- size: body length around 1.25 to 1.5m
- weight: from 45 to 100 kg for males and from 35 to 50 kg for females.

## DISTINCTIVE CHARACTERISTIC

Makes its nest every evening in a matter of minutes using leaves and branches. Remarkably intelligent, it commonly fashions tools to aid it in foraging for food.

## FOOD

Fruits, durians, jackfruit, mangos, litchis, mangosteens, figs. Primarily frugivorous but also eats leaves, lianas, young shoots and small animal prey (termites, ants, contents of a bird's nest).

## THREATS

- **The destruction and fragmentation of habitat** is the biggest threat to orangutans, particularly from unsustainable and/or illegal logging, the development of roads and mines but above all from agriculture (notably for palm oil production);
- **Conflict with humans:** Sumatran orangutans come into conflict with humans usually when eating fruits belonging to the community along the forest edge. Illegal trade in infant orangutans as pets is also a problem.

# AND CLIMATE CHANGE

Climate change is placing additional pressure on the forests of Indonesia and consequently is further jeopardising the survival of orangutans.

In fact, much heavier rainfall related to climate change can be expected in the majority of the islands of the archipelago, thereby accentuating the risk of floods and landslides. Climate models suggest that by 2025 annual rainfall is likely to increase significantly. In addition to the direct negative impact on forests, this heavier rainfall will probably also influence the pace of growth and the reproductive cycles of the plants preferred by orangutans. The quantity of food available is likely to decrease and consequently affect the reproductive capacities of the females.

Climate change could also lead to more intense droughts and increase the risk of the forest fires already impacting the habitat of the great apes. Similar events have already occurred. In 1997 the dramatic forest fires which ravaged Kalimantan (the Indonesian part of the island of Borneo) caused millions of hectares of forest to go up in smoke, probably causing the deaths of many orangutans living in the area. With each forest fire, the orangutans, which are slow movers, perish in considerable numbers.

It is an irony that whereas climate change is accentuating the degradation of the orangutans' habitat, the carbon dioxide emissions resulting from deforestation are also making a significant contribution towards climate change.



## WHAT IS WWF DOING?

WWF's work on orangutans in Borneo and Sumatra includes

- **Conserving their habitat** by working to ensure that the protected areas and forest landscapes are properly managed, with wildlife corridors;
- **Promoting sustainable forest and agricultural production** via Forest Stewardship Council (FSC) and Roundtable on Sustainable Palm Oil (RSPO) certification to preserve habitat and thereby reduce conflict between humans and apes;
- **Combating trade in animals:** WWF is working with TRAFFIC (the global wildlife trade monitoring network) to help governments strengthen restrictions on the trade in live animals and orangutan products;

- **Improving livelihoods** of local communities living alongside orangutan habitats.

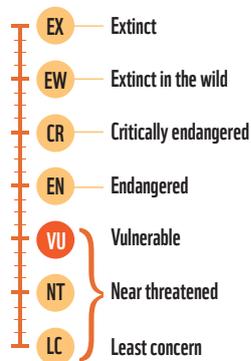
We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency actions and a full stop to unsustainable land use and deforestation

# THE AFRICAN ELEPHANT

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## IUCN Status



VU : Vulnérable

**Scientific Name :**  
*Loxodonta africana*

**Common name :**  
African Elephant

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Proboscidea

**Family :** Elephantidae

**Genus :** Loxodonta

**Classified in Appendix I of CITES, except populations of Botswana, Namibia and Zimbabwe and South Africa, which are in Appendix II.**

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

Elephants occur in west, central, eastern and southern Africa, in tropical forest, savannah and some sahel.

## POPULATION

470 000 individuals.

## DESCRIPTION

Largest land animal. Huge bulky body, very large ears, long ivory tusks, and imposing trunk used to touch and grasp objects and food, drink, smell as well as to greet, caress and threaten each other. An elephant's trunk is strong enough to uproot a tree, yet sensitive enough to pick up a pea-sized fruit from the ground.

- size: < 3.3 m tall;
- weight: 7.5 tonnes maximum.

## DISTINCTIVE CHARACTERISTIC

Particularly fond of bathing (in water and mud). Cannot do without water for more than 48 hours without risk. Requires mud to destroy the parasites living on its skin and to cool its body since it does not have sweat glands (the mud serves the same function as sweat).

## FOOD

Strictly herbivorous, it feeds exclusively on plant matter. Diet varies considerably depending on the regions travelled though, from equatorial forests to semi-arid areas, and on the time of year, from dry seasons to tropical rainy seasons.

## THREATS

- The demand for ivory, especially in Asia, means that **poaching** is a major threat;
- **Loss of habitat:** Agriculture development, as well as infrastructure projects (dams, roads, mines and other industrial complexes) have destroyed and fragmented the elephant's habitat, thereby significantly decreasing their chances of survival;
- The conversion of elephant habitat into agricultural land is causing **increasing conflict between elephants and humans.**

# AND CLIMATE CHANGE

According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), by 2080, there will be an expansion of between 5 per cent and 8 per cent of arid and semiarid land and an increase in the frequency and intensity of periods of drought in parts of the African continent. This might result in some areas experiencing a significant increase in deciduous trees and heat-resistant grasses at the expense of evergreen trees.

In addition, the changing nature of vegetation could influence the flow and volume of water sources, consequently affecting the structure and functioning of the ecosystem. In this case, the changes to the geographical distribution of the fauna and flora may heighten the pressure on water resources.

While the most crucial problem for the elephant likely lies in its enormous freshwater needs, its daily activity, its reproduction and its migration could be influenced.

There may also be increased competition between humans and wildlife for control of the growing scarce resources given the reduction of available quantities of water and food. As a result, conflicts between humans and elephants are likely to intensify.

Given that elephant migrations are linked to seasonal changes in rainfall and vegetation, it is likely that the pace of their movements will change along with a disruption of the overall distribution of the species as a whole. Agriculture and the presence of human infrastructures also hinder the movement of elephant populations to more suitable habitats.

Although elephants have considerable capacity for adaptation, no one knows if these will be sufficient to cope with the scale of the changes that will affect their natural environment.



## WHAT IS WWF DOING?

- **Protecting elephant habitat** by advocating for sustainable management of large elephant landscapes, as well as the creation of new protected areas and enhanced management of the existing protected areas;
- **Reducing conflicts between humans and animals** by training wildlife managers and local communities to use modern methods and tools to mitigate conflict, such as: early warning systems, fences, proper land use planning that gives space for the seasonal movements of the elephants harmless chilli or tobacco-based deterrents to keep them away from farms, etc;
- **Training anti-poaching surveillance** **patrols,** contributing to financing

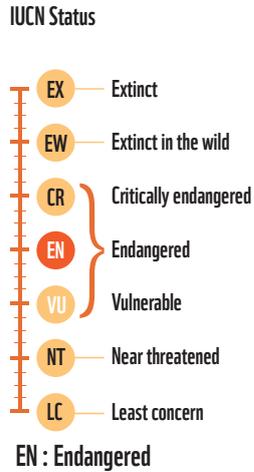
their equipment and helping governments to prepare effective national and transnational conservation strategies;

- **Lowering the demand** for illegal ivory and working to improve enforcement efforts against illegal ivory trade, in collaboration with TRAFFIC.

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency actions and a full stop to unsustainable land use and deforestation

# THE BLUE WHALE

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**Scientific Name :**  
*Balaenoptera musculus*

**Common name:** Blue whale

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Cetartiodactyla

**Family :** Balaenopteridae

**Genus :** Balaenoptera

## Classified in Appendix I of CITES

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

Lives in all the oceans of the world except, the Arctic, Mediterranean, Okhotsk and Bering Seas.

## POPULATION

Between 10 000 and 24 000 individuals.

## DESCRIPTION

One of the largest animals to have existed on Earth, blue-grey upper body and white underside. Does not have teeth, but baleen plates, which act as a filter.

- size: 25 to 35 m long;
- weight: from 100 to 190 tonnes

## DISTINCTIVE CHARACTERISTIC

It spends the summer in the high latitudes, where it is cooler and with an abundant supply of krill. In winter, it migrates to warmer waters at lower latitudes to reproduce and give birth.

## FOOD

Carnivorous, feeds on krill and other crustaceans.

## THREATS

- **Pollution**, both **chemical**, in the form of Polychlorobiphenyls, or PCB, which accumulates in the body of whales, and **noise**, in particular seismic surveys and military sonar which, by masking the sounds emitted by the whales, disrupts the communication essential to their reproduction);
- **Collisions** with shipping vessels and risk of entanglement in fishing gear, particularly in coastal areas;
- **Overfishing** of krill is a threat which needs to be quantified.

# AND CLIMATE CHANGE

The natural habitat of the blue whale in the antarctic ocean is changing under the impact of climate change due to the impacts on their food supply, and this could have a seriously negative impact on blue whale populations.

Firstly, global warming and associated ocean acidification from increasingly dissolved atmospheric carbon dioxide (fossil fuel burning) into the ocean waters may impact krill (the basis of their food supply).

In addition, Frontal zones – critical whale habitats – are also projected to move southwards due to climate change. Frontal zones are boundaries between different water masses, where water can rise from the depths, bringing with it large amounts of nutrients that stimulate the growth of phytoplankton and support substantial populations of prey species for whales.

Blue whales would have to travel even further south (possibly an extra 200 to 500 km) to reach and feed at these food-rich areas where they build up reserves to sustain themselves for the rest of the year. These longer migration paths could increase the energy costs of migration and reduce the duration of the main feeding season. As frontal zones move southward, they will move closer together, reducing the overall area of foraging habitat available.

Lastly, along with the higher concentration of carbon dioxide in the atmosphere, CO<sub>2</sub> will also increasingly be absorbed by the oceans, this effect already causes these spaces to become more and more acidified. This process could once again have a serious effect on the whale populations because of its impact on the krill.



## WHAT IS WWF DOING?

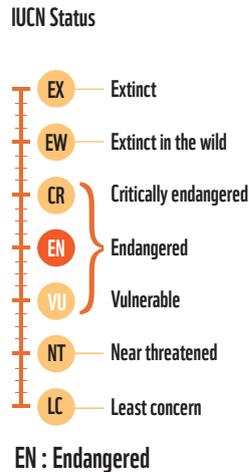
- **Promoting a whale conservation agenda at the International Whaling Commission** that strengthens international efforts to address ship strikes, ocean noise and marine pollution;
- **Lobbying** for the creation of marine protected areas in whale habitats, such as the Marine Protected Area (MPA) network that WWF-Chile has been promoting to protect foraging and nursing grounds of blue whales in Corcovado, Chile. In 2014, three protected areas covering 120 000 ha were approved by the government;
- **Embarking on scientific missions** of cetacean monitoring because by improving the level of our knowledge about whales, we can protect them more effectively;

- **Initiating awareness campaigns** to sensitise users of the sea to respect whales and their natural habitat, especially people involved in whale-watching.

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency actions and a full stop to unsustainable land use and deforestation.

# THE GREEN TURTLE

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Scientific Name :  
*Chelonia mydas*

Common name: Green turtle

Kingdom : Animalia

Class : Reptilia

Order : Testudines

Family : Cheloniidae

Genus : Chelonia

## Classified in Appendix I of CITES

(The Convention on International Trade in Endangered Species of Wild Flora and Fauna)

## DISTRIBUTION

In the tropical waters of every ocean and some sub-tropical waters.

## POPULATION

Estimated to be over 100 000 individuals.

## DESCRIPTION

Green turtles are in fact named for the greenish color of their cartilage and fat, not their shells. In the Eastern Pacific, green turtles with darker shells are called black turtles by the local community.

- size: from 1 to 1.4 m;
- weight: around 130 kg.

## DISTINCTIVE CHARACTERISTIC

Females return to the beach where they were born to lay their own eggs. Sex of hatchlings is determined by nest temperature with warmer temperatures producing more females. Nest temperature also determines growth rate and metabolism.

## FOOD

Adult green turtles are the only truly herbivorous marine turtles. They feed mainly on seagrasses or algae.

## THREATS

- Turtles are at risk - often being injured or drowned accidentally - **by catch** when they get caught in fishing gear while fishermen are targeting other species;
- Although in many countries, it is prohibited to hunt them, turtles continue to be **killed for their meat and their shells**, which are used for tourist souvenirs. Looters often pillage their nests and collect the eggs for sale;
- **Marine pollution** leads to suffocation by tar, oil and plastic waste;
- **Coastal development** threatens their nesting sites which are increasingly affected by infrastructure development, with associated light pollution, waste and human activity.

# AND CLIMATE CHANGE

Although sea turtles have been evolving in the oceans of the whole world for over 100 million years and have survived the climate changes of the past in a remarkable way, the speed of the current warming is significant cause for concern.

Temperature plays a key role at every stage of the life of the sea turtle. Its sex is actually determined by the incubation temperature of the eggs buried in the beach sand after laying (hotter temperatures favour the development of females, while cooler temperatures favour males). It is obvious, therefore, that a small increase in temperature can seriously skew the proportion of the sexes in favour of females.

Fresh water from melting glaciers, changes in salinity and isotope ratio, and rapidly increasing ocean acidification will affect marine habitats and biodiversity. These changes will result in shifts in range and abundance for algae, plankton, fish and other species. It is impossible to predict how changes in globally important ocean currents, key habitats, and prey abundance and distribution will affect marine turtle distribution, foraging behaviour and reproductive fitness, but the potential for profound negative impact is significant.

More violent storms, furthermore, will inevitably mean the destruction of very important nesting beaches, and at the same time, of many eggs. The resulting intensification of flooding is then likely to cause the disappearance of the seagrass beds and the nesting habitats, a process that is already affecting the growth and reproduction rates of the green turtles in Queensland, Australia.

Added to this is the risk of the probable erosion of the nesting beaches under the impact of rising sea levels.



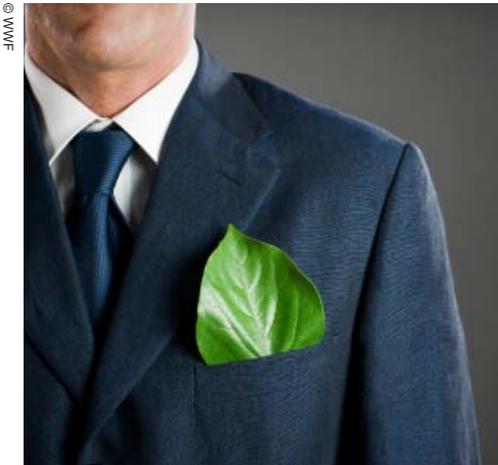
## WHAT IS WWF DOING?

- **Making fishing more selective** to limit accidental catching via the use of TEDs (turtle excluder devices) on shrimp trawlers which allow the shrimp to pass through the main part of the net while enabling the majority of the sea turtles to escape;
- **Carrying out surveillance patrols** to restrict the looting of turtle nests in many regions of the world and involving communities in the protection of turtle nests by developing ecotourism;
- Working worldwide to ensure the **creation of marine protected areas** and helping to protect the egg-laying beaches, feeding grounds and migration routes of the sea turtles;
- **Combating the illegal trade of turtles.** WWF is working with TRAFFIC (the global wildlife trade monitoring network) to help governments strengthen enforcement of restrictions on trade in live animals and products made from turtles.

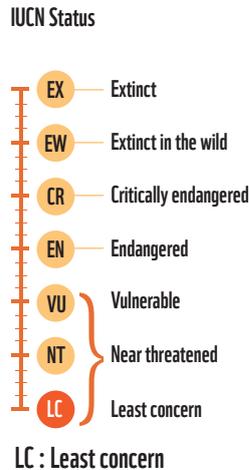
WWF has taken a **proactive role in addressing the effects of climate change on marine turtles** by convening a group of leading scientists to evaluate impacts, and design and test adaptation measures, including the reduction of non-climate stressors, to enhance the resilience of populations and the habitats on which they depend. Turtles are good flagships for climate change too, which facilitates the promotion of coastal adaptation with relatively simple, hands-on measures. An adaptation toolkit for marine turtle habitats for global distribution is already benefiting turtles and coastal communities alike.

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency actions and a full stop to unsustainable land use and deforestation

# THE HUMAN



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**Scientific Name :**

*Homo sapiens*

**Common name:**

Human being

**Kingdom :** Animalia

**Class :** Mammalia

**Order :** Primates

**Family :** Hominidae

**Genus :** Homo

## DISTRIBUTION

Throughout every latitude and on every continent, with the exception of the Antarctic.

## POPULATION

7.3 billion individuals.

## DESCRIPTION

Round head, slender body, large brain – at least some.

Stands upright, hairiness limited to certain parts of the body (armpits, pubis, on top of the skull).

Great variety of skin colour (black, brown, beige or very light pink), related to the greater or lesser presence of melanin.

- height: from 1.5 to 1.8 m on average;
- weight: approximately 75 kg for males and approximately 65 kg for females.

## DISTINCTIVE CHARACTERISTIC

The human can hunt any species of animal, and is even capable of hunting animals normally regarded as super-predators. Consequently, the human is sometimes regarded as the ultimate super predator. However, humans are not high on the food chain because of their omnivorous diet, which is mainly vegetarian.

## FOOD

Omnivorous, very diversified diet of both animal and plant origin including starches, legumes and proteins.

Specific characteristic: consumes mainly cooked food, which increases the energy supply and seems to have played a key role in the development of the human brain.

## THREATS

- **disease:** infectious diseases, worms, malaria, HIV, tuberculosis, cancers, heart disease, strokes, cerebrovascular events, etc.;
- **natural disasters:** earthquakes, cyclones, floods, avalanches, volcanic eruptions, droughts, etc.;
- **conflicts with peers:** wars, criminal activities, racism, unfair income and wealth distribution within and among countries etc.;
- **threats related to the development of human activities or ways of life:** pollution, hunger, malnutrition, lack of education, clean water, clean energy and hygiene, poverty, industrial disasters, political suppression and human rights violations.

# AND CLIMATE CHANGE

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Although humans are the cause of climate warming, they will also be its victims.

The conditions of their environment will change and influence the social and environmental determinants of their health: pure air, clean drinking water, food in sufficient quantities, housing safety.

Climate change is already the cause of population displacements which are at the root of tensions and conflicts throughout the world. For example, certain populations of the islands of Vanuatu and Papua New Guinea, fearing rising water levels, are beginning to flee. And that is just the beginning...

The Intergovernmental Panel on Climate Change (IPCC) predicts by 2050 there will be 250 million climate refugees in the world. IPCC predicts major negative consequences for humanity in the 21st century, which will be environmental, health-related and economic.

Consequently, as is already the case in many regions, the steadily increasing average temperature and the growing erratic rainfall performances from floods to droughts will result in a general drop in agricultural yields and cause serious damage to certain staple crops.

Heatwaves and extreme flooding such as have already occurred in the last few years (e.g. north western Europe, the United States, Russia, Pakistan and India) will become commonplace and lead to many heat-related deaths by the elderly, sick and poor. Enhanced and excessive rainfall might foster disease-bearing species such as mosquitoes carrying malaria and bring other diseases such as dengue fever. But the biggest fear comes from the natural disasters generated by climate change. More violent cyclones, floods, landslides, avalanches, mudslides and forest fires: at least half of humanity could suffer the harmful effects of climate change.

A number of impacts on the human environment can already be identified and some are directly linked to climate change, while others are an indirect consequence of it.



## WHAT IS WWF DOING?

- **Working for the protection of spaces and species** to ensure the survival of humanity and of future generations because the conservation of the human species and of the planet go hand-in-hand;
- **Creating the conditions needed for peaceful cohabitation between humans and animals** through actions to raise awareness among local populations or by the use of traditional methods to keep animals away from human habitations;

- Ensuring the proper use of natural resources and encouraging the maximum reduction of pollution in order to eradicate and **reverse the process of increasing degradation of our planet.**

We are also fighting globally for **greenhouse gas emissions reductions** to stop global temperatures rising by 1.5 degrees Celsius by the end of the century – a survival threshold for many ecosystems and vulnerable communities. WWF is promoting a move to 100 per cent renewables by mid-century in combination with enhanced energy efficiency actions and a full stop to unsustainable land use and deforestation

# 3 LESS ICONIC SPECIES WHICH ARE JUST AS THREATENED BY CLIMATE CHANGE

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## **Bumblebees** (*Bombus*)

The bumblebees of Europe and North America are disappearing from the most southerly and hottest parts of their range, by migrating towards the poles, to cooler latitudes, or higher areas in quest of temperatures better adapted to their biological cycle. Some bumblebees have retreated as much as 300 kilometres from the southern edge of their historic ranges. This is an alarming situation because as active pollinators, bumblebees play a key role in relation to crops and food security.



## **Edelweiss** (*Leontopodium alpinum*)

The Edelweiss is a star-shaped flower with leaves covered in fuzzy “hairs” which lives at an altitude of up to 3 400 m. Climate change is likely to negatively impact edelweiss, driving plant species that usually live at lower altitudes to colonise these higher altitude areas where the temperatures are more suitable for them. This creates competition which the “traditional” mountain species cannot sustain.



## **Elkhorn coral** (*Acropora cervicornis*)

Higher water temperatures due to climate upheaval and increased acidification of the oceans are responsible for the phenomenon of coral bleaching. Bleaching occurs when the coral, stressed by the higher water temperature, expels the microscopic algae zooxanthellae with which it lives in symbiosis. These algae supply the coral with its food and give their colours to their calcareous skeleton. If the zooxanthellae do not re-enter the coral tissue, the coral dies.

# IMPACT OF CLIMATE CHANGE ON SPECIES

**1 864**

Estimated **Giant Panda** population at risk from climate change.

**20 000  
TO 25 000**

Estimated **Polar Bear** population at risk from climate change.

**7.3 BILLION**

Estimated **Human** population at risk from climate change.



**6,624**

Estimated **Sumatra Orangutan** population at risk from climate change.

**< 100,000**

Estimated **Green Turtle** population at risk from climate change.

**10 000  
TO 24 000**

Estimated **Blue Whale** population at risk from climate change.

**470 000**

Estimated **African Elephant** population at risk from climate change.



## Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

[panda.org/climateandenergy](http://panda.org/climateandenergy)