

Formación  
ESTANTES HUERTA GRANDE

# HUERTA GRANDE

## VISITORS CENTRE

### EXHIBITION GUIDE

Batallas de amor  
Tempo de plumas

ro Bonaio

antes  
HUERTA GR



JUNTA DE ANDALUCÍA

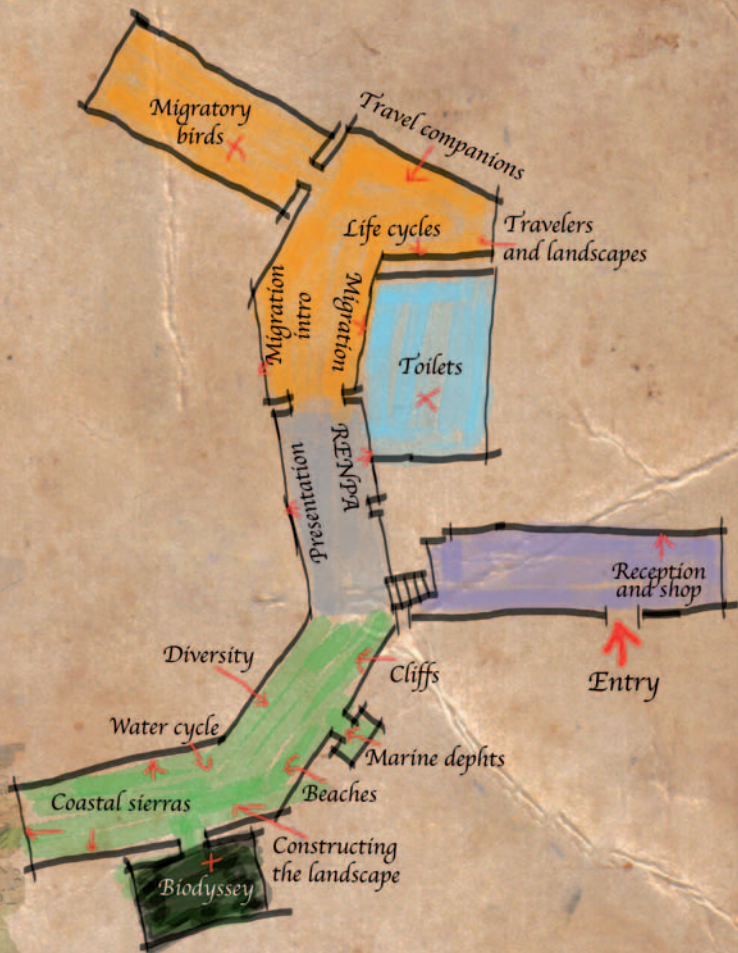
# Presentation

*From east to west,  
on two seas and two continents.  
the sound of the wind*

The visit to the Huerta Grande Visitors Centre is a journey brimming with sensations through the Strait of Gibraltar. Visitors have two options: stroll and discover its most outstanding landscapes; or accompany and discover its travellers as they migrate.

A journey that goes beyond the walls of the building and covers the whole external space, a new long voyage on which mythology and botany are our travelling companions.

Now, get ready to feel, to learn ...



## The RENPA and Huerta Grande

More than 19% of the surface area of Andalusia is protected. In fact, the region has the most important network of protected natural areas in Europe.

The conservation of Andalusia's rich natural and cultural heritage clearly deserves to be guaranteed. The different legal protection instruments guarantee its sustainability and safeguard its development. Over the years, these conservation measures have gradually given rise to a common management framework: RENPA (Network of Protected Natural Areas of Andalusia).

From the outset, the RENPA territories have sought to reconcile the economic aspirations of inhabitants in protected areas with sustainability and utmost respect for the natural and cultural values of these areas.

The Huerta Grande Public Usage and Environmental Education Complex is a cluster of facilities and services integrated within the Network of Protected Natural Areas of Andalusia. Situated halfway between the Natural Parks of El Estrecho and Los Alcornocales, it is a reference facility in the province.

The Visitors Centre provides information on the natural environment of the Strait of Gibraltar, hiking and other activities, as well as information on the main features of the landscape and one of the most fascinating natural processes: migrations.

The Bird Park is an educational centre that provides detailed information on birds and wetlands. It is mainly aimed at schoolchildren.

Visitors also have a choice of rural accommodation establishments if they wish to use Huerta Grande as a

base from where to carry out different activities available in the area, such as hiking, routes on horseback, etc.

This broad range of services and activities is complemented by Huerta Grande's interesting history. Traditionally linked to its forest setting, it served as a barracks for spies and soldiers in the early years of World War II, providing accommodation to Italians and



Germans who kept a watchful eye on the nearby British-held Rock of Gibraltar. During the second half of the 20th century, it was the residence of military governors and was used as a military prison for General Milán del Bosch, one of the participants in the attempted coup d'état in 1981.

## Landscapes. Marine depths, beaches and cliffs



This room introduces visitors to the different landscapes that can be found in Campo de Gibraltar and the Strait, the entrance and exit gateway for the Mediterranean, its inhabitants and cultures, a thin, imaginary line that separates and at the same time unites.

Sail on and under its waters. Discover the huge diversity of organisms that we never see. Approach the African and European coasts. Stroll through the forests growing on the coastal sierras. Travel down the rivers and streams. Discover how the environment and landscape have gradually changed over the years. Ac-

company us on a true bio-odyssey...starting with its marine depths. They form a wide range of underwater landscapes in the waters of the Atlantic and the Mediterranean. Currents, waves, tides, salinity, temperature, the substratum or sea bottom are some of the factors that condition the presence of specific organisms.

A very illustrative example of these marine communities is the rock face, near the surface and with a small cave or shelter that accompanies us on this underwater journey through the Strait. The highest part is an area that appears above the water surface at low

## Landscapes. Marine depths, beaches and cliffs

tide, with a pool full of organisms. Hard rock walls provide shelter to many animals and plants that cling to the rock face in order to avoid being swept away by the swell and currents. Other living organisms live deeper down inside the cave where there is much less light.

With their high vertical rock faces, the cliffs are one of the most spectacular features of the coast. They show the clear, almost dramatic, expression of the contact between earth and sea.

The cliffs differ depending on which part of the coast on the Straits we visit because they are intimately linked to coastal mountain formations, which have been eroded. The western sector - with cliff formations at Punta Paloma - is characterised by old materials, while the eastern sectors between Tarifa and Algeciras are more recent.

One of the main differences between the eastern and western sectors is the arrangement of strata in the cliffs. Strata in the eastern sector are vertical, while in the western section they are arranged horizontally. This arrangement establishes a more homogeneous distribution of vegetation in the former, and a more heterogeneous and diverse distribution in the latter.

The beaches are strips of sand, gravel or boulders that have been deposited on the beaches by the swell and marine currents. Two zones may be distinguished: the lower beach, which is affected by the swell and tides; and the upper beach, which is normally dry and only floods during storms and when the tides are very rough. The upper limit of the beach coincides with the

base of the cliffs on the rocky coasts, or with the first embryonic dunes when the coast is long and sandy.

The dunes are the result of accumulations of fine and loose materials transported by prevailing winds from the lower part of the beach. The prevailing winds on each coast and the specific type of coast determine the types of dunes that are formed.

Dunes play an important role on the coast, acting as sand reserves for the natural regeneration of beaches after storms. A wide variety of plants and animals inhabits these sand dunes and have adapted to the strong winds, shifting sands and salinity.



# Coastal Sierras

The traveller rises from the waters of the Strait in search of lands and forests. They move inland and travel through apparently non-marine landscapes, but they are in fact closely related.

With the first autumn rains, many plants grow on the more clayey and flat soils – known as bujeos - at

olives, mastic trees or palmettos, and other shrub and tree-like formations, but which were transformed to foster the development of pastures for cattle.

The best wild olive forests are concentrated in the countryside and bujeo areas, since they are not suitable areas for cork oaks or holm oaks due to periodic



the foot of rocky sandstone elevations. These plants have to complete their life cycle before the drier and hotter months, and have a life span of no more than one year. They spend the summer as seeds or bulbs, and sprout with the first rains.

They appear in soils previously occupied by wild

flooding and the actual movement of the clay soils. These areas have resisted pasturage and conversion into agricultural lands, and have become real island forests, with many examples in the Cadiz countryside.

The acebuche is a wild olive tree that bears fruit in autumn. Many migratory birds take advantage of this

# Coastal Sierras

to regain their strength by eating the nutritional acebuchinas (wild olives) before continuing their journeys.

Cork oak forests form one of the most representative landscapes of the coastal sierras of the Strait. A dense undergrowth of scrubland and ferns enriches the cork oak forest. Cork oaks are normally accompa-

function is to protect the tree against fire in Mediterranean ecosystems and landscapes. Many plants, such as rockrose and heather, have adapted using other mechanisms to combat damage caused by fires. In the case of cork oaks, the thick bark isolates the tree from high temperatures and the direct effect of flames on



nied by wild olives in areas near bujeos or Andalusian oak and other trees in the vicinity of rivers or more humid and shady areas.

Cork is the bark of the cork oak. In addition to the normal functions of this tissue in plants, bark (or cork in this case) has other unusual properties. Its main

the trunk and branches.

Cork is extracted every nine years between June and August. This is the best time for the pela, as the process is known, since photosynthetic activity in the tree is greatest during the summer and the bark can be removed from the trunk without causing damage.

## Coastal Sierras

The ravines through which permanent streams flow and where forests grow are known locally as canutos. The special climatological conditions of the Strait mean that these high areas have mainly humid conditions.

They form gallery or tunnel forests in the highest sections of the rivers, where true botanical treasures can be found such as ojaranzos (rhododendrons) and certain types of fern and moss. Other plants that accompany the ojaranzo or rhododendron in the canutos (ravines) are holly trees, laurels and avellanillos (frangula). They all have one common characteristic: they have large leaves covered by a waxy layer allowing water deposited on them to run off and be used by the plant.

In addition to their important contribution to the biodiversity of plants, mosses, insects and fungi, they are living witnesses of the important changes that have taken place in the history of our planet. They are true survivors from the many millions of years ago in the past and share ecological characteristics with other tropical forests of laurisilva (humid subtropical laurel forests) such as those on the Canary Islands, the Azores or Madeira.

Dating from remote times, Andalusian oak forms forests in areas with abundant humidity, either due to the proximity of water courses or mists and fogs carried by easterly winds. They share many features with gall oaks from North Africa; hence, they are also known as African gall oaks.

Under their dense canopies of leaves grow a large

number of plants adapted to the shade, mild temperatures and strong humidity. In fact, it is considered to be a genuine tropical forest, with lianas, ferns and plants with wide leaves, such as laurels. Their trunks are covered by thick layers of fern and moss.

They were used in the past for firewood, coal and wooden beams. As a result, some trees are shaped like candlesticks with their arms raised. In the autumn, like the oaks, the leaves turn yellow and dry, but in this case they stay on the branches. This is known as marcescence, a process in which the leaves remain on the tree until springtime when new leaves grow. The colours of the trees and the large number of dead leaves at this time of year the gall oak forests magical and mysterious places.

The riverbanks and meadows around the rivers that run into the Strait are populated - whenever they have been allowed - by lush vegetation, which is sometimes so dense that it forms tunnels and galleries through which the hidden streams flow.

Alders, ashes, willows, figs and poplars form woodland areas in the middle and lower sections of the rivers, already tired on their long journey towards the great sea.

Many rivers maintain a sufficient amount of water during drier periods, thus allowing many insects, fishes, reptiles, amphibians, birds and the odd otter to survive. Thus, they become green corridors, reserves for living organisms during the hardest moments of the annual cycle.





*Dating from remote times, Andalusian oak forms forests in areas with abundant humidity*

# Constructing the landscape and Water Cycle

We are direct or indirectly involved in the origin of most landscapes, and sometimes even in their creation and always in their permanence.

The most suitable landscapes for life - which are the most inhabited - are also the ones that have undergone the most dramatic transformations: forests have been cut to transform the land for crops and cre-

The history of the Strait of Gibraltar has been marked by the constant to-and-fro of travellers between the two continents and between the two seas. From the first Neolithic settlers until the present day, a journey of peoples and cities that have left their particular mark and imprint on the landscape.

Water is not an infinite element. The Planet Earth has an enormous amount of water, but not all water is the same or fit for consumption. Water moves from different places and changes state. This is known as the Water Cycle in Nature.

The mountain areas in the Strait form a large wall that separates the Atlantic from the Mediterranean. The west winds (Atlantic) carry moisture and bring rain. The east winds (Mediterranean) are very dry and release the water they carry in the

form of fog.

The river forests protect the banks of the rivers in the middle and lower sections, almost until the mouth of the Strait. The banks or sides of these rivers are covered by tall trees and thick shrublands. Their function in the landscape is very important because they provide protection to many animals and plants.



ate meadows and pastures for cattle, creating farming landscapes; trees from other places have been planted to create forests to obtain wood or cork; factories have been built, producing industrial landscapes; cities have been founded, creating urban landscapes; roads, bridge, ports and tunnels have been built; mines and quarries have been exploited to extract rocks and minerals.

**Guide to visit Huerta Grande Visitors Centre**

*The history of the Strait of Gibraltar has been marked by the constant to-and-fro of travellers between the two continents and between the two seas*



# Migrations and life cycles

Migration is the periodic and cyclical movement of many animals from one place to another, normally every year. This movement sometimes only occurs once in life, although migration is normally annual.

Thanks to migration, a complete population is able to take advantage of resources in different locations without causing any harm to those places. Therefore, this definition would exclude the movements of many populations, such as African locust or certain moth species because their movements may be defined more as disperse or invasive.

In general, animals migrate to establish alternative reproduction and breeding places to the ones where they normally grow and feed.

Each form of migration is unique to each organism. No two are the same. Each life cycle is different to the others. In these cycles, migration is a crucial moment that may have different degrees of importance according to the species.

**1. Wildebeest.** These animals migrate annually from the first year of life. Immedia-

tely after birth, they begin to migrate over the plains of Africa.

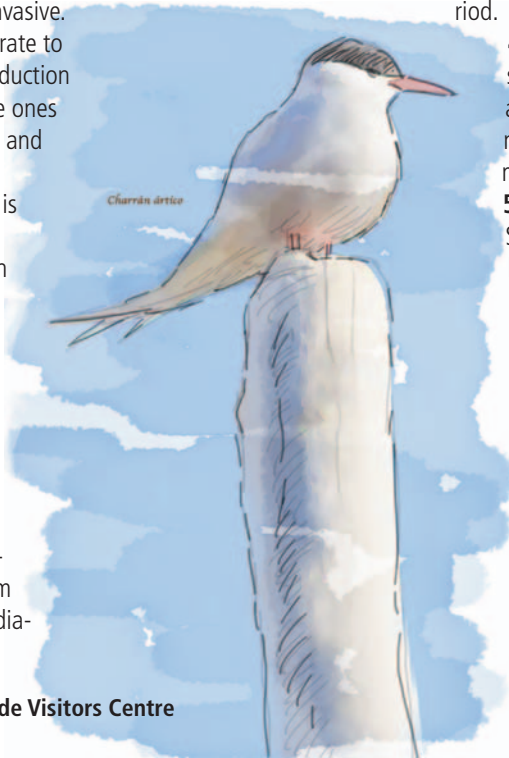
**2. Gray whale.** The same as the wildebeest, after birth baby grey whales start migrating to feeding areas and repeat this journey every year.

**3. Monarch butterfly.** The first butterfly to migrate (the great-grandmother) is the one that travels the longest distance, from North America to Mexico. The next three generations are the ones that return north, covering a smaller distance and shorter migration period.

**4. Tuaregs or desert nomads.** They start travelling (caravans) when they are adolescents, variable periods and not always seasonal. They become more sedentary in old age.

**5. People from the 21st century.** Seasonal movements (mainly during holiday periods) but which are not always repeated. They travel more in some periods than in others.

**6. Loggerhead sea turtle.** They spend the first 30 years of their lives with dispersive movements. Once they are adults, they migrate periodically and normally annually to reproduce and lay eggs.



**Each form of migration is unique to each organism.  
No two are the same**



*Anguila*



*Nu*



*Mariposa monarca*



*Ballena Gris*

## Travel companions

What do a Monarch butterfly, Atlantic blue fin tuna and antelopes have in common with wildebeest? The most striking similarity is probably their migratory behaviour.

Atlantic blue fin tuna go on long underwater journeys, from their spawning areas in the Mediterranean to their growth and development areas in the Atlantic. Old settlers on the coasts of the Strait were aware of this and took advantage of these movements to fish tuna, as can be seen in the Roman city of Baelo Claudia.

The Monarch butterfly makes a long thousand-kilometre journey from North America to Mexico. It returns to its places of origin in various generations. Some monarch butterflies can be seen in the Straits, but other butterflies such as the Painted Lady butterfly also travel between Europe and Africa in a similar fashion.

For many fish, insects, mammals or reptiles, migration is a milestone in their lives, e.g. sturgeons, eels, salmon, dragon flies, elephants, bats or penguins.

The knowledge and valuation of migrations and landscapes is due to the inestimable work, drive and sensitivity of a group of scientists, naturalists, writers, intellectuals or, simply, great travellers.

During the 19th and early 20th centuries, these explorers wrote tales about nature that was largely unknown in these lands. Figures such as Carter, Irby, Ford, López de Ayala, Chapman, some local, others foreign; all were fascinated by this southern corner of Europe, so close to Africa. They sowed the seeds that matured and flourished with time.

Research and much of current knowledge on the

migration of birds would not have been possible without Francisco Bernis and José Antonio Valverde, true pioneers of biology and ecology in Spain. A large number of collaborators have continued those first, tentative steps taken in the mid 20th century until the present day, through projects to monitor migratory fauna such as the Migres Programme.

The giants of the sea are great travellers. Some, like the grey whale or the humpbacked whale, travel thousands of kilometres from their breeding and feeding zones.

Whales and dolphins have swum through the waters of the Strait since time immemorial. Dolphins and long-finned pilot whales are permanent neighbours, while others such as sperm whales, killer whales or Rorqual whales often pass through the Strait in search of food or to migrate or search for food between the Mediterranean and the Atlantic.

The common Minke whale is the only clear migrator, although research continues into the movements of other whales. Minke whales seek the waters of the Atlantic in spring and return to their winter hideouts in the Mediterranean. Sperm whales migrate throughout the Atlantic, but it would seem that they only come to the Strait in search of food (squid and other cephalopods). Something similar occurs with killer whales, which are associated with the great banks of tuna that swim into the Mediterranean.



*They sowed the seeds that matured and flourished with time*



*José Antonio Valverde*



# Migratory birds

Birds are true experts in migratory movements. Due to their ability to fly, they can travel long distances and fly over landforms. Since time immemorial, birds are the animals that have been studied and mentioned most by philosophers, naturalists and writers, such as Aristotle, who described the seasonal movements of swallows.

The origin of bird migration may be due to the climatological changes on the planet during the last ice age, around 10,000 years ago. Since then, the routes used by birds in search of the best places to find food have gradually changed, giving rise to the situation today, which has also been affected by climate change in recent years.

In late autumn every year, many birds embark on a long journey from northern and central Europe to the Iberian Peninsula in search of milder places with more food. The south of the Peninsula becomes a large funnel, concentrating a large number of birds over a period of a few weeks on their journey to Africa.

The flying technique of each bird determines its migratory strategy. Basically two types of migratory birds can be distinguished in this sense: gliders and flappers. The former are larger and have larger wing spans, which they use to stay in the air virtually without flapping their wings, rising on hot air and gliding in downward flight. These hot air columns rise because hot air is lighter than cold air. These birds detect and enter these hot air columns, forming large groups flying in circles. When they reach a certain height, they leave the hot air column and fly downwards, travelling


various kilometres until they reach another hot air column.

The drawback for migration is that there are no hot air columns over the sea. For this reason, these birds have to fly to places where the distance between land areas is small, such as the Bosphorus Strait (in Turkey between Europe and Asia), the Strait of Messina (between the island of Sicily and the Italian peninsula) and the Strait of Gibraltar.

Flapping birds have to flap their wings constantly in order to fly. They therefore depend on thermal currents and may fly at night or over larger surfaces of water. The Strait of Gibraltar is an important passage for these birds.

The westerly and easterly winds in the Strait are two fundamental elements that condition the routes of migratory birds. When the prevailing wind is blowing from the east ("levantado"), the birds fly on routes on the Atlantic side of the Strait; if the wind is coming from the west ("poniente"), the birds fly on the Mediterranean side. Since prevailing winds in the area are strong, it is not unusual to see large groups of gliding birds making frustrated attempts to try to cross the Strait, since a poor calculation in direction and strength may jeopardise the lives of a large group of birds.



A large flock of birds, likely cranes, is captured in flight against a clear, bright blue sky. The birds are scattered throughout the frame, with some in the foreground and others further away, creating a sense of depth and movement. The birds' wings are spread, and their bodies are silhouetted against the sky. The overall scene is dynamic and illustrates the concept of birds using thermal updrafts for flight.

*When they reach a certain height, they leave the hot air column and fly downwards, travelling various kilometres until they reach another hot air column.*

## Fly through the Strait

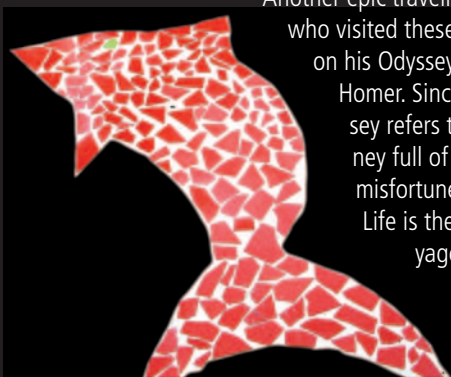
Since time immemorial, longer ago than history has been able to record, great travellers have journeyed between the two shores or the two great seas. The mythology of ancient settlers in the Mediterranean called the Strait Fretum Herculeum, in reference to the work of a legendary traveller: Melkart, Heracles or Hercules (as he was known by the Phoenicians, Greeks and Romans, respectively).

Another epic traveller was Ulysses, who visited these lands and seas on his *Odyssey* as narrated by Homer. Since then, an odyssey refers to a long journey full of adventure and misfortune.

Life is the Greatest Voyage in which living beings go on a journey, often to return, but always with

an end. The Bio-Odyssey is this journey in the Strait of Gibraltar.

In the large model outside the Visitors' Centre, after enjoying the views of the African coastline and the imposing Mount Musa (Yebel Musa), visitors can relive some of the voyages of the protagonists of this odyssey.





*Life is the Greatest Voyage in which living beings go on a journey, often to return, but always with an end.*

*The Bio-Odyssey is this journey in the Strait of Gibraltar.*



**JUNTA DE ANDALUCIA**  
CONSEJERÍA DE MEDIO AMBIENTE

Free entry

**Huerta Grande Visitors Centre.**

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