

CONSERVATION CENTERS FOR SPECIES SURVIVAL: THE BARCELONA ZOO (Spain)



CONSERVATION RESEARCH AT THE BARCELONA ZOO (SPAIN)

The Barcelona Zoo's main mission is to actively intervene in the **conservation, scientific research and dissemination of wild fauna and its natural habitats**. This task, which is carried out in collaboration with other zoos, universities and research centers, follows the guidelines and strategies established by the research committees of the World Association of Zoos and Aquariums (WAZA) and the European Association of Zoos and Aquariums (EAZA), and is covered by existing legislation and regulations in conservation matters.

We currently participate in **97 EAZA programs**, ex-situ management of threatened species (European Endangered Species Programs, EEP, and European StudBooks, ESB). More than 85% of the species we host are included in the International Union for Conservation of Nature (IUCN) 'Red List' of Threatened Species, and in recent years, almost 30% of the animals born in the Zoo that have left our facilities, have done so to be released into their natural habitat.

Since 2009, through the **Research and Conservation Program (PRIC)** and the **Barcelona Zoo Foundation**, we have developed 108 institutional collaboration framework programs, 110 specific research and / or conservation programs, we have awarded 75 PRIC scholarships, 9 Copito de Snow and 4 Antoni Jonch scholarships. This has involved a direct investment in research and conservation of more than 1.5 million euros. More than 50% of the projects developed by the Barcelona Zoo grants in the period 2009-2016 have been focused on native fauna species.



Chimpanzee

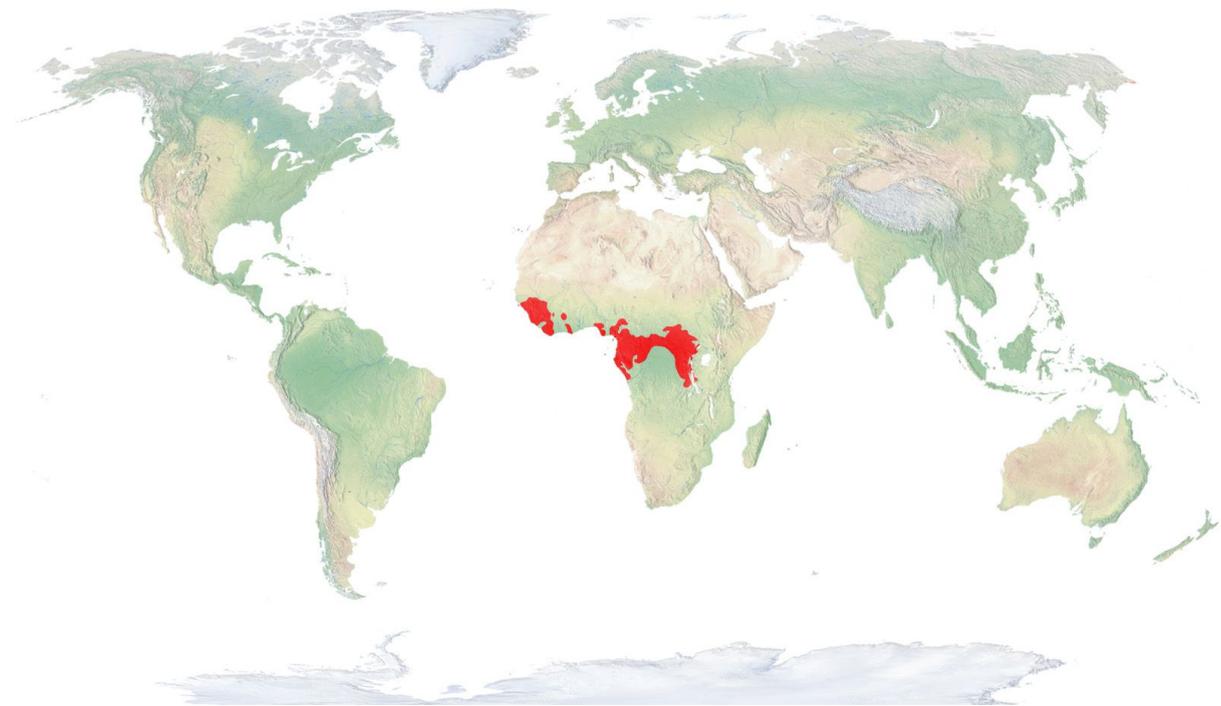
Pan troglodytes

The chimpanzee is a typical inhabitant of rainforests in equatorial Africa and is the closest species to human beings. It is able to use tools by gathering and adapting small sticks to obtain access to termites and it can also use rocks to break hard seeds.

As in gorillas and orangutans, chimpanzees build a nest on the top of trees every night, made from branches and leaves, to spend the night. They live in social groups with a dominant male. Several families can gather temporarily, forming tribes.

Natural habit

Central and western Africa: Ivory Coast, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Rwanda, Senegal, Sierra Leone, Cameroon, Gabon, Equatorial Guinea, Angola, Central African Republic, Congo, Democratic Republic of the Congo, Sudan, Uganda and Tanzania.



Physical characteristics

20-70 kg

Birth Weight: **1,5-2 kg**

70-96 cm

Up to 50 years

Biology

Habitat

Jungle

Social life

Gregarious

Feeding

Omnivorous

Reproduction

Gestation

225-260 days

Days

Baby

1

Discover how they are







Biology

Description

Its body is covered by a thick blackish hair, except for the face, fingers, hand palms and soles of the foot. It has opposable thumbs in the hands and feet, which grant them a firm grasp. Their arms are much longer than their legs, spanning one and a half times the body's height, which in erect position on their legs can reach 1,7 m. Their long arms allow chimpanzees to swing from tree limb to tree limb, a form of locomotion called brachiation.

Habitat

It inhabits rainforests, either primary or secondary, riparian forests, swamp forests and forest-savannahs.

Feeding

It is an omnivorous animal as, though its diet is basically vegetarian -consisting of fruits, leaves, seeds, flowers, bark, resins and honey- it complements its diet with insects and, occasionally, small vertebrates that are hunted in group, in an organized manner. It often hunts birds and small mammals such as duikers or antelope calves, but they can also capture and eat other small and medium primates, like the red colobus and other species of guenons of the rainforest.

Reproduction

The gestation of the chimpanzee lasts for eight months and a single infant is born each time, weighting around 2 kg. Infants are weaned when they are 3 years old, but they generally maintain a close relationship with their mother for several more years. Puberty is reached when they are 7 or 8 years, and their life span is of 60 years in captivity.

Conduct

The chimpanzee is a typical inhabitant of rainforests in equatorial Africa and is the closest species to human beings. It is able to use tools such as gathering and adapting small sticks and introducing them in termite nests to capture termites; picking and properly using stones to break hard seeds, or making sponges with leaves or moss, to use the water in the cavities of trees.

It is a more arboreal species than the gorilla, but less than the orangutan, for it climbs down to the ground very often. Its locomotion on the ground is quadrupedal, supporting the body's weight on the medium phalanges of the hands and feet. The form of locomotion of the great African apes and the orangutans is different, as the latter stand on the palms of their hands and feet. However, chimpanzees can also move on two feet, if their hands are busy or for short distances.

It leads a social life in family, with a dominant male and various females with infants, although sometimes several families temporarily gather, forming quite numbered tribes. Males can form temporary associations as well, in which a strict hierarchy is established, that causes many fights to occupy its top positions.

As in gorillas and orangutans, every night chimpanzees build sleeping nests in the shape of a platform, with leaves and branches, on the top of trees. These nests allow scientists studying their behaviour to spot the presence of chimpanzees in an area.

Status and conservation programs

Up to four chimpanzee subspecies are distinguished: *Pan troglodytes verus*, which inhabits the rainforests of western Africa, in the northern part of the Guinea gulf; *Pan troglodytes ellioti*, which only lives in Nigeria and Cameroon; *Pan troglodytes troglodytes*, which lives in the rainforests in the centre of the continent; and *Pan troglodytes schweinfurthii*, which can be found in the eastern area of central Africa.

In Africa lives another chimpanzee species, the bonobo (*Pan paniscus*), which was not acknowledged by scientists until 1929, and that can be differentiated by some physical characteristics and, mainly, by its social and sexual behaviour.

As in all Pongids, the chimpanzee is critically endangered nowadays, mainly due to the destruction of its habitat, although it is also hunted by humans for its meat and, even though it seems hard to believe nowadays, to be used as pet animals.

What do they do for him from the Barcelona zoo?

The *International Primate Heart Project*, henceforth the IPHP, involves collaboration between veterinarians, physiologists and cardiologists for a better understanding of heart disease among the great apes. Heart disease has been identified as one of the main causes of death in great ape populations in captivity; the underlying cause, however, remains unknown at present. In addition, the knowledge base on the structure and normal function of the heart in great apes is extremely limited. The IPHP is therefore aiming to establish recognised reference values for the structure and function of the heart in all great apes, for the purposes of being able to diagnose diseases better and investigate the specific causes of heart disease in the great apes.

The IPHP has been working with zoo collections in the UK over the last eight years and is currently expanding the scope of the project in Africa. The project has been approved by the British and Irish Association of Zoos and Aquariums (BIAZA) and is working in close collaboration with the Pan African Sanctuary Alliance (PASA) and the EEP's Veterinary Advisory Group on Orang-utans.

This programme is an example of the effective inter-disciplinary association that has shown evidence-based improvements in the well-being and conservation of wild animals. The IPHP is offering a scientifically-based research programme on a conservation concern: cardiac health in the great apes. However, more importantly, it is acting as a respectful, perceptive

and open collaboration model that produces fast and useful results and an opportunity to improve knowledge and skills in order to collectively enhance the health, well-being and conservation of the great apes.

Barcelona Zoo is collaborating in the IPHP through institutional support for the veterinary Yedra Feltre (former head vet at the Zoo) to carry out a full assessment of the health of the chimpanzees living in the Tchimpanshi Sanctuary in Zambia. This collaboration allows full heart check-ups to be carried out in order to characterise heart structure and function, electric conduction, heart biomarkers and measure the blood pressure of chimpanzees born in the wild.

CONSERVATION OF THE MANGABEY IN GHANA

The Guinean forest region, identified as one of the world's most biodiverse areas, currently conserves under 10% of its original primary vegetation. In Ghana, a country included in that region, deforestation was already affecting 78% of the original tropical forests towards the end of 1980; according to estimates from the UICN, losses are continuing at an unsustainable rate of 3% a year. Habitat destruction and fragmentation along with poaching are the main reasons behind the extinction of numerous primate species all around our planet. More specifically, the situation is especially worrying in the forests of Ghana for two species of primates whose populations have diminished by over 50% over the last few decades: the white-crowned mangabey (*Cercocebus lunulatus*) and the Roloway monkey (*Cercopithecus roloway*).

In 2001, 16 European zoos, including Barcelona's, decided to create *West African Primate Conservation Action* (WAPCA), to promote the *in situ* and *ex situ* conservation of these and other species of primates in West Africa. WAPCA established its main *in situ* work area in Ghana and the Ivory Coast; Barcelona Zoo and the University of Barcelona (Faculty of Psychology) have been playing an active part since 2010 in the *in situ* projects in Ghana, focusing their work on the white-crowned mangabey.

On the other hand, Barcelona Zoo's involvement in *ex situ* conservation work on the white-crowned mangabey carried out within the heart of EAZA is at the highest level, given that Dr M^a Teresa Abelló has been coordinating the European Endangered Species Programme (EEP) for this species since 2001. The *Endangered Primate Centre* (EPC) was built by WAPCA in 2005, in collaboration with Accra Zoo (the capital of Ghana), and the Wildlife Service (Ghanaian government authority). The EPC, located in Accra Zoo, receives and rehabilitates primates confiscated from individuals, promotes breeding among some species and develops environmental programmes with the local population.

One of the tasks which Barcelona Zoo has been focusing on since 2010 was the creation of a semi-wild forest area in a nature park in Ghana (Kumasi), to house a group of mangabeys and study their capacity to adapt to a natural environment after years of captivity. This is seen as a pioneering project among the zoological community for assessing the risks of re-introducing primates into the natural environment in the future. What is more, the EEP's white-crowned mangabey programme has been boosting and intensively monitoring the population *ex situ* located in Accra Zoo, so that, should the natural population have to be boosted in its original habitat and the necessary protection and safety conditions arise, it can collaborate and contribute towards the wild population's recovery.

WHITE-NAPED MANGABEY

Cercocebus atys lunulatus

As in other mangabey species, it is an arboreal primate, typical from the wet rainforests of western equatorial Africa. It is a diurnal animal that lives in groups of up to thirty individuals. Its diet is omnivorous and it is able to swim for short distances, in order to obtain food.

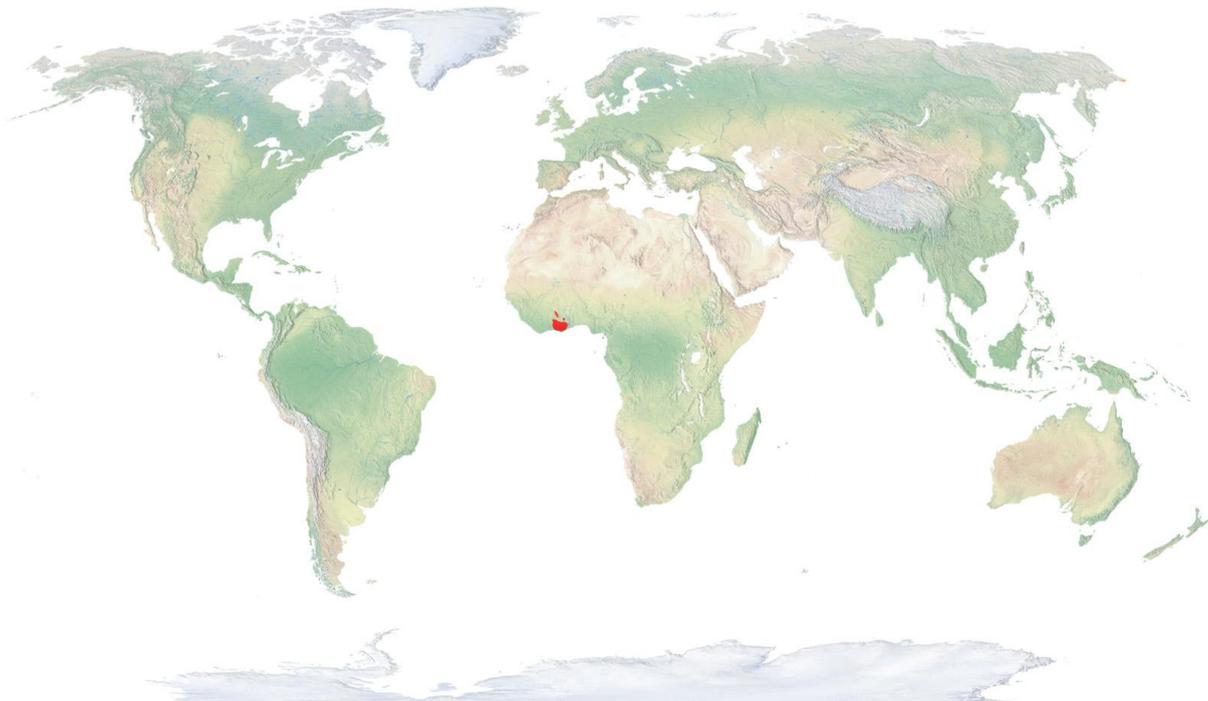
This species is distinguished by the white patch in the shape of a half moon that can be found on its nape.



BREEDING PROGRAM

NATURAL HABIT

Ghana, Ivory Coast and Burkina Faso.



- Distribution / Resident
- Breeding

- Wintering
- Subspecies

RISK LEVEL

- Extint
- Extint in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

ENDANGERED

TAXONOMY

Class **Mammalia**

Order **Primates**

Family **Cercopithecidae**

PHYSICAL CHARACTERISTICS

4-12 kg

Birth Weight: **300-500 g**

67-74 cm

20 - 30 years

BIOLOGY

Habitat

Jungle

Social life

Gregarious

Feeding

Omnivorous

REPRODUCTION

Gestation **160-170** Days

Baby 1

Discover how they are



Biology

Description

Its body fur is greyish on the back, tail and external part of the limbs, while the underparts have a whitish hue. It is distinguishable by its half-moon shaped white patch on the top of its head. Females are smaller than males.

Habitat

It inhabits different primary and secondary rainforests, including mangroves and flooding and riparian forests.

Feeding

Its diet is omnivore, as it eats all kinds of plant products, such as seeds, fruits, leaves and tender sprouts, although it can also feed on invertebrates, eggs, rodents and other small vertebrates. Their strong incisors let them crack through hard shells of nuts that many other guenon species cannot open.

Reproduction

Gestation lasts for about six months and generally a single infant is born each time.

Conduct

They are medium-sized and their tail is longer than the rest of the body, which they use to keep their balance, when jumping between trees in the jungle.

Its habits are diurnal and lives in large groups, which include more than one male, who defend them against other groups of the same species, by means of loud vocalisations and quite an aggressive behaviour. Many males leave the group upon reaching sexual maturity, while females tend to stay with the family group, with a well-established hierarchy. The main core of the group is comprised by the females and their offspring.

Status and conservation programs

Although it was considered until recently a subspecies of the grey mangabey with the scientific name *Cercocebus atys lunulatus*, currently many scholars consider it a separate species, *Cercocebus lunulatus*.

Hunting for human consumption is one of the main threats they face, along with the destruction of their habitat, caused by wood exploitation, opening of clearings in order to obtain space for cattle pastures and the expansion of crops.

The Barcelona Zoo is the coordinator of the EEP (European Captive Breeding Programme) of this species.

GENETICS OF THE GORILLAS IN THE EEP

Great ape populations are dwindling on a global level, a situation that represents a drastic reduction in opportunities for analysing their genetic variability. Most of the scenarios predict the extinction of several subspecies within the next 50 years. Understanding genomic diversity would allow us to create genomic tools applied to the species' conservation from a new and more efficient perspective.

The latest research carried out at the Institute of Evolutionary Biology (IBE, UPF-CSIC) has created what is today the most extensive catalogue of primate genomic variants, by analysing the full genome of several great-ape species from blood samples. A large part of today's knowledge on the genetic diversity of great apes was determined through detailed research on a few autosomal loci, microsatellites and reconstructions and comparisons of the mitochondrial hypervariable region. By contrast, human genetics have moved much faster through SNPs (single nucleotide polymorphisms), and, in some cases, analyses of the genome's full sequence, provides a more accurate result and, therefore, represents a more useful tool for research applied to great-ape conservation.

These new and more efficient protocols and specific kits now make it possible to obtain a better quantity and quality of DNA. This will allow genotyping of individuals in captivity held in zoos taking part in the EAZA's European Endangered Species Programme (EEP), thereby facilitating more informed judgements with a genetic basis in future breeding programmes between individuals in captivity. An opportunity is being presented through the SNP technique for a comprehensive analysis to be made of the entire captive population on a European level, by carrying out genetic tests on every individual examined during routine veterinary checks or from previously stored samples.

The most important goals in the study are (1) to genetically determine the maximum number of individuals in the EEP's populations, by prioritising the wild individuals captured, to determine the subspecies and clarify uncertain affiliations within the EEP, (2) to determine the real genetic variability of the EEP population, and (3) to determine pedigrees by comparison with current Studbooks.

Animal file

Western lowland gorilla





WESTERN LOWLAND GORILLA

Gorilla gorilla gorilla

The western lowland gorilla is an exclusively vegetarian gorilla that lives in family groups led by a dominant male, that can be distinguished by its silver whitish back. The size of the group varies between two to twenty animals, and is formed by at least the dominant male, several females and infants. As in humans, they do not have a determined reproductive season, and females give birth to a single infant, after almost nine months of gestation.

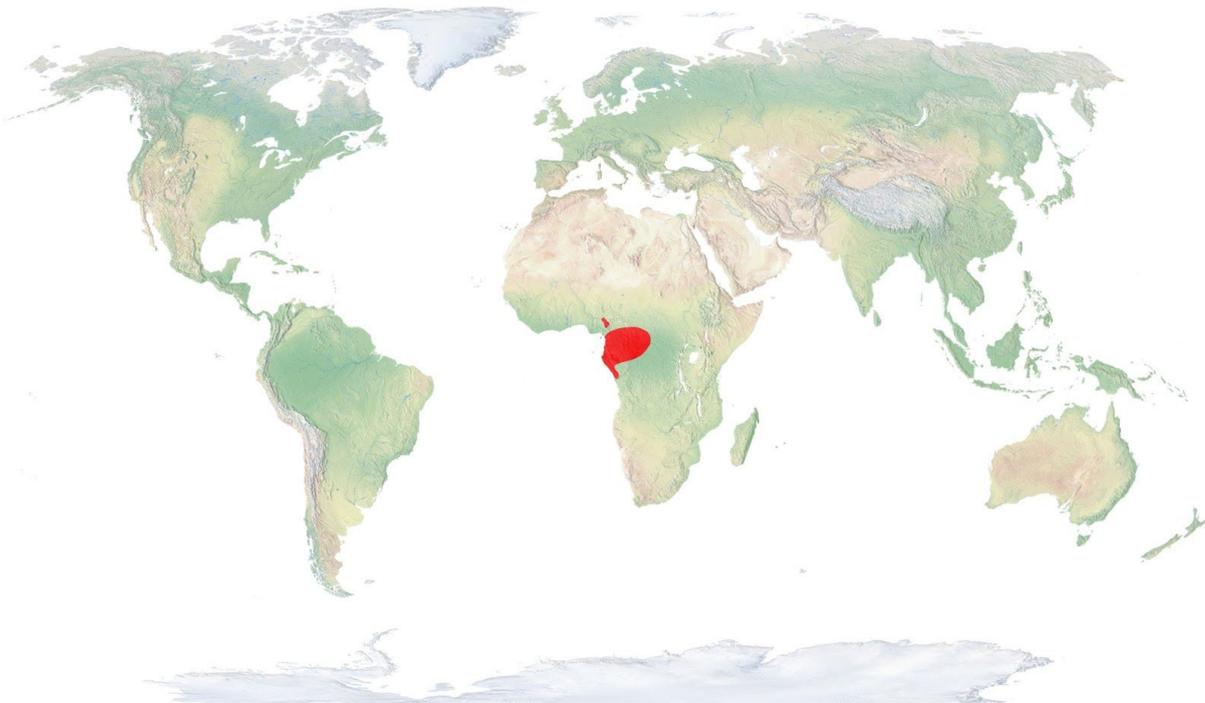
Recent studies about its DNA show that they share 97.7% of the genes with humans.



BREEDING PROGRAM

NATURAL HABIT

Western central Africa: southern Cameroon, Central African Republic, Gabon, Equatorial Guinea and northern Angola.



- Distribution / Resident
- Breeding
- Wintering
- Subspecies

RISK LEVEL

- Extinct
- Extinct in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened

- Minor concern
- Insufficient data
- Not evaluated

CRITICALLY ENDANGERED

TAXONOMY

Class **Mammalia**

Order **Primates**

Family **Pongidae**

PHYSICAL CHARACTERISTICS

57-190 kg

Birth Weight: **1,5-2 kg**

103-107 cm

Up to 50 years

BIOLOGY

Habitat

Jungle

Social life

Gregarious

Feeding

Herbivorous

REPRODUCTION

Gestation **250-295** Days

Baby 1

Discover how they are





Biology

Description

Gorillas are the largest primates, males are usually 1.65 to 1.75 m tall and weigh 145 to 190 kg, and in captivity some are capable of reaching weights of up to 250 kg. Females weigh half as much as males. Their front limbs are longer than their rear ones and are also used as a support for walking, as they usually walk on all fours.

Adult males have a characteristic sagittal crest and grey hair on the back with a silver hue, which is why they are known as “silverbacks”.

Habitat

Primary and secondary rainforests, swamp forests and wide riparian forests, generally below 500 m.

Feeding

Gorillas are herbivores that spend most of the day foraging and they never fully exhaust a feeding point. An adult male can eat up to 30 kg of plants, mainly leaves, fruits and tender sprouts. Occasionally they can feed on insects, though it only represents 1% or 2% of their diet.

Reproduction

Gestation lasts for eight and a half months and a single infant is born each time, with a weight of 2 kg. Infants are looked after until their 4th or 5th year, with long intervals between births, which explains why gorilla populations grow so slowly and why they are so vulnerable to poaching. Young males often abandon the group upon reaching adulthood. Females move to another group before reproduction, that begins when they are 8-9 years old.

Conduct

Despite the bad reputation they got from the fantasy tales of the first European explorers of Africa and certain films such as King Kong, field studies carried out by scientists like George Schaller, Dian Fossey, Jordi Sabater i Pi or Marga Bermejo, show that gorillas are shy and peaceful animals, able to accept humans in their environment if these respect and do not interfere with their habits and daily activities.

Gorillas live in stable groups formed by five to ten individuals, with a dominant male that leads and protects the females and the infants. As infants grow, they abandon their paternal group to form their own, in case of males, or to join other groups, in case of females.

It is a peaceful animal and in places where food is abundant, groups of gorillas can gather in the same area without serious conflict.

Status and conservation programs

As in the rest of Pongids, due to its genetic resemblance with humans, gorillas have been object of great interest, mostly to study its behaviour, either in captivity or in the wild.

In 1970, gorillas were classified under a single species, with three subspecies:

- Western lowland gorilla *Gorilla gorilla gorilla*
- Mountain gorilla *Gorilla gorilla beringei*
- Eastern lowland gorilla *Gorilla gorilla graueri*

Since 2003, gorillas are classified in two species, which in turn have two subspecies each, as stated in the Red List of Endangered Species of the IUCN:

Western gorilla (*Gorilla gorilla*), with two subspecies:

- Western lowland gorilla (*Gorilla gorilla gorilla*), found in western Africa, to which the gorillas at the Zoo and Snowflake belong.
- Cross River gorilla (*G. gorilla diehli*), that only lives in a small border area between Nigeria and Cameroon.

Eastern gorilla (*Gorilla beringei*), with two subspecies:

- Virunga mountain gorilla (*G. beringei beringei*), found in the Virunga volcanoes and in the Bwindi forest.
- Eastern lowland gorilla or Grauer's (*G. beringei graueri*), found in the Democratic Republic of the Congo.

Its hunting or trade are totally forbidden and its greater threats are the destruction of rainforests for agricultural purposes, poaching and, lately, the effects of the Ebola virus outbreak, which is causing great mortality in the Democratic Republic of the Congo and in Gabon, an area that comprised 80% of all the gorillas living in the wild, and where a loss of 56% has been estimated for the last years. The list of causes of the reduction of gorilla populations in the wild also includes armed conflicts, which are frequent in the area.

It is estimated that the total amount of gorillas in the wild does not exceed 100.000 specimens by much, and the UNEP, the United Nations Environment Programme, has included gorillas in the red list of endangered species for the next thirty years, while pointing human activities as the main threat of the species. According to the UNEP, on 2030 less than 10% of the habitat of great apes in Africa (gorillas, chimpanzees and bonobos) will remain unaffected by human impact.

Laws against hunting and capturing gorillas have been passed in all the countries with populations in it, but their enforcement proves to be very difficult. In order to prevent their extinction, in situ conservation programmes are being carried out, through the creation of sanctuaries, reserves and national parks.

In Europe, an EEP of the gorilla specimens in the zoos is being carried out, in order to maintain a demographically sustainable population with enough genetic variability that allows to keep a reserve in case of any future difficulty, in which the Zoo of Barcelona takes an active part.

SPOTTED HYAENA

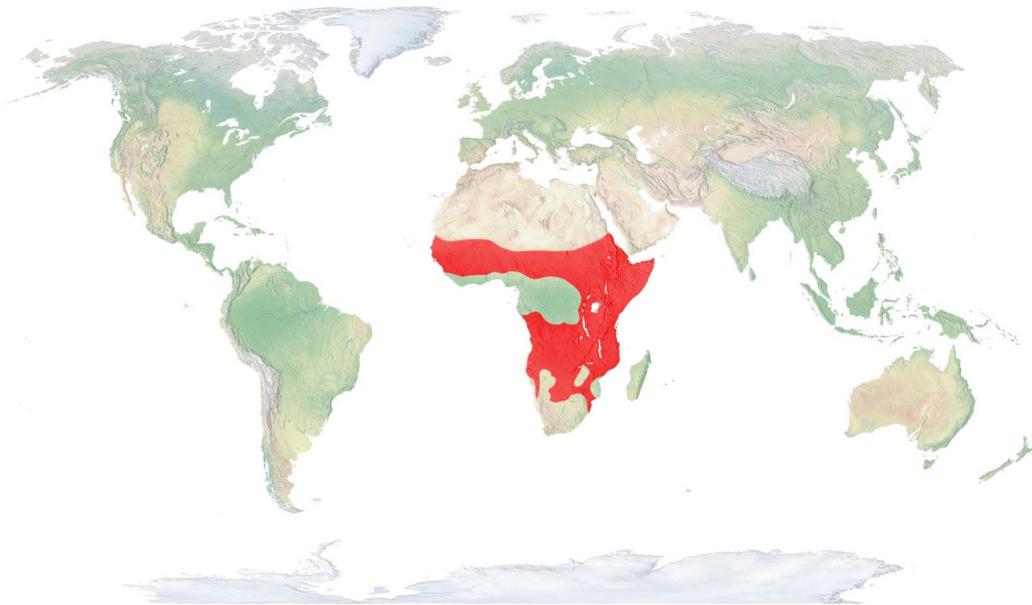
Crocuta crocuta

Distributed exclusively in Africa, its habitat are savannas and other open spaces of most of the continent, and it is localized more or less continuously, from southern Sahara to Namibia and the northern part of the South African Republic, except in deserts and in the tropical rainforests of the basin of the Congo river.

BREEDING PROGRAM

NATURAL HABIT

Although it is best known for being a carrion eater, the spotted hyena is a powerful predator that preys in group and can capture considerably large animals. Its distribution spans along a great part of Africa in southern Sahar, where it dwells in all kinds of habitats, except for dense rainforests and deserts.



- Distribution / Resident
- Breeding
- Wintering
- Subspecies

RISK LEVEL

- Extinct
- Extinct in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

(LEAST CONCERN)

TAXONOMY

Class Mammalia

Order Carnivorous

Family Hyaenidae

PHYSICAL CHARACTERISTICS

45 - 85 kg

Birth Weight: 900 - 1200 g

125 - 160 cm

More than 40 years in captivity

BIOLOGY

Habitat

Savannah

Social life

Gregarious

Feeding

Carnivorous

REPRODUCTION

Gestation 110 - 115 Days

Baby 1-4, usually 2

Discover how they are



Description

The spotted hyena, with a weight that can exceed 80 kg, is the largest species of the hyaenidae, a family of the carnivorous order characterized for having their front legs slightly longer than the rear ones, a short and thick snout, big eyes and ears, powerful jaws and strong and developed molars, that denote their carnivorous diet. In the case of spotted hyenas, such molars are specialized in grinding big bones and rip hard textures, that other animals are not able to eat nor digest.

Habitat

It lives in all kind of habits, except for dense rainforests and deserts.

Feeding

It is a very adaptable and opportunistic animal that can feed on zebras, reptiles, ostrich eggs, warthogs, impalas, young giraffes, buffaloes or hippos, although their favourite preys are gazelles, zebras and gnus.

Reproduction

One of the most important characteristics of this species is that both sexes' appearance is very similar, even their genital organs, for females' clitoris is so developed that looks like a penis, and it even has a bag that resembles the scrotum of the males. For this reason, many African people believe that hyenas are hermaphroditic animals.

Spotted hyenas do not reproduce seasonally and can mate at any time of the year, although they are more prone to do so during the wet season. Gestation can vary considerably, although the median is 110 days, and usually two cubs are born, although births of three or even four cubs have been documented.

Conduct

It lives in family groups of up to thirty animals, which are usually led by an adult female. In some places especially rich in potential preys, such as the crater of the Ngorongoro in Tanzania, groups can reach up to eighty animals. These more or less related clans, defend their territory against other clans of hyenas by marking the limits with secretions from the anal glands, urine or excrements.

With nocturnal and crepuscular habits, they dig their dens or use the ones of they live in subterranean dens that are dug by themselves or in the ones of the aardvark or other digger animals. As social species, it emits a series of different vocalizations, the best known of which is some kind of repetitive barking that vaguely resembles human laughter.

Despite of the traditional image of this species, of an animal that merely feeds on the remains left by the authentic hunters of the savanna, such as lions, cheetahs or

STUDY OF THE SPOTTED HYENA IN KENYA



Large populations of carnivores have diminished all over the world during the last century, mainly as a result of increased conflict with humans. Large carnivores have cascade effects on the ecosystem and their conservation at ecologically effective densities is crucial for maintaining ecological functions. While protected areas are the main mechanism for conserving predators, they are becoming increasingly isolated and often insufficient for the large areas required for wild carnivores. In the east of Africa and especially in Kenya, given the human population growth and drop in natural prey, the conflict between humans and carnivores has been on the rise, often resulting in diminishing populations of carnivores.

The spotted hyena (*Crocuta crocuta*) is dying out in Kenya because of the direct persecution it has suffered at the hands of humans, given its responsibility for most attacks on livestock and it is one of the clearest examples of conflict between carnivores and humans. Hyenas are very flexible in their behaviour and ecology, which enables them to adapt rapidly to ecosystems that are being increasingly dominated by humans and, sometimes, substituting wild prey with domestic livestock. Note that the animosity towards hyenas is frequent in several indigenous African groups, with traditional tales and stories that convey culturally developed prejudices and a persistent antipathy towards the species, making its conservation even more difficult.

Collars with GPS will mainly be used for understanding the movements and patterns of activity of the spotted hyena. The Barcelona Zoo Foundation's goal is to award microgrants to support research and/or conservation for the *Global Change and Conservation Lab* Research Group at the University of Helsinki, so that it can acquire and attach two collars with GPS on to two spotted hyenas in the area under study. The Research Group has been working in close cooperation with Kenyan institutions in field work, such as the *Kenya Wildlife Service*, the *National Museums of Kenya*, the *Turkana Basin Institute* and the *Mpala Research Centre*. These institutions have been tasked with managing both the administrative and the local logistics sides, such as providing the legal framework for the research and integrating the results into conservation programmes. The project is making an important contribution to the global assessment of the state of hyenas being conducted by the UICN's *Hyaena Specialist Group*, in which a specialist from the research group at the University of Helsinki is taking part. The National Geographic Society has given support to the project by financing four GPS collars, although the acquisition and attachment of a further two collars, funded by the Barcelona Zoo Foundation is considered very important for obtaining statistically significant results to extract a sufficient amount of conclusive data.

GAZELLA DORCAS OSIRIS

This gazelle is almost extinct in the wild due to excessive hunting. The *osiris* subspecies, also known as *neglecta*, survived thanks to the fact that in 1972 the Experimental Station of Arid Zones of Almeria, under CSIC (Spanish National Research Council), started its captive breeding program and other projects aimed to reintroduce it to its habitat.

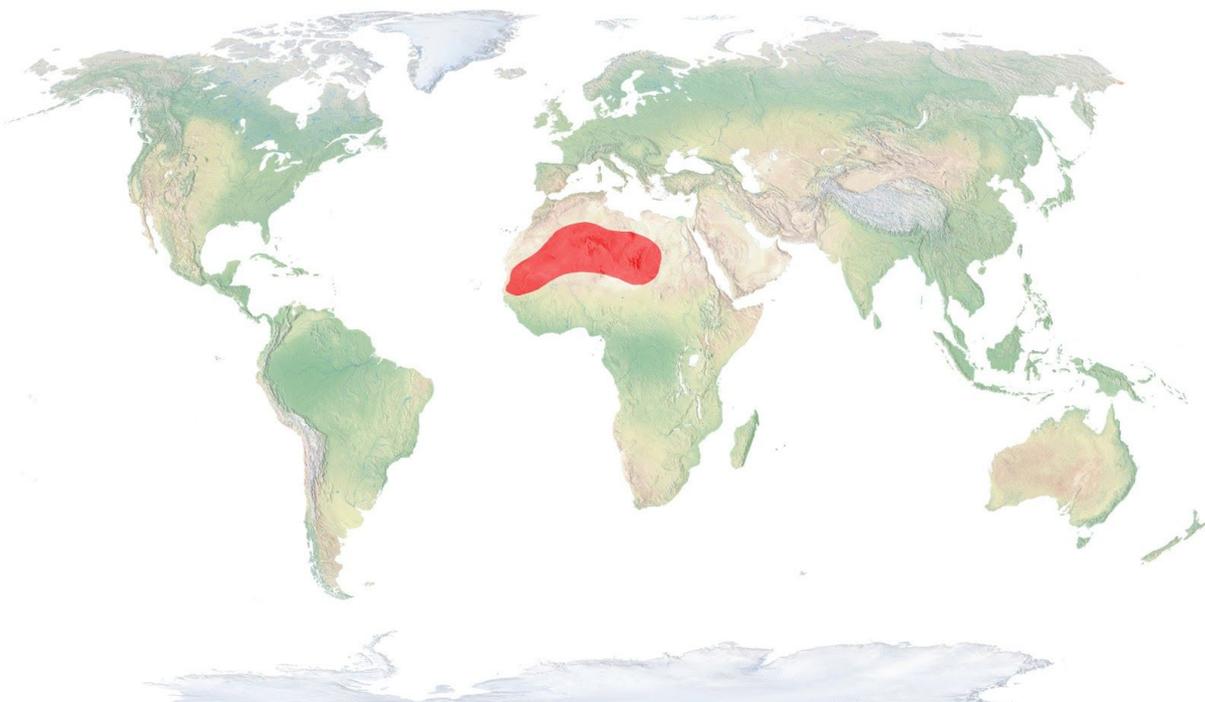
It is adapted to deserts, where the only available water is obtained through vegetables, mainly acacia leaves.



BREEDING PROGRAM

NATURAL HABIT

Western Sahara.



- Distribution / Resident

- Breeding
- Wintering
- Subspecies

RISK LEVEL

- Extint
- Extint in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

VULNERABLE

TAXONOMY

Class **Mammalia**

Order **Artiodactyla**

Family **Bovidae**

PHYSICAL CHARACTERISTICS

15 - 20 kg

Birth Weight: **1,3 - 1,7 kg**

90 - 110 cm

More than 15 years in captivity

BIOLOGY

Habitat

Desert

Social life

Gregarious

Feeding

Herbivorous

REPRODUCTION

Gestation **175 - 182** Days

Baby **1, rarely 2**

Discover how they are



Biology

Description

It is a small ungulate, characteristic from great desert areas of north-western Africa. Small and with a slender silhouette, the upper part of its body has a light brown colour, similar to the desert's sand, while the lower part is white. Although bigger in males, both sexes have horns, which are ringed and shaped like a lyre.

Habitat

Desert, sub-desert, steppe and sandy areas, with sparse vegetation.

Feeding

It is the most adaptable gazelle to desert conditions, and feeds on leaves, flowers and sheaths of different acacia species, as well as leaves, roots and fruits from many bushes. It can spend long periods without drinking water, as it obtains water from plants.

Reproduction

Gestation lasts for about six months and a single calf is born each time, exceptionally two. During the first weeks, the little calf remains still in a land depression or between bushes, while the mother is nearby, always attentive. During oestrus, males become territorial and mark the limits of the territory with their stool.

Conduct

Gestation lasts for about six months and a single calf is born each time, exceptionally two. During the first weeks, the little calf remains still in a land depression or between bushes, while the mother is nearby, always attentive. During oestrus, males become territorial and mark the limits of the territory with their stool.

Status and conservation programs

Very abundant until recently, it lived in large herds that moved through the desert looking for pastures and water. They had always been hunted by nomad people inhabiting the area, who feed on their meat, but the arrival of firearms and motor vehicles caused a huge population decrease.

In order to save this gazelle and other Saharan endangered species, on 1971 the Saharan Fauna Rescue Park in Almeria, Spain, was created, which has proven a remarkable success, for animals born at their facilities have been sent to different zoos, among which ours, and furthermore, it has allowed the reintroduction of some of them to certain parks and animal reserves in northern Africa.

Following the advice of the Global Zoo and Aquarium Conservation Strategy, which aims to support in situ conservation, i.e. in the native places of species, the Zoo of Barcelona, collaborating with CSIC (Spanish National Research Council) and other

zoos of Europe, takes part in an important dorcas gazelle reintroduction project in one of the African countries where the species comes from, Senegal.

This has been carried out with animals from the Zoo, from selected genetic lines, as well as with the Zoo's technical and veterinary support. Moreover, from an educational point of view, the Zoo has prepared information signs for the reception hall of the Animal Reserve of Guembeul, the first destination of the animals, where they have an adaptation period, before they are definitively freed to the National Park of Ferlo North.

The Zoo of Barcelona takes part in the EEP of this gazelle species.

MONTSENY TRITON

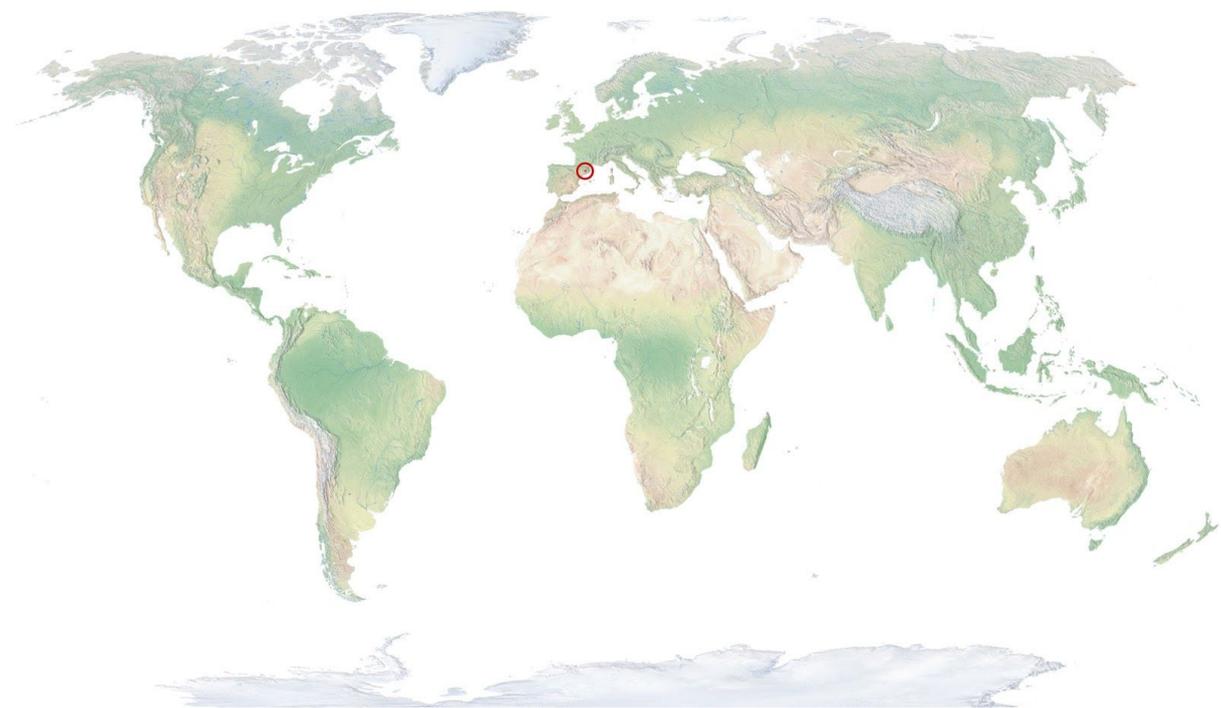
Calotriton arnoldi

The Montseny brook is an amphibian species from the Montseny that can only be found in this Catalan Massif, in a very small distribution area of only 25 km², and it is the only vertebrate endemic to Catalonia. It has only been spotted in seven streams, distributed in two populations, which are four kilometres from each other.

It is estimated that during the last ten years its population has decreased 15%, which has led the International Union for Conservation of Nature and Natural Resources to list it as Critically Endangered (CR) on their red list.

Natural habit

It lives in mountain streams of cold highly-oxygenated waters, preferably in beech and oak forests, between 600 and 1,200 metres of altitude.



Critically endangered

Discover how they are



Biology

Description

Its length does not exceed 11 centimetres and has a brownish hue on the back, with small yellow spots on the tail sides, as well as cream coloured underparts. Its sexual dimorphism is low: males have slightly bigger and wider heads than females and their tail is shorter and higher. The main difference is in the cloaca, where females have a slightly prominent and round protuberance.

Habitat

It lives in mountain streams of cold highly-oxygenated waters, preferably in beech and oak forests, between 600 and 1,200 metres of altitude.

Feeding

It feeds on aquatic invertebrates and salamander larvae.

Reproduction

Oviparous, reproducing in the spring and fall. Eggs of this species have never been spotted in the wild, but it is believed that females leave them under rocks, to prevent them being dragged by currents. In captivity, they lay up to forty eggs per year, with an incubation period between one month and one month and a half. They are born as a whitish minuscule larva and they slowly acquire their adult shape. Young newts' appearance is the same as in adults, albeit smaller, with completely smooth skin and with gills.

Conduct

Mountain brook has developed some very particular adaptations to live in cold streams with strong currents. The main ones are: its flattened body that enables it to easily enter crevices; the lack of dorsal crest; its granular skin and its chitinous parts on the tip of its fingers, which lets it have a strong grip on crevices and on the bottom of the streams. Its small lungs help him remain underwater.

Unlike its Pyrenean counterpart, the young newts do not seem to leave the water and adopt ground-dwelling habits. It shares its habitat with two other amphibians: the fire salamander and the common midwife toad.

Status and conservation programs

Although the existence of a newt population in Montseny has been known since the 80s, at the times this was initially identified as Pyrenean newts, a common species in many parts of our country, and it was not until 2005 when it was proved that, due to their isolation, both species evolved independently.

It is estimated that during the last ten years its population has decreased 15%, which has led the International Union for Conservation of Nature and Natural Resources to list it as Critically Endangered (CR) on this organization's red list. It has also been protected by Spanish and Catalan laws, where it is also considered to be a critically endangered species. It is, without a doubt, one of the most endangered amphibians in Europe.

The survival of this species is closely linked to the preservation of aquatic environments, but also to the vast forests surrounding them. Natural disasters, such

as fires caused by lightning or floods caused by torrential rainfall, may lead to local extinctions of newt populations, but it is human intervention which is endangering the survival of the species.

Since 2006, Barcelona Provincial Council and the Catalan Government have co-funded the Montseny brook newt conservation project, in the scope of the Montseny Natural Park, which is aimed at ensuring the survival of this threatened vertebrate.

On 2007, twenty adult specimens were taken to the Torreferrussa Wild Fauna Recovery Centre to start a pilot programme and evaluate the feasibility of their reproduction in captivity. It should be noted that this is a species that had never been bred before, so the centre had make a great effort, in terms of both research and investment, to push the project forward. The specimens adapted very well, as reported a year later when the reproductive cycle ended with a high number of eggs. The growth of the larvae during the first two years was very encouraging, once the critical initial period had been overcome, which enabled us to have a reserve of over 400 juveniles and to start releasing them into the wild on 2010.

However, a single population is not enough to ensure the future of the species, should a critical situation arise. Along these lines, the Zoo of Barcelona started collaborating in the recovery plan of the Montseny brook newt, by breeding the species at its facilities.

On 2016, a LIFE project for the conservation of the Montseny brook newt has been started and the Zoo of Barcelona takes part in it, with the construction of a second facility for the reproduction of this endangered species.

Conservation of the Montseny brook newt

The Montseny brook newt (*Calotriton arnoldi*) is a species of amphibian found exclusively on this massif, nature park and biosphere reserve. It is therefore endemic to this territory and also the only vertebrate that is from Catalonia. The first populations of the species were discovered by chance in 1979 and it was initially

believed to belong to a very close species, the Pyrenean brook salamander (*Calotriton asper*). Scientific studies were able to establish, towards the end of 2005, that these populations were actually, on a morphological and genetic level, a different species: the Montseny brook newt. It had remained unknown to science for decades owing to its rarity, despite its obvious differences with the Pyrenean species. So all brook-newt populations known so far became a new species, the Montseny brook newt, and the Pyrenean species was therefore not present on the massif. That led to concerns over the state of conservation of this emblem of Montseny's biological diversity, which was finally listed as a "critically endangered" species by the UICN, as Western Europe's most threatened amphibian.

It was in light of this scenario, in 2016, that the European Commission authorised a LIFE project for conserving this species, with the Barcelona and Girona Provincial Councils, Generalitat of Catalonia, Forestal Catalana and Barcelona Zoo taking part. The project is aimed at implementing initiatives to minimise current threats to the Montseny massif and lead to the improvement of its state of conservation. The following operational goals were established for that purpose:

Goal 1. To ensure its genetic conservation and expand its geographic distribution.

Goal 2. To improve water quality and the ecological flow of transmissions in its distribution range.

Goal 3. To eliminate or minimise the threats that occur in brook habitats where the Montseny brook newt is currently found.

Goal 4. To establish sufficient legal cover on both domestic and EU levels and have a plan for its management.

Goal 5. To monitor its state of conservation regularly and increase scientific and expert knowledge for its conservation and management.

Goal 6. To disseminate information and involve society in conserving brook habitats, their biodiversity and, specifically, the Montseny brook newt.

Animal file

Black-winged stilt

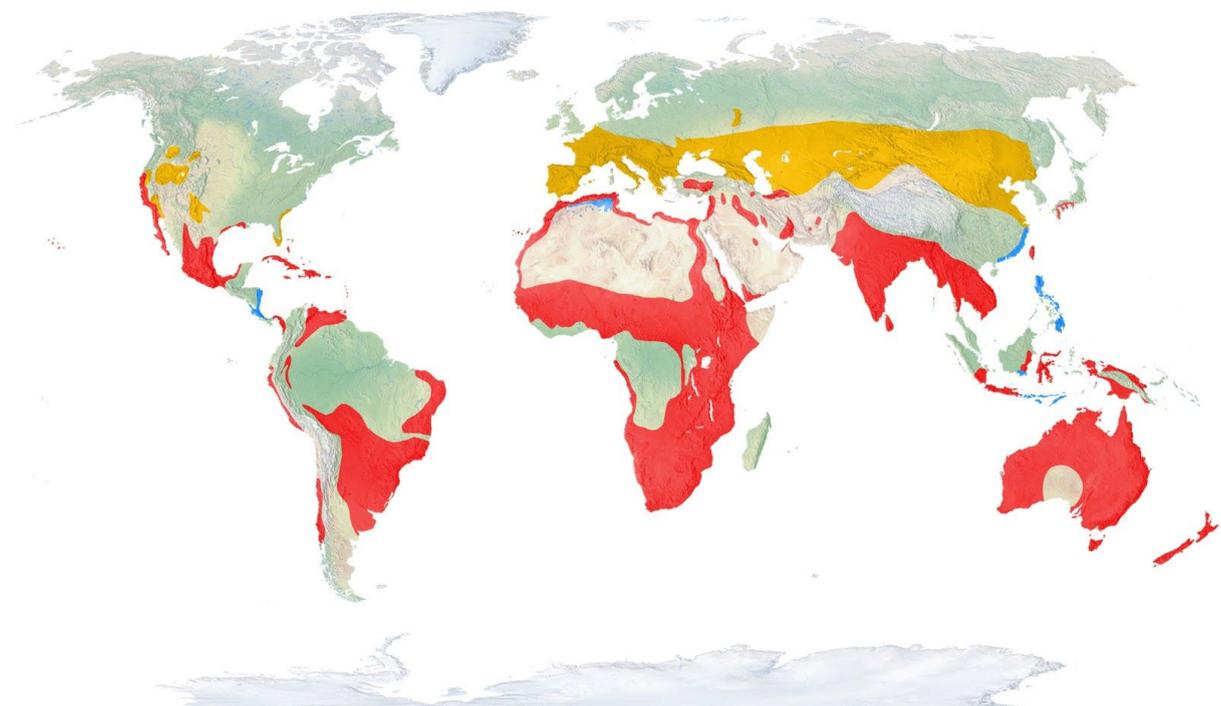
Himantopus himantopus

The Black-Winged Stilt is a small wader characterised by having very long legs for the size of its body. Its long narrow beak helps it feed on small invertebrates in the mud.

It nests on the ground and has curious defensive behaviour: if an intruder approaches the nest, it runs away feigning a broken wing, but then takes flight once it has lured the predator away from the young.

Natural habit

Almost all countries of the world



- Distribution / Resident
- Breeding
- Wintering
- Subspecies

Risk level

- Extint
- Extint in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

Least Concern

Taxonomy

Class

Aves

Order

Charadriiformes

Family

Recurvirostridae

Physical characteristics

166-205 g

Birth Weight:

35-40 cm

Up to 5 years

Biology

Habitat

Wetlands

Social life

Gregarious

Feeding

Insectivorous

Reproduction

Gestation

22-26

Days

Baby

3 to 6

Discover how they are





Biology

Description

The common stilt is a small wader, famous for its red long legs, its long thin bill and black and white hue. It is the most common wader, with the largest distribution in our country.

Habitat

It lives in all kinds of deltas, estuaries, coastal lagoons, marshlands and shallow rivers and lakes. It can tolerate quite well areas greatly altered by human action.

Feeding

Its fragile bill allows it to capture small invertebrates and mostly aquatic insects, in the mud or the surface of water, on which it feeds.

Reproduction

Due to its wide distribution area, its reproductive season varies greatly. It is a gregarious species that reproduce in breeding colonies, that can be formed by a few couples to hundreds of nests, which are built on the ground, that resemble a small land depression covered with plants. In the nest, it lays three to six eggs, normally four, that are brooded for 22 to 29 days by both sexes. They are very aggressive towards anything or anyone that

approaches their nests and aggressions to different large rapacious and ducks have been reported.

Conduct

It is sedentary, from southern United States to eastern Argentina, only avoiding the Amazon, and all Africa below Sahara, except for forest areas of the continent, India and most of South-east Asia, as well as New Guinea and Australia. In the Nearctic and the Palearctic realms, it is exclusively a summer species, reaching these areas at the beginning of April to build its nest, before returning to the south, to spend the winter in warmer areas. In the Iberian Peninsula it is an exclusively summer species.

Status and conservation programs

It is a quite common species, whose main threat is habitat degradation, especially its breeding territories, caused by human activity. It is not considered endangered, despite increasing degradation of aquatic and coastal environments, which represents a future threat for the conservation of the species.

What do they do for him from the Barcelona zoo?

Endemic breeding bird atlas



Field work first began 15 years ago on the Atlas of Catalonia's Nesting Birds 1999-2002, which enabled the discovery of the distribution of 232 species, 21 of which had not been detected in the first atlas. Some species have become more abundant in Catalonia since then, such as the lesser spotted woodpecker or, more rarely, the greater short-toed lark; there are others that have nested there for the first time, such as the marbled duck, or which have vanished, such as the Dupont's lark. The ICO is now planning a new atlas to enable an updating of the distribution of all the species nesting in Catalonia. What is more, for the first time, it will provide us with accurate knowledge of how the distributions of many species change. Of course, this new atlas is a new piece in the structure for monitoring Catalonia's birds, and analyses of changes in their distribution will play a central role.

Preparing and publishing the new Atlas of Catalonia's Nesting Birds with recent and historical data on the species regarding their nesting has attracted huge interest among the naturalist and scientific community in our country, as well as throughout Spain, the Iberian Peninsula and even Europe. The goal behind the Barcelona Zoo Foundation's collaboration is to contribute to the preparation of the Atlas, by giving financial support at this stage so that all the necessary field work can be completed and the whole Catalan territory can be covered, using the methodology described. Later stages will also require scientific advice and technical support.

ENDEMIC BREEDING BIRD ATLAS



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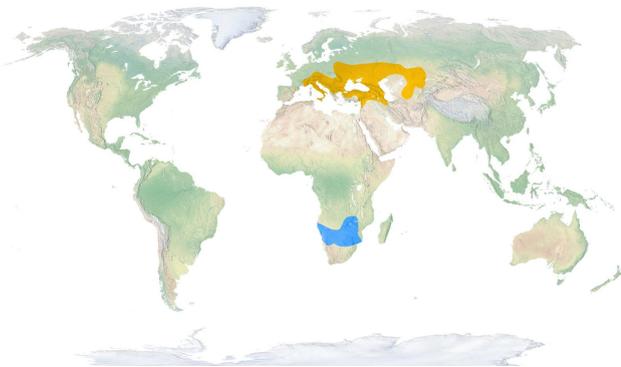
LESSER GREY SHRIKE

Lanius minor

The lesser grey shrike is a small passerine bird of the Laniidae family characterised by a large beak and head that are out of proportion with the rest of its body. A pure insectivore, it uses its powerful and curved beak to break the exoskeletons of the beetles and other insects on which it feeds. Laniidae are known for impaling their prey on the sharpened twigs of bushes, enabling them to tear them apart easily.

NATURAL HABIT

From the north eastern Spain to Central Asia and northern Jordan. Winter in southern Africa.



- Distribution / Resident
- Breeding
- Wintering
- Subspecies

RISK LEVEL

- Extint
- Extint in the wild
- Critically endangered
- In Danger

- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

(Least concern)

Hábitat

Forest

Social life

Gregarious

Feeding

Insectivorous

REPRODUCTION

Gestation **14-16** Days

Baby **3 to 7**

Discover how they are



Biology

Description

The shrike is a small passerine bird that belongs to the Laniidae family, which is the same family as other species living in Catalonia like the woodchat shrike *Lanius senator*, red-backed shrike, *Lanius meridionalis*, or southern grey shrike, *Lanius collurio*, which is characterised by having a large beak and head that are disproportionate to the rest of the body, like falcons and other smaller birds of prey. Its back and top of its head are grey, with a pink breast and a highly-characteristic black eye mask and forehead.

Habitat

Its area of distribution is primarily in Eastern Europe and Asia. Until recently it was also abundant in Western Europe, but on the Iberian Peninsula today we can only spot them in a very limited area in the province of Lleida.

Feeding

It is a strict insectivore, using its powerful curved beak to break the exoskeletons of beetles and other insects it feeds on. The Laniidae family is known for impaling their prey on the sharp branches of bushes, from where it can then quarter them easily.

Reproduction

In Catalonia, breeding starts at the end of May with building the nest, in which it lays five to seven eggs that are incubated by the female for some 15 days. Around August, the chicks leave the breeding areas to embark upon migration.

Conduct

It is a summering species that spends the winter in the south of the African continent, in the Kalahari depression. It makes one of the longest migrations of all European birds, as it crosses the Mediterranean in the Near East and not at Gibraltar.

Status and conservation programs

Although this species is not endangered in the entire world, in Catalonia there has been a huge drop in its numbers in recent decades. It used to have an extensive and well-established population in our lands, and today it is very limited, with only few individuals surviving on the Lleida plain. This situation has made it the vertebrate that is most endangered of all Catalan fauna and, indeed, all Iberian fauna. The causes for the decrease in shrike numbers here and in a large part of its European distribution area are largely due to the combination of several factors, including the loss of nesting habitat (dry crops with fallow lands and well conserved borders) due to farming intensification, climate change, high predator rates and excessive use of pesticides that kill the insects on which it feeds. The Barcelona Zoo takes part in an important shrike conservation project, consisting of the establishment of a collaboration agreement with the Shrike Association (Associació d'Amics del Centre de Recuperació de Fauna de Vallcalent) in order to maximise the breeding of this species ex situ and favour in situ conservation of the wild population, which is done by the Vallcalent Fauna Recovery Centre in the Lleida area where the species has survived.

The two institutions TRENCA and the Barcelona Zoo Foundation, have a conceptual collaboration framework, and their common interests include recovering and conserving biodiversity and wildlife in the Ponent's counties, which is their preferred territorial area of action. Notable within this biodiversity framework is the priority interest in iconic and bioindicator species, such as the lesser grey shrike (*Lanius minor*) and the cinereous vulture (*Aegypius monachus*).

The Lesser Grey Shrike (*Lanius minor*) Conservation Project in Catalonia, promoted by the Department of Territory and Sustainability at the Generalitat, regional government of Catalonia, and run by Trenca, with support from public and private entities such as the Biodiversidad Foundation, the Spanish Ministry of Agriculture and Fisheries, Food and the Environment, WWF España and Barcelona Zoo itself. This year marks the tenth anniversary of the first releases, since when the species' extinction here has been halted, for the time being. Trenca's work is centred on managing the habitat of the last breeding areas in Lleida, freeing and monitoring fledglings through *hacking*, supplementary feeding and migration studies, among other things.

On the other hand, the Barcelona Zoo Foundation is also taking part in the Project for highlighting the ecosystemic values of scavenger Pyrenean birds through the Specific Feeding Point (PAE) network, in whose framework the Trenca association has been managing three PAEs in the Lleida Pyrenees and Pre-Pyrenees for eight years, as part of the Project for the Reintroduction of the Cinereous Vulture (*Aegypius monachus*) in Catalonia. The goal behind our collaboration is to open an additional new specific PAE for the cinerous vulture, for the bearded vulture (*Gypaetus barbatus*), the Egyptian vulture (*Neophorn percnopterus*), the red kite (*Milvus milvus*) and the black kite (*Milvus migrans*) half way between the current and only cinereous vulture colony, in Boumort, and Aragón. In addition, it will be equipped with *hides* to carry out environmental education and awareness work as

well as promote nature tourism and, therefore, contribute to sustainable rural development. This new PAE is mainly aimed at consolidating cinereous vulture populations and enabling expansions in new territories with suitable habitats for the species.

Aegyptian vulture

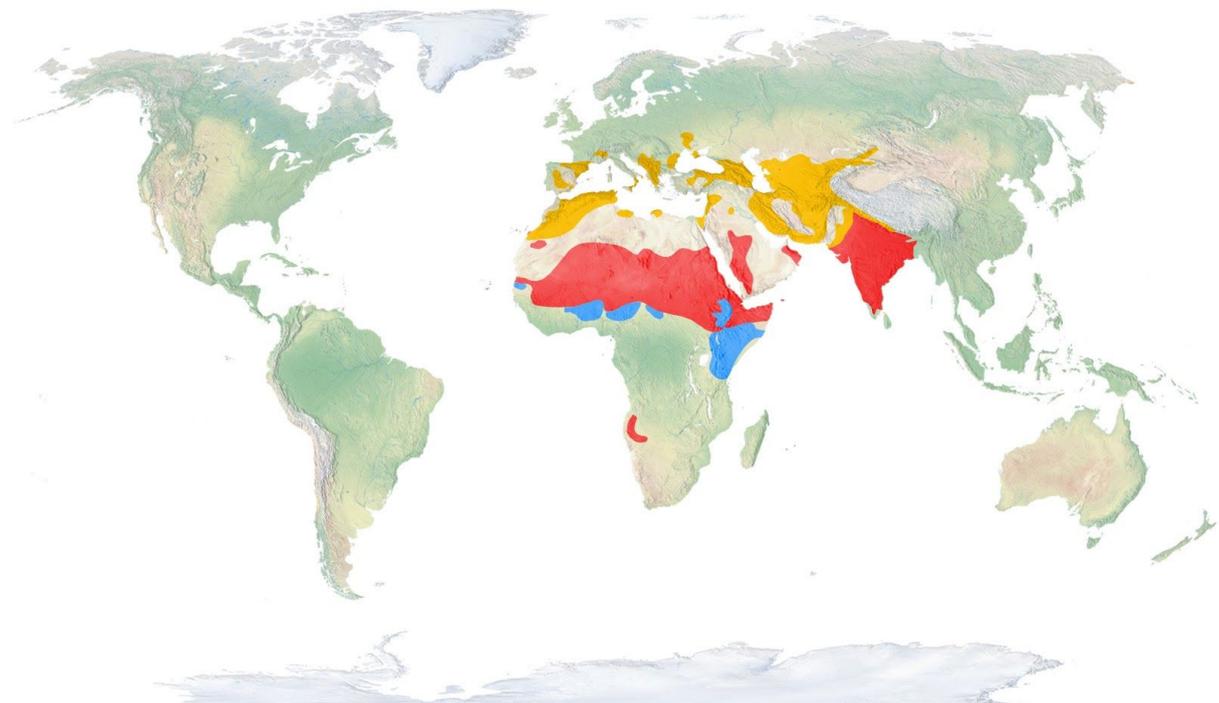
Neophron percnopterus

The Egyptian vulture is the smallest European vulture, living on the steppes, semi-arid zones and other open spaces in southern Europe, the Middle East as far as India and in most of Africa. It feeds mainly off carrion and is migratory, coming to Spain each year to breed in nests in cliffs.

It is one of the few species of animals able to use a tool and breaks open ostrich eggs left in the savannahs of Africa by dropping stones from its beak.

Natural habit

Southern Europe, the Middle East to India and much of Africa.



- **Distribution / Resident (RED)**
- **Breeding (ORANGE)**
- **Wintering (BLUE)**
- **Subspecies: AVES**

Risk level

- Extint
- Extint in the wild
- Critically endangered

- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

Endangered

Taxonomy

Class

Aves

Order

Falconiformes

Family

Accipitridae

Physical characteristics

1600-2200 g

(Birth Weight)

58-70 cm

Up to 40 years

Biology

Habitat

Savannah

Social life

Gregarious

Feeding

Scavenger

Reproduction

Gestation

38-44

Days

Baby

2

Discover how they are



Biology

Description

With basically white plumage, the feathers on the tips of the wings are black. The featherless head and neck are yellow and the plume of long thin whitish feathers surrounding the head are typical. During flight, it can be recognised by the two-toned black and white underwing and wedge shape of the tail. The young have a uniform brownish colour with a grey face.

Habitat

It lives on steppes, semi-deserts and other open sites in southern Europe, the Near East to India and a good part of Africa.

Feeding

They primarily feed on carrion, although their long narrow beaks, less robust than that of other vulture species, means that they cannot slash the hides of large animals. They have to wait for larger vultures to start the job off in order to access the softer parts that make up their diets. They also feed on the remains of small animals like rabbits, birds, reptiles and fish.

Reproduction

They build their nests on shelves, in caves, cavities and cracks in cliffs and the pairs return each year to the same place for reproduction. They generally lay two eggs, which are incubated by both the male and female.

Conduct

They are one of the few species of animals that can use a tool, having proven that they can open ostrich eggs with the assistance of stones they drop from their beaks.

Migratory, they are a summer species in our country, arriving to breed starting in the month of February. They spend winter in sub-Saharan Africa. Conversely, the populations that live on the Balearic and Canary Islands are completely sedentary.

Status and conservation programs

Their populations suffered an important drop during the second half of the last century, for which much work is being done to reverse the trend. The main reasons for this situation have been the use of poisons on crops, which has become a serious problem again in recent years, disturbances to their breeding areas, direct hunting and collisions with power lines.

The current situation of this species continues to be precarious throughout the Iberian Peninsula and, despite the fact that this is the habitat of the majority of the European population, some specific groups, like those on the Canary and Balearic Islands, are now in a critical situation. The Barcelona Zoo participates in this species' EEP.

REINTRODUCTION OF THE BLACK VULTURE

Black Vulture

Aegypius monachus

This is the largest bird of prey to be found in Spain and the most common carrion-eater in the woods of the Mediterranean area. Unlike other species of vulture, it does not nest in cliffs but in the tops of trees.

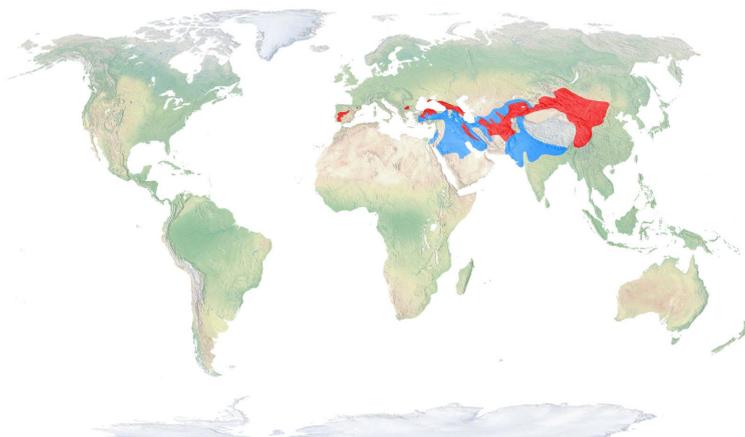
It ranges from the centre and south-east of the Iberian peninsula, Mallorca, to eastern Europe and central Asia. Although the population on mainland Spain has increased recently, the numbers in Mallorca remain in a critical state.

BREEDING PROGRAM



NATURAL HABIT

The center and southwest of the Iberian Peninsula, the Tramuntana mountains of Mallorca, some countries in eastern Europe and central Asia to northern India and southern China.



- Distribution / Resident
- Breeding
- Wintering
- Subspecies

RISK LEVEL

- Extint
- Extinct in the wild
- Critically endangered
- In Danger
- Vulnerable
- Near threatened
- Minor concern
- Insufficient data
- Not evaluated

Is Near threatened

TAXONOMY

Class: Bird

Order: Falconiformes

Family: Accipitridae

PHYSICAL CHARACTERISTICS

Birth Weight : 7-15,5 Kg

Height: 98 - 107 cm

Life: Up to 40 years

BIOLOGY

Habitat: Forest

Social life: Gregarious

Feeding: Scavenger

REPRODUCTION

Gestation 50-62 Days

Baby-1

BIOLOGY

DESCRIPTION

The Cinereous, or black, vulture is the largest bird of prey in all Europe and one of the largest in the world. It is the most characteristic scavenger in the Mediterranean forest. The plumage is dark brown, almost black, with a ruff of long feathers around its neck. The featherless face, the base of the beak and legs are a bluish grey.

HABITAT

Its area of distribution includes the central and southwest Iberian Peninsula, the sierra of Tramuntana on the island of Majorca, some Eastern European and central Asian countries to north India and southern China.

FEEDING

It can locate and make better use of small carrion they find in forested regions than its relatives, although it also eat larger cadavers that it finds in more open areas.

REPRODUCTION

They are also different from other vulture species because their nests are not built on cliffs, but are built high in trees, as they are strictly forest species. Their nests, an accumulation of sticks and branches made by both members of the pair, are very large, measuring up to a 4 metre diameter, 3 metres high and weighing 100s of kilos.

CONDUCT

Unlike the populations in other regions of the world, the adult Cinereous vultures that inhabit our country are sedentary, remaining around the breeding grounds year round.

STATUS AND CONSERVATION PROGRAMS

This species is less gregarious than the Griffon vulture. When it reaches carrion at the same time as other vulture species, it can easily take control, owing to their strength and size.

At present, the black vulture is in great danger of extinction in many regions of its area of distribution. Although Iberian populations have increased in recent years, with our country conserving the largest population in the world, the situation of the Majorcan core group (where our individuals are from) continues to be critical. The Barcelona Zoo participates in the EEP for this species.

BIODIVERSITY IN CATALUÑA

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