



Ecomuseum Iberian lynx



The landscape of the Sierra de Andújar houses some of the most emblematic species of the Iberian fauna.

This unique location is an example of landscape that is shaped by humans and, at the same time, one of the wildest territories of Sierra Morena.

We invite you to discover the secrets of the main protagonist of the Sierra de Andújar and its epic fight to survive.



1

Iberian lynx, an indispensable treasure



Emblematic figure of the Mediterranean forest

The story of this singular feline started a million and a half years ago in an almost ice-covered Europe, in which the Iberian Peninsula served as a refuge for numerous species.

Among those species, the lynx of the villafranchiense, considered as the ancestor of the current lynx lineage, underwent significant changes during glaciation that led to the Mediterranean cave lynx.

In this Iberian environment dominated by the Mediterranean forest, the feline progressively specialized in the hunting of rabbits, giving rise to a new species: the Iberian lynx.

// *The Iberian lynx has the smallest habitat distribution of its genus. It is currently considered one of the world's most threatened feline.* **//**

Distribution of the lynx species and other threatened felines

BOBCAT

(*Lynx rufus*)

- Least concern
- Length: 65-105 cm
- Height: 30-60 cm
- Weight: 6,8-9,6 kg.

CANADA LYNX

(*Lynx canadensis*)

- Least concern
- Length: 76-106 cm
- Height: 48-56 cm
- Weight: 8,5-10 Kg.

IBERIAN LYNX

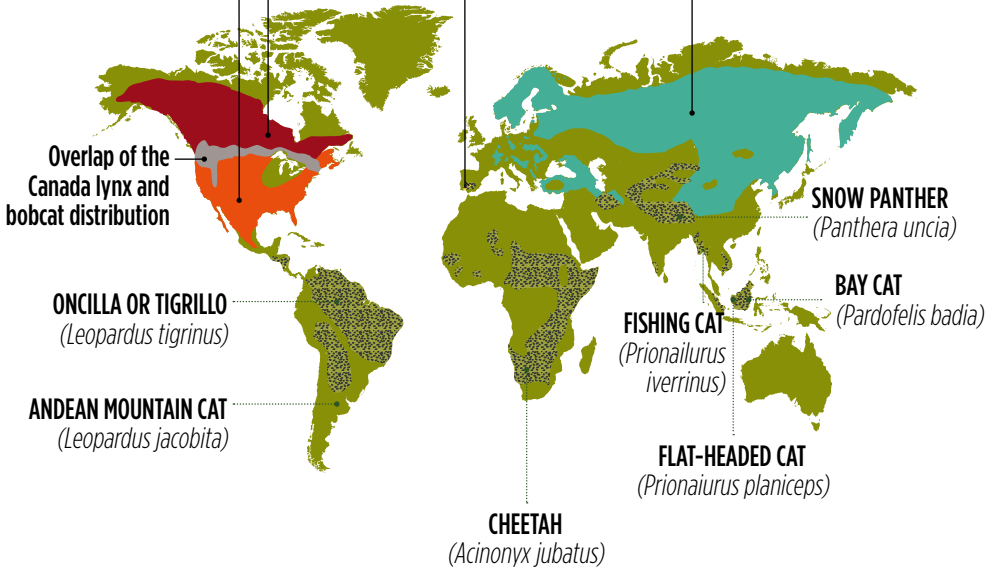
(*Lynx pardinus*)

- Endangered
- Length: 80-100 cm
- Height: 46-54 cm
- Weight: 10-15 Kg.

BOREAL LYNX

(*Lynx lynx*)

- Least concern
- Length: 80-130 cm
- Height: 60-75 cm
- Weight: 18-30 Kg.



Distribution of some of the world's most threatened and least known felines.

A species in distress

In the end of the 20th century, the emblem of the Iberian fauna suffered a dramatic regression that led it to the brink of extinction.

Persecution by man, the reduction of the field rabbit population by the appearance of new diseases, as well as the destruction and fragmentation of its habitat strongly hit this feline, reducing its population to only two locations: Doñana and the *Sierra de Andújar-Cardena*.

However, the efforts initiated by the government and society in the beginning of the 21st century explain the historic recovery of their distribution.



How did the distribution of the Iberian lynx vary during these last decades?

Estimated population in 1960

- Andalusia
- Distribution area



Population in 2002



Population in 2016



The natural balance of our forest

The Iberian lynx constitutes an essential piece of our forests, not only for its outstanding aesthetic and heritage value, but also for the unreplacable regulatory function it exercises over other carnivores.

It controls the territory by expelling or eliminating generalist predators like foxes or Egyptian mongoose, thus benefiting the populations of field rabbits and red-legged partridges.

Therefore, the establishment of the Iberian lynx in our environment reflects the environmental quality and guarantees the conservation of the Mediterranean forest.

The lynx maintains the ecological balance

“ When the lynx’ population increases, it decreases that of generalist predators and improves that of field rabbits. ”

Move the joystick and watch it change

2

The peculiar life pattern of the Iberian lynx



Biography of a feline

The Iberian lynx is a territorial species and as such, it marks its limits with visual (latrines) and olfactive (urine) signals that allow it to find a partner and to avoid confrontations with possible competitors.

The species is mainly crepuscular. Their activity rate vary depending on temperature, light hour, age or their life cycle.



Annual life cycle:

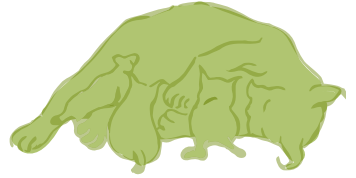
MATING

With the first winter days, the calling meows indicate the mating and copulation period.



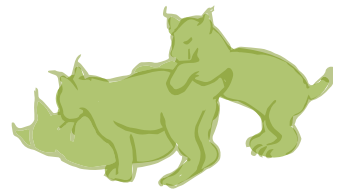
BIRTHS

After two months of gestation, the females lay a litter of one to five cubs.



CUBS

When the cubs abandon the shelter, they start an essential phase of their life cycle, consisting in exploration, games of hierarchy and learning the art of hunting.



JUVENILES

Over the following months, the cubs start to independentize within the mother's territory. At the age of two, the juveniles reach their sexual maturity and seek their own territory.



Overlap between territories and family members

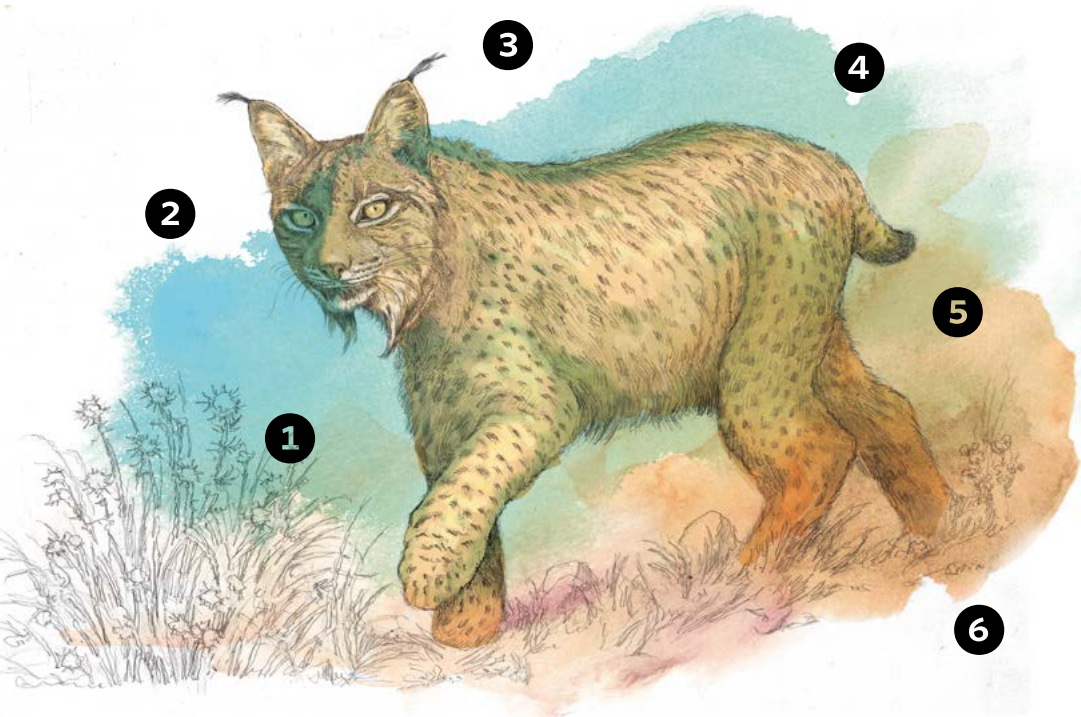
Males usually breed and share territory with more than one female. During the development period of the cubs, sometimes one can observe some family relations between the male and its offspring. It is also frequent that a young female remains with its mother during the breeding season of the following litter.



What beauty hides

Main features

- 1** Medium size adapted to the hunting of field rabbit and the warm Mediterranean climate.
- 2** Frontal eyes for a tridimensional vision and big, round pupils that allow it to see in the dark.
- 3** Tufted ears and its long beard blur its figure when approaching its prey.
- 4** Mottled and greyish-brown fur to camouflage in scrub and dry grass.
- 5** Long hind legs, adapted to the jump, and large claws with strong retractable nails to catch its preys.
- 6** Length: 80-100 cm / Cross height: 46-54 cm / Weight: 10-15 kg / Tail length: 14 cm / Longevity: 10-15 years.



The Iberian lynx indicates its emotions through different expressions that allow us to understand it better.

BEARD



OPEN:
Aggressiveness, danger or displaying



RETRACTED:
Attention, alert



NATURAL FALL:
Calm

TAIL



VERTICAL AND MOVING POSITION:
Display



VERTICAL AND IMMOBILE POSITION:
Attention



**CONSTANT RHYTHMIC MOVEMENT AND
HORIZONTAL OR DOWN POSITION:**
Calm

The three coats of the lynx

Each individual has a different spot pattern that makes it unique and identifiable. There are three types of spots:



Small spots



Intermediate spots



Thick spots

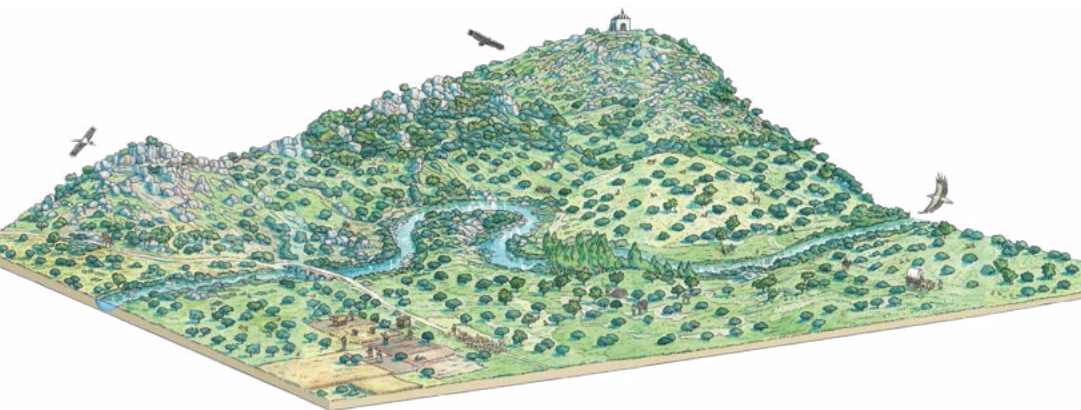
|| *Behind its spectacular beauty, the Iberian lynx remains the big feline of the Mediterranean forest. Each of its traits are the consequence of a long evolutive process that convert it to an unfailing hunter of rabbits.* **||**

Seeking home

The presence and abundance of the field rabbit determines the distribution of the Iberian lynx. Where do the rabbits live? Mainly in areas with a balanced combination of grass and crops, thickets or rocks, water points and a soft substrate allowing them to dig their galleries.

Moreover, the Iberian lynx needs low and medium mountain zones with water access, as well as natural vegetation patches that can give them refuge.

Recreation of the environment of the Sierra Morena during the preindustrial era



The field rabbit, the main livelihood of many Iberian predators

The field rabbit is a species of Iberian origin that has a key role in the maintenance of the ecological balance of the Mediterranean forest.

Its medium size, high reproductive capacity and vast distribution converts it as the main prey for numerous carnivores, among them various threatened species.

The rabbits are active during the entire day. Nonetheless, to avoid its predators, its highest activity rate is at dusk. For the rest of the day, they remain inside or near their burrows.

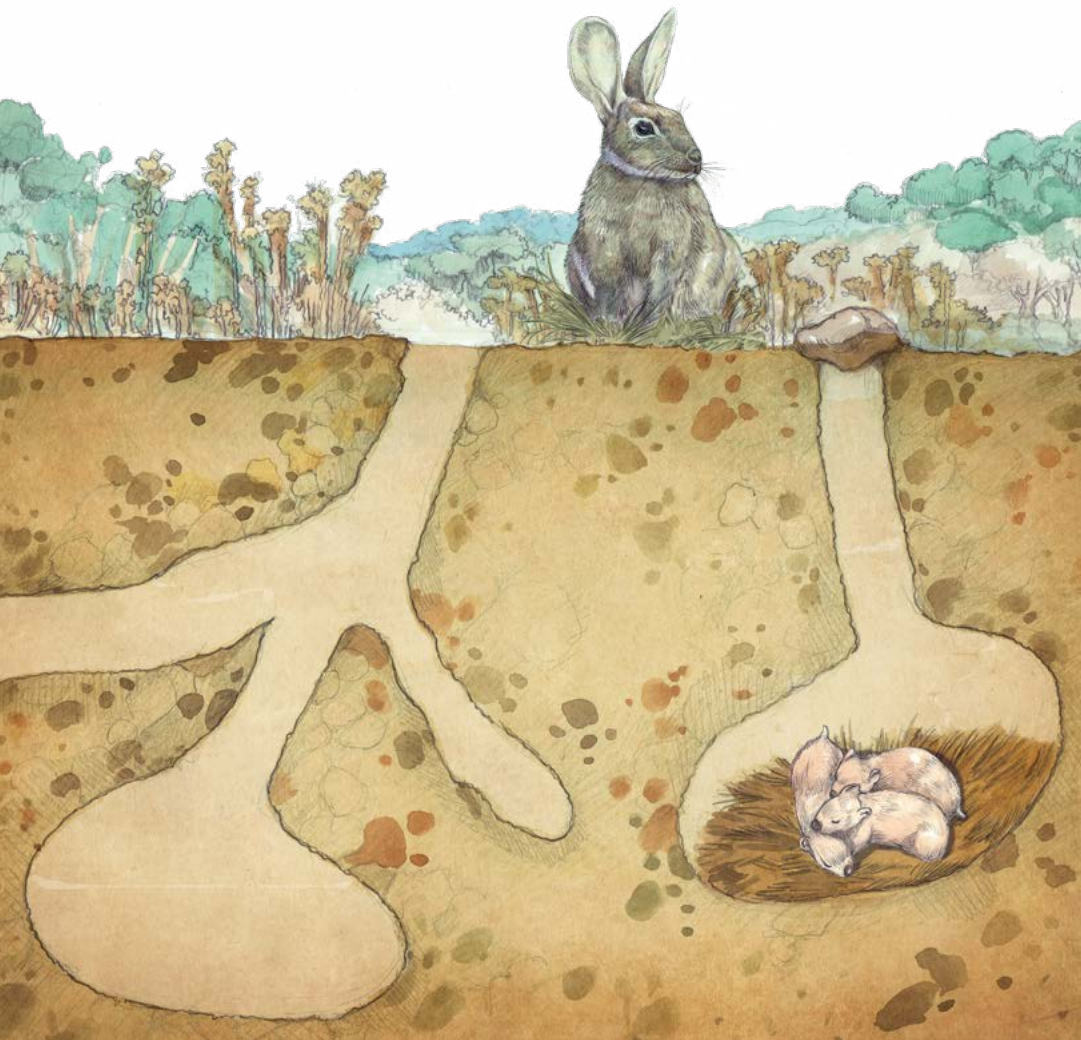


Main features:

- > **Adult mean size: 1.5-2.5 kg.**
- > **Presents long ears that can reach up to 7cm.**
- > **Cola corta, negra en la parte superior y blanca en la inferior.**
- > **It has a brownish-greyish color with a white ventral zone.**
- > **Its hind legs are very powerful, perfectly adapted for the race.**
- > **Opportunistic herbivores adapted to multiple habitats of the Mediterranean ecosystem. Even though it is not a ruminant or has a large intestine, it has developed the ability to take advantage of the nutrients of grass through cecotrophy: it re-ingests its feces and passes them a second round through the digestive tract.**



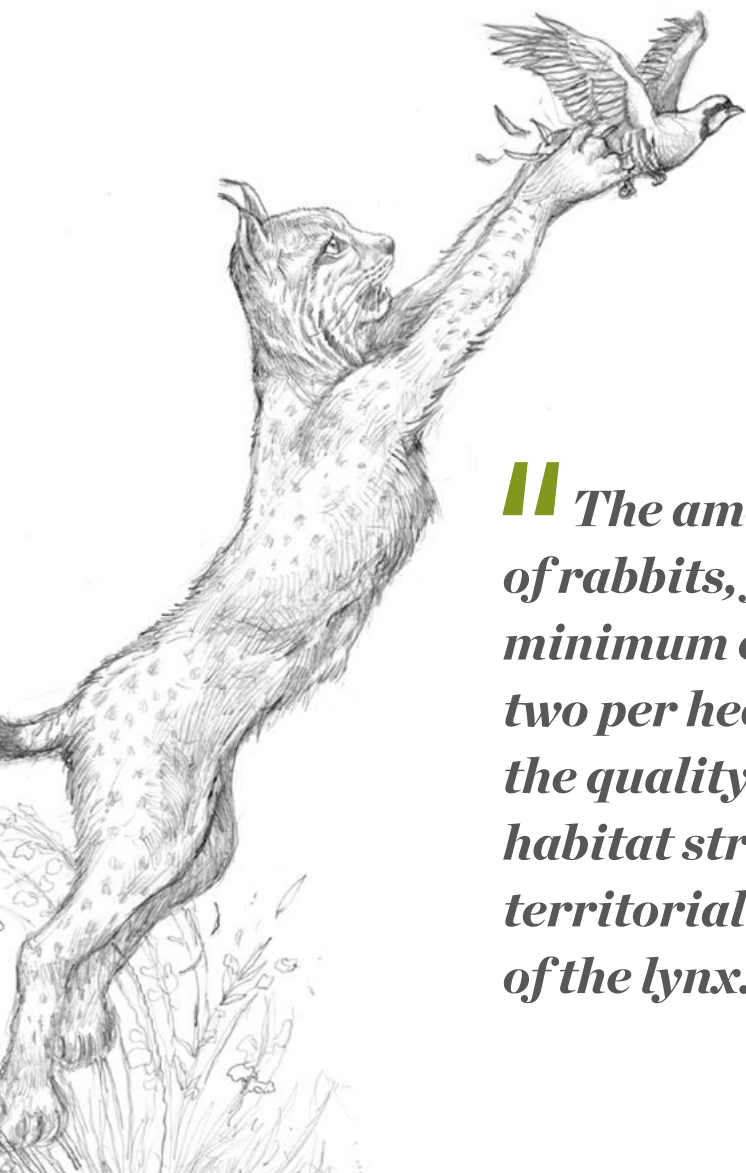
- > **The burrows are a social, highly structured space.**
- > **At birth, the rabbits do not have fur and are blind. Only after the age of 10 days, they start growing hair and opening their eyes.**



One rabbit a day

The life of the Iberian lynx is marked around its necessity to eat a rabbit a day, and at least two for lactating females.

If this condition is not met, they can very rarely pursue the development of their cubs and, occasionally, need to abandon their territories.



|| *The amount of rabbits, from a minimum of one to two per hectare, and the quality of the habitat structure the territorial dimensions of the lynx. ||*

What are we eating?

The same than yesterday?

Even though the field rabbit represents 80-90% of the lynx's diet, it can hunt other preys such as micromammals, birds, lizards and even ungulates. However, the rabbit consumption seems essential during the breeding season.

***|| The field rabbit
represents 80-90% of the
lynx's diet. ||***



The hunting process of the lynx

Its attributes are its best weapons for hunting on stalking, silently sneaking on the prey, swiping it and leaping over it.



3

The struggled path to survive



Yesterday enemy, today ally

The Iberian lynx was once considered as a threat and, consequently, was regularly persecuted by the Harmful Animal Extinction and Hunting Protection Boards (Juntas de Extinción de Animales Dañinos y Protección de la Caza). Furthermore, in the beginning of the 20th century, it was the victim of its beauty, mainly hunted for its fur and used as hunting trophy.

Today, many unnatural deaths continue to be linked to the illegal use of leghold traps, ties, poison and illegal hunting.

The benefits of the presence of this species in private forests and hunting areas are undeniable.

Thanks to the efforts of the government and other organizations to sensitize and implicate society, first positive results could be observed.

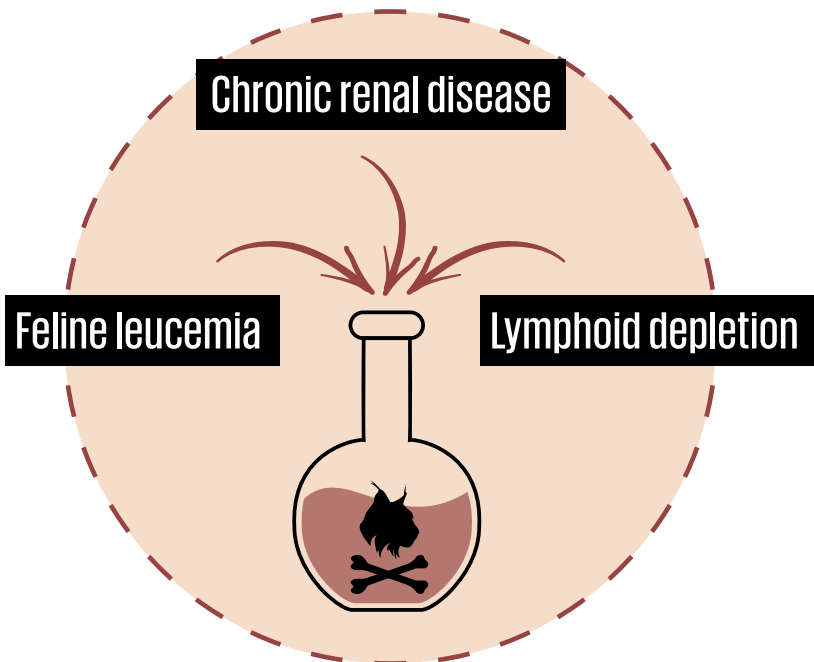


Royal blood

Throughout the 20th century, most of the Iberian lynx populations disappeared, and with it the flow of individuals among the remaining populations. Consequently, the genetic richness of the species was greatly diminished.

Thus, the species started showing higher susceptibility to diseases, breeding deficiencies and having offspring with lower viability or maladaptations.

An inbred population has little genetic variability and is more sensitive to the risk that a disease will affect all the individuals of the population and cause the extinction of the species.



The collapse of the field rabbit

The appearance of two viral diseases in the Iberian Peninsula rapidly decimated the population of field rabbits.

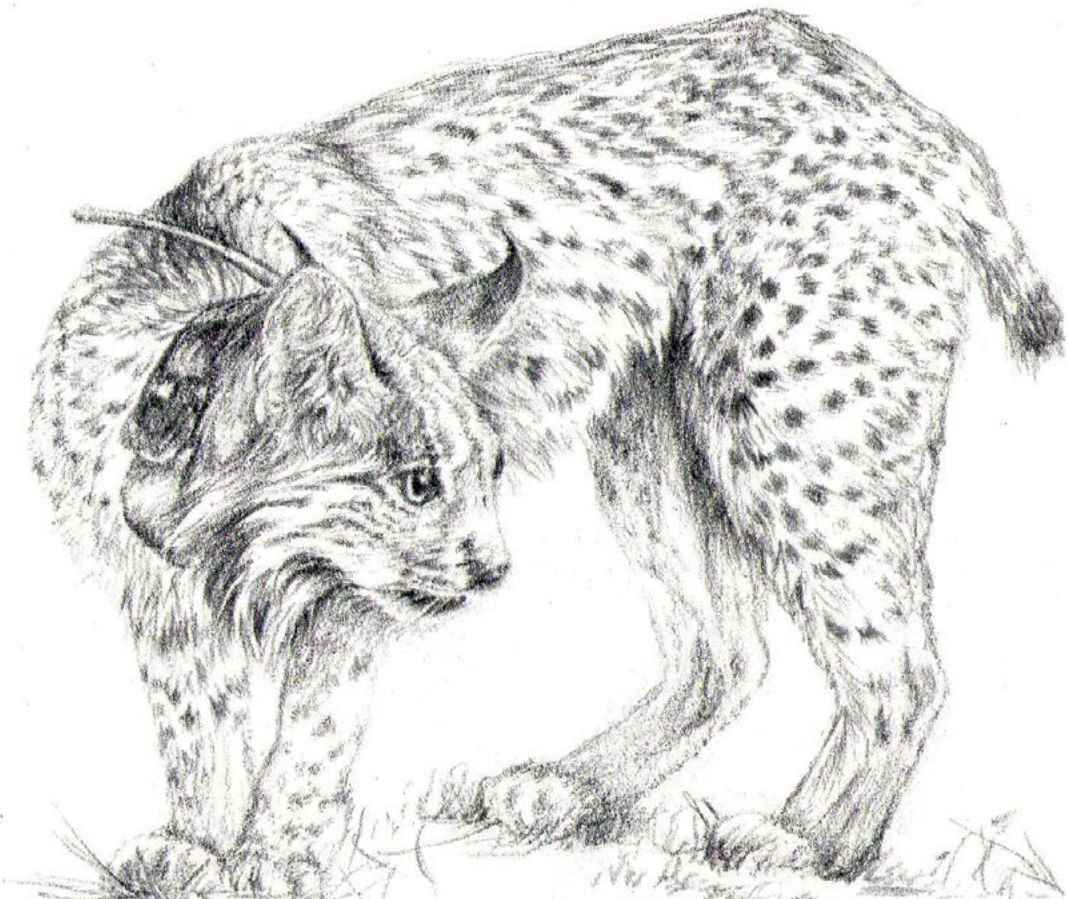
In the 1950s, the mixomatosis virus killed 90% of the species, and in the 1980s, the viral haemorrhagic virus (EHV) disease made some of its populations disappear almost completely. Its consequences are still affecting today.

In fine, the decline of the rabbit led to the decline of the lynx.

*|| If there are no rabbits,
there cannot be lynxes. ||*



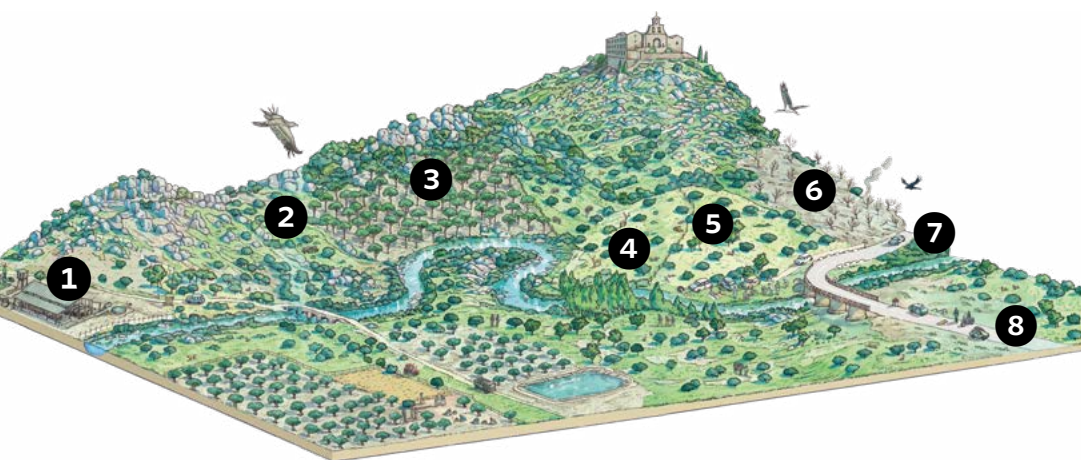
Due to the disappearance and fragmentation of populations in the end of the 20th century, the distribution areas of the lynx were reduced to two, one in Doñana and the other in the Sierra de Andújar and Cardena.



An environment to transform

During the second half of the 20th century, the industrialization and abandonment of rural areas transformed the traditional agricultural lands, affecting the rabbits, the lynxes and the rest of the Iberian fauna.

Recreation of the environment of the *Sierra Morena* in the end of the 20th century



- 1** Agricultural intensification
- 2** Abandonment of pasture and shrubbery
- 3** Large areas of monoculture repopulations
- 4** Disappearance of the rabbit
- 5** Waterproof fences
- 6** Bushfires
- 7** Expansions of roads and traffic increase
- 8** Roads crossing the forest (next page)



Roads crossing the forest

Paved roads represent one of the main factors of habitat fragmentation and unnatural mortality of the Iberian lynx.

Road kills diminish the hopes for the species' recovery. The feline needs a habitat without barriers in which the roads are safe.



4

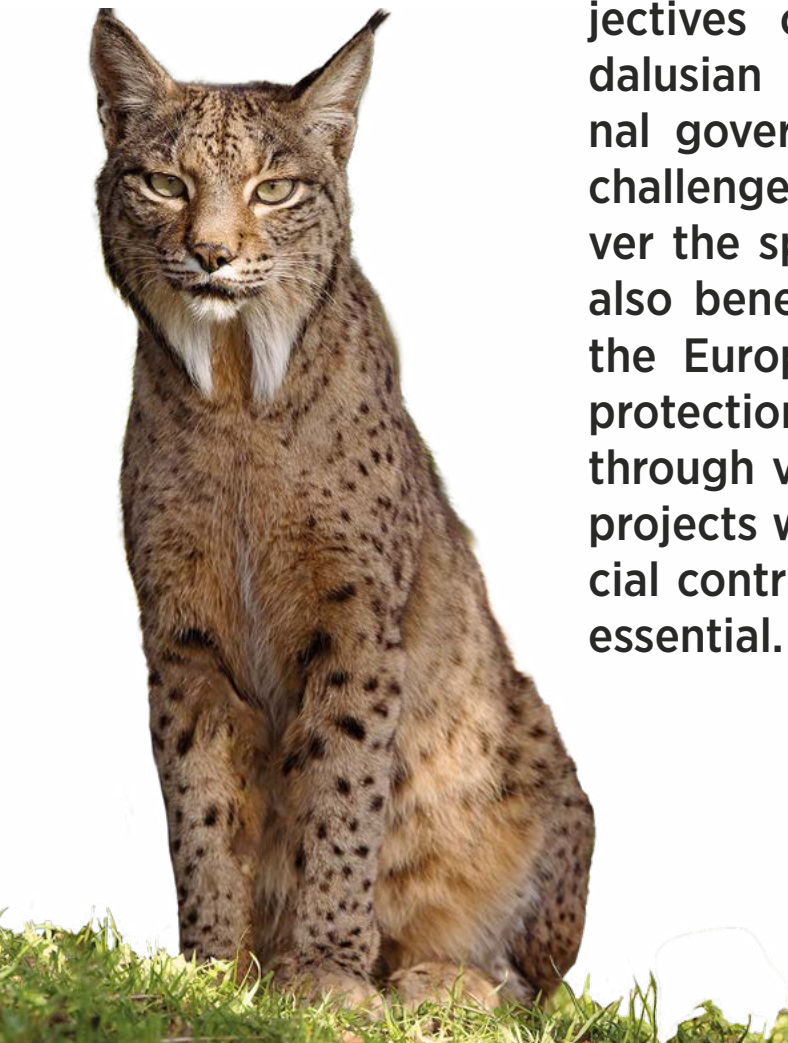
The challenge to recover a species



***“The species is facing
high risk of extinction”***

This short and heartbreaking sentence triggered many responses from the government, such as the coordination of a series of conservation strategies to protect the species.

Following the objectives of the Andalusian and national government, the challenge to recover the species soon also benefitted from the European Union protection measures through various LIFE projects which financial contribution was essential.





“ We still miss a population big enough and genetically diverse to prevent the species from extinction ”

4th LIFE Project

2020-2025

Reach a population that is self-sustained and genetically viable by connecting the existing nucleus in Spain and Portugal.

1.111 individuals
(registers of 2020)

3rd LIFE Project

2011-2019

Recover the historic distribution of the lynx in Spain (Montes de Toledo, Extremadura y Ciudad Real) and Portugal.

590 individuals

2nd LIFE project

2006-2011

Recover the populations of Guadalmellano and Guarrizas and increase the genetic variability in Doñana.

310 individuals

1st LIFE project

2002-2006

Stabilize the existing populations (Andújar-Cardeña and Doñana).

about 92 to 177 individuals

Onset of the projects by the Junta de Andalucía

2000



For more information about the LIFE projects



Videos of the lynx' conservation program in Andalusia





The outstanding teamwork performance

A large team of professionals work together for the conservation of the lynx in the following actions:

Lynx' monitoring

The use of tracking cameras helps in the annual count of the species and the identification of each individual. In this way, it allows to know the number of individuals in a territory, the annual breeding success and even to detect possible health problems.

At the end of panel 5 you can play with pictures taken from tracking cameras.

The use of radio-transmitted collars allows the documentation of daily movements of the individuals, and improves the knowledge of its behavior and the risks they face.

Captive breeding, reintroduction and translocation

Many individuals born in captivity are reintroduced in the environment with the aim of creating new populations and reinforcing the genetic pool of the existing populations. Similarly, some wild individuals are translocated between populations.

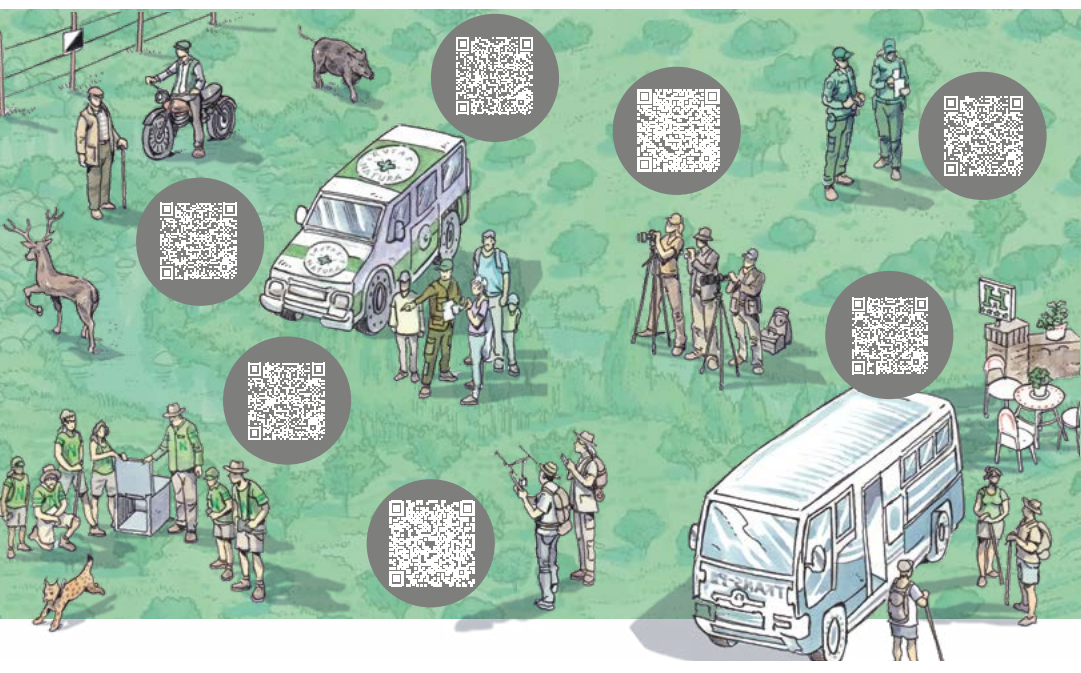
The captive breeding program started with the aim of saving the genetic heritage of the species, which was facing extremely high risk of extinction.



Breeding center of the Iberian lynx “La Olivilla”, Santa Elena.

The conservation of the Iberian lynx is a common task

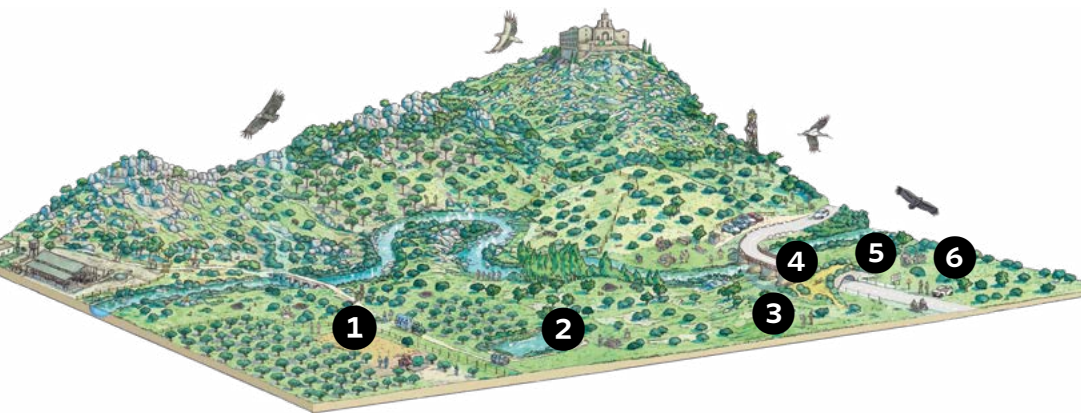
Discover the voices of the people working in the territory



An environment in recovery

Work is being done to promote the lynx' and rabbits' population in the territory, and reintroduce lynxes in areas that allow future connections between populations.

Recreation of the present landscape of the *Sierra Morena*



- 1** Land stewardship agreements with private property
- 2** Improvement of the habitats of the lynx and rabbits
- 3** Monitoring of the population of the lynx and rabbits
- 4** Surveillance and reduction of mortality
- 5** Releases of the lynx
- 6** Environmental sensibilization and education

5

***Sierra de
Andújar: the
lynx and the
Mediterranean
forest***



Stronghold of the species and the origin of its recovery

In the beginning of the 20th century, the *Sierra de Andujar* and Cardeña were home to one of the last shelters of the Iberian lynx. This population was confined in the granite strip, which runs through the mountain range, and in which rabbits were still abundant.

During the last twenty years, the lynx' population from Andújar-Cardeña were milestones for the recovery of the species, providing individuals for translocations, reintroductions and breeding centers.

Currently, the *Parque Natural Sierra de Andújar* continues to play a key role for the species allowing the connection between new populations of Sierra Morena.



Surprise in the forest

The lynx *Santa María*

Discover what happened one morning of October 1999:



At the end of the 90s, the only reliable presence recorded of the Iberian lynx was in Doñana, although it was speculated that the feline still lived in other remote territories, such as in the *Sierra de Andújar-Cardena*.

After three months of unsuccessful camera trapping at the *Lugar Nuevo* estate, hopes of finding lynxes faded. However, one day, analyzing the pictures from a camera trap, the surprise arose: a female and its cub posed in front of the camera with the sanctuary of the *Virgen de la Cabeza* in the background.

In her honor, this female was named *Santa María*, and her appearance was key to continuing the sampling that revealed that there was still a viable lynx population in Andújar.



Lynx Santa María and her cub, the lynx Javier.

[Pictures taken from a camera trap]

An abundant and diverse life

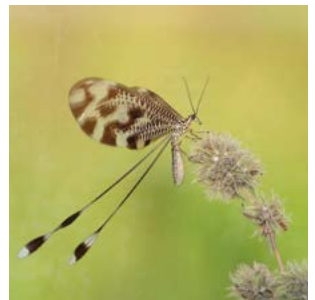
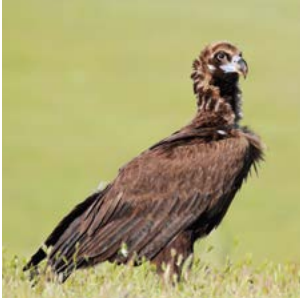
The natural park covers almost 75.000 hectares of mountain and pasture, constituting one of the best spots of natural vegetation of the *Sierra Morena*.

Its natural heritage and good conservation status make it an essential shelter for other emblematic species, such as the black vulture, the Iberian imperial eagle and, until a few years ago, the Iberian wolf. The natural park is home to a wide range of Iberian fauna.

Additionally, the forest covers a large landscape of holm oaks, Portuguese oaks, cork oaks, pines, Mediterranean scrub and riparian forest.

|| The lynx population of the Sierra de Andújar is genuine, meaning that it has not been reintroduced. This fact is of scientific interest, and makes the inhabitants of this region proud. ||

Discover the biodiversity and landscapes of the natural park of the Sierra de Andújar.



By rotating the reels, you can compose three different groups: →

1. The landscapes

Alder forest

Juniper shrubland

Cork oak forest

Riparian forest

Mediterranean forest

Pasture

Granitic landscape

Slate landscape

Quartzitic landscape

2. The biodiversity

Black vulture

Aegypius monachus

Otter

Lutra lutra

Foxglove

Digitalis mariana

Narcissus

Narcissus fernandesii

Iberian imperial
Eagle

Aquila adalberti

Spoonwing

Nemoptera bipennis

European pond
turtle

Emys orbicularis

Small red damselfly

Ceriagrion tenellum

Black stork

Ciconia nigra

3. The emblem of the Sierra de Andújar Natural Park

The uses of the forest, an ancestral knowledge

|| The traditional management of the Iberian forests hides profound treasures that allow to obtain multiple products in balance with their environment. ||

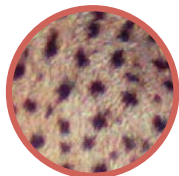
The Mediterranean forest, as we know it today, is the result of the management of the landscape by human activities.

Beekeeping, hunting, extensive livestock, pine and firewood harvesting or cork removal are some of the benefits that have traditionally been developed in the *Sierra de Andújar* together with the conservation of its natural heritage.

Today the ecotouristic boom constitutes an important motor for the local economy.



... to finish, check your knowledge:
Can you tell to which lynx
corresponds each spot pattern?



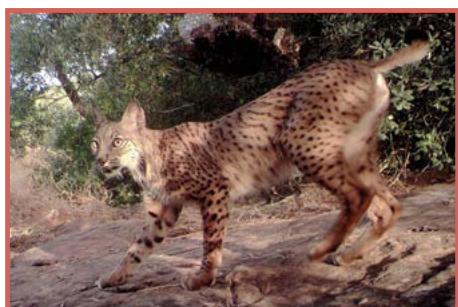
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2



3



Brezo



Retama



Paz

Ecomuseum Iberian lynx



Credits

**Consejería de Agricultura, Ganadería, Pesca y
Desarrollo Sostenible, Junta de Andalucía**

EXHIBITION PROJECT, TEXTS AND CARTOGRAPHY

**Dirección General de Medio Natural, Biodiversidad
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Junta de Andalucía

Consejería de Agricultura, Ganadería,
Pesca y Desarrollo Sostenible

