

Guide to Spanish Biosphere Reserves

Man and nature in harmony



GOBIERNO
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MINISTERIO
DE MEDIO AMBIENTE,
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de Reservas
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Biosphere
Reserves

Man and nature in harmony

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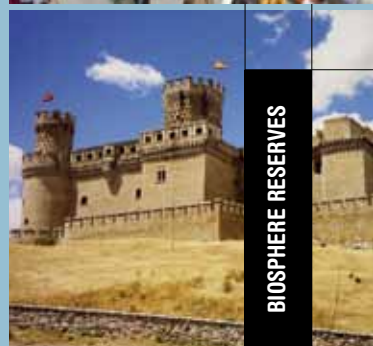


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PROLOGUE

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The Man and Biosphere Programme (MaB) was launched by UNESCO in the 1970s. The aim was to establish a new relationship between man and nature, resulting in the setting up of biosphere reserves. This new relationship is based on what has come to be called “sustainable development”, an area that has had a great repercussion on the evolution of concepts such as “the conservation of natural resources” and “socio-economic development” within the territories. Today there are over 560 biosphere reserves worldwide in 110 countries. In Spain, whilst the first reserves were established in 1976, it was not until 2007 that real impetus was given to the setting up of biosphere reserves, with the passing of the Natural Heritage and Biodiversity Act N° 42/2007 and Royal Decree N° 342/2007, regulating the development of the MaB Programme. Today, the Spanish Network of Biosphere Reserves comprises 40 reserves spread across the country, coordinated by the Spanish Autonomous Authority for National Parks, part of the Ministry of the Environment and Rural and Marine Affairs. Special credit should be given to the people who work on these reserves and who have actively collaborated on this Guide.

Whenever we have a few days off work and we want to explore places we don't know, one of our options is to consult a travel guide. These guides normally focus on key elements of natural and cultural heritage of the place we wish to visit. This book may also serve as a guide to the countless natural and cultural monuments we find within the Spanish Network of Biosphere Reserves. Their gastronomy, arts and crafts, regional traditions and customs, the typical products ▶



BIOSPHERE RESERVES



and folklore from each area are all important aspects in this guide, although the objective here is much more ambitious.

There is a wide variety of protected natural spaces in Spain. From the national and natural parks to the protected scenic landscapes, without forgetting the European protection programmes which make up the Natura 2000 network: the Sites of Community Importance (SCIs) and the Special Protection Areas for Birds (SPAs). There are over 40 types of protected areas, among which special mention should be made of the UNESCO Biosphere Reserves which, as we will see in this book, go far beyond that offered by other protected natural spaces.

When we enter a biosphere reserve we can be certain that these will be natural settings of stunning beauty, with flora and fauna of particular importance or else monuments of great interest. It will always be both interesting and enjoyable to visit the unique sights on our

visits to these reserves. Nevertheless, our memories of the trip to a biosphere reserve will also include our enjoyment of the local cuisine, our relaxed contemplation of the landscape, or of having taken part in popular fiestas and traditions. We should not forget that the most interesting aspect of a biosphere reserve, what really differentiates it from other protected spaces, is the ambitious objective that their creation represents, highlighting the significance of everything we come across there.

A territory that contains a reserve of such characteristics faces a number of challenges: guaranteeing environmental, economic and social sustainability, the ongoing viability of the activities undertaken there, guaranteeing the services provided by the reserves ecosystems ensuring the well-being of presents and future generations, developing and integrating knowledge in order to widen our understanding of the relationship between human settlements and nature, ensuring adaptable management models for complex socio-ecological systems etc. These ambitious aims constitute the basis of a scenario in which it is hoped that the conservation of biodiversity and traditions can co-exist with the use of resources and new technologies. The actors on this new stage are members the scientific community, managers and administrators, teachers, politicians, NGOs, the media, and, of course, local people, those who live on the reserves, key players in this story.

When we enter a biosphere reserve we should therefore be aware - as this guide aims to make us - that this place not only seeks to conserve nature, but also work towards ensuring balanced territorial development. We shall be entering a landscape in which we do not wish to wipe out the human footprint but rather integrate it into a rich natural and cultural mosaic. To conclude, we find ourselves in an area in which the efforts of the widest possible range of administrative bodies and individual agents coincide, in which we are seeking a management and planning model that will have a significant influence on the quality of life of their inhabitants, placing great value on their natural and cultural heritage, and putting into practice a new focus concerning the relationship between people and nature: one where men and women are a key part of the biosphere.



SPANISH BIOSPHERE RESERVES

NAME	YEAR DECLARATED	REGION	PROVINCE
Sierra de Grazalema	1977	Andalusía	Cádiz, Málaga
Ordesa-Viñamala	1977	Aragón	Huesca
Montseny	1978	Catalonia	Barcelona and Girona
Doñana	1980	Andalusía	Huelva and Sevilla
La Mancha Húmeda	1980	Castilla La Mancha	Ciudad Real, Cuenca and Toledo
La Palma	1983 2002	Canary Islands	Sta. Cruz de Tenerife
Sierras de Cazorla, Segura y las Villas	1983	Andalusía	Jaén
Marismas del Odiel	1983	Andalusía	Huelva
Urdaibai	1984	País Vasco	Bizkaia
Sierra Nevada	1986	Andalusía	Granada, Almería
Cuenca Alta del Río Manzanares	1992	Comunidad de Madrid	Madrid
Lanzarote	1993	Canary Islands	Las Palmas
Menorca	1993 2003	Balearic islands	Balearic islands
Sierra de las Nieves y su entorno	1995	Andalusía	Málaga
Cabo de Gata-Níjar	1997	Andalusía	Almería
El Hierro	2000	Canary Islands	Sta. Cruz de Tenerife
Somiedo	2000	Asturias	Asturias
Muniellos	2000 2003	Asturias	Asturias
Bardenas Reales	2000	Navarra	Navarra
Redes	2001	Asturias	Asturias
Terras do Miño	2002	Galicia	Lugo
Dehesas de Sierra Morena	2002	Andalusía	Huelva, Sevilla, Córdoba
Valle de Laciana	2003	Castilla y León	León
Picos de Europa	2003	Castilla y León, Principado de Asturias and Cantabria	León, Asturias, Cantabria
Monfragüe	2003	Extremadura	Cáceres
Valles del Leza, Jubera, Cidacos y Alhama	2003	La Rioja	La Rioja
Babia	2004	Castilla y León	León
Gran Canaria	2005	Canary Islands	Las Palmas
Área de Allaríz	2005	Galicia	Orense
Sierra Del Rincón	2005	Comunidad de Madrid	Madrid
El Alto Bernesga	2005	Castilla y León	León
Los Argüellos	2005	Castilla y León	León
Valles de Omaña y Luna	2005	Castilla y León	León
Los Ancares Leoneses	2006	Castilla y León	León
Las Sierras de Béjar y Francia	2006	Castilla y León	Salamanca
Os Ancares Lucenses y Montes de Cervantes, Navia y Becerreá	2006	Galicia	Lugo
Intercontinental del Mediterráneo	2006	Spain-Andalusía / Morocco	Cádiz, Málaga / Morocco
Río Eo, Ocos y Terras de Burón	2007	Galicia / Asturias	Lugo/ Asturias
Fuerteventura	2009	Canary Islands	Gran Canaria
Transfronteriza Gêres-Xurés	2009	Spain-Galicia / Portugal	Orense / North of Portugal

THE MAB PROGRAMME IN SPAIN AND THE SPANISH BIOSPHERE RESERVE NETWORK

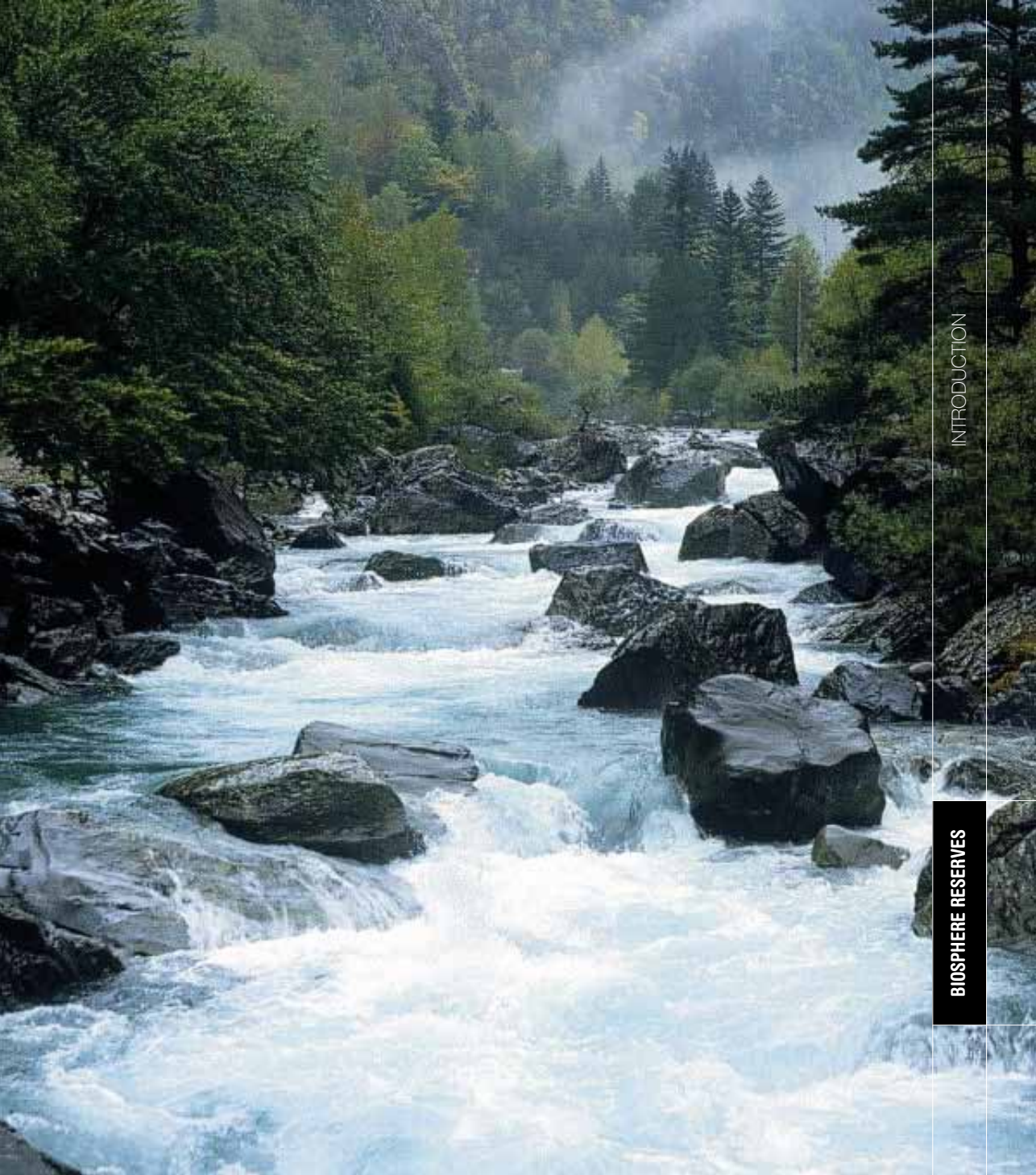
WHAT IS A BIOSPHERE RESERVE?

When a reader picks up this Guide to Spanish Biosphere Reserves, perhaps the first question is what is a biosphere reserve and what are its specific characteristics.

Biosphere reserves have been defined in the framework of the UNESCO “Man and Biosphere” Programme (MaB) and which are applied to territories that are of significant natural value, as well as having important cultural heritage and where local people have expressed a willingness to apply a regional development model that respects this value. The status was introduced in 1974, three years after the launch of the MaB Programme.

Having given this formal outline we should now add detail in order to give an idea of the multifaceted nature of this status. The central axis which has been the focus of biosphere reserves from the outset is that of commitment. The first commitment here is the commitment to local people, who accept their role in a development model that is compatible with the values of the territory in question and its long-term conservation. The following points sum up the essence of a biosphere reserve, and what differentiates it from other protected natural spaces:

- * It is requested by the country itself, either proposed by or with a firmly committed from local people from the outset.
- * It includes a sustainable development project that is compatible with conservation.
- * It is based on a foundation of voluntary commitment, going beyond that strictly required by law.





There are many variations on these basic ideas and widely differing situations when putting them into practice, as the status is very flexible and does not require a strict blueprint regarding what can and cannot be done. This flexible nature, which allows for a wide range of practical measures, is one of the main advantages of the programme, albeit one which makes understanding of biosphere reserves more complex. The margins with which the different types of biosphere reserves can be developed are determined by UNESCO World Network of Biosphere Reserves reference documents.



As far as the territorial structure is concerned, there should be three zones:

- * A core area, protected by legally-backed conservation status within the corresponding country. In the case of Spain, this means protected natural space status (as defined by the Natural Heritage and Biodiversity Act Nº 42/2007).
- * A buffer zone, cushioning the core from the effects of human activity.
- * A sufficiently large transition zone, where economic activities that favour local people are promoted.

Participation and commitment

Another fundamental component, set out in the principles of the MaB Programme, and the basis for the commitment on which a biosphere reserve is founded, is the participative character of the action plan(s), ensuring that the general strategy and the specific action are the result of interaction between the agents acting on the ground and their commitment to the action plan.



Functions

The schema represents the functions assigned to a biosphere reserve and which are based on the harmonisation of conservation and development, something which these days is referred to as sustainable development. Within this schema, the conservation of biodiversity, of natural and cultural resources is on one side of the scales, whilst encouraging local development is on the other. Both aspects are equally important and necessary, with the individual project determining the specific characteristics of the biosphere reserve in question. The way in which

each reserve integrates these two functions constitutes a veritable field of exploration, experimentation and learning. A third function, based on an action programme that is part of the specific project for each reserve, completes the elements that define the nature of a biosphere reserve.

This third part, defined as logistical support, consists in ensuring "...that Biosphere Reserves are effective centres of learning for sustainable development on a global, regional, national and local scale", as set out in the Madrid Action Plan, which will be outlined later. To this end, steps need to be taken to undertake research into



the interaction between human activities with natural resources and biodiversity, to develop education, training and awareness-raising, publicise advances in the development of the reserves and contribute to exchange and communication at the heart of the networks they form a part of.

The three functions assigned to a Biosphere Reserve





The implication component is therefore not an extra added-value factor but rather one which represents the very essence of a biosphere reserve, as it is not a mere legal status establishing obligations and sanctions, but one based on freely-assumed commitment.

The biosphere reserve - a versatile concept

It should therefore not be surprising to see how the many different facets that converge in a biosphere reserve create ideas which, whilst perhaps seeming contradictory, are actually partial visions, elements within a concept that seeks to harmonise diverse components, producing a sort of kaleidoscope effect. A biosphere reserve may thus be seen as a conservation programme, a way of improving the quality of life of local people, an opportunity to modernise the territorial and production structure within an area, or a participative model of governance, and so on. For this reason, these reserves are not merely protected areas but something altogether more comprehensive.



BIOSPHERE RESERVES – ELEMENTS WITHIN A WORLD NETWORK

Initially, the MaB Programme had a number of lines of approach, one of which was that of the biosphere reserves. Countries would present candidate territories, following their own criteria, which MaB Programme management bodies generally approved without too many objections.

Originally, there was a scientific and research-based focus to the MaB Programme, **although from the start, the focus of the research was on biodiversity, ecosystems and their management, as well as there being an emphasis on the importance of the participation of, and a commitment to local people.**

In accordance with the dominant attitude toward conservation at that time, both the countries concerned and the relevant MaB Programme bodies responsible for approving new proposals put more resources into conservation than into development or programme management.

Thus the biosphere reserves designated in the first years, even in the first two decades, often tended to coincide with national parks or other key conservation programmes, without any local people being involved.



The first rethink regarding the various functions of a biosphere reserve

The first MaB Programme World Congress was held in Belarus in 1983, at which the draft of the First Biosphere Reserve Action Plan was announced. The rethink focused on the development aspect of the reserves, setting a series of targets and recommending a number of courses of action. This Action Plan defined the **World Network of Biosphere Reserves as a fundamental organisation for these reserves, through which knowledge and advances are shared and spread.**

Although the basis for the biosphere reserves was clearly established, at least in theory, expressly drawn up in such a way, some of the components of the reserves were still in a very sketchy, embryonic state.

Nonetheless, the number of territories that have joined this programme continues to grow at a swift pace: in 1987 there were 266 biosphere reserves in 70 countries.





Introduce new ideas and new agents

The professionals entrusted with management on the ground - in close collaboration with local people, their development needs, the administrative bodies responsible for the planning of the territory and all social demands and interests - were forced to seek out synergies and coordinated participation with a wide range of social agents and sectors. It became clear that the **commitment to the biosphere reserve project needed to be extended to planners, decision makers and the designers of territorial policy, the business community and investors, as well as to a number of different social groups and local authorities etc.**

The clearly scientific nature of the programme was changing into one of sustainable development. The scientific information concerning biodiversity and ecosystems could be helpful, although programme managers needing to tackle numerous day-to-day situations would need to make full use of their experience and creativity, creating the required tools on the fly. The World Network was frequently looked to in search of assistance, in order to find suggestions from other biosphere reserves facing equivalent problems.

This evolution also meant that researchers had to face up to new challenges: how to acquire knowledge which might be useful when making decisions, in creating options, in day-to-day management and when selecting administrative tools.

NEW LANDMARKS IN THE DEVELOPMENT OF THE WORLD NETWORK

In 1995, a UNESCO International Conference on Biosphere Reserves was held in Seville, Spain. The event had great importance for the MaB Programme, as all its activities focused on biosphere reserves, the only line of action. At this time, the worldwide network consisted of 324 territories in 82 countries.

The Seville Strategy and the Statutory Framework

The Conference saw the launch of the Seville Strategy and the Statutory Framework thanks to the work on biosphere reserves and the networks formed on various levels (regional, national and thematic), as well as the work of the International Secretariat of the UNESCO MaB Programme. **These documents set the standards for biosphere reserves since then, one in terms of its recommendations - the Strategy - and the other focusing on the requisites to be met by both existing and new reserves - the Statutory Framework.** Once approved by the UNESCO supreme body, both documents reflect the commitments that affect biosphere reserves from all countries and the various social agents that give them support, as well as state institutions.

According to the terms of the Seville Strategy, from that point onward biosphere reserves had to **focus their attention on putting the development aspect into practice, with the different components that this implies.** At the heart of a now numerous World Network, the Statutory Framework sought to establish strict criteria and standards that define the origin of biosphere reserves in greater detail, whilst maintaining the same essence. There was also the proposal to assist reorientation of existing reserves that do not meet these requisites, as had been detected in a preliminary assessment.



The Madrid Action Plan

Thirteen years after the Seville Conference, the Third UNESCO World Congress of Biosphere Reserves was held in 2008. This Congress ratified the Seville documents and drew up an Action Plan, referred to as the World Network of Biosphere Reserves Action Plan 2008-2013, or the Madrid Action Plan, as the conference was held in Madrid. At that point, having assessed the application of the Seville recommendations, the emphasis was placed **on the adaptation of all biosphere reserves as defined in Seville, both those announced prior to 1995 and those announced after, the strengthening of networks on various levels, and the assembly, synthesis, interpretation and diffusion of the lessons learnt from the MaB Programme** in over 30 years of biosphere reserves.

Over these three decades, new territories have been continuously added to the World Network of Biosphere Reserves, reaching a total of 563 in 110 countries by June 2010. Nevertheless, this number is no indication of either success or effectiveness unless it reflects projects that are well established on the ground, that meet all the functions assigned to biosphere reserves and have in place all the necessary commitments between local communities and the institutions working within and responsible for the territory. The assessment of a biosphere reserve, both within the individual countries and internationally, has also resulted in a process of self-evaluation and responsibility which can be clearly seen in the ever-stricter requirements imposed on those seeking entry to an increasingly demanding club.



Predominance of natural spaces at the outset

The first territories designated as biosphere reserves in Spain coincided with natural protected areas, and, on occasions, with national parks (Ordesa-Viñamala, Doñana). In all cases these were prestigious spaces, recognised for the importance of their conservation work. In 1983 Urdaibai (Vizcaya) was designated biosphere reserve, the first not to coincide with a protected area, although at the time its status was declared the Urdaibai Biosphere Reserve

Act was before the Basque Government, which sought to offer some protection to the space and promote the development of the local population.

In 1992, the Spanish reserves held their first reunion, the first step on the path toward the establishment of a national network. This incipient period focused on the sharing of uncertainties, doubts and expectations,

before swiftly moving on to identify areas of common interest. The Network's dynamic highlighted the need to involve other strata of the Government and society as a whole within the MaB Committee. As well as scientists, management figures were also brought in, both from central government bodies and Spain's regional governments, territorial managers and representatives of the humanities, including economics and sociology.





From natural spaces to complex territories committed to conservation

The National Network began with eleven biosphere reserves across Spain, of which only one, Urdaibai, was not previously a natural protected area. In 1993 the whole islands of Lanzarote and Menorca were added with the Sierra de las Nieves following in 1995. These additions saw the commencement of the practical application of a biosphere reserve in all its multiple facets: conservation, development and logistics. These additions also represented a challenge for the World Network as well as having a significant influence on future MaB approaches, in terms of **departing from the framework of protected spaces and broadening horizons to ensure a greater diversity of biosphere reserve functions.**

As far as the Spanish reserves that appear at the start of the guide are concerned, a progression can be seen in the declaration of new reserves, with the period from 2000 to 2006 worthy of special mention in which 23 Spanish Biosphere Reserves were announced. The map shows their distribution.

STRUCTURE OF THE SPANISH BIOSPHERE RESERVE NETWORK (SBRN)



From the effort made by individual reserves to institutional support

The First Congress of Spanish Biosphere Reserves in 2006 saw a leap forward in terms of the evolution of the Network with the drawing up of a joint Strategy and a three-year Action Plan. The conference was held in the Lanzarote biosphere reserve, under the auspices of the OAPN (the Spanish Authority for National Parks-OAPN). **The priority identified by reserve managers and administrators was to ensure that the Network had a suitable structure and organisation, in order to ensure that programmes of common interest could be drawn up and appropriate channels of development found.** The Ministry of the Environment (later to become the Ministry of the Environment and Rural and Marine Affairs) responded to this demand through the OAPN.

In terms of the effects on reserves and the network, the landmarks during this period are as follows:

- * Publication of **Royal Decree 342/2007**, of 9 March 2007, granting the OAPN the development functions undertaken by the MaB Programme in Spain and defining the make-up of the Spanish Committee of the UNESCO MaB Programme.
- * Publication of the **Natural Heritage and Biodiversity Act 42/2007**, of 13 December 2007, which covers biosphere reserves in the section dedicated to areas protected by international agreements and which sets out the basic requisites that a biosphere reserve should meet in order to be granted and maintain this status.
- * The **increase in human and economic resources** in order to provide support to biosphere reserves and the Spanish network.

The legislation outlined above has highlighted the operations of the Spanish Biosphere Reserve Network, which now enjoys notable institutional support, as well as maintaining an intense functional dynamic.



WHAT DOES THE SPANISH BIOSPHERE RESERVE NETWORK INSTITUTIONAL SUPPORT CONSIST OF?



The Spanish Biosphere Reserve Network demands a commitment from institutions on various levels (state, regional, local etc.) and, frequently, also requires an adaptation of certain local policies to the objectives of biosphere reserves. In order to ensure a suitable response to such demands, **the Spanish Biosphere Reserve Network needs to have appropriate instruments in place, such as solid scientific backing, good capacity for action on various levels of the Public Administration, accepted and respected authority and a capacity for dialogue and coordination.** The institutional and personal components which can offer these aspects to the Spanish Biosphere Reserve Network can be found within the Network itself on a functional level and are the pieces that produce the required synergies as they interact. Therefore, when we refer to the Spanish Biosphere Reserve Network the concept is taken to include: biosphere reserves with their technical and institutional representatives and social agents, the Spanish Committee of the MaB Programme (including consultancy bodies and accompanying components) and the OAPN, responsible for the coordination of the development of the MaB Programme in Spain.



The institutional support for the Spanish Biosphere Reserve Network has evolved significantly since the setting up of the first Spanish Committee of the MaB in 1974. This evolution has created a series of mechanisms allowing interaction between the various biosphere reserves and between these reserves and the institutions, with the structural relationship with the Government and the regional governments duly defined, creating bodies offering support and covering the basic operations of the Spanish Biosphere Reserve Network.



Coordinated parts within a complex machine



The make-up of the MaB Committee provides a space within which converge the basic needs of biosphere reserves, an analytical and critical vision of the various scientists and NGOs, the interests of regional and governmental institutional representatives; all of this under the presidency of the Minister for Environment and Rural and Marine Affairs.



Legal basis

Royal Decree 342/2007 currently regulates the coordination of the development of the MaB Programme in Spain with the Spanish Authority for National Parks (OAPN) and the Ministry of the Environment and Rural and Marine Affairs, as well as defining the make-up of the Spanish Committee of the MaB as the Government's consultancy body. **The OAPN also includes the Office of the MaB Programme in Spain, offering technical and logistic support to the Spanish Biosphere Reserve Network**

and the Spanish Committee of the MaB Programme and fulfils a key role in the coordination and diffusion of information.

The Spanish Committee of the MaB Programme has two consultancy bodies: The Biosphere Reserve Management Council, consisting of a technical representative from each of the 40 reserves, the Scientific Council, made up of a representative from the university of each Region with biosphere reserves, three from the Spanish National Research

Council and a further three, making a total of 21 members.

Here we should highlight **the composition of the Spanish Committee of the MaB Programme where all the Spanish regions which have biosphere reserves are represented, the two advisory councils, a number of NGOs (environmental groups, trade unions, business groups etc.), as well as representatives from the Ministry of the Environment and Rural and Marine Affairs and the OAPN.**

The OAPN coordinates all these components, making use of its own resources. Its main lines of action are aimed at:

- * Participate in MaB Programme bodies, propitiate and facilitate Spain's intervention and representation of its biosphere reserves within various international networks
- * Maintain the Office of the MaB Programme in Spain
- * Undertake action deemed to be of interest to the Spanish Biosphere Reserve Network
- * Provide support and the necessary resources in order to carry out the duties of the Scientific Council in its role as an advisory body



The Management Council is the direct voice of the reserves and the main source of initiatives and demands concerning their needs. Its proposals are generally passed on to the OAPN and the Spanish Committee of the MaB Programme, where they may be taken up by the represented bodies. The Management Council may also look for agreements and collaboration with other entities not on the MaB Committee.

The Scientific Council acts as a consultant to the MaB Committee with regard to the adjustment of biosphere reserves to the recommendations of the MaB Programme, applicable both to existing and proposed reserves. Its contribution is to make a rigorous assessment system available as well as essential orientation necessary for the development of the MaB Programme through both the reserves and the network.

The Regions and some local bodies provide direct support to the individual biosphere reserves.

The Directorate General for Rural Sustainable Development at the Ministry of the Environment and Rural and Marine Affairs, in response to commitments assumed by the Spanish MaB Committee, where this organisation is represented, has established a specific line of financing for sustainable development projects on biosphere reserves, under a co-funding modality with Spain's Regions and local bodies presenting the projects.

The activities currently undertaken by the structures that offer support to the Spanish Biosphere Reserve Network are an interesting example of the interaction between the public administration (Government, the autonomous regions, local bodies, universities) and social organisations, where the cooperation between the various components and the coordination function are of great importance.

SPANISH BIOSPHERE RESERVE NETWORK ACTIVITIES

The activities of the Spanish Biosphere Reserve Network, over the period between 2009-2013, are orientated toward the recommendations of the **Montseny 2009-2013 Action Plan**, or the SBRN Action Plan, detailing the action set out in the World Network Madrid Action Plan in the activities to be undertaken throughout Spain. Of all possible action, attention is centred on:

- * Developing a **system for monitoring the reserves and the Spanish Network**. Here there is a convergence of the work undertaken by an external team, by the Scientific Council, by a Management Council and by individual biosphere reserves. Currently work is ongoing in order to integrate all these efforts to establish a Spanish Biosphere Reserve Network monitoring process and the setting in place of a series of protocols that make it easier for the reserves to implement their own monitoring model.





* **Increase the visibility and awareness of biosphere reserves** by those living within the reserves and the general public. As well as all the communications efforts made by each of the biosphere reserves individually, action is also taken on a Spanish Biosphere Reserve Network level, such as: a digital information bulletin every three months approximately, the registration of the Spanish Biosphere Reserve Network corporate image, a homogenous signage model, to be applied voluntarily by the reserves, a space dedicated to the MaB Programme on the Ministry of the Environment and Rural and Marine Affairs website, within the space dedicated to the OAPN, publication etc.

* **Awareness raising and training initiatives** aimed at favouring the adaptation of biosphere reserves to the requirements established by the MaB Programme which must be met by 2013.

* **The promotion of quality economies**, consisting of facilities ensuring that biosphere reserve economic agents become involved in production activities that are committed to the principles of biosphere reserves. The work was undertaken through horizontal collaboration between reserves, with the creation of an identifiable product and service brand.







- * The Management Council has also initiated a number of channels of collaboration with other Governmental departments and private bodies, focussing on **sustainable development projects in biosphere reserves**, related to both production and service sectors, equipment and organisational structures.

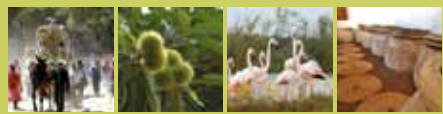
As examples of the support given to Spanish Biosphere Reserve Network by outside institutions, we should mention the **General Secretariat for Tourism and Domestic Trade**, which supports the tourist sector in biosphere reserves through the introduction of Biosphere Reserve Tourist Products, developed in collaboration with the Management Council, and the specific financing that the **Biodiversity Foundation** dedicates to sustainable development projects in biosphere reserves, via competitive tendering.

It is worth highlighting the Spanish Biosphere Reserve Network as a **good example of collaborative working, multiple support and networking**, where common objectives are clear and the real commitment of those taking part is driving force behind this collective experiment. The result, which can already be seen and is the cause for optimism, is that these territories are now better off than they were before these efforts were made, with local people more actively involved in the various initiatives on the ground.



We cannot afford to sit back and wait for others to do what we should be doing: reinvent our lives and progress by righting day-to-day mistakes.

Madrid, November 2010
Office of the MaB Programme in Spain
Organismo Autónomo Parques Nacionales (OAPN)



- * CABO DE GATA-NIJAR
- * DOÑANA
- * DEHESAS DE SIERRA MORENA
- * GRAZALEMA
- * MARISMAS DEL ODIEL
- * SIERRA DE LAS NIEVES
Y SU ENTORNO
- * SIERRA NEVADA
- * SIERRAS DE CAZORLA,
SEGURA Y LAS VILLAS
- * INTERCONTINENTAL
DEL MEDITERRÁNEO

Javier Ávila Elviro. Gestor de la Reserva.
 Javier Navarro Pastor. Asesor técnico de la Reserva.
 Víctor Vargas Escudero. Asesor técnico de la Reserva.

CABO DE GATA-NÍJAR

The nature of the Cabo de Gata reserve is notable for including the largest area of Neogene volcanic rock in the south east of Spain, as well as its semi-arid character - it is one of the few desertified or steppe-like protected areas in Europe, its well-conserved coastline with minimal human presence and for featuring a Wetland of International Importance which integrates man as an essential element of the ecosystem.

Due to its special characteristics, the region has traditionally been sparsely populated, with the local economy dependent on fishing, agriculture, livestock farming and mining. In recent years, with the classification of the region as a protected space, improvements to infrastructures, the tourism boom and the rapid growth of horticultural operations in the Campos de Níjar, the situation has changed, with socio-economic indicators and quality of life having improved notably. What was once an under-populated area with low per capita income, has become one of the most visited areas in southern Europe.



The rugged coastline conceals sandy shores such as the beach at Peñón Blanco.

Date declared biosphere reserve: 1997

Surface area: 37,500 hectares on

land and 12,012 hectares at sea

Location: South-east of the Iberian Peninsula.

Andalusia. Province of Almería

Municipalities: Almería, Níjar and Carboneras

Management body: Junta de Andalucía Regional

Government Department of the Environment

Other protection: Natural Park.

Special Protection Area for Birds (SPA).

Specially Protected Areas of Mediterranean Importance (SPAMI).

Site of Community Importance (SCI).

Ramsar Wetland of International Importance.

National Marine Reserve.

Member of the European Geoparks Network.

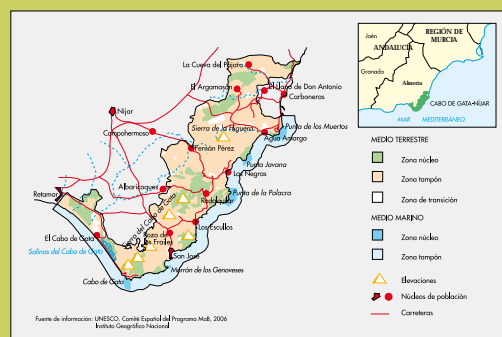
Member of the Global Geoparks Network.

Biogeographical Region / Province: Mediterranean region, Murciano Almeriense province,

Almeriense sector, Charidemo subsector



Cistern at the Los Murcia Cortijo.





The solitary loggerhead sea turtle, an endangered species, is currently the subject of a reintroduction programme.

Two natural settings, one marine, the other continental, separated by a coastline with stunning physiographic features, is the perfect expression of the magnetic appeal of this especially beautiful area.

Surrounded by a landscape of exceptional geomorphology, it is an orographic desert that determines the life forms that live there.

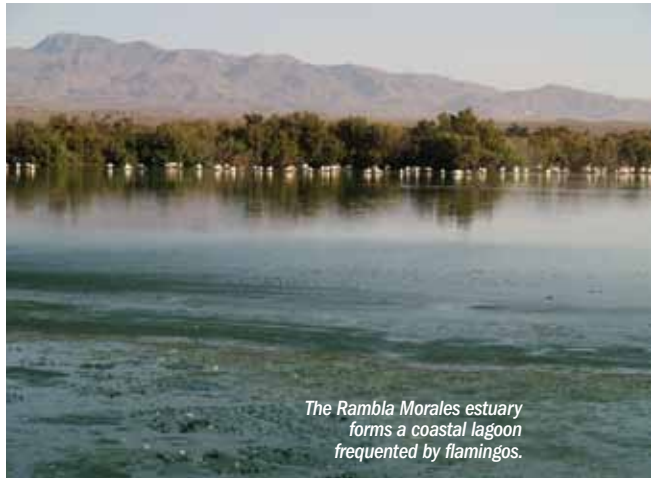
The geological past is dominated by the volcanic activity that has given form to the landscape; with its tropical palaeoclimate revealing fossilised coral reefs and dunes whose whiteness gives the coast a special luminance.



Underwater meadow of Neptune grass

Sandy sea beds

This reserve is a place with a special charm for sailors, with cliffs that are home to cormorants and gulls, with an underwater world rich in benthic fauna in parts where the sea bed is rocky and extensive meadows of marine phanerogams where it is sandy. These meadows offer refuge to a species as noteworthy as the huge bivalves known as *Pinna nobilis* or noble pen shells, as well as sea horses.



The Rambla Morales estuary forms a coastal lagoon frequented by flamingos.

Large amounts of sand have resulted in beautiful beaches, far too many to be numbered here. Within this context, the presence of rock pools, lagoons and *albuferas* - coastal salt water lakes - mean that over 80 species of birds can be observed here.

The landscape is notable for the virtual absence of significant tree cover. In its place, there are shrub extensions such as jujubes and milkweed, palm colonies, grassland with thickets, where esparto grass and thyme dominate, offering shelter to reptiles such as the ocellated lizard or the spur-thighed tortoise. The presence of sisal, agave and opuntias show the relationship between man and the environment. Fields of cereal crops provide the habitat for an extensive community of steppeland birds such as Dupont's lark, the stone curlew and the black-bellied sandgrouse. The rocky outcrops, populated by Bonelli's eagles and eagle owls, are also the habitat for a wealth of endemic flora such as *Antirrhinum charidemi* (a local endangered snapdragon), whilst other species, such as mountain germander and *Dianthus hinoxianus*, a local species of wild carnation, grow on stony terrain.



From left to right: Presillas, Windmill at Collado de los Genoveses, Cortijo El Sabinar.

Cultural Heritage and Landscape

Although deserted, the Reserve has not escaped human occupation. Since the earliest times, people have adapted themselves to live in the climatically extreme conditions, leaving behind a rich and varied cultural heritage.

In the 17th century, frequent incursions by Berber pirates meant that a series of castles had to be built, a programme which reached its height during the reign of Charles III.

Wherever the scarce resource of water could be found, small market gardens abounded. Crops grown on non-irrigated land occupied large expanses of land, creating a cereal steppe. Much time and effort has been necessary in order to build dry stone walls, irrigation ditches, cisterns and waterwheels that could capture the scarce surface and subterranean water, whilst the region's windmills remind the visitor of the legacy left by our ancestors. The *cortijos* - Andalusian country estates - with their farmyards, threshing floors and piggeries are an architectural reflection of the various cultures to have peopled this land.

The geological peculiarities of Cabo de Gata have bequeathed a rich mining heritage. The Alumbres Royal Concession, granted in 1509, allowed the mining of copper, lead, iron and manganese. In 1883 gold was discovered near Rodalquilar, although mining did not commence until the 20th century was well underway.

The Cabo de Gata salt flats are situated in an old drained *albufera* or salt-water lagoon outside Almadraba de Monteleva, whose name derives from the fishing of long-finned and frigate tuna - known as *melva* in Spanish - which was practiced until the 20th century.

Cabo de Gata has been of great importance to seafaring. The archaeological finds in the area led to the cataloguing of three underwater sites and a number of control areas.

Its special layout and tranquillity have attracted and inspired artists of all types and backgrounds, and its landscape used as the setting for countless film productions, making the area a point of reference for all manner of cultural events.



"Tierra y Arte (Land & Art)" photographic exhibition



The Rodalquilar Valley. Here we can see an area of old mining spoil tips, now restored, and part of the Reserve's installations.

Socio-Economics of the Reserve



Small fishing boats on the Isleta del Moro.

With less than 6,000 inhabitants spread between 30 towns and villages, Cabo de Gata is a sparsely populated area, as might be expected in an environment that is hostile to man. It has been the hard work of farmers who have tamed a land that has long been populated by miners, fishermen, farmers, livestock drovers and potters and weavers working with ceramics and natural fibres.

The Reserve covers part of the municipalities of Almería, Carboneras and Níjar, with the greatest amount of land falling within the boundaries of this latter town.

Livestock farming, semi-extensive and traditional, focuses on raising goats and sheep. The Celtiberian white goat is still bred in this area, one of the last such regions on the Iberian Peninsula.

Economic Activities

Whilst the main economic activities are situated outside the Reserve, development has centred on ensuring the sustainability associated with the characteristics of a Protected Area. Currently, the main activities are tourism, which has seen a proliferation in rural cottages and boutique hotels which attract a type of tourism that is different from that in other areas in southern Spain; traditional small-scale inshore fishing which in some parts has evolved into aquaculture and two differing types of agriculture: intensive and organic.

The only current forestry operation relates to the production of fragrances. Small wild game hunting is of social and sporting nature, and does not generate significant income.

Mining, which used to be traditional in the region, is today limited to the extraction of bentonites, a mineral with numerous industrial and environmental applications, and salt production, thanks to which there is a Wetland of International Importance.



A Celtiberian white goat on the El Romeral estate.



The town of Las Negras.



The Reserve's contribution to sustainable development

The Reserve lacks exclusive management and participation structures, as its surface area coincides with that of the Natural Park, the status of which was granted earlier. It is therefore managed through three key plans: the Natural Resources Ordinance Plan, the Plan for Governing Usage and Management and the Sustainable Development Plan.

The first two of these established the regulation of usage and activities, with the most recent updating of the plans coming in 2008. Implementation of these plans has included environmental strategies, plans, programmes and norms or thus related. These are therefore integrating instruments whose application on the ground should ensure compliance with the principles set out in the Biosphere Reserve action plans. Flexible documents have also been presented that may be subject to adaptation and revision.

The Sustainable Development Plan sets out a planning strategy, seeking a synthesis between the demands of en-



Canoe excursions are one of the main active tourism activities.

vironmental conservation and local economic development in tandem with local people and all social, economic and cultural agents. It outlines as specific targets the improvement to productivity and business activities related to the sustainable use of resources. In parallel, the demands on infrastructures, equipment, human resources training and research, development & innovation are examined.

In 2008, the Park signed up to the European Charter of Sustainable Tourism, which seeks to ensure, among other benefits, a boost to tourism in the region, with an environmental focus that strives to set itself apart from the typical clichés of the Spanish coastal zones.

CABO DE GATA-NIJAR

The Natural Park "brand"

The Andalusia Natural Park "brand" guarantees the quality of products and services from within protected spaces and their socio-economic spheres of influence. It permits new channels of promotion, distribution, marketing and sales.

A craft product bearing the Natural Park trademark representing columns of volcanic rock.



Bird watching hide at Las Salinas.



Public use and tourism

Tourism is, above all, from within Spain, although the number of foreign tourists is slowly increasing. At first visitors came mainly in the summer; however, in recent times an increase in those coming off-season has been noted, with the region's natural and cultural heritage becoming the main attractions. Visitors are mainly looking for peace and quiet, unspoilt beaches and well-conserved destinations.

As well as the aforementioned attractions, we can also add the regional gastronomy and local fiestas. The local cuisine is based on the freshest possible produce from land and sea, with a wealth of fascinating recipes bringing together centuries of culinary wisdom: *gurullos* (semolina with saffron), *caldo de pimentón* (a fish soup with paprika), *cuajadera* (baked fish, meat or chicken), *patatas a lo pobre* (sautéed potatoes with green pepper) and *tortas de chicharrones* (pork fritters) are just some of the most representative dishes.

Also worthy of special mention are the festivities to celebrate the feast day of the Virgin of Carmen and the Blessed Virgin of the Sea, in whose honour coastal *romerías* - local pilgrimages - and processions are held. Other local festivals include San Esteban, San Juan, Santa Bárbara and San Antonio de Padua.

Tourism has undergone certain diversification in recent times, with a significant increase in active tourism and sports along the coast. Strategies are being designed and developed that allow sustainable tourism which is no longer concentrated on summer months. Concepts such as geotourism, ornithological tourism and ethnocultural tourism are gradually becoming more popular among visitors to the region, with local businesses responding to the demand.

Inland tourism is also a growth area through rural tourism, guided routes and cycle tourism.

FACILITIES FOR PUBLIC USE	
Open	Temporarily closed, under construction or pending renovation
<ul style="list-style-type: none"> Visitor centre at las amoladeras (almería) Telephone: 950 160435 El cornical botanical tourism centre (rodalquilar, nijar) Telephone: 950 389825 La casa de los volcanes geotourism centre (rodalquilar, nijar) El albardinal botanical gardens (rodalquilar, nijar) Telephone: 950 389825 Information points (6) at isleta del moro (nijar), la amatista (nijar), las sirenas (nijar), rodalquilar (nijar), noria del pozo de los frailes (nijar) and playa de los muertos (carboneras) El corralete sea centre (el corralete, nijar) Villacepillo rural accommodation i & ii (rodalquilar, nijar) Telephone: 950 389825 Bird watching hides (5; las salinas, cabo de gata, almería) Panoramic view points (5) at isleta del moro (nijar), las amoladeras (almería), playa de los muertos (carboneras), las sirenas (nijar), la amatista (nijar) and playa de los muertos (carboneras) Signposted public footpaths (17), old railway line at agua amarga (nijar), the majada redonda crater (nijar), cerro del cinto (nijar), cortijo del fraile-montano-hornillo (nijar), el pocico-las marinas (almería), escullos-isleta del moro (nijar), escullos-pozo de los frailes (nijar), la molata (nijar), las amoladeras (almería), loma pelada (nijar), los genoveses (nijar), mesa roldán (carboneras), requena (nijar), río alías (carboneras), san pedro-el plomo-agua amarga (nijar), vela blanca (nijar), las salinas (almería) Conference and exhibition centre (rodalquilar, nijar) Telephone: 950 153464 	<ul style="list-style-type: none"> Campsite (rodalquilar, nijar) Coastal service centres (2) at mónsul & torregarcía El bujo nature centre (rodalquilar, nijar) Los espartales agriculture and forestry centre (rodalquilar, nijar) Bird watching centre at las amoladeras (almería)
Other facilities	
<ul style="list-style-type: none"> Provincial environment department administrative offices (rodalquilar, nijar) Telephone: 950 153464 Nursery (rodalquilar, nijar) Telephone: 950 389747 It resource centre (rodalquilar, nijar) Telephone: 950 389529 	<ul style="list-style-type: none"> Building offering management support for special areas of mediterranean importance (spami) in andalusia (el corralete, nijar) Centre for the protection of endangered marine species at puerto de carboneras (carboneras)

Águeda Antonia Villa Díaz, Teresa Agudo Blanco,
José Juan Chans Pousada, Francisco Quirós Herruzo,
Juan Carlos Rubio García, Patxi Serveto i Aguiló.

DOÑANA

Doñana is part of the Mediterranean Biogeographical Region, with its key landscapes the marshes bordering the River Guadalquivir and the surrounding sand dunes, forming a diverse environment between swampland and arid terrain, with a rich biodiversity. These wetlands are of great importance to the migratory routes between Africa and Europe.

Doñana represents one of the foremost such regions in the world, comprising a wide range of ecosystems. The wealth of its fauna makes it a unique site, with over 300 species of vertebrates and some 6 million birds which year after year follow the same migratory routes, as well as being one of the last refuges for endangered species such as the Iberian lynx and the Spanish imperial eagle. The area's cultural heritage, the fruit of an age-old process of colonisation, includes both unique landscapes and remarkable ethnographic values.

Date declared biosphere reserve:

30 November 1980.

Surface area: 77,260 hectares (66 % core zone and 34 % Buffer Zone, with no Transition Zone).

Location: Western Andalusia, the estuary of the River Guadalquivir, at the confluence of the provinces of Huelva, Seville and Cádiz.

Municipalities: Almonte, Aznalcázar, Hinojos and La Puebla del Río.

Management body: Espacio Natural de Doñana (Junta de Andalucía Regional Government Department of the Environment)

Address: Centro Administrativo El Acebuche, 21760 Matalascañas (Almonte, Huelva)

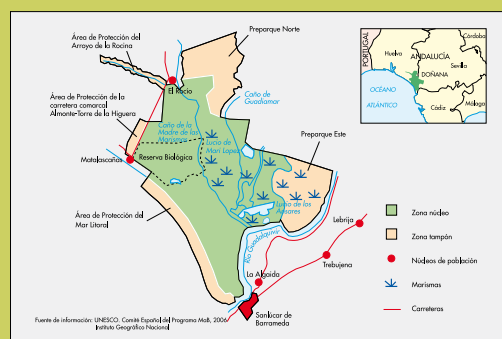
Telephone: 959 439 627

Email: en.donana.cma@juntadeandalucia.es

Website: <http://www.cma.junta-andalucia.es/medioambiente/site/web/>



Wading birds on the marshes



Other protection:

Doñana National Park, Doñana Natural Park, Special Protection Area for Birds (SPA), Site of Community Importance (SCI), Ramsar Wetland of International Importance, Diploma of the European Council and UNESCO World Heritage Site.

Biogeographical Region / Province: Mediterranean, Ibero-Atlantic.



Group of pink flamingos (*Phoenicopterus ruber*) on a sandbank in the marshes.

Avifauna and flora

Doñana's avifauna is the largest fauna group in the region, with over 220 species, which either breed or winter on the reserve, or use it as a migratory stopover site. Special mention here should be made of the common spoonbill (*Platalea leucorodia*), white-headed duck (*Oxyura leucocephala*) and the booted eagle (*Hieraetus pennatus*). In terms of flora, there are many endangered or vulnerable species, such as *Linaria tursica*, *Micropyropsis tuberosa* and *Juniperus oxycedrus* subsp. *macrocarpa*.

Doñana sits between two continents, North-South; and two vastly different bodies of water, the Atlantic and the Mediterranean.

The huge ecosystem that is Doñana comprises three eco-districts: the coastal eolian mantle of active dunes, one of the most important such sites in Europe; the coastal system, with the Las Marismillas spit bar and its beaches; and finally, the fluvial-marine marsh consisting of silt and loam, the result of the Guadalquivir estuary filling up.

The climate is sub-humid Mediterranean, with very irregular rainfall. There are two main under-evolved soil types: sandy, with a predominance of conifer and oak forests with scrub, and heavy clay/saline, characteristic of grassland marsh. The water regime, both subter-

ranean and superficial, is essential in ensuring the conservation of these vast wetlands.

The combination of factors such as the River Guadalquivir, the closeness of the ocean, the flat relief, the winter flooding and summer droughts, and over 3,000 hours of sunshine per year results in Doñana's extraordinary natural beauty, both in terms of the species found there and its habitat.

From a point of view of fauna, it is worth highlighting the Spanish imperial eagle (*Aquila adalberti*) and the Iberian lynx (*Lynx pardinus*), as well as numerous other internationally catalogued species of interest.

Landscape of moving dunes



Cultural Heritage and Landscape

The estuary nature of Doñana, with its lightness and brackish waters open to the Atlantic, has resulted in a dynamic, diverse setting for its various inhabitants, from the mythical Tartessians visited by Hercules in his voyage to found Europe, to the current population, interweaving a contemporary and future identity within the protected area of Doñana.

The archaeological remains point to the presence of prehistoric (Palaeolithic and Neolithic) and ancient (Tartessian and Roman) cultures, whilst the basis of its secular culture dates back to the Late Middle Ages, when the socio-territorial order derived from the Castilian reconquest replaced that prevalent in Al Andalus.

Since the 14th century, Doñana's four characteristic landscapes have consolidated their presence through their relationships between their most important parts and traditional agricultural systems. To the north, the stable land, where rural villages account for the most noteworthy architectural heritage - churches, public buildings, houses, oil mills, wineries and bullrings - where the Mediterranean legacy is evident in the growing of grapes, olives and other crops. In the south, with the instability of the dunes, the marshes and beaches that make up the Reserve, habitat is far more dispersed (palaces, forestry, farm and livestock buildings, huts and cabins) and the traditional activities (livestock farming, fishing, crop harvesting, hunting), representing the

El Rocío Hermitage and La Madre de las Marismas.



genuine expression of Doñana's popular cultural heritage. Also worthy of mention is the intangible heritage - the rich dialect, local customs and religious festivals, especially the Sanctuary of Our Lady of Rocío, situated on the edge of the wetlands.

Currently, painters, writers, photographers, filmmakers etc; constantly reinvent, creating a contemporary heritage where nature and culture seem to always have been intertwined and will long continue to be so.

What Cannot Die

Say, say once more what
cannot die:
the light, which in the south is innocent
climbing pine trees.
a gentle trot on a June morning;
the falcon's blue plummet;
the dunes, still with their signs
of another summer to be
placed in the mouth.
Eugenio de Andrade

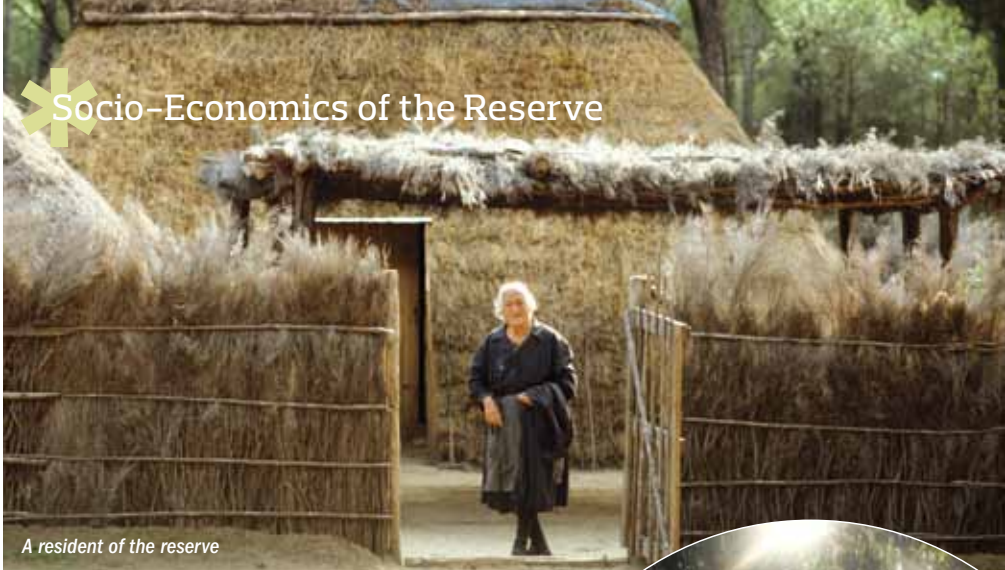
DOÑANA

BIOSPHERE RESERVES





Socio-Economics of the Reserve



A resident of the reserve

The population of the four municipalities in the Reserve rose to around 42,000 in 2009: 52% in Almonte, 29% in La Puebla del Río, 10% in Aznalcázar and 9% in Hinojos. The density of the population goes from the maximum in La Puebla del Río, with 32.4 people per km² to the minimum in Aznalcázar with 9.05 people per km², considerably below the Andalusian average of 85 people per km². Nonetheless, the local population has gradually increased across the region due to immigration, largely from Eastern Europe, South America and the north of Africa and working mainly in agriculture.

As far as the use of land is concerned, the area dedicated to Protected Areas (National Park, Natural Park and others) is especially significant, covering 79% of the land in Almonte, 76 % in Hinojos, 44% in Aznalcázar and 34% in La Puebla del Río.



Beekeepers in Doñana

Economic activities are mainly represented by the primary sector, with agriculture the main activity as a source of employment and income: on the one hand there is the traditional agriculture, represented by the “Mediterranean trinity” (cereals, grapes and olives) and, on the other hand, modern irrigable agriculture, growing strawberries and other red fruits, as well as various orchards and rice fields. Tourism is especially relevant in the town of Almonte, above all, spa and natural tourism, although a significant number of visitors come to see the Hermitage of El Rocío, especially during the *Romería*.



Footpath to Charco del Acebrón

Pilgrimage to El Rocío featuring the Sanlúcar de Barrameda Brotherhood.



Traditional "Saca de las Yeguas" horse driving in Almonte

* The Reserve's contribution to sustainable development

The declaration of Doñana as a Biosphere Reserve established the National park as the Core Zone, with its "pre-parks" as the buffer zone. No Transition Zone has been defined. Nevertheless, the conservationist, socio-economic and political evolution of society has meant that the National Park is currently at the heart of a network of protected areas covering 50.65 % of the *Comarca de Doñana* region, made up of 14 municipalities.

Doñana's uniqueness extends over all imaginable characteristics of a protected area, with special mention for the role played by science and the conservation of nature. Recent years have seen new initiatives introduced for the conservation of natural resources, both in terms of preserving biodiversity, with ecological restoration and conservation projects such as Doñana 2005 and the Guadiamar Green Corridor, with their comprehensive global vision of the territory and in terms of ensuring that the services provided by ecosystems to society are sustainable, due to the new levels of socio-economic demand in the *Comarca de Doñana* region.

Fully aware of this, the Administration has proposed an extension to Biosphere Reserve to cover the whole of the *Comarca* region, with a consen-

sus existing as to a consideration of the area currently known as Doñana, allowing a zoning more in line with socio-economic and ecological reality within the territory. This is also reflected in the new MaB Programme directives, which require Reserves with extensive surface areas and populated transition area with socio-economic activities, without excluding potentially conflictive places and activities.

Thus the extension to the reserve would presuppose the international certification for strategic work undertaken over recent years, generally consisting of consolidating the Doñana region as a large-scale Sustainable Development initiative.

DOÑANA

Pair of spoonbills (*Platalea leucorodia*).



Public use and tourism

Through the Public Use of Doñana initiative, the Natural Area Administration seeks to raise awareness, both amongst local people and visitors, of its unique natural and cultural heritage, and consequently of the need to conserve this through the sustainability of the region. Communication, environmental education and equipment programmes will therefore be introduced, managed through quality

control systems and linked to the heritage of the rest of the region and surrounding area.

Therefore, the interest of local people sporting, educational, recreational and tourism activities associated to protected heritage has been satisfied in Doñana thanks to an extensive network and a wide range of public and tourism activities.

Internet addresses for further information

Andalusian Protected Areas (Regional Government Environmental Department)

[http://www.cma.junta-andalucia.es/medioambiente/site/web/INFORMACIÓN Ambiental/Espacios Protegidos/Red de Espacios Naturales Protegidos de Andalucía/Reservas de Biosfera \(Red de Andalucía\)](http://www.cma.junta-andalucia.es/medioambiente/site/web/INFORMACIÓN Ambiental/Espacios Protegidos/Red de Espacios Naturales Protegidos de Andalucía/Reservas de Biosfera (Red de Andalucía))

Websites for Visitors to Natural Areas (Regional Government Environmental Department)

<http://www.cma.junta-andalucia.es/medioambiente/site/web/Ventana del Visitante de Espacios Naturales>

Network of National Parks (Ministry of the Environment and Rural and Marine Affairs):

<http://reddeparquesnacionales.mma.es/parques/donana/index.htm>

Maximum service quality

Doñana is working to ensure its range of public and tourist activities offer maximum service quality, promoting a tourism model among the business community which, as far as possible, is in line with the principles of Sustainability. To this end, two initiatives have been instigated. The first consists of the adhesion of Doñana to the European Charter of Sustainable Tourism (EUROPARC, 2006), which fourteen tourism companies have already signed up to, whilst the second is the *Etiqueta Q de Calidad Turística* programme promoting tourism quality, launched by the Secretary of State for Tourism in 2008. Doñana is the first protected area in Andalusia to be granted this recognition.

Equipment and services at the disposal of visitors to the Doñana Natural Area. The map shows the guided excursions (walking, cycle tourism, horse riding, by boat and by 4WD vehicle) offered by private companies. Further information and web links available at the Websites for Visitors to Natural Areas above.



DEHESAS DE SIERRA MORENA

This Reserve lies crosswise along the southern edge of the Castilian plateau. The maximum distances between the extremes of the Reserve exceed 46 km from north to south and 178 km from east to west. It represents the administrative limit of Andalusia with the rest of Spain and Southern Portugal.

This Reserve is classified by the MaB Programme as within the Evergreen Sclerophyllous Forests & Scrub category.

It is dominated by a continuous series of mountains and valleys of differing characteristics. The mountains have peaks at low and medium altitudes, with some higher ranges contrasted by gorges which add a wild touch to the predominantly bucolic landscape. The valleys are short and longitudinal, corresponding to the **network of rivers**, except in the westernmost part, where a central valley has made inroads into the sierra.

The landscape is one of traditional pastures (dehesa), truly Iberian in nature, with extensive grasslands dotted with age-old holm oaks, Portuguese oaks, sessile oaks and cork oaks. The Reserve also has well-conserved areas featuring chestnut forests, Mediterranean hills and gallery forests alongside the numerous rivers.



Date declared biosphere reserve: 8 November 2002
Surface area: 424,400 hectares (8% core zone, 77% buffer zone and 15% transition zone)
Location: Provinces of Huelva, Seville and Córdoba, Andalusia.
Municipalities: 43 (28 Huelva, 10 Seville y 5 Córdoba)
Management body: Junta de Andalucía Regional Government Department of the Environment
Address: Servicios Centrales, Avda. Manuel Siurot 50, 41071 Sevilla.
Telephone: 955 003 400 / 955 003 500 Fax: 955 003 775.
Website: <http://www.cma.junta-andalucia.es/medioambiente/site/web>
Email:

pn.aracena.cma@juntadeandalucia.es
pn.sierranorte.cma@juntadeandalucia.es
pn.homachuelos.cma@juntadeandalucia.es

Other protection:

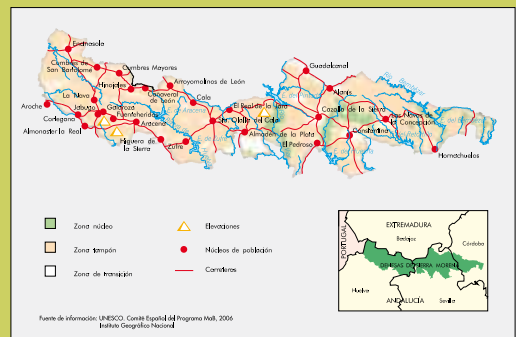
3 Natural Parks Sierra de Aracena and Picos de Aroche (Huelva), Sierra Norte de Sevilla (Seville) and the Sierra de Hornachuelos (Córdoba).

3 Natural Monuments Holm Oak in the Dehesa de San Francisco (Huelva), Cerro del Hierro (Seville) and the Huesna Waterfalls (Seville).

Special Protection Area for Birds (SPA).

Site of Community Importance (SCI).

Biogeographical Region / Province: Mediterranean



Natural Heritage

The extent of this Reserve lies within the Sierra Morena region, bordering the Central Plateau to the north and representing the natural nexus between the Guadalquivir depression and the rest of the Peninsula. Mesomediterranean holm oak woods are the most extensive in the area, although pasturelands represent dominant vegetation. The Dehesas de Sierra Morena are characterised by the typical elements of a Mediterranean woodland, although there are also trees more representative of Atlantic forests, such as sessile oaks and chestnuts. The specific conditions in the Sierra Morena are perfect for providing habitat to a large number of reptile and bird species, and for it to be considered an area where rarer species are often found.

Unique natural heritage

Endangered and vulnerable species of fauna: Golden eagle, Spanish imperial eagle, Bonelli's eagle, Black vulture, among other birds of prey; Black stork, wolf and bat colonies.



Chestnuts on the tree.



Fungi

Fungi in the area are abundant and varied: The most important species are *Amanita caesarea* (Caesar's mushroom) and *Amanita ponderosa* (known locally as *gurumelos*). Among the other edible mushrooms found on the reserve *Lactarius deliciosus* (saffron milk cap or Red pine mushroom), *Macrolepiota procera* (commonly known as the parasol mushroom) and *Boletus edulis* (penny bun, porcino or cep). Perhaps the most abundant fungus in the area, *Amanita phalloides* (the death cap) is deadly poisonous.

Vegetation: The vegetation of this area is represented by holm and cork oak woods. The higher land features stream beds and damp, shaded areas, with chestnuts, Portuguese oaks and occasional *Quercus pyrenaica*.

The uses to which the agro-system in these hills is put determines the economies of the towns and villages in the Reserve, which can be defined as specific and diverse agro-forestry systems, which make use of and combine the multiple available resources, agricultural and livestock, as well as making use of forestry resources, resulting in an agro-system that is representative of the Iberian Peninsula within a Mediterranean context, most typified by pastureland (dehesa). Mention should also be made of the traditional cultivation of chestnut trees, grown both for their wood and their nuts.

Cultural Heritage and Landscape

Much has been said and written about the antiquity and continuous population of this area, as can be seen in the maturity of its cultural expression, which, thanks the permanent dialectic, has resulted in a rich, diverse and endogenous cultural heritage, whose multiple manifestations are in relation to the prevailing conditions.

There is a wealth of architectural heritage, represented by both the housing in the area's towns and villages and a wide range of architectural elements that combine habitation and production: hermitages, town churches, fountains, public washing places, mills, country estates and farms, small bridges, oil mills, wineries and distilleries and Arabic and Christian defensive architecture - castles, towers, walls, ramparts - which can be found across the Reserve.

The local fiestas and *romerías* held in these towns and villages reveal a rich, multi-faceted accumulation of culture.



Visitor walking the Los Madroños footpath

Where religious belief is concerned, the way in which the region virtually appears to serve as an area of transit, as well as having isolated yet long-populated parts, has resulted in a superimposition of belief systems. These characteristics have been expressed in the interest shown in the region for the different religious orders, such as the Carthusians and Franciscans, and historical characters as important to Spanish culture as Arias Montano, a humanist from the 16th century and collaborator with Phillip II, who retired to Alájar, a small village in the Sierra de Aracena.

The characteristics of the physical environment, the combined knowledge, beliefs, techniques and approaches that have resulted in considerable cultural wealth, have culminated in the advent of the *dehesa* or pasturelands, both a farming system and a rural way of life, and which represents the highest expression of traditional culture in the Sierra Morena.

DEHESAS DE SIERRA MORENA

BIOSPHERE RESERVES

MAIN CULTURAL ASSETS IN THE BIOSPHERE RESERVE	
Huelva	The Historical-Artistic Site of Almonaster la Real
Huelva	The Historical-Artistic Site of Aracena
Huelva	The Historical-Artistic Site of Aroche
Huelva	Cortegana Castle
Huelva	Cumbres Mayores Castle
Huelva	Encinasola military ramparts
Huelva	Santa Olalla de Cala Castle
Córdoba	Almodóvar del Río Castle
Córdoba	Villaviciosa de Córdoba Nevalo Arab Castle
Córdoba	Finca Moratalla garden, Hornachuelos
Córdoba	Guadacabrilas Tower, Posadas
Córdoba	Ruined bridge over the River Guadiato, Villaviciosa de Córdoba
Sevilla	Alanís Castle
Sevilla	Almohad town walls, Cazalla de la Sierra
Sevilla	Constantine Castle, Cerro del Hierro
Sevilla	Town walls, Guadalcanal
Sevilla	Castillo de las Torres, Real de la Jara

* Socio-Economics of the Reserve



Sources of income

Livestock farming traditionally represents the most important activity within the Reserve. The Iberian black pig is the most representative species. Hunting is the second traditional activity in the Sierra, and one which has grown in recent decades. Similarly, cork farming is a significant source of income. Agriculture is currently undergoing a process of timid revitalization toward quality-focused production, based, above all, on olive oil.

The total population of the Reserve (excluding the Córdoba nucleus) in 2009, was 81,320, compared to the 89,092 registered in the 2001 census, with population density within the area of influence standing at 19.16 people per km²

Dehesas de Sierra Morena is in excellent environmental condition whilst also having a way of life that is compatible with a more urban lifestyle, an added value which ensures sufficient visitor flow.

The service sector has evolved positively over recent years thanks to rural tourism (hunting, active, cultural and eco-tourism).



Cork collecting

Negative impact

Industrial activities, mainly mining and quarrying, urban planning pressure, the abandonment of traditional farming, excessive livestock production and hunting and changes to traditional usage.

Positive impact

Increased tourism, prevention of forest fires, brand image for products, environmental guarantees, receiving subsidies.

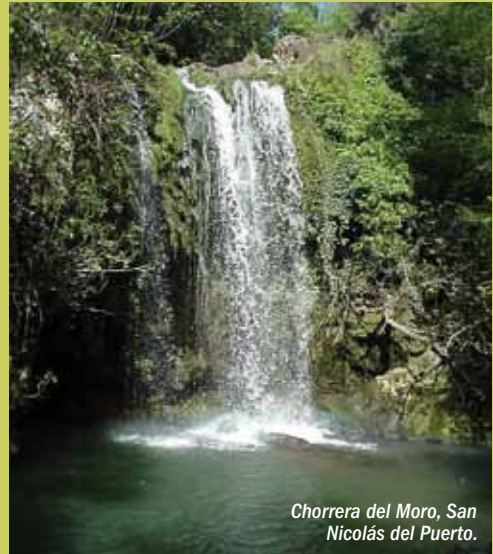
Regional environmental policy has played a key role here, with the declaration of the Sierra as a protected space.

All these circumstances converge to define a structural orientation focusing on the socioeconomic future and based on the resources that define this reevaluation: environmental quality and traditional culture, with local people assuming a more central role to ensure the success and continuity of the project.



The Reserve's contribution to sustainable development

The declaration of this vast territory as a Biosphere Reserve represents the highest possible international recognition for the *dehesa*, a man-made ecosystem which successfully supports traditional agricultural, livestock farming and forestry activities, which go hand-in-hand with the agro-forestry system as well as supporting agricultural processing industries and the growing agro-tourism sector.



Chorrera del Moro, San Nicolás del Puerto.

Initiatives

A number of initiatives have been undertaken through the Regional Council for the Environment, the Reserve's management body, regarding the implementation of sustainable development programmes:

- * Sustainable Development Plans (SDP)
- * European Charter of Sustainable Tourism (ECST)
 - * Natural Park Trademark
 - * Public Use Programmes (PUP)
 - * Forestry management for publicly owned land
- * Public game reserve management
 - * Endangered fauna conservation projects



Cortegana Castle



Cabildo Viejo Visitor Centre (Aracena)

PUBLIC AND TOURIST USE OF THE BIOSPHERE RESERVE

RESOURCE NAME	CONTACT DETAILS
Museum of Iberian Ham and the Iberian Black Pig	C/ Gran Vía, nº 31, 21200, Aracena 663 937 870 / 959 127 076 museodeljamon@ayto-aracena.es
La Cilla Archaeological Museum: The Hispano-Roman town of Turobriga	Edificio de La Cilla, Aroche 959 140 373 / 605 338 872
The hamlet of San Calixto	17 km from Hornachuelos (Córdoba), architectural ensemble from the 18th century
Almodóvar Castle	Almodóvar del Río, 14720, Córdoba. 957 634 055
Las Maravillas Grotto	C/ Pozo de la Nieve, s/n. 21200. Aracena 663 937 876
Natural Science Museum	C/ Cervantes, Real de la Jara (Seville) 954 733 910

PUBLIC USE FACILITIES OFFERED BY THE REGIONAL COUNCIL FOR THE ENVIRONMENT

TYPE OF FACILITY	NAME OF FACILITY
4 Visitor centres	<ul style="list-style-type: none"> ■ Cabildo Viejo: Plaza Alta, s/n. Aracena 959 129 553/4 ■ Huerta del Rey: Carretera A-3151, Carretera de San Calixto, Km 10.5. 957 579 656 ■ El Robledo: Ctra. Constantina-El Pedroso Km 1, Constantina. 955 889 593 ■ Cortijo el Berrocal: Almadén de la Plata-Los Melonares rural road 902 105 570-678 436 728
3 Information points	<p>Arroyomolinos de León: Guadalinfo, C/ Antonio Machado, Arroyomolinos de León (Huelva)</p> <p>El Charcón: Avenida de la Cabalgata, Higuera de la Sierra (Huelva)</p> <p>Cerro del Hierro: San Nicolás del Puerto (Seville)</p>
1 Jardín Botánico	■ El Robledo: Ctra. Constantina-El Pedroso Km 1, Constantina 955 881 226
1 Campsite	El Martinete: Ctra. SE-7101, 3 kms from San Nicolás del Puerto 902 525 100 / 955 693 074
2 Cycling routes 1 Vía Verde green route	<p>Carril Blanco cycle path: Length: 6.2 km.</p> <p>Minas del Teuler cycle path: Length: 13.2 km.</p> <p>■ Sierra Norte via verde: Length: 19 km.</p>
46 Signposted footpaths	GR-48 "Sendero de Sierra Morena": Length: 550 km. From Barrancos on the Portuguese border with the province of Huelva, passing through the provinces of Sevilla and Córdoba through the whole biosphere reserve to the Despeñaperros Pass in the province of Jaén.
15 Panoramic viewpoints	<ul style="list-style-type: none"> ■ Of the reservoir at Puerto Moral. ■ Constantina Castle in Constantina. Huerta del Rey in Hornachuelos
12 Recreational areas	<ul style="list-style-type: none"> ■ Isla Margarita in Cazalla de la Sierra. El Talenque in Galaroza. ■ Fuente del Valle in Hornachuelos.

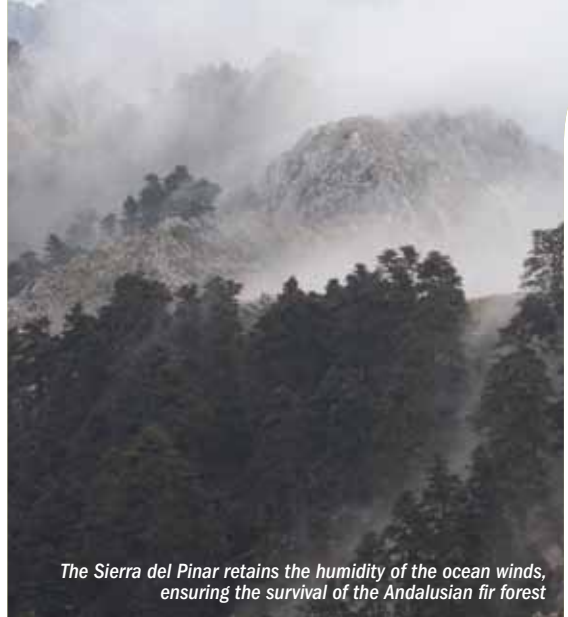
SIERRA DE GRAZALEMA

Between the provinces of Cádiz and Málaga, the Grazalema Biosphere Reserve situated in the westernmost part of the Baetic range, in the transition area between the Campiña de Jerez de la Frontera and the Aljibe siliceous mountains. This situation, between different bio-geographic sectors, and the effect of capturing oceanic humidity generated by the mountain elevation, defines the essence of this Reserve, along with Ordesa - Viñamala, the first to be declared in Spain.

In this territory, inhabited by man since the Palaeolithic times, the traditional activity has focused on livestock farming and agriculture, and industries that depend on these activities (cheese making, cured pork products, olive oil, leatherwork and other crafts). These activities have evolved over time, and, to a great extent, continue to this day. One of the fruits of this interaction between man and nature is the countryside landscape, which has acquired an incalculable value, with the wild sierras, with their Mediterranean forests in an exceptional state of conservation, rivers and riverine woodlands and, of course, the imposing Spanish fir forests are all worthy of special mention, the Reserve's true badge of identity.



The Cueva del Gato cave at Benaoján



The Sierra del Pinar retains the humidity of the ocean winds, ensuring the survival of the Andalusian fir forest

Date declared biosphere reserve: 22 January 1977

Surface area: 51,6951 hectares

Location: Provinces of Cádiz and Málaga. Andalusia.

Municipalities: Algodonales, Benaocaz, Benaoján, El Bosque, Cortes de la Frontera, El Gastor, Grazalema, Jimera de Líbar, Montejaque, Prado del Rey, Ronda, Ubrique, Villaluenga del Rosario, Zahara de la Sierra.

Management body: Junta de Andalucía Regional Government Department of the Environment

Address: Avd. Diputación s/n,
11670 El Bosque , Cádiz.

Telephone: 956 70 97 03.

Email: pn.grazalema.cma@juntadeandalucia.es

Other protection:

Sierra de Grazalema Natural Park

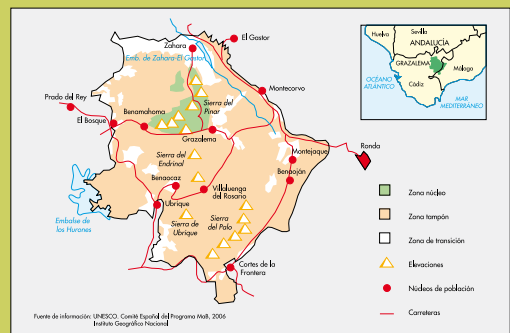
Special Protection Area for Birds (SPA)

Site of Community Importance (SCI)

Intercontinental Biosphere Reserve
of the Mediterranean

Biogeographical Region / Province: Mediterranean

1. New measurement 2006



Natural Heritage

The key characteristic of this Reserve is its extensive biological diversity, due to:

- * Orographic diversity.
- * Diversity and abundance of rainfall: these mountains receive the highest rainfall in Andalusia and among the highest in all Spain.
- * Geological diversity: alternate siliceous and limestone zones.
- * The existence of springs which create veritable oases that contrast with the surrounding landscape.

Flora and vegetation

Furthermore the fir groves, the most important woodland species are holm oaks, cork oaks, gall oaks, as well as riverine woodlands, all of which aid in the diversification of the mosaic of vegetation and help to explain the wealth of flora and fauna in the region.

There is a stunning variety of flora: over 1,400 taxa, of which 6 are catalogued as being in danger of extinction, 15 as vulnerable and a further 3 of special interest. Here we should highlight the presence of four local endemisms: *Fumana lacidulemiensis*, *Echinopartium albicum*, *Phlomis x margaritae* and *Narcissus x libarensis*.



The Grazalema Biosphere Reserve is home to one of the main colonies of griffon vultures in Andalusia

Fauna

As far as the Reserve's fauna is concerned, the territory includes over 200 catalogued species of vertebrates. Among the species present, worthy of special mention here are the griffon vultures, golden eagles, Bonelli's eagles, Egyptian vultures, mountain goats, roe deer, otters, crayfish, as well as a number of species of bats.

Geodiversity

The important yet fragile presence of geo-morphological processes related to karst also highlights the importance of the natural value of this Reserve.



Spanish firs in 1958, cut and ready for the sawmill

The fir groves

In the shadow of the Sierra del Pinar a real botanical treasure can still be found: the Spanish fir (*Abies pinsapo*). This corner of the Sierra includes a forest covering approximately 450 hectares, thanks to the very special environmental conditions, especially in terms of humidity. It constitutes one of the main reasons behind the protection of this region.

This reserve is the only place on the Iberian Peninsula where the Spanish poppy (*Papaver rupifragum*) can be found



Cultural Heritage and Landscape

The Reserve has a rich historical and artistic heritage with a long list of Assets of Cultural Interest, including six Historic Ensembles (Ubrique, Algodonales, Ronda, Villa de Benaocaz, Villa de Zahara de la Sierra and the old quarter of Grazalema), archaeological sites (Ocuri and Iptuci), Roman roads and cave paintings (Cueva de la Pileta). It is worth highlighting the castles at Zahara de la Sierra, Aznalmará and Fátima in Ubrique and the Torre de Agüita in Ronda.

The region's ethnological heritage comprises buildings that are related to traditional activities, such as farm buildings, cisterns, threshing floors, wine presses and watering troughs.

The mountain peaks feature snow wells, used in the past to conserve and store the snow that had fallen during the winter. There are also a number of limestone quarries, inside which the rock would be baked for various days to make the lime used to whitewash the walls of the buildings and giving rise to the collective name for settlements in the region - "the white villages".



The Roman road between Benaocaz and Ubrique is one of the Reserve's footpaths

The infrastructures linked to the channelling and use of water, such as water mines, irrigation ditches, reservoirs, flour mills, gins, fulling houses, hydroelectric power stations, etc, constitute the maximum expression of traditional engineering, of immense cultural value.



The Nazari neighbourhood, Benaocaz.

SIERRA DE GRAZALEMA



Intangible heritage

Despite the decline suffered in many of the traditional practices, others, such as pasture farming, the extraction of cork or the manufacture of craft products (textile weaving in Grazalema, leatherwork from Ubrique, furniture from Benamahoma, El Bosque and Prado del Rey) have survived the passing of time. The traditional fiestas are a further part of this heritage: the re-enactments of battles between the Moors and Christians in Benamahoma, the Toro de Cuerda - "Bull on a Rope" - in Grazalema, Villaluenga del Rosario and Benaocaz, and the festival of Corpus Christi in Zahara de la Sierra, declared a Festival of National Tourist Interest.

The "Moros y Cristianos" Fiesta in Benamahoma

BIOSPHERE RESERVES

Socio-Economics of the Reserve



Flock of Grazalemeña Merino sheep on the medieval drovers' road in Grazalemea



Craft products from the Grazalemea Biosphere Reserve

The Grazalemea Biosphere Reserve is characterised by the mainly rural environment and the strong bond that exists between local people and natural resources. The main source of employment is the manufacturing industry (leather crafts and agro-industry such as cheese making, meat products, etc.). This sector has undergone an evolution over time, with it currently positioned as a developed, competitive asset. The main services in the sector are commerce and the hotel and restaurant trade, which has increased substantially with the continuing growth in tourism.

This is, without doubt, the sector that has expanded most since the area was declared a Biosphere Reserve. Between 1991 and 2007, the available accommodation increased by 730 % (excluding campsites), especially at the high end of the market, thus improving the quality on offer.

Agriculture has retreated to the region's marginal lands, decreasing in importance over time (by 37 % between 1996 and 2005), with a significant drop in olive farming.

Livestock farming is generally of an extensive nature, representing one of the most important activities, both in terms of its exploitation and its transformation into meat and dairy products, improving the profitability of these operations.



View over Polje de Benaoján

Nº inhabitants in municipalities with territory in the B.R. (2009)	81,167 inhabitants
Nº inhabitants in the B.R. (2009)	22,823 inhabitants
Density of population (2009)	43.45 people per km ²
Annual growth rate (2001-2009)	0.286
Birth rate (2008)	10.5 per thousand
Death rate (2008)	9.2 per thousand
Average annual family income (2008)	12,976.44 €



The Reserve's contribution to sustainable development



Canyoning in Garganta Verde.

As far as these achievements are concerned, this Reserve is one of the first protected areas in Andalusia with consolidated management strategies with regard to conservation, environmental education, public use and sustainable development.

The need to modernise and adapt to new socio-economic schema represents a significant threat to traditional production methods.

New times bring with them new challenges: in addition to the challenges posed by the over-exploitation and pollution of water tables, urban planning ordinances and the development of tourism we now must add the fight against global change and the adaptation of governance to adaptive management.



Cheese made by hand

Examples of sustainable activities

*** LIVESTOCK FARMING.** The Grazalema Reserve has developed an extraordinarily valuable silvi-pastoral approach to the conservation of the environment and the economic sustenance of the area. The main exploitation model is that of extensive livestock farming, family owned and run operations with little external input. Within this context, the Andalusian Regional Government has committed itself to guaranteeing quality within this activity through the certification of the livestock grazing on public land on the Reserve as an organic farming operation. Operations of this type ensure, on the one hand, product quality and, on the other, optimum conservation of the natural resources in the region, making them a model for the territory as a whole.

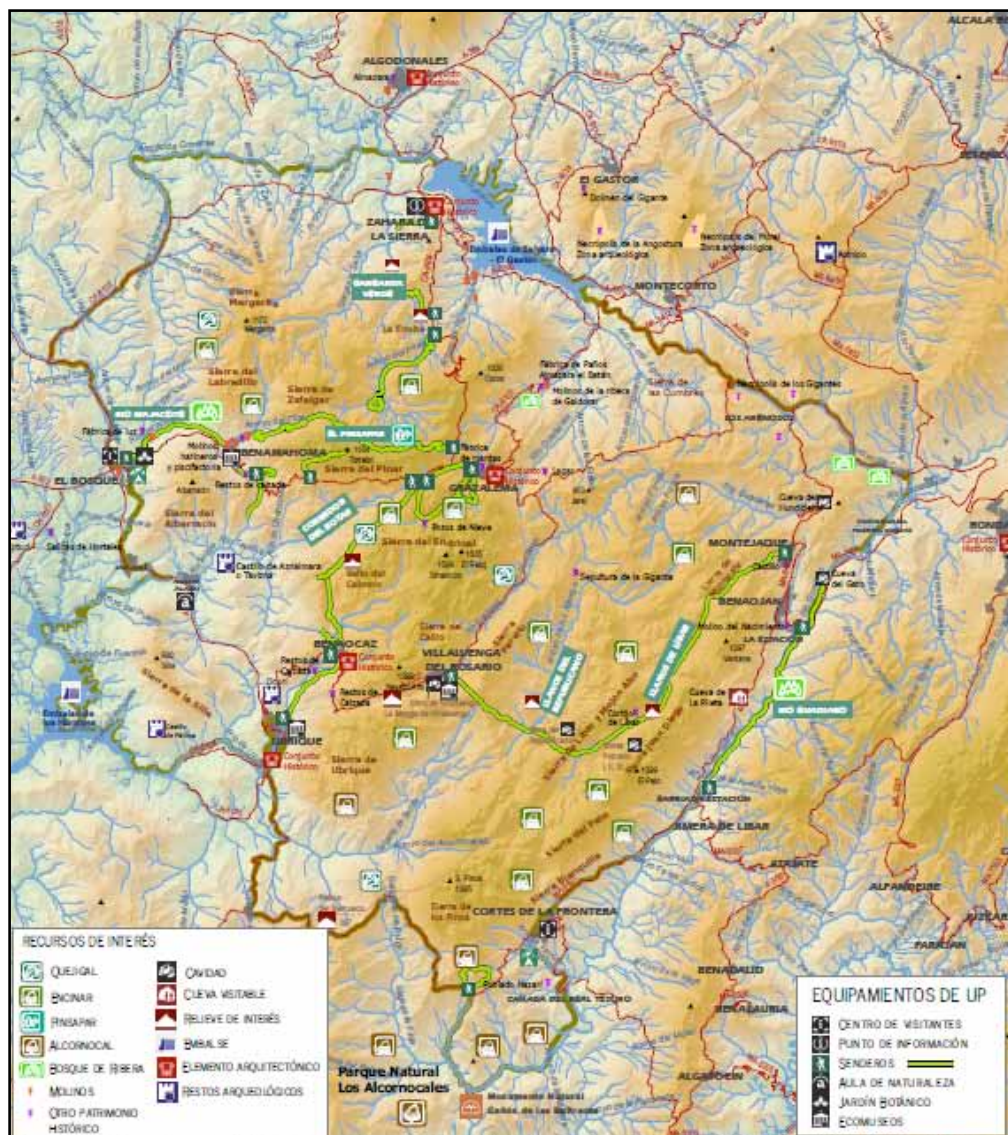
*** CHEESE MAKING.** The manufacture of cheese is a traditional activity that has successfully modernised its operation, creating considerable social and environmental benefits as a result. The cheese-making industry favours the commercialisation of local milk production - thus increasing the profitability of livestock operations - and establishing the added value of industrial activity in the region. This is an extremely competitive activity, and this Reserve can be considered one of the areas that produces some of the best

Spanish goat- and ewes-milk cheeses, the winners of prestigious awards both domestically and internationally.

Public use and tourism

As this is one of the most visited rural areas in Andalusia due to its exceptional natural beauty, nature-oriented and cultural values represent the

main resources that the Grazalema Biosphere Reserve offers its visitors. The map below shows the main points of interest.



MARISMAS DEL ODIEL

This paradise, a natural space which stretches over land belonging to four municipalities, is located on the western coast of the province of Huelva, in the estuary of the Tinto and Odiel Rivers. It was declared a Biosphere Reserve in 1983, the first step taken in order that the Andalusian Regional Government recognised its real importance, not only from a natural heritage perspective, but also from an ethnographic and cultural point of view.

This recognition came in the form of the region being granted Natural Site status, the first in Andalusia. Since it was declared a Biosphere Reserve, the Marismas del Odiel marshes have been granted various levels of protection reinforcing the importance of its heritage and allowing the participation of, and management, by local people.

Inland, the reserve features multiple ecosystems and cultural elements related to its diverse natural wealth. Amongst its wetlands, pine groves, salt flats and beaches have created added value for local people, taking advantages of the natural resources in the ecotone between the sea and the land.

Over 50% of the total population of the province of Huelva live in the four cities and towns within the Marismas del Odiel Reserve, with all that implies for the reserve, which also borders significant industrial and port areas. The involvement of the various Public Administration bodies, social agents and local people in the knowledge, usage and resources that the reserve offers are therefore of vital importance to the conservation of natural, cultural and ethnographic resources.



Flamingos on the wetlands

Date declared biosphere reserve: 21 April 1983

Surface area: 7,158 hectares

Location: Province of Huelva. Andalusia.

Municipalities: Huelva, Aljaraque, Gibraleón and Punta Umbría.

Management body: Junta de Andalucía Regional Government Department of the Environment

Address: Carretera del Dique Juan Carlos I Km. 3 (Huelva)

Telephone: 959-52-42-18 Fax: 959-52-42-17

Email: pn.marismasodiel.cma@juntadeandalucia.es

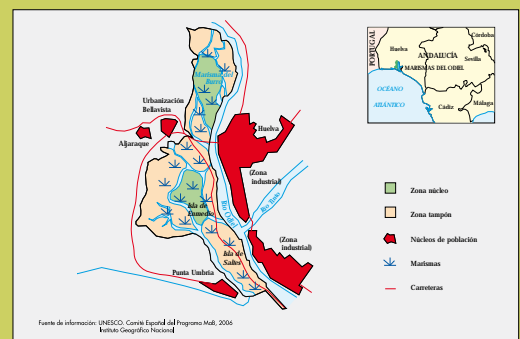
Website: www.juntadeandalucia.es/medioambiente

Other protection: Natural Park Site of Community Importance (7) Special Protection

Area for Birds (SPA) Ramsar Wetland

Biogeographical Region / Province:

Mediterranean, Ibero-Atlantic





Common pratincole and avocet

Natural Heritage

are home to another such treasure of biodiversity in terms of the vast array of vegetation - pines, cork oaks, wild olives, myrtle and mastic trees, dog rose, rosemary etc.

One of the great attractions of this Reserve is its heterogeneous nature. Natural ecosystems and those that have been modified by man constitute a veritable jigsaw puzzle of marshes and salt flats, woodland and sand dunes, lagoons and beaches, all interrelated, each complementing the other.

The majority of the ecosystems are subject to or conditioned by the tides, with the benefits and limits that these bring with them. The energy produced by the tidal flow makes the Marismas del Odiel wetlands an extremely productive system, which can be seen throughout the entire food chain.

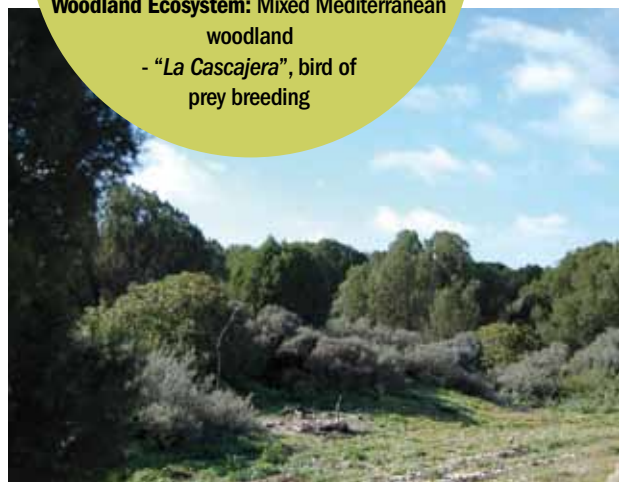
The salt flats, a marsh ecosystem that has been modified by man, have contributed significant natural wealth due to wide range of biophysical conditions that they offer as a result of the production processes developed there. Salt production needs wide ranges of salinity in order to create different biotopes, and therefore the presence of an extensive biological variety capable of adapting to such extreme conditions. To give an example, in 2008 a small colony of some three hundred breeding pairs of pink flamingo established itself on the reserve, which has gradually grown, doubling in size by 2010. The “Puntales” and “Saltés” Mediterranean woodlands

La Marisma del Burro and the Isla de En Medio, the core zones of this Reserve, perfectly represent natural marshland ecosystems as well as being home to one of the Reserve’s “star” species: the breeding colony of spoonbills (*Platalea leucorodia*), one of the largest in Europe and a centre for recuperation and the dispersion of the species.

In 2004 a programme was launched to reintroduce the osprey (*Pandion haliaetus*) through the hacking technique, on the Island of Saltés. This programme saw its first success in 2009 with a pair of birds breeding in a nest in the reintroduction area, the female having via hacking in 2004.

Ecosystems

- Natural Marsh**
Ecosystem: Colony of spoonbills (*Platalea leucorodia*)
- Transformed Marsh Ecosystem (Salt flats):**
Colony of flamingos (*Phoenicopterus ruber*)
- Dune Ecosystem:** Colony of little terns (*Sterna albifrons*)
- Woodland Ecosystem:** Mixed Mediterranean woodland
- “La Cascajera”, bird of prey breeding





Dusk on the marshes



View from the air

Cultural Heritage and Landscape

The Marismas del Odiel, as well as their incalculable natural wealth, contain a significant part of the region's history in their interior and in the surrounding area. Worthy of special mention here are the prehistoric sites at Papauvas in Aljaraque, the Ciudad Islamic town of Saltés in Huelva or the Castle of Gibraleón. Odiel represents a coming together of the seafaring tradition from Punta Umbría, the mining tradition from Aljaraque and the rich tradition of forestry from the public land.

Within the Reserve's limits, on the Island of Saltés, there is one of the most important archaeological sites in the province of Huelva, the Islamic Town of Saltés, dating back to the 9th century, although there are also Tartessian remains here from between the 7th and 5th centuries B.C. as well as remains from the Roman period. The town as such disappeared in the 8th century, when the Christian reconquest changed the face of the human landscape in the marshes.

There is a rich and diverse ethnological heritage in the area, which has a strong basis in the local people. Popular fiestas, in which the local gastronomy and tradition generally go hand in hand, enhance life in these towns and are an extra attraction for tourists.

The contrast of the landscapes that define this natural mosaic reveal the wealth of the coastal and marsh lands, making this Reserve a truly privileged corner of Andalusia, full of light and colour, the joy of local inhabitant and visitor alike.

Fiestas

Aljaraque: Procession of the Magi, Live Nativity Scene at Corrales, Carnival, *Romerías* in honour of San José Obrero (May) and the Virgen de los Remedios (May), Fiestas of San Antonio (June), San Pedro (June), Nuestra Señora de los Remedios (August).

Gibraleón: Easter week, *Romería* of San Isidro (May), the *Feria* of San Lucas (October)

Punta Umbría: Carnival, Easter week, *Romería* of Santa Cruz (May), Fiestas of Carmen (July), the *Feria* of Punta Umbría (August).

Huelva: San Sebastián (January), Carnival, Easter week, Fiestas Colombinas (August), Fiestas for Nuestra Señora de la Cinta (September).

Gastronomy: Aljaraque: Fish stews, seafood, *Tortas de Pascua* - Easter fritters.

Gibraleón: Rabbit *salmorejo*, Marzipan.

Punta Umbría: Donax and *chirla* clams, fresh fish from the coast, seafood.

Huelva: Broad beans with cuttlefish, broad beans enzapatás, seafood and fresh fish from the coast, Iberian pork products.

Socio-Economics of the Reserve

The population of the municipalities within the Reserve represents about half the people who live in the province of Huelva, some 200.000 inhabitants. The majority live in the city of Huelva.

Among the negative impact water and air pollution should be mentioned, the pressure on urban planning on the outskirts of the city and changes to the use of river basins.

Punta Umbría is a town of considerable tourist interest. Its beaches and gastronomy make it an attractive destination to which the proximity of the Reserve adds further value, a factor which, until a few years ago, was not considered to be part of the tourist attractions on offer. In Aljaraque a large Science and Tech-



Salt mound

nology Park is being built on the edge of the Reserve, dedicated, among other things, to research into renewable energy. Gibraleón offers the wealth of its cultural events and woodland.

For a long time the city of Huelva did not take advantage of the proximity of the Reserve, although in recent years a more direct and participative relationship has been established in terms of the programmes that have been undertaken.



Spoonbill



Footpath through the salt flats

Economic activities

A number of economic activities are undertaken within the Reserve, the most important of which, not least in the surface area that it occupies, is salt production. A traditional saltworks is still operational on the Island of Bacuta as well as a fish farm situated on what used to be another traditional salt pan. Seafood collection and fishing are experiencing something of a boom at a time of economic decline. The potential the area has for tourism should not be ignored, with nature tourism, and especially ornithology, of real importance.



The Reserve's contribution to sustainable development



As well as the salt and fish farming operations, the Biosphere Reserve has been behind a number of other projects linked to sustainability.

By way of example, the building of multi-modal transport routes and cycle lanes running through the Reserve; the adaptation of interpretive trails which allow visitors to move easily about the Reserve:

the restoration of marshes and wetlands, the promotion of ornithological tourism and improving access to beach areas.



Volunteers ringing birds

The building of a Centre for the Recovery of Threatened Species (CREA-CREMA) alongside the Interpretation Centre represents an important step forward, as it not only fills a void that had existed in

Huelva province but also represents a source of employment as well as creating added value in terms of public use and dissemination.



The Calatilla walkway.

Signing up to the European Charter of Sustainable Tourism is another initiative that the Reserve has promoted. In close collaboration with local Municipal Town Councils, companies, social organisations and anonymous individuals the adherence process began in 2009.

The contribution that this Reserve has made to Sustainable Development can be seen, above all, in the improvements that have been made to visitor facilities providing information on and promoting respect for the values of the Marismas del Odiel Biosphere Reserve.



La Choza bird-watching hide.

Public use and tourism

One of the great attractions of this Reserve is its accessibility. Its proximity to local towns and cities, without ever being directly within them, was in fact one of the most important drawbacks at the outset, with local people having to learn to be aware of and value this Reserve. Nevertheless, the various Environmental Education Programmes have brought people of all ages to the Reserve, from the very youngest to the eldest, offering their experience and knowledge of the area to the staff working within.

Through its public use programmes, the Andalusian Regional Council for the Environment has equipped the Reserve with extensive and accessible facilities, including a Visitor Centre with a permanent exhibition and an events hall; a number of trails and footpaths, some

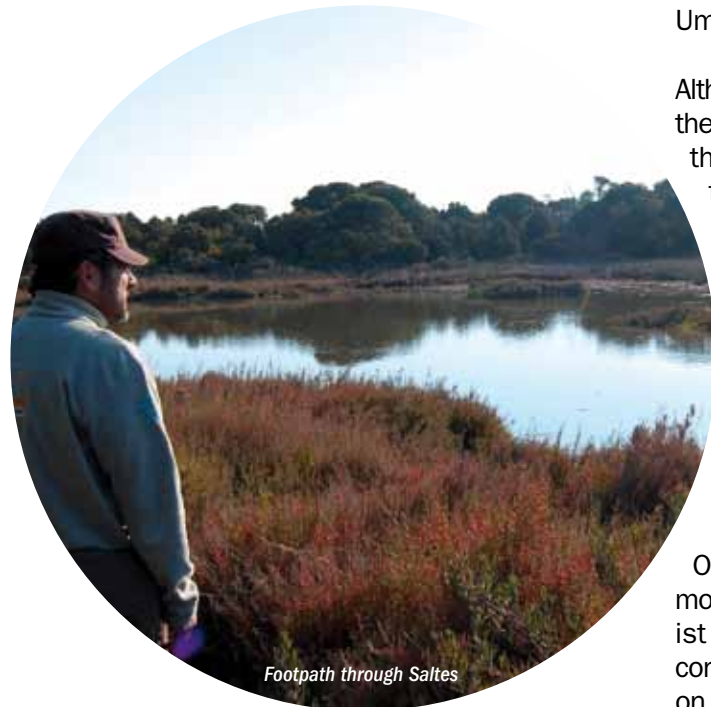


Osprey

guided, some self-guided, bird-watching hides and even a multimodal transport route that runs around the perimeter of the Reserve from Huelva to Punta Umbría.

Although the visitor profile is wide-ranging, the peak period for visits is spring, when the greatest number of people come from the various educational centres and universities. Here we should add the large numbers of European tourists as well as those coming from the north of Spain, who tend to visit the Reserve for its significant ornithological potential.

The municipalities within the Reserve have become increasingly committed to promoting the Marismas del Odiel, and now see it as one of their most important values, both from a tourist and an environmental perspective, contributing their knowledge and respect on all levels.



Footpath through Saltes

SIERRA DE LAS NIEVES

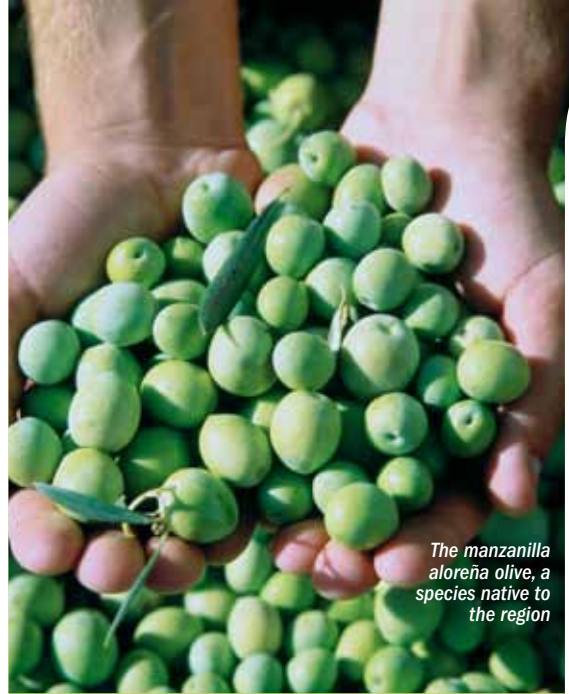
The Sierra de las Nieves Biosphere Reserve, situated in the central-western region of the province of Málaga, is a spectacular rural and mountain territory where, for centuries, man has lived in perfect balance with nature.

The main massif of the Sierra de las Nieves, declared a Natural Park in 1989, dominates the landscape from any point within the Reserve, as well as being the most important mountain range in all western Andalusia and the home to the most extensive forests of what is considered to be one of the botanical jewels in the Iberian Peninsula's crown, *Abies pinsapo* - the rare and unique Spanish fir.



The back-breaking work which made these mountains famous

The imposing limestone mass that is the Sierra de las Nieves, crowned by the 1,919 metre-high peak of Mount Torrecilla, is covered by a beautiful blanket of snow for a number of months each year. The snow that gives its name to this Sierras became famous across a large part of Andalusia, thanks to the age-old, back-breaking occupation of some of the area's inhabitants, the neveros or "snow collectors", who gathered the snow during the cold winters and stored it in "snow wells", in order to sell it later at inflated prices to local towns and villages during the long hot summers.



The manzanilla aloreña olive, a species native to the region

Date declared biosphere reserve: 15 June 1995

Surface area: 93,930 hectares (4,227 hectares core zone, 53,258 hectares buffer zone and 36,445 hectares transition zone)

Location: Province of Málaga. Andalusia.

Municipalities: Alosaina, Casarabonela, El Burgo, Guaro, Istán, Monda, Ojén, Parauta, Ronda, Tolox and Yunquera.

Management body: Mancomunidad de Municipios Sierra de las Nieves

Address: Carretera de Monda 20, 29108 Guaro, Málaga

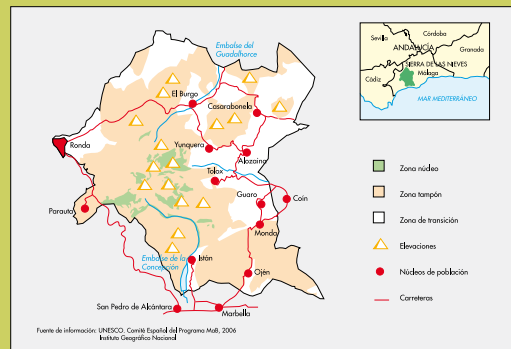
Telephone: 952 45 61 53

Email: reservabiosfera@sierradelasnieves.es

Website: www.sierradelasnieves.es/reservabiosfera

Other protection: Sierra de las Nieves Natural Park Site of Community Importance (7), Special Protection Area for Birds ((SPA), Andalusian Game Reserve, Natural Monument

Biogeographical Region / Province: Mediterranean / Baetic





El pinsapo, reliquia botánica de la época glacial.

La gran riqueza natural de la Sierra de las Nieves tiene múltiples manifestaciones y un mismo denominador común, la variabilidad. Variabilidad en todos los sentidos: en el sentido geológico, climático, paisajístico, faunístico y, sobre todo, botánico.



Herrerillo capuchino en su hábitat preferido, el pinsapar.

Una gran diversidad faunística

La gran riqueza de condiciones ambientales también tiene su reflejo en la enorme diversidad faunística de este territorio con especies emblemáticas.

La cabra montés domina las zonas más abruptas y rocosas, el corzo la profundidad de los alcornocales, la nutria los ríos y arroyos, y el meloncillo los espesos matorrales. Pero probablemente sean las aves las que más fáciles sean de observar por el ojo humano. El águila real, la perdicera y la culebrera, junto con el buitre leonado y el halcón peregrino, son los dueños del cielo abierto; el azor y el gavián de la espesura del bosque, y junto a ellos, hasta un total de más de 125 especies ornitológicas.

Asimismo, un sinnúmero de reptiles, anfibios, insectos, arácnidos, etc.; hacen de la Sierra de las Nieves un lugar con una amplia representación de la fauna del monte mediterráneo.



La cagarria es una seta muy apreciada.

Gran variedad de paisajes y ecosistemas

La Sierra de las Nieves destaca por su fisonomía y relieve abrupto, esculpido por una importante red hidrológica sobre una amplia gama de materiales geológicos, entre los que destaca un gran macizo calizo.

Altos picos e importantes cortados, profundos barrancos y desfiladeros, numerosas cavidades y simas, así como zonas más onduladas y suaves, conforman una profusión de ambientes que, unida a su enorme gradiente altitudinal (100-1.919 m), provocan una completa representación de pisos de vegetación, con comunidades vegetales que integran especies de muy distintos orígenes (alpino, subtropical, norteafricano, etc.), algunas de ellas únicas en el mundo, como el pinsapo, raro y hermoso abeto endémico del sur de la Península Ibérica, rey indiscutible de estas sierras, en las que se encuentran sus más extensos y frondosos bosques.

Existen también importantes alcornocales, encinares, pinares, además de los exclusivos quejigos de montaña.



El rico patrimonio etnológico está puesto en valor.

Fiesta tradicional de Los Rondeles, en Casarabonela.



Patrimonio Cultural y Paisaje

Sierra de las Nieves atesora un imponente legado cultural, histórico y etnológico fruto de la profusa presencia de civilizaciones.

A la riqueza arquitectónica y monumental de la ciudad de Ronda, mundialmente conocida, se le une el rico patrimonio de los pequeños pueblos, basado en la estrecha relación histórica de sus habitantes con estas sierras y campos.

Una historia basada en el equilibrio.

El duro trabajo de los neveros, que recogían y almacenaban en pozos la abundante nieve del invierno para luego comerciar con ella como preciado botín en verano, no sólo dio nombre y fama a estas sierras, sino que también se ha convertido en el símbolo de la utilización racional de los recursos del territorio. La fabricación de carbón vegetal, el cuidado del ganado, la agricultura, y la recolección de leñas y esparto para confeccionar útiles y herramientas han sido otras ocupaciones que han contribuido a modelar un paisaje en el que se pone de manifiesto la búsqueda de un equilibrio entre el hombre y su medio.

Mezcla de culturas.

Desde la prehistoria hasta hoy, el hombre pobló esta tierra, quedando sobre ella las huellas del hombre del Paleolítico, de íberos y romanos, de árabes y mozárabes, de cristianos y moriscos. Esta mezcla queda patente también en la arquitectura popular, en la gastronomía tradicional, en las costumbres de las gentes y en un rico y variado calendario festivo. Los Zambombes, Los Zurriagos, La Cencerrá, Los Rondeles, La Tostoná, Las Mayordomas, El Judas, El Harineo, La Luna Mora, son fiestas populares en las se mezclan lo religioso y lo pagano, lo trágico y lo cómico, cuyo origen y significado merece ser conocido.



El mundialmente conocido Tajo de Ronda



A traditional white village in the foothills of the Sierra

The majority of the villages within the Reserve, Alosaina, Casarabonela, El Burgo, Guaro, Istán, Monda, Ojén, Tolox and Yunquera are medium-sized, with between 1,500 and 3,000 inhabitants, with a total of 58,645 living in the Reserve.

The exception here is the town of Ronda, with a population of slightly over 36,000 people, and the hamlet of Parauta, with just 231 inhabitants, in both cases located at the western limits of the Reserve.

However, in all cases, the compact nature of the villages and the traditional houses offer a spectacular landscape, with these white villages nestling in the foothills of the Sierra de las Nieves

Until recently, agriculture, livestock farming and an intelligent use of products from the countryside, almost ex-

clusively occupied the lives of the people living in the Sierra de las Nieves, although due to soil and terrain conditions, these activities were never particularly productive or profitable.

Nonetheless, in recent years new areas of work and socio-economic development have arisen. Traditional work, such as craft production and the processing of foodstuffs originating in the region, have both accompanied and contributed to the boom in the tourist sector which seeks to base itself on the strengthening and rational use of the territory's important natural, historical, cultural and ethnological values.

It should not be overlooked that nearby centres of urban development, such as the Costa del Sol, represent a real threat to and constant pressure on the territory which, until now, has been able to maintain its own identity.



The Reserve's contribution to sustainable development

The cataloguing of the Sierra de las Nieves as a Biosphere Reserve is especially relevant as it was requested and promoted by local authorities and the economic agents in the area, under the auspices of the *Mancomunidad de Municipios Sierra de las Nieves*.

This declaration has meant the international recognition of the Reserve's values as well as representing a guarantee of the quality of its products. Above all, however, it has established the basis for the commitment that the local people and authorities have acquired in terms of the acceptance and start up of the action plan aimed at ensuring a model for a way of life that promotes a social and economic development that is compatible with the protection and conservation of the stunning natural, cultural and ethnographic heritage.



The Reserve is extremely well signposted.

This commitment has opened the way for new areas of employment and future possibilities for local people.

A future based on diversification

The drop in the profitability of the economic activities of yesteryear, crop and livestock farming, due to the high costs of production, has made it necessary to diversify such activities.

Tourism, the transformation and revaluation of local products, the provision of services to neighbouring communities and the development of new communications and marketing technologies are the fundamental areas to prioritise in order to ensure improved quality of life and higher income for local people and guarantee their place within the region.



The Spanish fir groves, covered with snow, are a real symbol of the Sierra de las Nieves' identity.

Key projects

- * Consolidation and visualisation of Biosphere Reserve
- * Environmental Education Programme
- * Rural Development Programme
- * Sustainable Tourism Initiative
- * Environmental impact studies
- * Employment training programmes
- * Implementation of organic farming
- * Implementation and diffusion of the "Sierra de las Nieves Reserva de la Biosfera" trademark

Public use and tourism

Tourism represents the greatest potential for the future of the Sierra de las Nieves Biosphere Reserve. Over 100,000 visitors a year currently visit the reserve each year.

Its location, alongside consolidated tourist destinations such as the Costa del Sol and towns and cities like Ronda and Málaga, places the Reserve in a privileged position as a complementary destination, based on a differentiated offer and high standards of quality.

To ensure this, over recent years the territory has set itself the objective of

having a wide range of public facilities and tourist services, an aim which is today a reality and which allows the visitor to enjoy an enriching experience of the Reserve, now granted European Destination of Excellence (EDEN) status by the European Union:

- * A full range of accommodation available, backed by the stamp of quality and a commitment to sustainability, with a predominance of small hotels and rural cottages for rent
- * Traditional gastronomy based on local products, which can be enjoyed at its best in the numerous restaurants as well as acquired in local stores

- * An extensive network of signposted trails that allow visitors to get to know and enjoy the best and most spectacular areas of the Reserve, including:

- 1 Long-Distance (GR) trail
- 16 Public footpaths within the Natural Park
- 20 Short-Distance (PR) trails
- 16 Mountain bike trails

- * A large variety of Tourist walks through the towns centres and villages and the surrounding area



Walking is one of the Reserve's great attractions

Recommendations

When visiting the Sierra de las Nieves Biosphere Reserve, we recommend you seek further information from the following websites:

www.sierradelasnieves.es

www.sierranieves.com

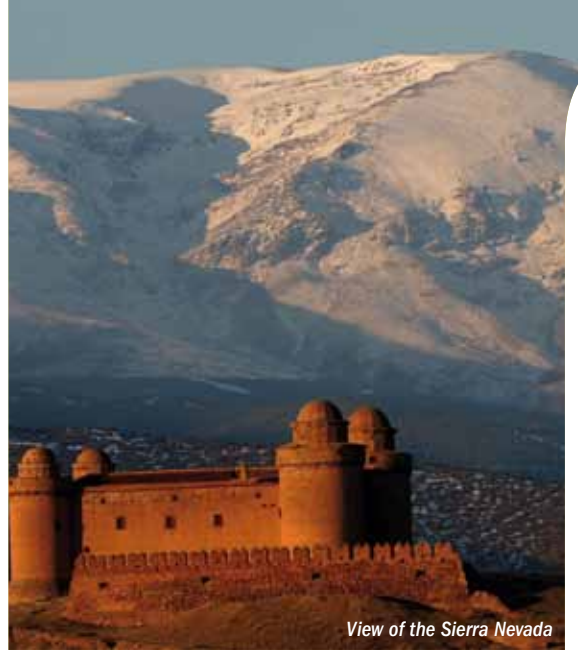
www.destinosierradelasnieves.com

SIERRA NEVADA

Between Almería and Granada, just 30 km from the coast, is one of the most stunning natural areas in southern Europe, which combines a breathtaking landscape with rich historical and cultural heritage.

The Sierra Nevada has long been a place of human settlement as well as being a frontier between different cultures, a place of refuge for diverse customs and traditions, many of which have lasted centuries. Physically the area is at a crossroads for migratory paths, distant influences providing space for Arctic and African, Atlantic and Oriental elements. For a number of writers, the Sierra Nevada thus represents a “*small continent*”. Mosaics shaped by man for thousands of years have given rise to a hugely versatile landscape in which usage and conservation are compatible.

The *Penibaetic* Mountains have benefited in recent decades from an exemplary process of environmental protection, resulting in an altitudinal profile which gradually increases in terms of protection the higher one gets. The majority of the towns and villages lie in the foothills of the Sierra, as do the largest areas of intensive land use. Set into the hillside is the Natural Park, a landscape that has been successfully humanised in which a wide range of activities - mainly agroforestry - have long shared their setting with the conservation of the region's biodiversity. In the highest areas, the most unique and endangered ecosystems are protected under National Park status.



View of the Sierra Nevada

Date declared biosphere reserve: April 1986

Surface area: 171,646 hectares

Location: Provinces of Granada and Almería (Andalusia)

Municipalities: 60 municipalities (37 in Granada and 23 in Almería)

Management body: Junta de Andalucía Regional Government Department of the Environment

Participatory Body: Council for Participation

Address: Ctra. Antigua de Sierra Nevada, Km. 7, Pinos Genil, Granada 18191

Telephone 958 026 300 - Fax 958 026 310

Email: pn.snevada.cma@juntadeandalucia.es

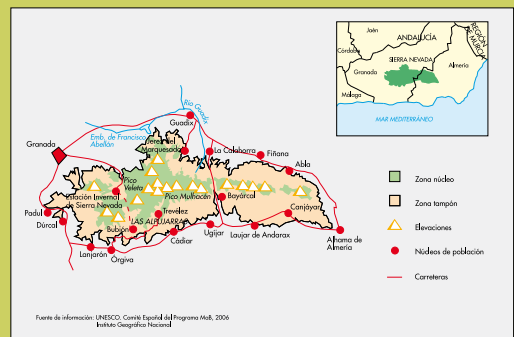
Other protection and recognition: Natural Park. National Park. Natural Monument (Falla de Nigüelas)

European Union Natura 2000 Network:

Special Protection Area for Birds (SPA), Site of Community Importance (SCI), Ramsar listed area (Padul wetlands and peat bog), European

Charter of Sustainable Tourism (ECST)

Biogeographical Region / Province: Mediterranean



Natural Heritage

The Sierra Nevada forms a part of the Baetic mountain range, belonging to the Penibaetic area. The main alignment of the chain, which forms a dividing line between the Mediterranean and the Atlantic, follows an east-west axis, approximately 90 kilometres in length. In terms of altitude, it is the second highest mountain chain in Europe, after the Alps, with Mulhacén as the highest peak at 3,479 m.



Plantago nivalis

The morphology of the slate and shale on the mountain peaks reveals the presence of masses of permanent ice during various cold periods in the Quaternary period. These would have been the southernmost glaciers in Europe, leaving behind their footprints in the form of cirques, moraines, lakes and trough valleys. The central siliceous massif is surrounded by a discontinuous ring of limestone, dolomites and phylites. The mountain sides are rugged and precipitous, occasionally ruiniform, with dramatic shale ravines amidst the dolomitic sand. In contrast, the lower areas to the east feature semi-desertified landscapes characterised by gullies that cut through soft, sedimentary rock.



Alpine accentor

The Sierra Nevada is at the heart of the area with most plant diversity in the Western Mediterranean Region. Descending “from the snow to the wheat”, Federico García Lorca, we can distinguish: high mountain pastures, juniper and brushwood groves, *dolomitic thyme* scrub, pine woods, oak groves, willows, holm oaks, and semi-desert thyme and thorny shrubs. Of the two hundred thousand species of vascular plants that have been catalogued - almost 30% of the flora in mainland Spain, more than eighty of which are endemic. Some of these species are veritable botanical treasures.

Fauna

There is also a wide range of fauna, especially in terms of bird life, with the colonies of golden and Bonelli's eagles deserving special mention. Among the passerine species, it is worth highlighting the Alpine accentor, a typically mountain species, and the trumpeter finch a bird which is more characteristic of North Africa. Among the Reserve's mammals, the mountain goat stands out. The community in the Sierra Nevada is the largest such in the world.



The endemic cricket,
Baetica ustulata

Insects

With some 18,000 species present in these mountains, of which over 300 are endemic, the kings of the Sierra Nevada fauna are its insects, many of which show interesting signs of having evolved to survive the high mountain conditions and which play an important role in the ecological dynamic of the Sierra's natural systems.

Cultural Heritage and Landscape

Historically, man's occupation of the Sierra Nevada has left behind a rich cultural legacy. Worthy of special mention are the defensive buildings - castles and forts and settlements from the copper age to Roman times. One of the most important cultural assets is the La Calahorra Castle (16th century), which houses a fine renaissance palace within its walls.

The abundance of highland pastures makes this a fine area for raising cattle and sheep. During the winter the animals graze on lowland pastures whilst in summer they are taken up to the wet meadows (known as *borreguiles*) higher up the mountains. Trashumance - the seasonal moving of livestock - has therefore had a significant historic influence on the Sierra Nevada's extensive highlands, with this also evident at lower altitudes, where crops are grown on the steep slopes, thanks to the cutting of terracing (known locally as *paratas*) each separated from the others by dry stone walls, known as *balates*. One of the essential factors in increasing the amount of pastureland and ensure water reaches the crops has been the irrigation systems, where part of the water from the spring thaw which supplies the mountain streams is channelled off and used to irrigate where necessary. A unique rural architecture has sprung up around these activities: *cortijos*, mills, reservoirs, fountains, threshing floors, ovens, sheepfolds and marvellous villages built up the hillsides. This agro-system was largely designed by the Arabs, and is still used today, despite the decline in hill farming due in part to the lack of young people keeping up the tradition.



Traditional chimneys in the Alpujarras

Traditional architecture

The Sierra Nevada also feature a Place of Cultural Interest in the Historical Site category, the Poqueira Gorge, which includes the stunning villages of Pampaneira, Bubión and Capileira, representative of the traditional architecture in the Alpujarras. Also recently declared a Place of Cultural Interest as a Historical Site is the area known as *Alpujarra Media Granadina* and *La Tahá*, protecting and in recognition of the richly varied ethnographic, architectural and natural heritage.

SIERRA NEVADA



The village of Ohanes and the surrounding terraces



Alcazaba and Mulhacén (right)



Dolomites in the Sierra Nevada

The Reserve's socio-economic area of influence covers five districts: Alpujarra, the metropolitan area of Granada (Cuenca del Genil), Marquesado, Río Nacimiento and Valle de Lecrín. Of the 94,417 inhabitants (in 2009), only 10% live within the Natural Area. After the population gradually decreased between 1960 and 1990, numbers have now stabilised and recovered.

The amount of land dedicated to crop and livestock farming within the Natural Area (11%) is significant, as it shows a steady decline over recent decades, with numerous fields and plots abandoned. Arboriculture, with citrus fruit and olive trees and grape vines in the low-est-lying land; almonds higher up, with apple and cherry trees and raspberry bushes grown on local plots, account for over 70% of cultivated land. Herbaceous crops represent a further 30%, with small-scale irrigated horticulture

accounting for most such crops grown in the Sierra.

In the industrial sector, we should highlight the meat processing operations associated with ham drying in La Alpujarra, wine production in the Andarax valley, building material operations in the Lecrín valley, renewable energy in El Marquesado and the mineral water bottling plant in Lanjarón.

Tourism represents a hugely important external source of income as well as contributing to the development of other sectors. The most dynamic district in this regard is La Alpujarra.

Environmental conflict

The Sierra Nevada Ski Station, which receives over a million visitors a year, plays a key socio-economic role in the western region. Its contribution in terms of employment and wealth creation is fundamental to the towns and villages in the Cuenca del Genil. Nevertheless, some of the main environmental conflicts in the Reserve have focused on the Station, whose 965 hectares of skiable terrain represents an extremely high level of transformation of the territory and a significant drain on water resources which are mainly used in the production of artificial snow.



Cattle grazing on the wet meadows



The Reserve's contribution to sustainable development

A recent study (from 2005) drawn up for the towns and villages on the Reserve, shows that 21.3% of average Net Available Family Income media per inhabitant and 18.5 % of employment created within the territory are directly attributable to the existence of the Natural Area.

The Natural park brand, promoted by Andalusia's Regional Council for the Environment, proposes a re-evaluation of the territory through the strengthening of its identity and the support of local initiatives, working with the principles of sustainable development. The trademark offers differentiated products and services, associated with the environmental values of the Natural Area. In 2010 the Sierra Nevada exceeded the figure of 120 certifications in the various areas of foodstuff and craft production and nature tourism quality.

The accreditation of the Reserve (the National and Natural Parks) European Charter of Sustainable Tourism (ECST) since 2004 represents, as well the recognition, a new approach to work in order to ensure mutual agreement and cooperation between the various agents involved.

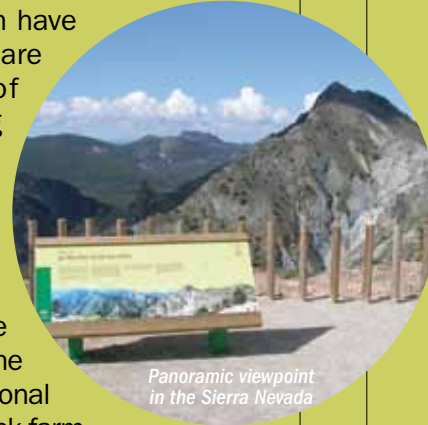
The traditional uses which have historically contributed to the shaping of

the countryside receive special treatment within the Reserve.

Two areas which have been looked at are the ordering of forest grazing pastures and the adapting of infrastructures associated with these areas in order to improve and distinguish the practice of traditional extensive livestock farming.

Similarly, a programme aimed at recovering the network of traditional irrigation systems within the Sierra Nevada in order to contribute to the upkeep of this unique landscape and the agro-forestry systems in middle mountain regions.

The Sierra Nevada Climate Change Observatory, set up within the Reserve in order to apply the UNESCO-promoted GLOCHAMORE (Global Change in Mountain Regions) strategy, represents a cutting-edge management initiative. The programme is a new working approach within a Natural Area, further driven by the close collaboration between administrators and scientists.



Panoramic viewpoint in the Sierra Nevada

SIERRA NEVADA

BIOSPHERE RESERVES

Weather station in the Trevélez valley



Public use and tourism



Educational activity for school children

Within the context of public facilities and visitor care, the Reserves approach is set by ECST guidelines, whose action plans outline the commitment assumed in the organisation and promotion of the sector.

Among the measures taken by the Reserve since its creation, we should highlight the setting up of the Environmental Interpretation Service associated to the organising of access points and the restoration of the countryside on the high western peaks, which has allowed significant advances to be made in terms of improving the conservation of these high mountain systems, as well as the overall quality of the visitors experience. It is also worth stressing the importance of the design and execution of the *Sulayr* long distance “GR” footpath , a 300 km-long circular which goes around the entire massif, and the *Transnevada* mountain bike trail, which allows cyclists to discover the Sierra Nevada on a 400 km-long route. Both initiatives, designed to ensure that visitors could undertake them in different stages, represent a very special attraction which combines nature, culture, leisure and sport and which has a significant repercussion in

the economies of the towns and villages in the region.

Over this period the Sierra Nevada Biosphere Reserve has established an important infrastructure focusing on visitor welcome, information and education, as can be seen in the table below. As far as leisure, recreation and sport are concerned, the number of facilities offered by the Regional Council for the Environment has increased satisfactorily with the opening of recreation areas, signposted footpaths, universal access footpaths, new panoramic viewpoints and controlled camping areas. The mountain refuges have acquired special relevance in the Sierra Nevada, considered now as public sports facilities. Two of these are in the high mountain, Poqueira and Postero Alto, and are manned throughout the year.

As far as environmental education and awareness-raising among local people are concerned, there are a number of programmes aimed at schools and other groups, complemented by a large number of dissemination activities.

PUBLIC FACILITIES WITHIN THE SIERRA NEVADA BIOSPHERE RESERVE

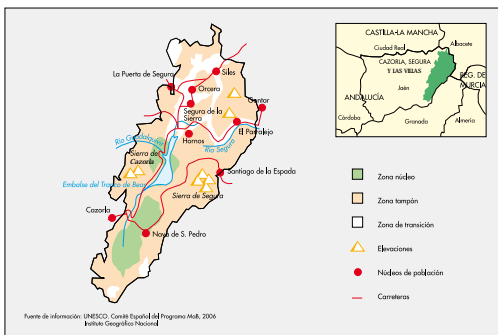
VISITOR WELCOME AND EDUCATIONAL FACILITIES (Regional Council for the Environment)	NAME	TOWN / VILLAGE
Visitor Centres (2)	Dornajo	Güéjar Sierra
	Andarax	Laujar A.
Information points (3)	Bco. Poqueira	Pampaneira
	Pto. Ragua	Bayarcal
	Servicio Altas Cumbres	Capileira
Nature Learning Centres (3)	Ermita Vieja	Dílar
	Paredes	Abrucena
	Aguadero	Padul
Botanical Gardens (2)	Cortijuela	Monachil
	Hoya Pedraza	Monachil
Bird watching hide (1)	Laguna Padul	Padul

SIERRAS DE CAZORLA, SEGURA Y LAS VILLAS

The Sierras de Cazorla, Segura y Las Villas Biosphere Reserve is in the north east of Jaén province. These sierras are a mountain massif with sheer, steep sides, the source of the Guadalquivir and Segura Rivers, with an abundance of karstic formations. The region's inhabitants have maintained an age-old relationship with their natural surroundings and the resources that they provide; hence the presence of settlements from the earliest times and a predominance of activities such as livestock farming and hunting.



Waterfall in Chorrogil



Griffon vulture

Date declared biosphere reserve: 30 June 1983

Surface area: 190,000 hectares

Province: Jaén

Municipalities: Arroyo del Ojanco, Beas de Segura, Benatae, Cazorla, Chilluévar, Génave, Hinojares, Hornos de Segura, Huesa, Iznatoraf, La Iruela, La Puerta de Segura, Orcera, Peal de Becerro, Pozo Alcón, Puente de Génave, Quesada, Santiago-Pontones, Santo Tomé, Segura de La Sierra, Siles, Sorihuela del Guadalimar, Torres de Albánchez, Villacarrillo, Villanueva del Arzobispo and Villarrodriego.

Management body: Junta de Andalucía Regional Government Department of the Environment

Contact details:

Departamento de Cazorla-Las Villas. Director-Conservationist: Catalina Madueño Magdaleno

Provincial Department of the Environment: C/ Dr. Eduardo García Triviño López, nº 15.

23071 Jaén, Spain Tel. 953 368 800

Departamento de Cazorla-Las Villas.

C/ Martínez Falero, 11. 23470 Cazorla,

Jaén, Spain Tel. 953 711 534

Departamento de la Sierra de Segura: C/ Familia Marín Martínez, 5, bajo. 23380 Siles, Jaén, Spain Tel. 953 499 564

Email: pn.cazorla.cma@juntadeandalucia.es

Website: <http://www.cma.juntaandalucia.es/medioambiente/site/web/>

Other protection: Natural Park. Site of Community Importance (SCI), Special Protection Area for Birds (SPA)

Biogeographical Region / Province:

Mediterranean / Baetic

Natural Heritage



Hummingbird hawk-moth

All the area occupied by the Reserve forms a part of the Baetic range, the mountain system that covers most of Andalusia. The range generally consists of calcareous rock, which, together with the abundant rainfall, has led to extensive karstic relief.

The climate in this region is sub-humid Mediterranean, with hot, dry summers and cold winters, albeit with large variations due to its complex orography. Average annual precipitation is 850 mm, ranging from 500 mm in the lowlands and 1,600-2,000 mm in the highest areas, a large part of which falls in the form of snow.



The endemic *Erodium cazorlanum*

The Reserve features an extremely rich fauna, containing over 190 species of vertebrates and a vast number of invertebrates, many endemic. Among the mammals, special mention should be made of the mountain goat, the most attractive species from a hunting perspective. Among the numerous birds, the golden and Bonelli's eagles and griffon vultures stand out. Visitors can also enjoy the majestic flight of the bearded vulture, the object of a reintroduction programme in which the birds are bred in captivity and later released into the wild. There is also an extensive amphibian and reptile population, with an endemic reptile deserving special attention, the *Spanish Algyroides*, a rock dwelling lizard.

Flora

As a consequence of these exceptional orographic, climatic and the historic-geological conditions, the Reserve's flora is among the richest in the Mediterranean region, with over 2,200 catalogued species, of which 157 species are endemic to the Iberian peninsula and 35 locally endemic. Here we should highlight the Cazorra violet and the butterwort *Pinguicula vallisneriifolia*, a wild plant that feeds on small insects. There are also extensive pine groves with the reforestation of European black pines and Aleppo pines, as well as typically Mediterranean woodland, featuring oaks, holm oaks, cork oaks, maples and Spanish juniper.



Cultural Heritage and Landscape

Landscape

As far as the Reserve's countryside is concerned, its orography, the consequence of the climate, the calcareous materials and the way they are arranged, can be characterised by the harsh, **rugged relief** in which numerous mountains alternate with high plains, escarpments, crags and tablelands, separated by deep, steep gorges through which plentiful rivers and streams flow. Amidst this stunning scenery, two important rivers have their source: the Segura, which flows into the Mediterranean, and the Guadalquivir, which flows into the Atlantic. Both rivers are of fundamental importance to traditional timber operations in the region, as they are used to move the cut pines to the shipbuilders in Cartagena and Seville.

Peña Musgo and Tranco de Beas.

SIERRAS DE CAZORLA, SEGURA Y LAS VILLAS

These lands have a rich historical and cultural, originating from a wide range of cultures that have occupied them, as can be seen in the caves and the Palaeolithic art found in them (Quesada, Segura de la Sierra and Santiago-Pontones), Iberian remains (Castellones de Ceal in Hinojares, the Toya burial chamber in Peal de Becerro) or from Roman times (Bruñel Roman villa in Quesada), and later Muslim and renaissance periods. Castles, towers, defensive walls and forts, the majority of Al Andalus origin although significantly restored and rebuilt in later periods, constitute practically half the 74 declared Assets of Cultural Interest.

As far as movable heritage is con-

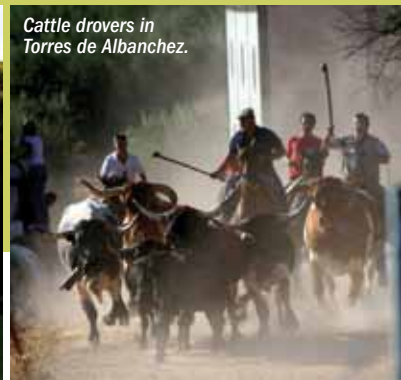
cerned, special mention should be made of the collections that can be seen in various museums, such as the Torres de Albánchez Municipal Archaeological Museum, the Villacarrillo Parochial Museum and the Rafael Zabaleta Museum in Quesada.

With respect to intangible cultural heritage, we should highlight the Toro de San Marcos, in Beas de Segura, declared a Fiesta of National Tourist Interest in Andalusia. Other fine examples of intangible cultural heritage are the "Caracolada" fiesta in Cazorla, the Corpus procession in Villacarrillo, the Christmas "luminarias" in Orcera, and the traditional bowls competitions.

Dusk on the Reserve.



Cattle drovers in Torres de Albánchez.



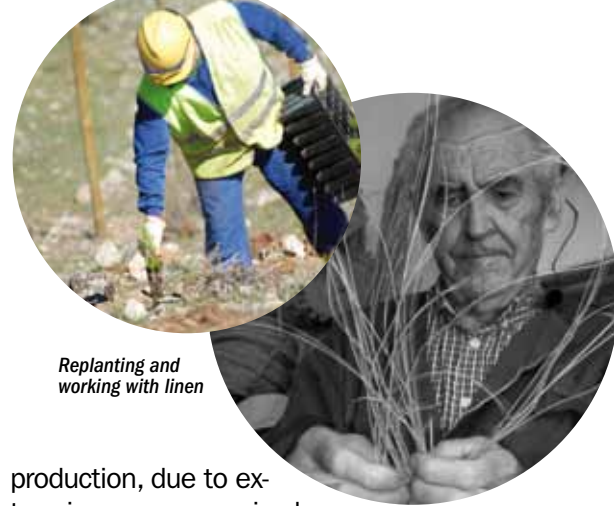
BIOSPHERE RESERVES

Socio-Economics of the Reserve

The population within the socio-economic sphere of the Reserve is 83,179, of whom it is estimated that some 14,101 inhabitants (almost 17%) live in the interior of the Reserve, and the remaining 69,078 (83%) in the outer area.

Until recently, the Reserve had constantly lost population due to the rural exodus, that is to say, the local people that decided to emigrate to cities in search of improved working conditions, especially in the 1960s and 1970s. The area lost 60.6% of its population, going from 161,813 inhabitants in 1950 to 83,179 in 2009. Nonetheless, in recent years the population has stabilised, although the population has aged considerably, with an aging rate of 21.11%.

The traditional timber operations in the Reserves forest has given way to other economic activities, such as olive oil



Replanting and working with linen

production, due to extensive areas required for hillside olive groves, especially those used to produce “Sierra de Segura” and “Sierra de Cazorla” designation of origin extra virgin olive oil, and livestock farming, above all the Segureña sheep, an autochthonous species which has adapted perfectly to the harsh conditions that prevail in the region. Hunting and fishing represent traditional areas that bring in considerable income, as does nature tourism, a new pursuit in this region, which is growing quickly and fast becoming one of the most important of local economic activities.

Population

The structure of the local towns and villages is predominantly disperse, with there being 167 centres of population (of which, over 100 are within the Natural Park). Only one of these has over 10,000 inhabitants, another 6 have between 5,000 and 10,000 living in them and over 100 are small villages with less than 100 inhabitants.





The Reserve's contribution to sustainable development



From behind the waterfall



A short flight

The practical application of the criteria of the MaB Biosphere Reserve Programme came to the Sierras de Cazorla, Segura y Las Villas with its declaration as a Natural Park in 1986. It was therefore empowered with a series of land-planning mechanisms, the Natural Resources Ordinance Plan and the Plan for Governing Usage and Management, which define zoning and the organisation responsible for social participation within the territory: the **Governing Board of the Sierras de Cazorla, Segura y las Villas Natural Park**.

Subsequently, in the development of a strategy defined in the Inventory of Andalusian Natural Protected Areas Act Nº 2/1989, of 18 July, based on the need to combine conservation with development and in accordance with the tendency of the European Union and the Rio and Jo-

Great commitment

The Sierras de Cazorla, Segura y Las Villas Natural Park has been a signatory to the European Charter of Sustainable Tourism (ECST) since October 2004, through which the main organisations responsible for tourist development within the region and representatives of the tourist industry commit themselves to favouring forms of tourist development, facilities and activities that are respectful to natural, cultural and social resources in the region, and which contribute to the economic development and well-being of local people and visitors. Since then, 22 tourist companies have been granted ECST certification.

hannesburg international summits, in 2003 the Sustainable Development Plan for Natural Parks was approved, with a final view to improve the level and quality of life of the people within the sphere of influence of Natural Parks, in such a way that is compatible with environmental conservation which considers the natural protected area as an important asset to local economic development.

Public use and tourism

In order to satisfy the demand from the ever-increasing number of visitors, as well as the private tourism infrastructure in place, the Natural Park has over 100 public facilities, with special mention due to the 23 signposted footpaths that allow visitors to see the park's most beautiful countryside, such as the Salto de los Órganos waterfall, the Valdeazores Lagoon or the Cascada de Gil Cobo, as well as the 18 leisure areas and 17 panoramic viewpoints that allow walkers to enjoy spectacular scenery within a grandiose setting.

There are also a number of environmental education centres and other points of interest, such as the Almendral **Hunting Park**, and the Sierras de Cazorla, Segura y las Villas Natural Park Ethnographic Museum of Popular Arts and Customs.

Among the reception and information facilities, the following are of special interest:

- * The Torre del Vinagre Visitors Centre
- * The Torre del Vinagre Botanical Garden
- * The Río Borosa Visitors Centre



To speak of all the tourist attractions in the region would almost require a book in itself, due to its vast area and well-established tourist tradition which goes back much further than its declaration as a protected space, and is beyond the scope of this guide. We need only mention that the socioeconomic area of influence feature 84 hotels, 123 rural cottages, 58 tourist apartment establishments, 13 camp sites and 28 companies offering a wide range of active tourism activities.

Footpaths

* **Río Borosa.** This begins near the Río Borosa Visitors Centre and runs alongside the river, through a rugged landscape to the Cerrada de Elías, a narrow canyon through which the Borosa flows. Length: 9 km.

* **Cerrada de Utrero.** The footpath runs parallel to the River Guadalquivir until it reaches the Cola de Caballo waterfall, also known as the Cascada de Linarejos. Further along the footpath is the Cerrada de Utrero, a long, narrow limestone gorge. Length: 1.5 km.

* **The Aguascebas reservoir.** The footpath runs around the reservoir and takes walkers to the Chorrogil waterfall, one of the highest and most spectacular within the Natural Park. Length: 5.2 km.

* **Acebeas-Navalperal.** This path takes visitors to the Navalperal peak, passing through lush woodland populated with holly and hazel trees. Length: 3.2 km (outbound).

The source of the River Guadalquivir



INTERCONTINENTAL DEL MEDITERRÁNEO

The Intercontinental del Mediterráneo Andalusia (Spain)-Morocco Biosphere Reserve is situated between the south of Europe and the north of Africa, forming an arc which opens out toward the Mediterranean and which fragmented by the Strait of Gibraltar. The uniqueness of the natural and socio-cultural crossroads - where the Influence of the Atlantic is a determining factor - can be exemplified in its grand axes: the mountains, the water, the Spanish fir groves and Al Andalus culture, as well as the complementary nature of its North-South sections. These elements are the foundations for this first intercontinental biosphere reserve declared by UNESCO and jointly proposed by the Department of the Environment of the Regional Government of Andalusia and the Kingdom of Morocco's High Commission for Waters and Forests.

Water and Al Andalus culture

During the Middle Ages, the Muslim presence on the Iberian Peninsula intensified exchanges in both directions, building, on the foundations of their shared legacy, a common and eclectic culture - the culture of Al Andalus, recognisable in numerous forms of expression, both learned and popular. Within the Reserve, due to its rural and wooded character, the signs of Andalusí culture are fundamentally linked to more popular manifestations, revealing great maturity and wisdom in the knowledge and handling of its natural resources, especially in its waterscapes. By way of example we have the varied and adaptable irrigation systems for terrace farming, the *neveros* - the snow collectors - and water wheels.



Date declared biosphere reserve: 27 October 2006
Total surface: 894,135 hectares. Morocco: 470,600 hectares, Spain: 423,535 hectares (414,287 hectares on land and 9,248 hectares at sea). This includes the biosphere reserves of Grazalema (51,695 hectares) and Sierra de las Nieves (93,930 hectares).

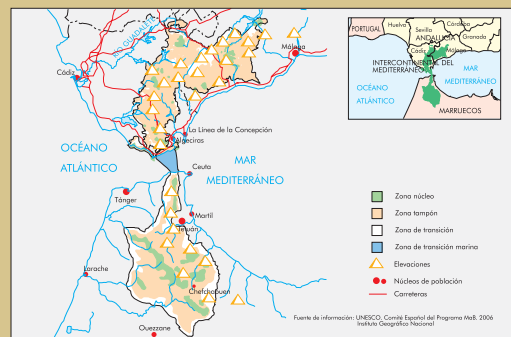
Municipalities: 106 (Andalusia 61, Morocco 45)

Zoning: Core zones: Andalusia: 21,651.37 hectares. Morocco: 64,600 hectares. Buffer zones: Andalusia: 351,154.95 hectares. Morocco: 282,500 hectares. Transition zones: Andalusia: 50,728.43 hectares. Morocco: 123,500 hectares.

Associated protected spaces: Andalusia: Natural Parks (4), Biosphere Reserves (2), Natural Spaces (2), Natural Monuments (3), Metropolitan Nature Park (1), Sites of Community interest [SCI] (22). Morocco: National park - Site of Biological and Ecological Importance (6), Special Protection Area for Birds [SPA] (11)

Management body: Andalusia: General Directorate for Protected Spaces and Local Participation. Junta de Andalucía Regional Government Department of the Environment. Morocco: The Kingdom of Morocco High Commission for Waters and Forests and the Fight Against Desertification).

Biogeographical Region / Province: Mediterranean



Natural Heritage

The Baetic-Rifeño System and its position as a barrier to Atlantic air masses, gives this Reserve its strong structural identity, defining it as atypical wet zone within an area that tends toward aridity. Its altitude, between the 2.170 metres of Lachhab in Morocco, to the over 500 metres depth of the Strait of Gibraltar, have resulted in unique land- and waterscapes, where water is present in various expressions and where mountains serve as an almost permanent backdrop.

The Reserve represents a great ecosystem which can be divided into

Fauna

The Reserve contains a rich and varied fauna, with a number of endangered or vulnerable species. It is worth highlighting the role of the Strait of Gibraltar as a passage of vital importance to European and African birdlife, with up to a thousand birds an hour crossing the water. Also noteworthy is the presence of other interesting species - monk seal and dolphins for example - and biotic constructs (coral).

three ecodomains: continental, and marine, whose general characteristics are repeated in Andalusia and Morocco.

Its most representative component is **Mediterranean mountain and forest**, conserving autochthonous elements such as laurel forests with rhododendrons and Spanish fir groves, a species endemic to the Baetic-Rifeño system and only found at the westernmost extreme of the Baetic mountain range in Andalusia and the Rif Mountains in Morocco. This flora is noteworthy due to the large amount of endemic species and the extensive representation of Mediterranean and Ibero-North African taxonomic elements.

The great diversity of environments has allowed the development of activities such as hunting, fishing, crop and livestock farming and the gathering of various elements for energy, gastronomy and medicine purposes etc. These are all age-old socio-economic aspects that point to a long-lasting and reasonable use of natural resources, based on a profound knowledge of the dynamic of natural systems.



The Ensenada de Bolonia, Cádiz.

“So much light, so much light
everywhere, like a body of wind
that flees from time, the flight of a
bird, surprising and clear, the golden
sand from years gone by shimmers and dances”
(*So Much Light*, Arabic song)



Archaeological site at Baedo Claudia

History, the process of populating this Reserve and its culture has been determined by the peculiarities of its physical environment and its strategic position, so close to events on the coast related to the busy trade routes and the colonising of the Mediterranean and influences from the Atlantic.

The region still conserves vestiges of Palaeolithic, Neolithic and protohistoric cultures, with a number of especially noteworthy cave paintings and groups of dolmens. The relationships between peoples of the Mediterranean intensified in the first millennium B.C, with Phoenicians, Greeks and Carthaginians influencing the local inhabitants, who adopted their productive and organisational methods. The conquest of Rome and the subsequent Romanisation established a common foundation for the whole region, as can be seen in the abundant archaeological remains from the period: Roman roads, villas, burial sites and inland and port settlements.

During the Middle Ages, more significant expressions of this shared cultural heri-

tage emerged, as the Reserve remained firmly within the sphere of influence of Al Andalus until the 15th century, establishing its unique character as a bridge between east and west. Andalusia represented the frontier zone, as indicated by the wealth of military architecture and the names of certain towns in the region (Jimena de la Frontera and Castellar de la Frontera for example), whilst in Morocco, Tetuan and Chefchaouen were rebuilt under the auspices of Al Andalus. The most important elements were concentrated in urban settlements, although there are nonetheless evidence of a disperse population due to the various uses of the land, either productive or symbolic (*cortijos*, hamlets, *marabout* tombs, hermitages, *douars* - tented villages, cemeteries etc).

The Reserve is still rich in what can be called cultural curiosities, the fruit of the human ebb and flow of people travelling in numerous directions since time immemorial, resulting in a complex network of person-resource relationships which are manifested in landscapes defined by diversity as opposed to specialisation.

Socio-Economics of the Reserve

Morocco

For Morocco, the situation is different, with a predominance of extensive usage and with a greater dependence of natural resources, especially those derived from woodland and livestock farming. Tourism is relatively well established both on the coast and in towns and cities inland.

Chefchaouen

529,086 people live on the Reserve, 126,859 Andalusians and 402,227 Moroccan, in the 61 municipalities in the provinces of Cádiz and Málaga and the 45 cities, towns and villages around Tetuan, Larache, Tangiers and Chefchaouen.

The most important traditional usage has seen the construction of agro-silvo-pastoral and fishing systems based on the available resources, creating a socio-economic structure typical of mountain areas near the sea and the possibilities of communications and trade that this factor allows. These agricultural systems continue to be partially active and are perfectly perceptible in the Reserve's countryside, where both the joint activities and those that are specific to either side of the Strait can be clearly seen.

In Andalusia, the current socio-productive structure has a mixed character, where

traditional activities, such as crop and livestock farming, forestry and fishing still survive, as well as new activities appearing related to both coastal and inland tourism, as well as the increased importance now given to product quality (second homes, hotels, restaurants, information centres and museums).

Over the Reserve as a whole, the economic and social aspects have adjusted to the particular dynamic in each country, as they have been subjected to greatly differing variables over recent centuries. Nonetheless, it should be taken into consideration that, socio-economically speaking, this area is in a state of transition, as Andalusia continues to be one of the most disadvantaged regions in the European Union, whilst the North of Morocco - within an African context - one of those showing the greatest dynamism.



The Reserve's contribution to sustainable development

Taken as a whole the region comprising the south of Andalusia and the north of Morocco represent an important area for communication between the African and European continents, a strategic space for natural and socio-cultural exchange, offering great potential and tourist appeal. It combines a great diversity of landscapes and natural and cultural resources, in many cases shared, whose management and conservation require cross-border consideration.

The desire to create a scenario that would allow this management to be approached from a standpoint of sustainable development is established in the principles of the Reserve, as can be seen in its objectives: contribute to the preservation of natural and cultural resources, promote a sustainable development model, encourage institutional collaboration between Spanish, Andalusian and Moroccan nation and region-



al government in order to best achieve common interests regarding the Reserve and provide a management tool that permits social development from a perspective of natural and cultural heritage conservation.

These objectives were set out in the Reserve's Action Plan, a strategic document which complemented the proposal and outlined future development based on four key general areas: the strengthening of the Reserve, the promotion of sustainable development, the integration of local people and improvements to environmental conditions.

Action Plan

The Action Plan defines the long-term steps to be taken during different phases. Between 2006 and 2009 the first stage was implemented, with results including: a development cooperation programme, social diffusion and communication action on behalf of the Reserve and ensuring the continuity of cross-border work group's contribution. Having assessed this first phase, three main areas of cross-border focus were outlined: consolidation of the Reserve, sustainable socio-territorial development and social communication, awareness-raising and participation in the 2010-2015

Action Plan



Public use and tourism

Further information

Andalusian Protected Spaces (Regional Government Environmental Department) www.juntadeandalucia.es/medioambiente/RENPA

Websites for Visitors to Natural Spaces

(Regional Government Environmental Department) www.juntadeandalucia.es/medioambiente/ventanadelvisitante

Mancomunidad de Municipios Sierra de las Nieves
Talassentame National Park.
Biosphere Reserve website
Intercontinental del Mediterráneo
Andalusia (Spain)-Morocco



Public facilities

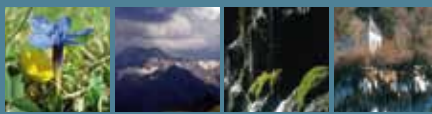
The scope and varied nature of the Reserve, as well as that occurring after its declaration as such in 2006, means that there is still not an effective, regulated system of public facilities which, as meeting the intrinsic objective of spreading the environmental heritage of this cross-border Reserve, would also help to strengthen the tourism it is generating and/or complement that linked to other natural and cultural elements recognised prior to declaration (natural protected areas and cultural assets).

Until now, and within the context of the 2006-2009 Action Plan, a series of specific steps have been taken such as the Talassentame National Park Public Use Plan in Morocco, an exhibition of 360-de-

gree panoramic photographs of landscapes in the reserve, a travelling exhibition for schools, a video and publication in French and Spanish and a documentary for TVE, the Spanish state TV company.

The assessment of these activities has had very positive results and has served as a starting point for designing public facilities and the Reserve's communications within the new 2010-2015 time-frame, which have programmed initiative such as the inclusion of cross-border content throughout the network of public facilities related to the protected areas they contain, the publication of new basic material in Spanish and French and the establishment of theme-based itineraries and routes.

Aragón



* ORDESA-VIÑAMALA

ORDESA-VIÑAMALA

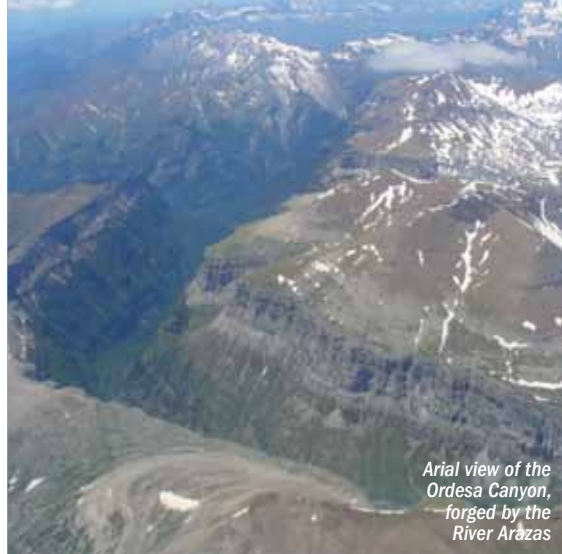
The Ordesa National Park, which in 1918 became Spain's second Natural Protected Space, also has the honour of forming part of one of the first two biosphere reserves in the country.

The Ordesa-Viñamala Biosphere Reserve was established based on the two administrative structures in place at the time, the Ordesa National Park (which then covered 2,166 hectares), and the Viñamala National Hunting Reserve, declared in 1966. It was subsequently incorporated into the Red Natural de Aragon (the Aragon Natural Network), through Act nº 8/2004, representing a relaunch and a commitment strengthening the Reserve and its sphere of socioeconomic influence.

From a nature point of view, it is one of the finest examples of a mountain Pyrenean ecosystem: high peaks shaped by glaciers and calcareous rocks with peculiar eroded forms which constitute the heart of a spectacular, diverse and enjoyable landscape. In the north-west, the siliceous mountains are dotted with ibones (the Aragonese word for mountain lakes), whilst to the south and east the limestone rock formations feature numerous caves and other such signs of karstic activity.

The zoning is as follows, pending revision:

- * **Core zone:** the part included within the National Park.
- * **Transition Zone:** the rest of the Reserve



Aerial view of the Ordesa Canyon, forged by the River Aráoz

Date declared biosphere reserve: 22 January 1977

Surface area: 51,396 hectares

Location: Province of Huesca Aragón

Municipalities: Sallent de Gállego, Panticosa, Hoz de Jaca, Biescas, Yésero, Torla and Fanlo.

Management body: Government of Aragón

Address: Paseo María Agustín, 36; 50071 Zaragoza

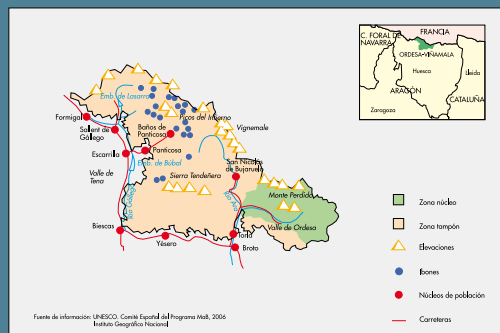
Telephone: 976-71-34-85 Fax: 976-71-48-17

Other protection: Ordesa y Monte Perdido National Park, Natural Monument of the Pyrenees Glaciers, Viñamala Hunting Reserve, Special Protection Area for Birds (SPA), Site of Community Important (SCI)

Biogeographical Region / Province: Alpine

Email: afernandez-arias@aragon.es

Website: www.aragon.es



Granite massif at Os Batans, in the north west of the Reserve



Natural Heritage

There are two well-differentiated sectors in the Reserve: north-west and south-east. The north-west of the Reserve, in the heart of the axial Pyrenees, occupies the left bank of the River Gallego basin (the Tena valley), as well as the headwater of the River Ara. These are crystalline, metamorphic mountains, dominated by the Comachibosa or Vignemale massif (3.298 m).

The south-eastern sector is drained by the River Arazas, an affluent of the River Ara and is situated on the calcareous substrata of the inland Pyrenean sierras, dominated by the Treserols or Monte Perdido massif (3,355 m), as well as the Sierra Tendenera (2,853 m).

In general, within the Reserve there is the following zoning of ecosystems, with varying levels of human intervention:

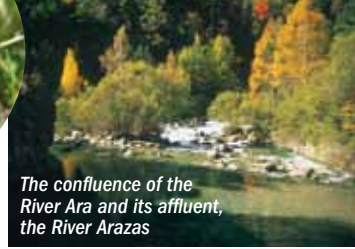
* **Sub-Nival floor.** This is the area less affected by man, with noteworthy glacier-shaped formations, where there are still active glaciers. It contains ecosystems with species typical of boreo-alpine environments.



The chamois (*Rupicapra rupicapra*) are curious animals...



Gentians and buttercups in May



The confluence of the River Ara and its affluent, the River Arazas

* **Alpine floor.** Here the pastures and scrubland that is characteristic of high mountains predominate.

* **Sub-Alpine floor.** Edaphic and climatic conditions favour woodland containing black pine, Scots pine and birch which, due to traditional forest and livestock farming, have been replaced by mountain pasture and scrubland.

* **The Oro-Mediterranean floor.** Where the climate is Mediterranean, there is a wide range of vegetation, with a predominance of black pine, Scots pine, cork oak and pastureland. Human activity is more intense on this level.

* **Mountain floor.** Here there is a predominance of extensive kermes oak, cork oak, and pine groves and mixed woodland. This is the floor that has the greatest level of anthropization.



Orchid in Buxargüelo

Great diversity

There is a vast number of species of flora, many of which are protected: *Borderea pyrenaica*, *Leontopodium alpinum*, *Cochlearia aragonensis*, *Cypripedium calceolus*. As far as fauna is concerned, the mountains are home to numerous mammal species: marmot, chamois, roe deer, red deer, fox, wild boar and pine marten, among others. As far as birds are concerned: bearded vulture, capercaillie, red and black kite, harrier eagle, ptarmigan, golden eagle, peregrine falcon, griffon and Egyptian vulture. Reptiles: European vipers, snub-nosed viper, Iberian rock lizard, viviparous lizard and ocellated lizard. Amphibians: salamander, Pyrenean mountain newt, palmate newt, midwife toad, Pyrenean frog, and numerous fish, especially brown trout.

Cultural Heritage and Landscape

One of the main values of the Reserve is its countryside, the result of the age-old interaction between man and nature.

Although the high mountain can be seen as a wild, virgin landscape, the lower floors have been shaped by the work of man since time immemorial. The forests have been turned into grazing pastureland through the clearing of the mountain slopes. Descending, the mountainsides which get the sun have been terraced for agriculture, creating cereal strips and fields. Bordas and mallatas - Pyrenean stables and cabins - are fine examples of popular architecture that have been present in these mountains since Neolithic times with the construction of funerary monuments such as the Santa Elena dolmen, at the entrance to the Lasieso valley.

The nearby Santa Elena hermitage is a fine example of religious architecture, reflecting the magical, mysterious world hidden within these hills. This hermitage, like the other of the same name situated at the other end of the Sierra Tendenera, is linked to a syphon-type karstic upwelling, the source of numerous myths and legends regarding fantastic local events.



Borda - traditional stable building - in Sobrarbe.

A landscape in which man has intervened in the Sobrarbe region, to the south of the Reserve.



Tufa formations below the Santa Elena hermitage

A cultural heritage in the form of a long oral tradition and evocative place names represent the invisible yet nonetheless rich legacy of this Reserve. When one walks through these mountains one can “read” the landscape, observing the hillsides, their shapes and colours, their fields and woodlands, the snow, the mountain lakes, the shale and rubble. The countryside is an open book full of images, though not without text, found in the wealth of the region’s place names. The interpretation of these names tells us of the presence of iron in village such as Ferreras and Ferraturas, or else gives us clues to the hidden, labyrinthine underground world of caves, sinkholes and potholes.

As can be seen, many of the place names are in the Aragonese language; a Latin dialect that is struggling to survive in the Pyrenean valleys.



Hiking in the Alto Ara

Enjoyment of nature

Within the Ordesa y Bujaruelo sector there is a focus on activities orientated toward an enjoyment of nature, which has been conserved thanks to the Natural Protected Area status. A number of hotels, restaurants, and traditional rural accommodation have sprung up in the area).



The River Ara with the Comachibosa massif in the background

La Reserve covers the municipalities of Sallent de Gallego, Panticosa, Hoz de Jaca, Biescas, Yesero, mainly in the Alto Gallego district, as well as Torla and Fanlo in the Sobrarbe district.

None of the main centres of population in the region is currently situated within the Reserve, although future extension may include a number of such towns. In any event, this is a region with a very low population density.

The Reserve represents a mountain region whose traditional productive structure, based on livestock farming and forestry, is undergoing a process of transformation and modernisation. This transformation, which has a significant impact on demographic and social organisation, on the one hand involves the implementation and development of outsourcing production models, whilst on the other

it requires the regulation and gradual adaptation of those activities with a greater historical weight and tradition.

Beyond livestock farming, the productive fabric can be characterised by its reduced level of activity, closer to traditional craft production than industrial operations. The virtual absence of industrial activity is compensated by increased commercial activity closely related to tourism.

The tourist sector is therefore probably the most dynamic in the region. In the Tena valley, there is a demand for mountain sports tourism which, in the case of skiing, has a negative environmental impact on the Reserve, not only due to the ski slopes themselves, but, more importantly, the associated urban development.

There is also hydro-electrical activity within the Reserve, centred on the Tena valley.

Finally, we should also mention hunting in the region, as well as residual agriculture.



View of a mountain lake

* The Reserve's contribution to sustainable development

As well as the official protection the territory enjoys, the majority of the land on the reserve is classified as Public Hillside.

The level of protection in this area has led to a management of natural resources oriented toward the three basic objectives established under Aragonese environmental law:

- * Conserving nature
- * Socioeconomic promotion and development
- * Public leisure and recreation

In order to guarantee compliance with these objectives, a number of collegiate bodies have taken over the organization of the territory, thus complying with one of the biosphere reserve commitments.

The subsidies applicable to the hunting reserve and the national park over their history have meant that another of the main biosphere reserve objectives has been met: promote sustainable development in the area.



Public use and tourism

There is no exact calculation of the number of visitors that the Ordesa-Viñamala Biosphere Reserve receives, although it may serve as a point of reference to note that the Ordesa y Monte Perdido National Park, as a whole, is visited by some 600,000 people a year. Bearing in mind that the north-western sector contains such important visitor attractions such as Sallent de Gallego and Panticosa (with its spa) we can estimate that half a million visitors a year visit the Reserve.



This large number reflects the Reserve's high values, but it also represents a management problem due to occasional mass tourism.

As management example of how best to resolve this matter we have the Ordesa Valley Access Plan, regulating entry to the park through the Torla sector. The system, implemented in 1998, has replaced peak-period private vehicle access with a bus service and a Park and Ride scheme in Torla. The system allows the presence of a maximum of 1,800 people at any one time in this sector of the park, with this service used by 120,000 visitors a year. The scheme has gone a long way to mitigating the environmental and security problems that free access created.



The countryside is an open book full of images





- * MUNIELLOS
- * REDES
- * SOMIEDO

MUNIELLOS

In the very heart of Asturias

The Muniellos Biosphere Reserve is situated in the south-western limit of Asturias, covering part of the municipalities of Cangas del Narcea, Degana and Ibias. The Reserve is bisected by the Rivers Narcea and Ibias and its affluents, the Tablizas, Naviego and Coto, which rise in the mountains that separate the municipalities of Ibias and Cangas del Narcea. The mountain landscape contains the largest oak forests in the Iberian Peninsula and one of the best conserved in Europe, Muniellos Forest.

This territory has a widely varied landscape and relief, and is one of the most representative areas within the Orocantabrian biogeographical province, in terms of habitat, ecosystems and species.

Geologically speaking, the Reserve falls within the Asturoccidental-Leonesa zone, an extremely uniform region from a lithological perspective, with an almost exclusive presence of siliceous rock from the Palaeozoic period. These substrata have suffered a number of different processes throughout their geological history, such as tectonic deformations and geomorphological processes related to the climate, resulting in the steep, rugged relief we see today. As an example of the glacial landforms in the region, the highest-lying areas feature small basins that have become mountain lakes or bogs, as is the case with the Parcial del Cueto de Arbas Natural Reserve.



Muniellos mountain lakes

Date declared biosphere reserve: 10 November 2000 (original reserve) and 10 July 2003 (extension)

Surface area: 55,657 hectares (core zone: 15.6%; buffer zone: 83%; transition zone: 1,4%)

Location: Asturias

Municipalities: Cangas del Narcea, Degaña and Ibias.

Management body: Asturias Regional Government Department of the Environment, Land Planning and Infrastructures

Address: C/ Coronel Aranda, 2, 33005 Oviedo, Asturias

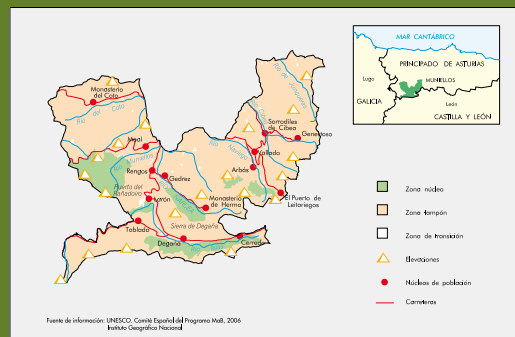
Telephone: 985 105 731

Website: www.asturias.es

Email: Antonio.albamoratilla@asturias.org

Other protection: Parcial del Cueto de Arbás Natural Reserva, Fuentes del Narcea, Degaña and Ibias Natural Parks, Special Protection Area for Birds (SPA), Muniellos Integral Natural Reserve

Biogeographical Region / Province: Eurosiberian / Orocantabrian



Natural Heritage



Fauna

Over 150 species of vertebrates inhabit this region, the home to emblematic Cantabrian fauna, such as the brown bear (*Ursus arctos*), the Cantabrian capercaillie (*Tetrus urogallus cantabricus*), the broom hare (*Lepus castroviejo*), wolf (*Canis lupus*), as well as over 100 species of birds, with a noteworthy number of woodpeckers and grey partridge (*Perdix perdix*). Alongside these species, the lakes and bogs are home to the gold-striped salamander (*Chioglossa lusitanica*).

The Cantabrian capercaillie

The region's flora is conditioned by two main factors: the wide range in altitudes and the poor soil, derived from the quartz mother rock. It can also be characterised by its excellent state of conservation and natural beauty.



Muniellos landscape

The majority of the Reserve is covered by mature forest, with the greatest areas covered by sessile oak (*Quercus petraea*) groves, followed

by the oligotrophic beech woods. Both types of woodland tend to occupy areas with high rainfall, the former receiving the sun, the latter in the shade, where the reduced sunlight favouring greater environmental humidity. In those areas of greater altitude, birch groves and Orcantabrian oak shrubs. There are also large areas of scrubland, covered with broom, heather and gorse, depending on the fertility of the soil.

There are numerous flora communities of high ecological interest, such as those associated with the mountain lakes, bogs and crags, with special mention due to the Muniellos buttercup (*Ranunculus pasrassifolius*, sbsp *munielliensis*), only found on some of the crags on the Muniellos Integral Natural Reserve, as well as the great diversity of lichen and moss, with a number of species more typical of circumpolar and alpine regions.



Cultural Heritage and Landscape



Traditional thatched raised granary

On the land within the Reserve there are numerous signs of human activity from the Roman period, both in terms of the remains of gold mining operations and the traditional *castros* - round stone settlements that proliferated around them.

There is a wealth of cultural heritage, with the regions ethnographic legacy of main interest. The conservation of its traditions has largely been the result of its centuries of isolation.

The original housing style in the protected area, conserved to the present day, shows considerable similarity with the *castros* of yesteryear. These circular buildings are known locally as *palloza*, and feature earthen floors, dry masonry walls using slate and quartzite, and rye-thatched roofs. Other characteristic architectural elements in the region are the *cortinos*, circular uncovered buildings with two metre-high dry masonry walls, used to protect beehives from marauding bears. Inside, usually on raised terraces adapted to the conditions of the terrain, the traditional beehives known as *trobos* were placed, made from hollowed-out chestnut-wood trunks or cork-oak bark. Within the Reserve there are still a multitude of such structures,



Braña de Arriba in winter

especially in the countryside around the town of Ibias.

Another type of traditional structure used to protect beehives, known as *talameiros*, are less common. They consist of solid rectangular structures over two metres high on which the hives were placed.

Corripas were small stone enclosures used to store chestnut husks.

A Terra Dos Cunqueiros

The villages of Tablado, Sisterna and El Bao, which fall within the municipality of Ibias inside the Reserve, make up an area known as A Terra dos Cunqueiros. Men in these villages used to make wooden tableware using a primitive pedal-driven lathe and manual cutting tools. During the winter, when agricultural activity is at its lowest ebb, teams of local men - the *cunqueiros* would leave for Castile, Extremadura and even Andalusia making and selling their primitive *cuncas*, wide wooden bowls. These *cunqueiros* developed their own jargon and slang, known as *tixileiro*, which today is virtually forgotten. In the tiny village of Sisterna there is a privately run museum which exhibits the products made by the *cunqueiros* and the tools they used.

El Bao



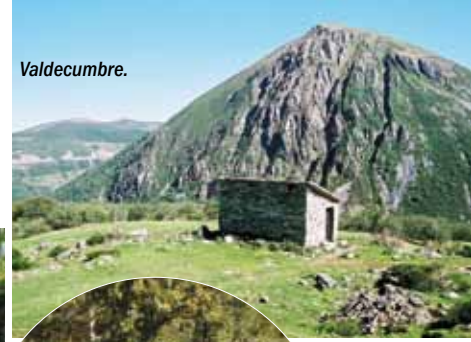
Socio-Economics of the Reserve



Valdebueyes.



Truébanos.



Valdecumbre.



Cortin.

The population is scarce here - just six thousand inhabitants who live in four main villages: Rengos, on the banks of the River Narcea, in the municipality of Cangas; Degana and Cerredo, on the banks of the River Ibias, in the municipality of Degana; and Cistierna and Luina, in a mountainous area near the Campa de Tormaleo Pass, in the municipality of Ibias.

In all these cases these are population centres which grew up inseparable from the intense mining activities undertaken nearby, where almost half the local people were employed. The rest of the population is spread across small hamlets in which crop and livestock farming is somewhat underdeveloped and in most cases is seen as merely complementary to work in the mines.

Coal mining, despite its sharp decline, is still of major importance to the economy of the Reserve, with virtually all the anthracite mined heading to the nearby Soto de la Barca Power Plant. Livestock farming is also of great importance, above all, the farms raising cattle of the local Asturiana de los Valles breed. In recent years wine production has returned

to the area, with wines from Tierra de Cangas granted Protected Geographical Status. Vines are grown on the steep yet sunny hillsides, with production currently experiencing something of a boom, especially in and around Cangas de Narcea and Ibias.

Services in the sector are also thriving, with the Reserve becoming a tourist destination for numerous visitors who see nature as an attractive leisure activity.



Cattle grazing in Valdecumbre



The Reserve's contribution to sustainable development



Panoramic view of Muniellos

The centre of the Reserve is dominated by the Muniellos, La Viliella and Valdebois mountains, which contain the largest oak forest (sessile oaks) on the Iberian Peninsula and one of the most important in all Europe. As well as the oak, the verdant hillsides are home to numerous other species typically found in broadleaf forests such as birch, holly,



Beech grove in Hermo



Bear tracks

yew, mountain ash and beech. One of the areas of great interest within the Reserve is the Pico de la Candanosa lakes, whose glacial origin goes back thousands of years. The extensive forests and their undergrowth serve as a refuge to bears, capercaillie, wolves, foxes, wild boar, roe deer and other species which are characteristic of Cantabrian fauna. The Reserve therefore features a series of mountains and valleys that, thanks to its low population and rugged relief, is able to conserve significant masses of autochthonous forest.

MUNIELLOS

BIOSPHERE RESERVES



Public use and tourism



Valdecumbre lake

Rural tourism is well represented within the Reserve, with a multitude of excellent holiday houses throughout the Reserve in locations where the imagination takes us back to bygone eras.

The cuisine on offer in the Reserve centres on cold cuts, cheese, *roxa* beef and game and local wine. A typical hearty dish, at any time of year, is the local stew known as *pote*, with cabbage and potato accompanied by the indispensable *compango*, mixed meats which will generally include chorizo, blood sausage, shoulder ham and pork belly. The ritual associated with the autumn pig slaughter still survives in the villages, with pork produce forming an important part of the local diet.

The short-distance walking itineraries afford visitors access to the environmental, ethnographic and cultural resources that the Reserve can offer, as well as the obvious attraction of its gastronomy.

The long distance *Gran Recorrido* footpath GR 203, “Where Bears Walk”, shows visitors the whole Reserve.



Cueto Arbas.

Facilities

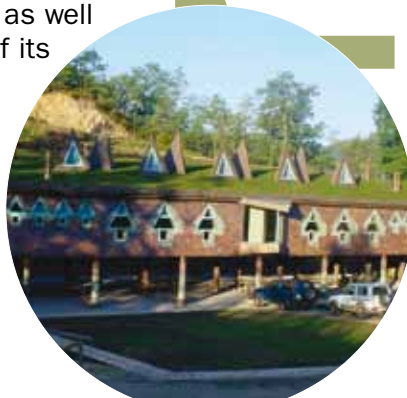
* **Fuentes del Narcea, Degaña e Ibias Natural Park Interpretation Centre** in Corias
Situated in the old stables belonging to the Monasterio de San Juan Bautista de Corias, at the entrance to Cangas del Narcea.

* **Nature Learning Centre in San Antolin de Ibias**, alongside the reconstruction of a traditional circular palloza, constructed using the techniques and materials typical of the region. This building is the legacy of the traditional castro settlements as well as having a connection to the traditional cabins - known as *brañas* - in Somiedo.

* **The Tixileiro Museum in Sistema**, where visitors can see a collection of the tools, machines and materials typical of the rural world, with a special emphasis on those related to the local woodworkers known as *cunqueiros*.

* **Casa del Parque, Degaña**.
Situated in Cerrado, this centre is a renovated traditional building.

* **Interpretation Centre at the Muniellos Integral Natural Reserve** in Obacho. New building alongside the natural panoramic viewpoint over the Muniellos Forest.



Muniellos Interpretation Centre

REDES

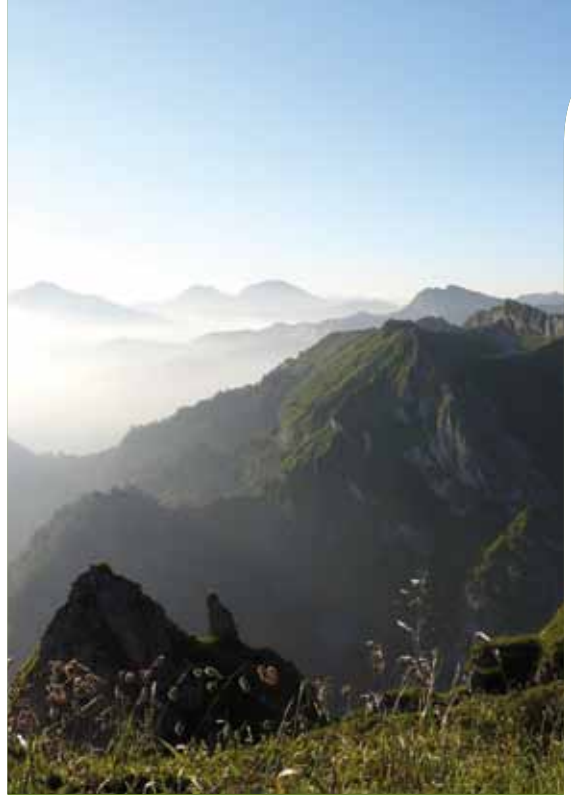
The Redes Biosphere Reserve, located in the heart of the Cantabrian Mountains, covers the land belonging to the Asturian municipalities Caso and Sobrescobio, conserving some of the range's finest scenery and ecosystems.

The natural beauty and ecological value of this Reserve is largely determined by its steep, rugged relief, with extensive, well-conserved natural woodland that is the home to a wealth of fauna, both protected species and game, and a river basin that supplies water to the whole central part of the region.

As well as the natural values in the area, markedly rural in character, we should add the human element that has proved itself perfectly capable of integrating itself within the environment through traditional activities that respect the conservation of the region, thanks to which the landscapes from bygone eras are still conserved.

The lithological uniformity of Redes, determined both by the origin and composition of its materials, and the geological period in which they were deposited, as well as the differential erosion, have all resulted in the sheer reliefs that make up the landscape. Other geomorphological phenomena, such as the glacial landforms, have contributed to the formation of scenery as beautiful as that at Ubales lake.

Especially noteworthy are the autochthonous forests, with their stunning flora, the moorland with its gorse and broom and the meadows and grazing pastures typical of traditional extensive livestock farming.



Date declared biosphere reserve: 20 September 2001

Surface area: 37,803.98 hectares, Core Zone: 53.7%, Buffer zone: 40.3%, Transition zone: 6%

Location: Central - eastern region of the Asturian mountains

Municipalities: Caso and Sobrescobio

Management body: Asturias Regional Government Department of the Environment, Land Planning and Infrastructures

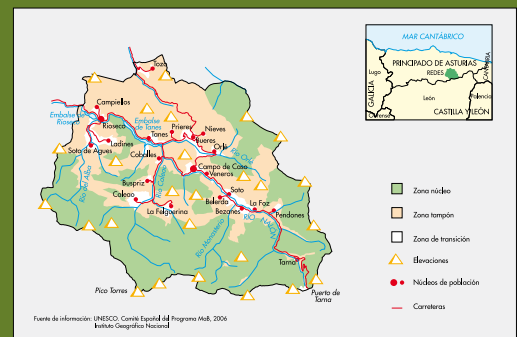
Address: C/ Coronel Aranda, 2, 33005 Oviedo, Asturias

Telephone: 985 105 500.

Website: www.parquenaturalderedes.es

Other protection: Redes Natural Park, Special Protection Area for Birds (SPA), Site of Community Importance (SCI) Natural Monument

Biogeographical Region / Province: Eurosiberian





Numerous protected species

The conservation of this territory allows it to maintain a wealth of flora that is representative of the Cantabrian mountains, and which includes over 2,000 species, many of them endemic or protected.

The diversity and the fine state of conservation of the habitat found in Redes make this Reserve one of the best examples of Cantabrian fauna, sheltering a vast number of protected species.

In Redes, mature forests occupy a third of the total area of the Reserve, representing the dominant vegetation and giving a good idea of the state of conservation of the forest mass. As a consequence of the uniformity of the environmental variables that characterise the area, a total of 10 types of mature forests in different phases can be found in the Redes Reserve, with beech woods the most abundant and characteristic.



Beech grove

The forest masses are in areas which lie among extensive scrubland (a number of types of broom and gorse), on the hills and mountains, mainly associated with livestock farming, allowing rich ecosystems, such as meadowland, to be conserved, representing 15 % of the territory.

With respect to the fauna, there are numerous species that are representative

of the Cantabrian Mountains, with the presence of 35 taxa of EU interest, 2 of which have priority status, and 51 species of birds covered by Council Directive 79/409/EEC on the conservation of wild birds.

The Reserve is currently home to over 200 species of vertebrates, the majority of which are associated with well-conserved forest mass, habitats of excellent ecological quality. Such is the case of the Cantabrian capercaillie (*Tetrao urogallus cantabricus*) or the middle spotted woodpecker (*Dendrocopos medius*), both of which have very demanding ecological requirements, markedly forested in nature. The presence of the Cantabrian brown bear (*Ursus arctos arctos*), sporadic and occasional, is limited to the southernmost area of the Reserve; nevertheless a large part of its territory is considered to be an area of potential occupation for the species.

The wealth of the Redes Biosphere Reserve's natural heritage is matched by the region's ethnographic and cultural legacy of which rural architecture ensembles and individual elements are noteworthy. The villages in the region have conserved fine examples of traditional houses, *horreos* and *paneras* - raised granaries - as well as cabins and mills, which the inhabitants of these mountains have preserved from the ravages of time. Special mention should undoubtedly be made of the so-called *cabañas de llábanas de piedra*, age-old stone cabins covered with stone slabs, one of the finest traditional architec-

tural elements of Asturian ethnographic heritage. Those living in these villages have maintained their traditional lives and trades such as the manufacture of *madreñas* - Asturian clogs - or typical produce such as *casín* cheese made from the milk of the local *casina* breed cows, which have greatly enriched the region's extraordinary cultural legacy.

According to the Asturias Inventory of Architectural Heritage's record of the municipalities of Sobrescobio and Caso, the area that constitutes the Redes Natural Park locates and describes 18 elements, 6 in Sobrescobio and 12 in Caso.

View from Paudefresnu





Casina cattle

Quality livestock

In Redes there are a number of establishments that make traditional craft produce (honey, *casín* cheese, liqueurs, ceramics, *madreña* clogs) as well as organic and ecological products (meat, bread, cakes and pastries etc). We should highlight the quality livestock production, especially the autochthonous breed of cattle known as *Asturiana de la Montaña* or *casina*, which, among other characteristics, are particularly well-adapted to the Reserve's high-mountain environment.

The declaration of the territory as a Natural Park implies sharing the conservation of nature with economic and social development, with the Sustainable Development Plan established to assist in this objective. Its content is also in line with the Biosphere Reserve's second objective, as it conceives and designs a series of strategies that contribute to the relaunching of economic activities within the Park without undermining the environmental values that it seeks to conserve, as well as establishing the broad outline that determines the way in which public investment and action contributes to conservation and compatible economic development. This outline should at least cover investment in facilities, services and infrastructures required in order to sustain the local population and visitors to the Reserve, the regeneration and improvement of its ecosystems, the promotion and diffusion of natural and cultural values, and the promotion of the development of economic activities that are compatible with conservation, including any economic assistance deemed necessary or appropriate.

A change is currently underway in terms of the economic structure, with a marked improvement in the quality of life of local people noted. This transformation is reflected in an increase in the service sector, in detriment to the traditional primary sector. In recent years numerous rural and active tourism establishments have opened, generally run by women, representing an important increase in their presence in this emerging sector. The tertiary sector has been a revitalising factor in the local economy, becoming the largest single component of municipal GDP. Municipal and per person income in Caso and Sobrescobio has increased, growing at a rate that is above the Asturian average after the Park was declared, taking off a few years after being granted said status.



The Reserve's contribution to sustainable development

The improvement to the quality of life of the inhabitants of Redes through the adoption of revitalisation and economic development measures, especially aimed at activities related to public use, tourism, forestry and crop and livestock farming, constitutes one of the objectives that led to the declaration of Redes as a Natural Park, through Act 87/1996, on 27 December 1996.

Park management is regulated under the Plan for Governing Usage and Management, revised on a four-yearly basis. The second four-year plan is currently in progress, which sets out all the directives concerning the use and organisation of the Park, its management, zoning, planning, the basis for ordering activities and all planned action. These legal measures are accompanied by Sustainable De-



Panoramic viewpoint

velopment Plans, whose basic directives are drawn up after Annual Management Plans.

Practical experiences

Since December 2007, Redes has had a Sustainable Development Indicator System in place, selecting 61 indicators grouped into 4 blocks (sustainable human economic development - institutional and administrative aspects - environmental biodiversity and conservation - logistic support), which are in turn subdivided into 14 subjects and 30 secondary subjects, which seek to reflect the progress that Redes has made toward sustainable development and compliance with its objectives. Furthermore, a large number of projects have been undertaken, related to the conservation of the countryside, ecosystems, species and genetic diversity, such as: the rehabilitation of *majadas* - traditional sheep pens and cattle sheds, the restoration the capercaillie's habitat, and the installation of infrastructures which prevent forest fires. The increase in the activities related to sustainable development has already been mentioned: rural tourism that respects environmental conservation, the elaboration of craft product and organic produce etc, constituting a diversification of the traditional activities that used to be undertaken in the region.



Public use and tourism

The declaration of the Redes Biosphere Reserve has also meant the creation of public facilities and logistical support elements aimed at the upkeep of the area, the organisation and realisation of management activities, visitor care and the regulation of public use.

Special mention should also be made of the Park's Reception and Nature Interpretation Centre in Campo de Caso, which, as well as administrative and guard services for the protected area, also includes an interactive exhibition and audiovisual area which allows the diffusion of the Reserve's values, such as undertaking environmental and cultural events, as well as monitoring visitor groups.

The Reserve also features a thematic educational area which explains the importance of water resources to the region. The *Casa del Agua* in Rioseco, situated on the banks of the reservoir of the same name, is an initiative aimed at awareness raising and environmental education which has managed to combine the efforts made by local and regional administration bodies and private business, in order to explain the importance of water as a resource that is in short supply.

The Redes Natural Park and Biosphere Reserve has been granted the "Q" trademark guaranteeing quality tourism and is in the process of signing up to the European Charter of Sustainable Tourism (ECST).



Majada

SOMIEDO

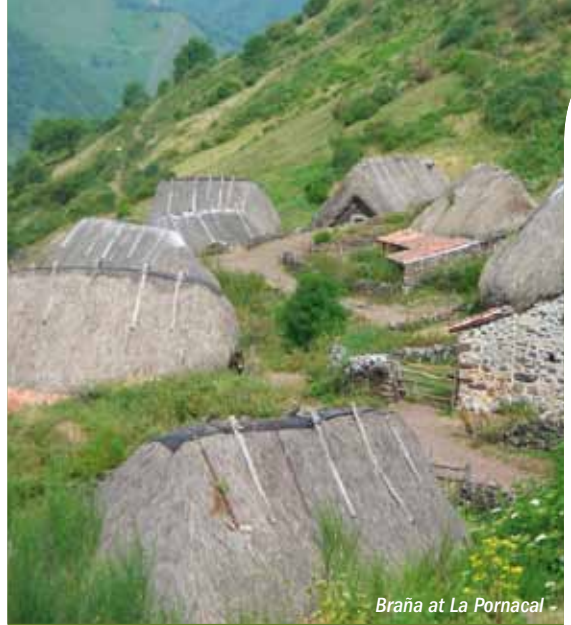
The Somiedo Biosphere Reserve coincides completely with the municipality and Natural Park of the same name, located in the central-western part of the Asturian mountains.

The territory consists of four main valleys, Somiedo, Valle de Lago, Saliencia and Piguena, and their respective rivers that flow south to north (Piguena and Somiedo), and south-east to north-west (Saliencia and Valle de Lago).

The Reserva includes 39 villages, which have experienced a marked demographic drop since the early 20th century. This has been partly halted by the declaration of the area as a Natural Park in 1988 and a Biosphere Reserve in 2000.

The Reserve is, environmentally speaking, one of the finest in the Cantabrian Range, with a high degree of conservation and unique environmental and landscape diversity, that ensure that this space includes the majority of the ecosystems and species that are characteristic of the central area of the Cantabrian region. This uniqueness is due to the wide variety of lithological substrates, the sharp, rugged relief, its biogeographical situation and its particular climatic conditions, where the general oceanic character of the Cantabrian coast is nuanced by a certain continental character of orographic origin.

Geologically, Somiedo represents a transition zone in the Cantabrian Range between the siliceous west and the limestone east, with an extraordinarily varied landscape.



Braña at La Pornacal

Date declared biosphere reserve: 10 November 2000

Surface area: 29,121 hectares (Core zone: 36%; Buffer zone: 60%; Transition zone: 4%)

Location: Central - western region of the Asturian mountains Asturias

Municipalities: Somiedo

Management body: Asturias Regional Government Department of the Environment, Land Planning and Infrastructures

Address: C/ Narciso H. Vaquero, s/n, 33840-Pola de Somiedo, Asturias

Telephone: 985763758

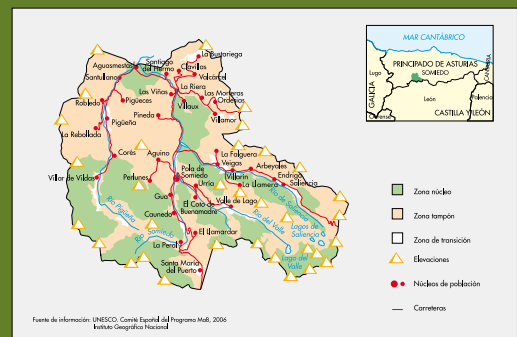
Email: luis.fernandezsierra@asturias.org

Website: Somiedo.es; Asturias.es/
Red ambiental de Asturias

Other protection: Somiedo Natural Park, Site of Community Importance (SCI), Special Protection Area for Birds (SPA), Lacustre de Somiedo Ensemble Natural Monument

Biogeographical Region / Province:

Eurosiberiana Region, Atlantic European Province.



Fuente de información: UNESCO, Comité Español del Programa MAB, 2006
Barrion, Geografía Nacional

Natural Heritage

A large part of the Reserve is covered by deciduous forest that is representative of the Cantabrian mountains. Beech groves are the most abundant, generally on the most shaded hillsides, whilst oak woods occupy the sunniest parts. Higher up, the climate and soil conditions prevent forests such as these from prospering, with a predominance here of birch, some oaks, scrub and herbaceous land. On the valley floors and river banks there are ash, chestnuts, alders and willows. Other noteworthy tree formations are the holm oaks, generally on craggy limestone crests below 1,000 m. In Somiedo there are also important heather, gorse and broom formations. The valleys are dominated by herbaceous formations, hay meadows and grazing pastures. Special mention should be made here of an endemic plant, unique to Somiedo, the centauray.

Glacial landforms at higher altitudes create lakes, lagoons and sinkhole, a relatively uncommon high-mountain environment which is home to numerous alpine flower and tree species.

Among the birdlife, over 100 species have been identified, with the capercaillie, in danger of extinction along the Cantabrian range, most noteworthy, as are others, such as the Egyptian and griffon vultures, the golden eagle and the middle-spotted and black woodpecker, as well as an extensive variety of insectivore birds. Among the fish, the most common species is the trout.



Chamois

Numerous animal species

The diversity of landscape and vegetation, the rugged mountains and the low population density have all made Somiedo a refuge for numerous species of animals, with one of the most complete and balanced representations of Atlantic fauna. All the main mammal species in the Cantabrian Mountains are present here: red deer, roe deer, wild boar, chamois, wolf and, above all, the brown bear, with one of the most stable communities in the Cantabrian Range, as well as a significant number of mammal species, reptiles and amphibians.



Calabazosa Lake

Cultural Heritage and Landscape

The Somiedo Reserve is of exceptional value due to the wide range of different landscapes: forest, scrub, pasture and rock. The majority of these have been shaped by human crop and livestock farming, which has created a rich mosaic of habitats.

The traditional seasonal droving of livestock has also left its mark on the area. If one factor can be said to characterise what makes Somiedo special, it is the harmonious co-existence between human and natural heritage, rarely as striking as it is here.

In addition to this spectacular natural heritage, Somiedo's cultural and ethnographic offering is no less impressive, with two groups of very different people, both socially and culturally living alongside each other for centuries: the nomadic herdsmen known as *vaqueiros de alzada* and the valley farmers, known as *xaldos*.

Livestock farming activities

The traditional livestock farming activities in the Somiedo region have also left their mark on the local way of life, traditions and buildings, shaping the landscape and the environment. Transhumance, the seasonal droving of livestock, is typical here, practiced by the *vaqueiros de alzada* who take their animals up the mountains from the valleys in the summer, making use of the *brañas*, fells that are dotted with traditional cabins with roofs thatched with dried broom and round stone enclosures, forming a rich ethnographic heritage. Another traditional construction is the *ollera*, slate-roofed buildings through which water flows, keeping the milk fresh, and the watermills used to grind wheat and rye, both staples in the region. The most common species of cattle is the *Asturiana de los valles* (also known as *vaca roxa*), prized for its fine meat and breeding characteristics. The animal is perfectly adapted to the harsh mountain grazing conditions.

Braña at La Mesa.

SOMIEDO

BIOSPHERE RESERVES



Socio-Economics of the Reserve



Cattle grazing on the hillside

The declaration of the area as a Natural Park in 1988, and its subsequent Biosphere Reserve status in 2000, has managed to slow the demographic tendency, providing new options for the future for local young people and offer better economic perspectives, especially in terms of rural and ecological tourism, providing work to a number of young people, allowing some of those who had been forced to emigrate in the past to return.

There has also been new investment and subsidies granted to the municipality, allowing a significant improvement

to and modernisation of the region's basic infrastructures (electrification, refuse collection and drainage, improved access to villages, mains water supply, more hotel accommodation and environmental and public use improvements).

Nonetheless, livestock farming continues to be right at the centre of the Somiedo economy. There are 200 livestock farms (all meat producing) with a total 7,000 head of cattle, an average of 35 per farm. The systems developed in the area are well-adapted to environmental conditions, with cattle taken to high-lying pastures in summer with simple stabling, or two-phase stabling during the coldest months. Three different types of land are used: meadowland near the village, the *brañas* or fells, and high-lying communal grazing land.



Pola de Somiedo.

SOCIOECONOMIC INFORMATION	
Area	291,3 km ²
Population density	5,13 hab/Km ²
Population	1.494 hab.
Natural increase	-20
Net migration	-7
Total employees	369
Registered unemployed	19
Agricultural employment	200
Service sector employment	156
Construction trade employment	14
GVA per capita	7.915 €
Income per capita	14.155 €



The Reserve's contribution to sustainable development



Valle del Lago.

The Somiedo Biosphere Reserve is the clearest example of what it means to base the future of a district on conservation and the sustainable exploitation of natural resources. Somiedo is a mountain district with an economy traditionally based on livestock farming, blessed with a natural beauty which is best represented by the brown bear. As the declaration of its status sets out, Somiedo Natural Park was born out of a commitment to “guarantee the conservation of the natural values of the area, making them compatible with the maintenance and improvement of traditional activities, the economic and social development of the area and the promotion and enjoyment of these values”.

In order to best develop the various plans and programmes, the Park was given the management tools it required, most important of which was the Plan for Governing Usage and Management,

which also were the management tools used by the Reserve.

The Plan for Governing Usage and Management is the key tool for use in the administration of both the Park and the Reserve, and has a span of 4 years. The fourth such plan is currently being applied. The Plan provides order to the activities susceptible of development within the Park, establishing protection guidelines to be applied in each area.



The Brown Bear

The Reserve is home to the most important community of brown bears in the Cantabrian mountains. This group, of extraordinary interest in Western Europe, is currently in a critical demographic situation, with numbers in decline. The Asturias Regional Government has therefore sought to implement a “Recovery Plan”.

SOMIEDO

BIOSPHERE RESERVES



Lago del Valle.

Public use and tourism

One of the main objectives as far as the management of the Reserve is concerned is that of directing leisure activities toward the least sensitive areas, ordering a series public infrastructures which, as well as combining the qualities that a protected area requires, ensuring that the environmental impact of large visitor numbers can be reduced.

As well as the signposted routes and the Reserve's recreational areas, in order to receive the numerous visitors and offer a good information service, there is a Reception and Interpretation Centre, open all year round.

The office offers the visitor extensive information, as well as brochures and pamphlets, on the various routes available: maps, accommodation, restaurants and activities. Information is also available on Park zoning and the activities allowed in each area.

The Centre has an audiovisual room and an educational exhibition space providing information on the Park's values and resources. Environmental education activi-



Horse riding in the mountains

ties are organised, with the archive room available for consultations.

The Somiedo Natural Park and Biosphere Reserve has been granted the "Q" trademark guaranteeing quality tourism and has been a signatory to the European Charter of Sustainable Tourism (ECST) since 2007.

The Park's network of footpaths and treks

The diversity of natural environments has made the Reserve one of the most attractive protected areas for walkers, easy climbing or just simple nature watching. In addition to its striking natural landscapes, its mountains, forests and lakes, we can add the ethnographic interest of the many *brañas* or fells, dotted among the Park's most stunning landscapes, making it clear that this is a unique and privileged territory.

There are currently 12 signed routes, each with its own information sheet.



Map of the Somiedo Biosphere Reserve

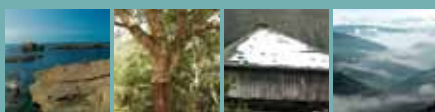
Facilities

* **Somiedo Natural Park and Biosphere Reserve Reception and Interpretation Centre.** In Pola de Somiedo

* **Craft Museum.** In Pola de Somiedo, this museum contains a collection of tools and utensils representing the traditional rural trades and crafts.

* **Somiedo Ecomuseum.** Situated in the village of Veigas, this museum features a number of traditional thatched houses, restored to their original state.

Asturias | Galicia



* RÍO EO, OSCOS
E TERRAS DE BURÓN

RÍO EO, OSCOS E TERRAS DE BURÓN

The Río Eo, Oscos y Terras de Burón Biosphere Reserve covers 108,068 hectares, including a small area of shallow marine waters adjacent to the Río Eo estuary.

The area within the Reserve is bisected by the River Eo basin, from the point where it rises in Fonteio (in the municipality of Baleira, Lugo), to where it meets the Cantabrian Sea. Within the territory included within Reserve there are at least four main landscape types, which can be integrated within the sectors proposed for the North-West Iberian region: The Western Cantabrian coast; rivers and watercourses; the Eo estuary and river mouth; mountains and mountain ranges.

The zoning of the Reserve differentiates 3 areas conceived as a series of concentric rings, although the initial conceptual schema has been modified depending on local needs and conditions.



Date declared biosphere reserve: 19 June 2007

Surface area: 159,949.60 hectares (11% Core zone, 18% Buffer zone and 71% Transition zone)

Location: Provinces of Lugo (Galicia) and Asturias

Municipalities: 14 municipalities distributed between Lugo and Asturias.

Management body: Xunta de Galicia Regional Government Department for Rural Affairs and Asturias Regional Government Department of the Environment, Land Planning and Infrastructures.

Address:

Asturias: C/ Coronel Aranda s/n,
3ª planta. 33071 Oviedo

Galicia: Telephone: 985 105 731

Email: josefelix.garciagaona@asturias.
org. Rogelio.fernandez.diaz@xunta.es

Website: www.asturias.es <http://mediorural.xunta.es/>

Other protection: Site of Community Importance (9), Special Protection Area for Birds (3), Wetland of International Importance (Ramsar Convention)

Biogeographical Region / Province:

Eurosiberian / Atlantic



Natural Heritage

The significant variability in the types of environment means that within the Reserve there are a wide variety of natural ecosystems that represent high environmental values, a fact that is reflected in the various levels of protection that have been designated as areas within the Reserve.

As well as the Reserve's territories it is also possible to identify a total of 41 types of habitat of EC interest, of which 11 are considered to be priorities, focusing mainly on dune ecosystems, coastal heathlands, coastal wetland and woodland associated with wetland environments.

As far as the species of conservation interest, there are a total of 123 taxa identified within the Reserve that have been included within Appendix I of Di-



Grey heron

Wetland scrub

rective 2009/147/EC, or any of the Appendices to Directive 92/43/EEC applicable to the remaining groups. Special mention should be made of the birds included within Appendix I of Directive 2009/147/EC, giving an idea of the important conservation role played by the Reserve, especially the River Eo estuary.

The Reserve's sea water is also of great importance, as it provides the habitat for the only species identified as a priority, the loggerhead sea turtle (*Caretta caretta*), a marine reptile whose presence within the territory has been documented. Within the group of mammals it is also worth highlighting those that have what we can call marine habits, almost half the total number.

River ecosystems

The species of conservation interest amongst the groups of flora, invertebrates, fish and amphibians mainly consist of the taxa connected to the Reserve's rivers, well-represented by the water network of the River Eo basin. This is an indication of the important role played by river ecosystems in the conservation of the Reserve's biodiversity, which, alongside the other natural land-based ecosystems (coastal wetland, scrub and rock, woodland etc.) practically completes the whole panorama of species of the aforementioned groups.

Cultural Heritage and Landscape

The heritage that can be found within the Reserve is principally of a cultural nature, in the widest sense of the word. There are not only the buildings and remains from bygone era but also the culture that has sustained local people, and which has been passed from one generation to another, a legacy that today allows a number of different craft activities to continue.

Burial mounds and dolmens are abundant throughout the region and the Reserve, as well as countless remains of the so-called Castro culture dating from the late Bronze Age to Roman times. As well as these remains, there is also a wealth of architectural heritage from both religious and civil life. The former has a long tradition, given that in this region there are a number of monastic orders, as well as an important ensemble of chapels, churches and hermitages, dating mainly from the 14th to 19th centuries, spread across the territory and in which there are a veritable wealth of carvings, sculptures and ornate altarpieces. The region's civil architecture also included numerous ca-

Ethnographic heritage

The region's ethnographic heritage is especially noteworthy, represented through the numerous buildings that are typical of traditional rural culture: The mountain landscape is covered with pallozas - part house, part cow shed, hórreos and cabazos - raised stone granaries, pigeon houses, trobos, cortizos and cortines (used to protect beehives from marauding bears and other such predators) and corpias and ouriceiras (used to store chestnuts and dry out their husks) spread throughout the villages on the Reserve. Neither should we forget the rich legacy of the region's oral culture, folklore, traditions and customs.



sas solariegas - manor houses - and pazos - the homes of the nobility.

There are two Camino de Santiago - the Saint James' Way - pilgrimage routes leading to the capital of Galicia: The Ruta de la Costa or "Coastal Route" and the Camino Primitivo.



Seascape

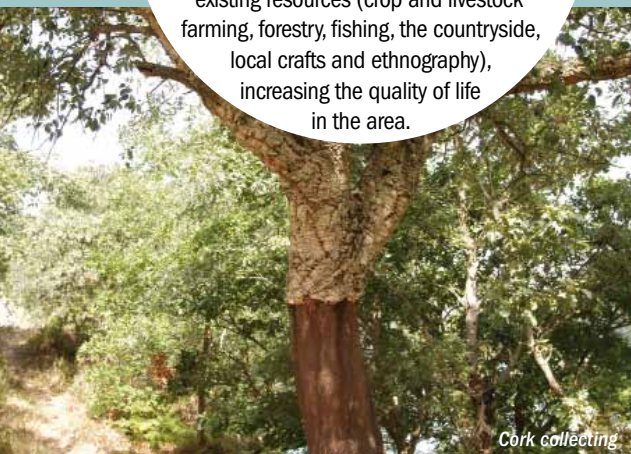
Socio-Economics of the Reserve

The people who live on the Reserve have known how to take full advantage of age-old natural and cultural resources, as well as undertaking traditional economic activities, in order to integrate them with new development programmes that have represented a notable change in the region and which offer favourable perspectives for the future.

In recent years, significant changes have been seen in the economic structure. There has been a drop-off in primary sector activities and a corresponding growth in the service sector. Livestock farming, forestry and tourism are currently the main areas of growth, with increasing specialisation across the region. It can be assumed that these

Sustainable development

The action undertaken within the Reserve, stemming from wider regional government and EC programmes have sought to promote a model of social and economic development based on the principle of sustainable development, striving to re-evaluate existing resources (crop and livestock farming, forestry, fishing, the countryside, local crafts and ethnography), increasing the quality of life in the area.



Cork collecting



Muiño at San Pedro de Neiro



Furnaces at A Pontenova.



The Las Catedrales beach

will be the cornerstones on which efforts to sustain medium growth will be focused in the medium term. Livestock farming has undergone a process of specialisation, albeit with certain differences between the municipalities in the area: the inland region has sought to specialise its operations through a focus on beef cattle whilst farms on the coast are centring on dairy operations. There have also been signs of new diversification initiatives, such as organic crop and livestock farming, nurseries and greenhouse farming, diversification of services, fish farming and other food-producing activities.



The Reserve's contribution to sustainable development



Mist is extremely common in the Reserve's valleys

Biosphere Reserves are designated to be spaces that, as well as being representative of certain biogeographical environments or having special relevance in the conservation of biodiversity, also offer the possibility of testing and demonstrating models of sustainability.

The inclusion of an extensive area of traditional farming systems within the reserve means that among its basic goals, consideration has to be given to the forms that human intervention of historical and ethnographic value take, and upon which a large part of the planned sustainable development will be sustained.

The conciliation of conservation and development objectives requires a significant effort in terms of logistic support, in other words, in ensuring the resources and incentives



Agrosistema tradicional.

that promote sustainable development among the various social agents that operate within the Reserve.

The Reserve has taken important steps that represent a qualitative advance along this path, through the promotion of and support given to experimentation and demonstrations relating to the sustainable development of resources (sustainable farming and forestry practices,), as well as the revaluation of natural products through their marketing as products certified in terms of the processes and practices used (forestry certification, organic produce etc.), or the genetic resources employed (protected designation of origin, quality product etc.)

The Reserve currently includes a series of facilities that constitute an important working tool in the dissemination of the region's natural, ethnographic and historical values, and which can be used to work on the demonstration effect with local questions and their associated culture.

Public use and tourism

The development of rural tourism has contributed to the recuperation of the region's heritage, rehabilitating buildings to be used for accommodation and revitalising other activities, such as local crafts, gastronomy and produce. The sector has also contributed to local knowledge, both within and without the region.

The structure of tourism has also taken a significant up-turn. An extensive network has been developed which covers all the various types of establishment. It is worth highlighting the quality of tourist facilities and services in the area which, in many cases, is backed by the recognition of product quality initiatives.

The Reserve also offers important attractions for visitors: traditional architecture, archaeological sites, ethnographic ensembles and elements, ethnographic museums and interpretation centres.

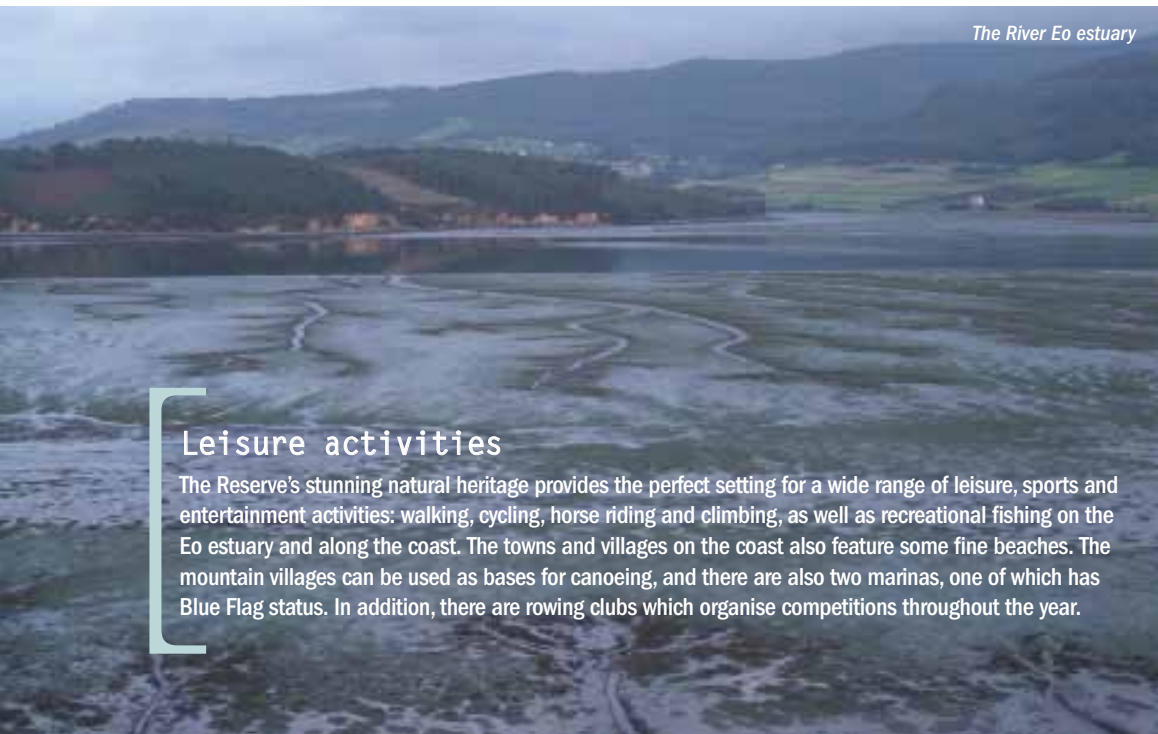


Ancient yew tree in Carballido.



Sailing

Quality craftsmanship, which has been revitalised by the growth in rural tourism in the area, also constitutes an important attraction for tourists. The Reserve also features a rich and varied offer in terms of local gastronomy.



The River Eo estuary

Leisure activities

The Reserve's stunning natural heritage provides the perfect setting for a wide range of leisure, sports and entertainment activities: walking, cycling, horse riding and climbing, as well as recreational fishing on the Eo estuary and along the coast. The towns and villages on the coast also feature some fine beaches. The mountain villages can be used as bases for canoeing, and there are also two marinas, one of which has Blue Flag status. In addition, there are rowing clubs which organise competitions throughout the year.

Asturias | Cantabria Castilla y León



* PICOS DE EUROPA

PICOS DE EUROPA

The Picos de Europa Biosphere Reserve and the National Park of the same name are situated within the Cantabrian mountain chain, forming an abrupt, rugged front between the provinces of Asturias, Cantabria and León.

The territory of the current Reserve and its surroundings has been inhabited since the Upper Palaeolithic period - in other words, for between 10,000 to 35,000 years. Palaeolithic man, an experienced hunter, has left his mark on a large number of caves that have contained bones, tools and splendid cave paintings, recently declared a World Heritage Site.

The Reserve's landscape has been shaped to a large extent by the basins pertaining to the Rivers Sella (with its affluent, the Dobra), Cares (and its tributary, the Duje) and Deva, and its division into three main massifs: Western, Central and Eastern, with their corresponding valleys.

A landscape shaped for grazing

Traditionally, the high-lying pastures of the Picos de Europa have been used by local people to allow their animals to graze in summer, moving the entire family and their essential belongings to small villages known as the *majadas*, high up the mountain. This traditional method of grazing has shaped a landscape of striking beauty, in which there is a stunning contrast between the blue skies, the white snow, the grey of the craggy limestone peaks and the green of the woodland and vast rolling meadows that border them.



Casina cow in front of the Torrecerredo mountain peak.

Date declared biosphere reserve: 10 July 2003

Surface area: 64,315 hectares (17,364 hectares Core zone, 45,545 hectares Buffer zone and 1,751 hectares Transition zone)

Location: The Regions of Asturias and Cantabria, and the Province of León, in the Castilla y León Region.

Municipalities: Amieva, Cabrales, Cangas de Onís, Onís and Peñamellera Baja in Asturias; Camaleño, Cillorigo de Liébana and Tresviso in Cantabria and Oseja de Sajambre and Posada de Valdeón in León.

Management body: The Picos de Europa National Park Management Committee

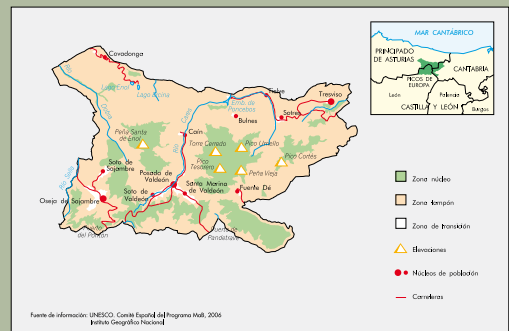
Address: c/ Arquitecto Reguera n° 13, escalera B, 1° . 33004 Oviedo, Asturias

Telephone: 985 241 412

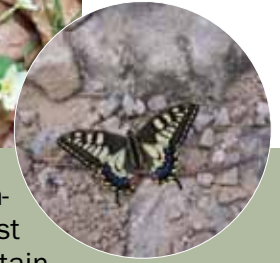
Email: picos@oapn.es

Website: www.mma/reddeparquesnacionales/picosdeeuropa

Other protection: Picos de Europa National Park (area associated with the Biosphere Reserve), Site of Community Important (SCI), Special Protection Area for Birds (SPA), Picos de Europa Regional Park (León), Monumento Natural (4) Biogeographical Region / Province: Eurosiberian /Atlantic



Natural Heritage



The wide range of altitudes (from 75 to 2,648 metres above sea level in a short distance) affords the Reserve a great diversity of landscapes, with an increase in the different traditional uses depending on the area. Mountain peaks such as Uriellu and Naranjo de Bulnes, iconic summits in Spanish climbing, are noteworthy for their spectacular beauty.

Quaternary glacialism has left its mark, with the area around the Covadonga lakes representing the most important frontal moraine that can be seen today.

Rivers have been massively important elements in the shaping of the landscape. They divide the main geographical units, such as the different massifs, creating imposing elements, such as the Cares and Sella gorges.

Among the outstanding species amongst the region's fauna we should highlight those that are most associated with the forest canopy such as the brown bear, the Iberian wolf, the red and roe deer and the very rare capercaillie. Chamois can

be seen on the mountain peaks, the largest colony in the mountain chain, as well as countless species of birds: the golden eagle, alpine chough and the bearded vulture, currently being reintroduced into the region. At higher altitudes, the white-winged snowfinch can be seen, a legacy of bygone era when the climate was much colder.

Exceptional flora

The most characteristic vegetation can be seen in the extensive beech and oak groves that spread around the foot of the mountains in the shade of the Cantabrian range. Remnants of Cantabrian mixed woodland, with a presence of numerous species (linden, ash, chestnut, maple, birch, rowan etc.) do the lower-lying land to the north of the Reserve, sharing space with hay meadows. Extensive pastures and scrub surround the base of the limestone mountains. Salmon, trout and otter are the main river species of interest, along with the many amphibians, such as the rare Alpine newt.

A last refuge for endangered fauna

The wide diversity of landscapes and flora also mean there is a richly varied fauna, including species from all stages of the food chain. The difficulty of access to certain parts of the Picos de Europa before protection was granted has allowed these species to thrive.



*Pair of roe deer
in the snow*



Cultural Heritage and Landscape

The inhabitants of the Picos de Europa have been able to adapt their work to the natural cycles, taking advantage of the production of fodder in summer. Traditionally, the herdsmen would spend spring and summer looking after their livestock on the mountainsides. One way to turn their milk into a less perishable product was to make cheese. A number of traditional local cheeses are still produced, such as Gamoneu, Cabrales, Picón, Quesucos de Liébana, Beyos and Peñamellera, with a craft industry dedicated to cheese-making springing up throughout the region.

The presence autochthonous livestock breeds which have adapted to the landscape, such as *casina* and *tudanca* cattle, *xalda* and *lacha* sheep, and the Pyrenean goats (especially the *bermeya*), ensures a significantly diverse gene pool can be maintained.

A rural architecture adapted to the territory and the landscape

Local livestock farming methods used to require the practice of *transterminance* - the seasonal droving of animals over short distances - with the herdsmen



Contrast between ice and light near Enol lake.



A fine example of a chamois on the Cantabrian side of Adara.

taking their cattle, sheep and goats to the higher pastures in late April, staying their all summer and making cheese. Some herdsmen in the Asturian part of these mountains still practice this method.

This grazing took place on the *majadas*, high pastureland dotted with the characteristic small rectangular dry-stone and red tile cabins for the herdsmen, with a lean-to roof in Asturias and a gabled roof in Cantabria and León.

PICOS DE EUROPA

BIOSPHERE RESERVES

A land of sanctuaries and monasteries

The history of the region is closely tied in with the commencement of the Christian reconquest of the Iberian Peninsula. After winning the Battle of Covadonga, near Cangas de Onís, Pelagius was crowned King, which legend says took place in the Ermita de Corona hermitage, in the Valdeón Valley in León. Special mention should be made of the number of monasteries in the Liébana Valley: Santo Toribio de Liébana, where the "Lignum Crucis" is venerated, the greatest of the Vera Cruz - True Cross - relics, and Santa María la Real de Piasca, both of which were important Benedictine abbeys when founded. We should highlight the imposing Basílica de Covadonga, neo-gothic in style and built in the late 19th century, with its striking setting and the ensemble it forms with the Santa Cueva or Holy Cave.

The Basílica de Covadonga



Socio-Economics of the Reserve



Cordiñanes, at the foot of Frierio

There are 20 small mountain villages within the Reserve, all featuring traditional stone architecture and set in splendid countryside.

The most important nucleus in the region is Cangas de Onís, in Asturias, the gateway to the Picos de Europa and point of access to the Covadonga lakes and the Santuario de Covadonga, one of the most important Marian pilgrimage centres in Spain. The Cantabrian side of the Reserve has fewer villages (most notably Fuente Dé, another of the main attractions in the Picos, with a cable car to the summit of the same name, and Tresviso), with Potes, the



Majada, Vega de la Piedra



Picón cheese

The local craft industry

Whilst extensive livestock farming and the associated local craft industry (particularly cheese-making) are still important activities, they have declined in relative importance compared to tourism, the main sector in the Picos de Europa, with between 1.8 and 2.0 million visitors each year. The state-run luxury hotels known as Paradores Nacionales (at Cangas de Onís and Fuente Dé), hotels, campsites and, above all, an outstanding range of casas rurales - rural cottages offering accommodation - can be found throughout the Reserve's villages and in the surrounding area. In La Liébana we should highlight the internationally-renowned production of orujo, the local firewater. Small-scale cheese-making operations, honey production and woodcrafts etc. can be found throughout the Reserve.

capital of the La Liébana district with 1,499 inhabitants, the centre for services in the area. In Leon, Oseja de Sajambre and Posada de Valdeón are the district capitals and the main villages in their respective valleys.

The regional gastronomy is well-suited to mountain excursions: hearty meat and bean stews such as fabada and pote asturiano, cocido de Valdeón, cocido lebaniego, cocido montañés, cabrito de los picos (with kid), all manner of cheeses, arroz con leche - a creamy rice pudding, canónigo (a typical Liébana dessert), Liébana wine, Asturian cider, Liébana orujo etc.



Sea of clouds near Ándara



Signposted footpaths.
Enol Lake

* The Reserve's contribution to sustainable development

The strict protection regulations applicable in the National Park favour the conservation of flora and fauna, as well as the geological values and the landscape in general, compatible with the traditional activities in the region, such as extensive livestock farming, so important to the upkeep of the countryside and the source of the traditional cheese making in the Picos. The development of an environmentally friendly nature tourism, which has grown in an ordered fashion over recent years, offers visitors a number of activities - walking, 4WD tours along authorised routes, horse riding, mountain biking etc. For more adventurous and experi-

enced tourists, the Picos de Europa are a legendary destination for mountain and ice climbing, with a good network of Mountain Refuges available.

The range of local craft products on offer more than meets the wishes of those who love natural produce, with quality control closely monitored.

The Picos de Europa are considered to be a veritable laboratory through which we can observe global change, and specifically, climate change, with an extensive network of control stations, as well as the development of mitigation and adaptation systems.



Wolf tracks

Projects

The Reserve has a series of projects that favour sustainable development among local people:

- * The Picos de Europa School for Herdsmen, aimed at training up young people to take the place of the current herders and conserve their legacy.
- * The development of a "Picos de Europa Biosphere Reserve" quality trademark.
- * The establishment of women's cooperatives producing local cheeses.
- * The development of courses aimed at training nature guides for the Picos de Europa, with special qualifications available to disabled people.
- * Training for the hotel and restaurant sector, promoting responsible tourism.
- * Promotion of Sustainable Tourism.
- * The development of a structured programme favouring the compatibility of wolves and extensive livestock farming.

Public use and tourism

The Reserve is one of the most popular regions among nature tourism aficionados. Between 1.8 and 2 million visitors a year are spread across the accessible parts of the Reserve which nevertheless are still able to conserve natural values. The spectacular mountain scenery and the exceptional network of footpaths attract visitors from around the world, as well as from all over Spain.

The Reserve and the National Park have an excellent Signposted Footpath Network, of a low or medium difficulty level, most of which can be walked by families with children. There are 26 short-distance footpaths and 2 long distance (GR) routes (the 27.5 km-long Senda del Ar-



cediano, through the Asturias and León parts of the Reserve, and the longer 58.6 km Ruta de la Reconquista, which takes in Asturias, León and Cantabria). Furthermore, for experienced mountaineers, the Reserve has 4 High-Mountain Routes that provide access to or link up the Reserve's Mountain Refuges.

Perhaps the most spectacular footpath, especially popular with foreign visitors, is the Ruta del Cares, almost 21 km long (if the complete path is followed) or 12 km, if only the section between Caín and Poncebos is walked, which runs parallel to the spectacular Cares River, along a ravine which at times is only a few dozen metres wide, at the foot of ravine walls that rise almost vertically over 1,500 metres to the mountain summit.

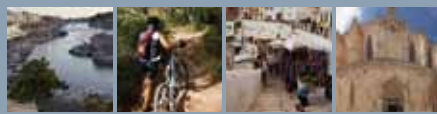


Sustainable tourism

The Reserve offers a wide range of sustainable tourism activities. The Reserve and National Park Administration have established a complete system of free Guided Routes for the summer months, which bring the natural world that much closer to visitors. For further information visit: www.reddeparquesnacionales/picos



Baleares



* MENORCA

MENORCA

The island of Menorca, in its entirety, was declared a Biosphere Reserve in 1993.

The main characteristic of the Menorcan environment is the great diversity it presents. In just 700 km², the island can offer virtually all the Mediterranean's habitats, notably its woodland, ravines, caves, wetlands, dune systems, rugged coastline and islets.

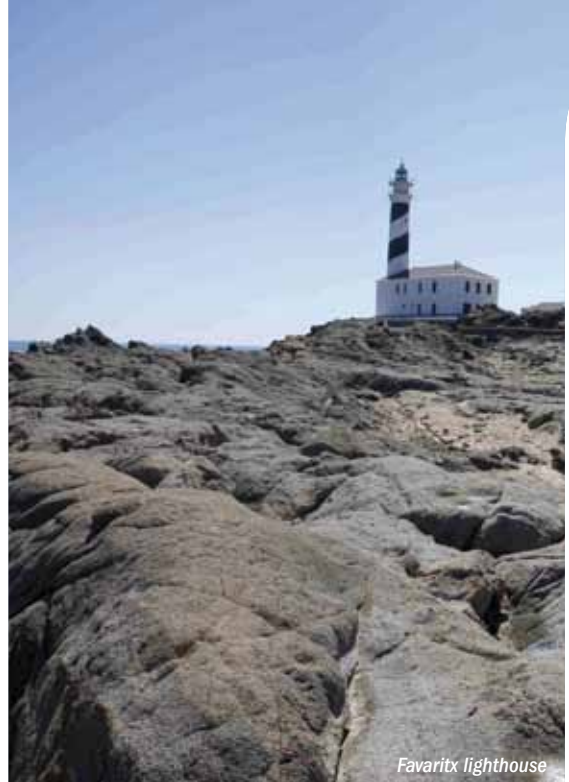
We should also make special mention of the existence of 6% of endemic flora species, some of which are only found on Menorca.

The administrative bodies with authority on Menorca are the local town councils, the Consell Insular de Menorca, the Regional Government of the Balearic Islands and the State Administration.

The island is responsible for land use policy, urban planning and inspection of the tourist sector, among other areas.

Zoning

The core area of the Reserve is the Parque Natural de s'Albufera des Grau, granted this status in 1995 and recently enlarged. The Natural Park includes a marine part (1,745 hectares) and a land part (3,438 hectares). The buffer zone includes the Natural Areas of Special Interest and the Rural Areas of Landscape Interest, although plans exist to extend this, including the rural land protected by the Plan Territorial Insular, covering 63% of the total area of the Reserve. The rest corresponds to the Transition area, which includes the urban area, some agricultural land and the areas which have been most significantly transformed. This zoning is undergoing a process of change, extending the Core area in order that it better fits the current ordinance framework.



Favariix lighthouse

Date declared biosphere reserve: 22 January 1977

Surface area: 71,186 hectares (Core zone: 7%;

Buffer zones: 38%; Transition zone: 55%)

Location: Western Mediterranean, part of the Balearic Islands archipelago.

Municipalities: 8 municipalities

Address: Plaça de Biosfera 5, 07703 Maó

Telephone: 971 356 251

Email: josep.suarez@cime.es

Website: <http://www.biosferamenorca.org/>

Management body: Consell Insular de Menorca

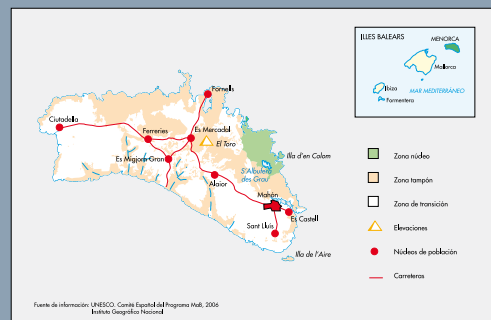
Other protection: Natural Reserves (5), Natural Park (1), Special Protection Area for Birds (SPA),

(14) Site of Community Importance (SCI),

(24) Natural Area of Special Interest (19)

Biogeographical Region / Province:

Mediterranean / Balearic



Fuente de información: UNESCO, Comité Español del Programa MAB, 2005
Biosfera, Organización Territorial



Natural Heritage

Despite its small size, the Island's climate and geological diversity means that Menorca has a great environmental variety: here one can find fine examples of the main Mediterranean habitats - ravines, caves and chasms, wetlands, dune systems, islets, low hills, and numerous open rural areas. The ravines, in particular, offer striking landscapes as well as being home to a vast number of flora and fauna species. The wetlands, both permanent and seasonal of special interest to ornithologists due to the wealth of nesting areas for birds of prey and waterfowl they offer. The core zone of the Reserve; the Parque Natural de s'Albufera des Grau is a striking aquatic environment formed by a lagoon and its surrounding area, which includes a long stretch of coast, a marine area and an islet. Among the woodland systems, three main types are worthy of note: the holm oak, wild olive and pine groves.



Biodiversity

The number of endemic species exclusive to the island, or to Menorca and Mallorca and/or the Tyrrhenian Islands, is considerably high. As regards the flora, in Menorca there are some 1,300 species of vascular plants, of which, 6% are endemic. This high level of endemism is, however, not uniform: whilst in the inland woods or the wetlands there are hardly any endemic species, in the coastal scrub and the communities that inhabit the ravine walls and cliff sides the number may be as high as 30-40%. Amongst the fauna, for example, the number of endemic species amongst the Tenebrionidae family (which includes the order of insects commonly called beetles) is 20% of all such species known in the Balearic Islands. Whilst not being endemic, special mention should also be made of the 25 species of birds of prey that inhabit the island's skies, both due to their abundance and the conservation interest they represent. 8 of these species nest on Menorca.

Cultural Heritage and Landscape



Maó port

Man's hand is perceptible in almost all corners of the island, largely as a result of the age-old farming practices which have shaped the inland areas of the island, creating a landscape mosaic that not only results in a beautiful countryside but which also guarantees great biodiversity.

The wealth of the island's cultural, architectural and archaeological heritage is also remarkable, especially prehistoric remains from the Talaiotic and pre-Talaiotic periods. Most noteworthy, however, is the extensive network of dry stone walls which still dominate the Menorcan countryside.

Menorca has developed a culture based on the use of natural resources, which have consequently been reflecting in the region.

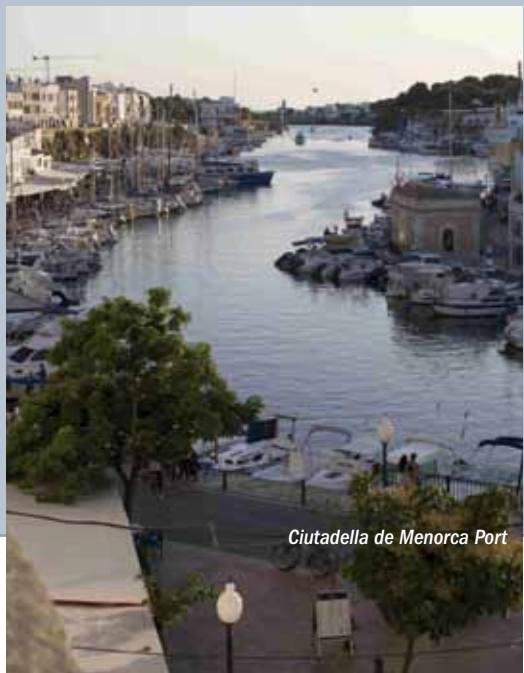
The island's landscape is a humanised one, albeit at low pressure - 10 inhabitants per km² - and with a great balance with the natural environment. As in other areas - the difference here being the element of permanence - rural activities undertaken using locally available building materials, and their extensive usage characteristics, have contributed greatly to the upkeep of a stable landscape in terms of its physiognomy yet diverse in its biological conditions.

MENORCA

BIOSPHERE RESERVES



The Cala de Trebalúger cove



Ciutadella de Menorca Port

* Socio-Economics of the Reserve



Sa Mesquida Beach

It has been said that Menorca is an island made with man in mind. Factors such as the well-balanced order of the traditional human settlements, and the carefully attended to countryside both contribute to this perception.

This feeling, although intuitive, leads one to view the island as having a certain load-bearing capacity and, to some extent, strengthens the bonds that Menorcans feel for their island, helping to understand the social complicity behind the initiatives to protect its natural heritage.

According to the indicator of human pressure as calculated by the Socio-Environmental Observatory of Menorca (OBSAM), the population during the winter months is 60,000 inhabitants (2004), whilst the maximum population figures are reached in summer, with almost 175,000 people between tourists and residents. Before the 2003 Insular Territorial Plan was drawn up and approved, the development of municipal urban planning calculated that the island's maximum capacity was 400,000 people. After the plan was passed, the eight municipal plans were adapted to a Menorcan



Cales Fonts, Es Castell

Boom in tourism

Until the 1980s, the Menorcan economy was relatively well-balanced between two sectors: agriculture (milk and cheese production) and industrial (mainly costume jewellery and shoe making). From then onward - somewhat behind the rest of the Balearic Islands - Menorca experienced a boom in mass tourism aimed at those seeking "sun and sand". The number of tourists began to exceed a million visitors a year, resulting in a land use that was difficult to control, with environmental impact as predictable as it was negative: increased water consumption, a significant increase in refuse, an alteration of the traditional landscape etc. Nevertheless, part of the agricultural and industrial activity still survives, albeit somewhat precariously, and Menorca's countryside continues to be noticeably distinctive, in the sense it has changed less than its neighbouring islands.

model of more sustainable socio-economic development, reducing the island's potential capacity for the coming 10 years to slightly above 200,000 (OBSAM, 2003).



The Reserve's contribution to sustainable development

* The representative nature of ecological systems

Amongst the systems associated with the land environment we should highlight: Well-conserved holm oak groves (climacic forest), wild olive and pine woods, and areas of scrub, mainly heather and dog rose, rock with natural vegetation, pastureland and agricultural areas.

Associated with the marine environment:

Coastal shelf, coastal islets, ports and harbours and traditional salt flats.

* Importance in the conservation of biodiversity.

The Reserve has a high proportion of endemic taxa due to its isolation (almost one hundred species endemic to the Balearic Islands of which, approximately, 40% are exclusive to Menorca), constituting a rich gene pool.

As far as the marine environment is concerned, the Reserve is home to one of the finest and best-conserved marine communities in the Western Mediterranean.



Albufera des Grau

* Possibility for sustainable development on a regional scale

Its isolation, extension and the presence of its own administration all facilitate organisational aspects and development. A recent study has estimated Menorca's Ecological Footprint as 2.4 whilst Mallorca's is >6.

Awareness raising among local people, and the wide consensus between economic agents and political forces regarding the sustainability of development, facilitating decision taking.

The island's main economic activities are susceptible to being compatible with conservation.

* Resource use and human activity management and mechanisms.

There is a Natural Resource Ordinance Plan drawn up to cover the Core zone, overseen by the Balearic Islands Government Regional Council for the Environment (regional administration).

The 2003 Insular Territorial Plan represents the main element of territorial planning on the island. Authority for the application falls on the Consell Insular de Menorca.



Punta Nati Lighthouse

Public use and tourism

The appearance of mass tourism in Menorca began late compared to the Balearic Islands. Nonetheless, in the 1980s and 1990s Menorca ceased to be an industrial island and became a tourist destination, today receiving over a million visitors a year, with a marked increase in summer.

Tourism represents almost 80% of the island's economy.

The seasonal aspect has a marked impact on Menorca's natural resources and on mobility, meaning that certain infrastructures have needed to be redesigned for specific needs, with a subsequent knock-on effect on maintenance and environmental impact over the rest of the year.

Public institutions have undertaken awareness-raising campaigns aimed at beach goers and water-sports enthusiasts, to inform them of the values of coastal ecosystems, with a view to improving conservation making people more aware of the issues at stake.



Camí de Cavalls

Recently a number of walking cycling and horse-riding routes have been introduced, as well as the promotion of natural tourism in order to observe the island's bird and plant life.

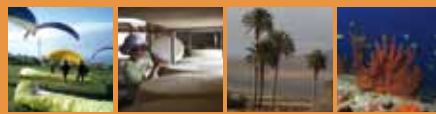


Artrutx lighthouse



The city of Maó

Canarias



- * EL HIERRO
- * FUERTEVENTURA
- * GRAN CANARIA
- * LA PALMA
- * LANZAROTE

EL HIERRO

El Hierro is the westernmost and smallest island of the Canary Islands archipelago. Volcanic in origin, it presents a rugged, abrupt relief, with steep slopes and the majority of the coastline marked by rocky cliffs. The island's mountains reach a height of 1,501 m (Pico de Malpaso).

Geographically, El Hierro is shaped like an inverted "Y", the central part of which is formed by a plateau, with the majority of the coast consisting of stiff cliffs.

The climate is conditioned by its proximity to the tropics and influenced by trade winds, which, combined with its altitude, results in a number of climatic zones, with rainfall that ranges from 150 mm in southern coastal areas to 750 mm in the mid-north of the island. The richness of marine life on the coast is noteworthy, with the area visited by divers from around the world.

It is worth mentioning that El Hierro features Spain's southernmost point, Punta de La Restinga, and its westernmost, Punta de Orchilla (formerly known as Meridiano Cero).



El Hierro, a water laboratory of world importance

Date declared biosphere reserve: 22 January 2000

Surface area: 29,600 hectares [26,871 hectares on land], (Core zone: 3.95%; **Buffer zone:** 55.81%; **Transition zone:** 40.24%)

Location: Island of El Hierro, Canary Islands.

Municipalities: Valverde, Frontera and El Pinar

Management body: Cabildo Insular of El Hierro, Department of the Environment, Refuse and Recycling.

Address: C/ Trinista 1, 38900 Valverde, Isla de El Hierro

Telephone: 922 55 00 78 ext. 1922

Email: biosfera@el-hierro.org

Website: www.elhierro.es

www.elhierro.travel

www.meridianocero.eu

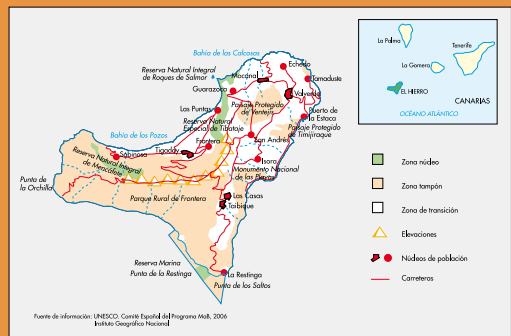
Other protection: Fully Protected Nature Reserve

(2), Special Marine Reserve, Special Protection

Area for Birds (SPA) (3) Natural Monument,

Protected Rural Landscape Park (2)

Biogeographical Region: Macaronesia





The El Hierro giant lizard

Geologically, El Hierro is of volcanic origin, as are the other islands in the Canary Islands archipelago. The landscape is noteworthy for its lava flows, craters and vegetation associated with this type of substrata.

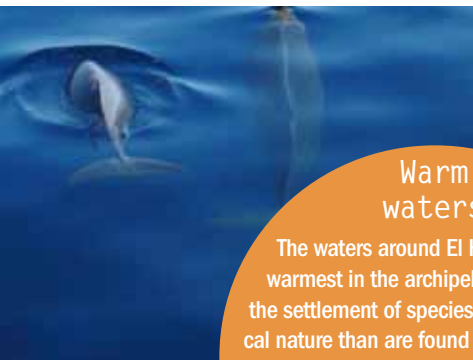
The main ecosystems are distributed as if they were steps: coastal scrub of succulent plants such as the balsamic and Canary Island Spurge, thermophilic forests of savin juniper, *monteverde* or green uplands, fir and heath and sporadic laurel woods and, finally, Canary Island Pine groves.

There are numerous endemic species of flora and fauna. Among these we should highlight the El Hierro giant lizard (*Gallotia simonyi*), whose situation continues to recover and which is being reintro-

duced into its original habitat. Among the endangered species are *Bencomia sphaerocarpa*, a shrub unique to El Hierro and which is considered to be in danger of extinction, *Cheirolophus duranii*, a species endemic to El Hierro also catalogued as threatened by extinction and *Silene sabinosae*, another plant exclusive to the island.

Other endangered species are: the laurel pigeon, Wilson's storm-petrel and the Bulwer petrel.

The scarcity of the ocean shelf around the island means that sea depth increases sharply just a short distance from the coast, favouring the presence of cetaceans (the bottlenose dolphin - *Tursiops truncatus* among others) and pelagic fish, as well as providing a rest and feeding area for various sea turtles (the loggerhead turtle - *Caretta caretta* and the green sea turtle - *Chelonia mydas*). There is a wealth of marine mammals, at least twelve species, with pride of place going to two of the deepest divers: Blainville's beaked whale and Cuvier's beaked whale, which can dive down to a depth of 200 metres, staying below the surface for up to an hour and a half. El Hierro is one of the few places on earth where these species are known to be found all year round.



Warm waters

The waters around El Hierro are the warmest in the archipelago, favouring the settlement of species of a more tropical nature than are found around the other islands or which are much rarer there, such as the brown lobster (*Panulirus echinatus*), the spotted burrfish (*Chilomycterus atringa*), and the scrawled filefish (*Aluterus scriptus*) etc.



Cultural Heritage and Landscape



Guinea Ecomuseum

There are countless vestiges of the primitive inhabitants of the islands, the Bimbaches or Bimbapes. Rock carvings, shell middens and the remains of cabins represent an open book on the lives of these Pre-Hispanic islanders.

In the early 15th century the Castilian conquest of the Archipelago began, led by French explorers Jean de Béthencourt and Gadifer de la Salle. The islands of Lanzarote, Fuerteventura and El Hierro were the first to be brought under domination. The Bimbaches did not offer much resistance, with the island colonised by peasants from Eu-



Ferns in a laurel wood

Tradition and culture

Every four years, in July, one of the island's most important events takes place: the descent of the Virgen de los Reyes. This has been celebrated since the 18th century, with local people carrying the image of the Virgin Mary along a 40-kilometre route.

EL HIERRO

rope who wasted no time in mixing with the local population.

Archaeological heritage

- * An abundance of archaeological sites
- * Important rock carvings
- * Indigenous settlements
- * Tombs in hollows
- * Sacrificial offerings
- * Shell middens
- * Archaeological finds in karstic caves
- * The El Julan archaeological site

Ecclesiastical and religious heritage

- * A wealth of fine religious architecture
- * Churches, hermitages, shrines
- * Altarpieces, paintings and gold & silverwork
- * Sacred stones

The island's archaeological heritage is of huge interest (with El Julan a special area of importance), as is its cultural legacy (the Poblado de Guinea, one of the oldest settlements on the island) and ecclesiastical culture, with its artistic and ethnographic wealth, due to the way that traditions, folklore and crafts have been maintained on El Hierro.



Petroglyph

BIOSPHERE RESERVES

Socio-Economics of the Reserve



Fisherman on the El Hierro coast

The island has a population of 10,892 people. Throughout its history it has undergone significant variations, especially the demographic drop experienced between the 1940s and 1970s, due economic hardship and lengthy spells of

drought. This tendency has been reversed over recent years, to a large extent thanks to the return of many emigrants who had been living in Venezuela.

100% Ecological

Under the auspices of the Cabildo Insular local government, and to mark the 10th anniversary of the declaration of El Hierro as a Biosphere Reserve, a commitment was presented and signed ensuring that El Hierro is 100% ecological and self-sufficient in terms of crop and livestock farming, fishing and food within eight years.

The majority of the population work in the service sector, followed by construction, industry, farming and fishing. Livestock farming is mainly limited to sheep and goats, with these the main producers of milk and dairy produce, especially the local cheeses.

La Restinga is the islands main fishing harbour, with boats leaving to fish the Mar de Las Calmas - the Sea of Calm.

As far as tourism is concerned, the island's activities, far removed from mass tourism, differ considerably from the rest of the Archipelago. Beaches are hard to come by, and thus the focus is rural and nature tourism. There is great potential for sports such as paragliding and scuba diving, due to spectacular mountain scenery and the trade winds, and the island's crystalline waters.





The Reserve's contribution to sustainable development

Although today the island is well-connected, transport-wise, its traditional isolation has favoured the survival of traditional crop and livestock farming and fishing. This has allowed the island to develop without endangering the preservation of the natural environment. El Hierro still conserves an important archaeological and cultural heritage, elements which have also been recognised in the declaration of the island as a Biosphere Reserve.

Since 1997, the El Hierro Cabildo local government has implemented an ambitious sustainability project, commonly agreed upon with all social agents and institutions. From this moment onward, there has been a move to modernise the cooperative segment of the primary sector, as well as energy and water self-sufficiency, through the El Hierro 100% Renewable Energy Project, with the main thrust the building of a hydro-wind plant, a review of urban planning, rural tour-

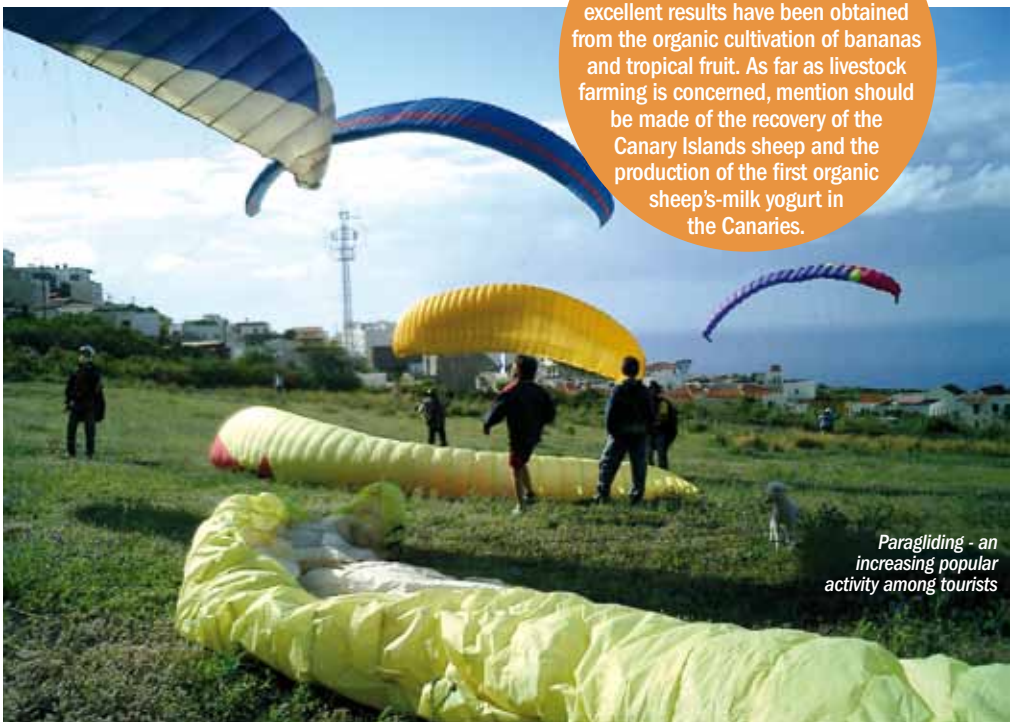


ism, organic crop and livestock farming, Leader initiatives within the rural environment, the Refuse Disposal Plan, among other commitments and courses of action, and more recently sustainable transport and mobility in compliance with the “zero emissions” commitment for the El Hierro Biosphere Reserve.

www.meridianocero.eu

Organic farming

With over 20 years of experience, excellent results have been obtained from the organic cultivation of bananas and tropical fruit. As far as livestock farming is concerned, mention should be made of the recovery of the Canary Islands sheep and the production of the first organic sheep's-milk yogurt in the Canaries.



Paragliding - an increasing popular activity among tourists

Public use and tourism

As well as the wealth of natural values on the island, we should highlight El Hierro's archaeology, its rich folklore, a varied and unique local craft industry and a delicious local cuisine based on organic products from El Hierro.

There is an extensive and varied network of footpaths of differing levels of difficulty.

Among these, there is the long distance GR 131 path known as Camino de la Virgen, which runs through the heart of the island from a high point, 1,501 above sea level. The path takes in points of interest such as the Virgen de los Reyes Hermitage, the Cruz de los Humilladeros, Pico Malpaso, the highest peak on the island, and Puerto de la Estaca.

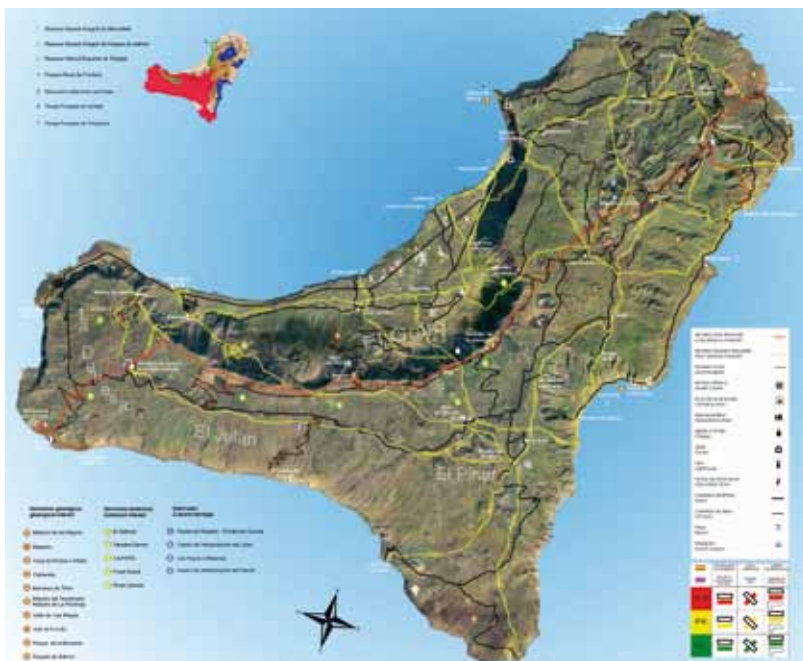
Another point of interest on El Hierro is the sabinar the savin juniper grove - on the western side of the island, where the shrubs have been shaped by the wind and the unique climatological conditions over the centuries.

Other noteworthy footpaths include the Camino de Jinama, Camino de Sabinsa, and the Ruta del Agua, recently created in the municipality of Valverde.

A wide range of accommodation can be found, far removed from that of mass tourism, where the values that predominate are proximity to nature and local customs, gastronomy and culture.

Special mention should be made of the island's cuisine, with quality products such as the quesadillas, a sweet whose main ingredient is a local cheese; the Protected Designation of Origin products, such as the local wine and herreño cheese, and freshly-caught fish accompanied by the typical papas arugadas or jacket potatoes, and traditional sauces such as mojo rojo and mojo verde etc.

Official El Hierro tourism website:
<http://www.elhierro.travel/>



FUERTEVENTURA

The island of Fuerteventura, covering 1,660 km², is the second largest in the various archipelagos that make up Macaronesia.

The island has a strong regional character which, due the specific nature of its geological characteristics and its extensive natural heritage, which emerges from the aridity and the presence of a rich, diverse marine environment.

The mark that the island makes on the Macaronesia Region is determined by its proximity to Africa, whose coast is only 52 miles to the east. This close geographical relationship to the African continent defines one of its key characteristics, its extreme climate, making it one of the largest desert and semi-desert areas of the European Union. The majority of Fuerteventura's west coast, stretching over 100 km, is virtually untouched, making it one of the best-conserved parts of the Canary Islands' coastline. Another striking characteristic is the fact that Fuerteventura is the oldest island in Macaronesia, meaning that the phenomena which led to the formation of the archipelago can be observed here, making it one of the best geo-paleontological observatories in the region.



Date declared biosphere reserve: 27 May 2009

Surface area: 354,288 hectares. Core Zone: 60,517 ha (36.35 % of the island's land area); 13,785 hectares of which is marine area (7.34% of the marine surface). Buffer zone: 47,062 hectares (28.27% of the island's land area); 150,793 hectares of which is marine area (80.28 % of the marine surface). Transition zone: 58,873 hectares (35.34 % of the island's land area), 23,258 hectares of which is marine area (12.38% of the marine surface).

Location: The Island of Fuerteventura. Canary Islands

Municipalities: Antigua, Betancuría, La Oliva, Pájara, Puerto del Rosario and Tuineje

Population: 97,859 inhabitants

Management body: Cabildo de Fuerteventura, C/ Lucha Canaria 112, Puerto del Rosario 35600.

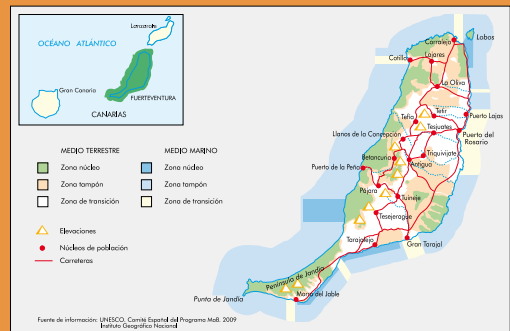
Telephone: 928 852 106

Website: www.fuerteventurabiosfera.es

Mail: Tony@canariasmedioambiente.com and tmartin@cabildofuer.es

Other protection: Natural Parks (3), Rural Park (1), Natural Monuments (4), Protected Landscapes (2), Sites of Scientific Interest (1), Ramsar International Convention wetland. Special Areas of Marine Conservation [SAC](3), Sites of Community Importance [SCI] (13), Special Protection Area for Birds [SPA] (5)

Biogeographical Region: Macaronesia





Houbara bustard

The Reserve features a high number of endemic species due to the island's geographical isolation and the peculiarities of its climate. Of the 721 taxa that constitute Fuerteventura's vascular flora, 42 are species endemic to the Canaries and 15 exclusive to the island. At least 1 species of fungus, 7 lichen and 5 bryophytes are similarly endemic.

As far as the fauna is concerned, the stars here are the invertebrates, with 1,771 species, of which 498 are endemic to the Canary Islands, with 120 exclusive to the island. 6 vertebrate species are endemic to the Canary Islands, with special mention due to the colonies of Houbara bustard, the largest found anywhere, and *Neophron percnopterus*, a Canary Islands subspecies of the Egyptian vulture which only survives today in Fuerteventura. As far as the marine fauna is concerned, we should highlight the large colonies of sea birds, the 22 species of cetaceans and 4 sea turtles, as well as a vast array of fish and marine organisms. The island is also home to autochthonous species of goat, donkey and camel (the dromedary), as well as the Bardino dog.



The Atlantic spotted dolphin



Cultural tradition



Cultural Heritage and Landscape

The Island conserves a multitude of cultural landscapes and an extensive architectural heritage, generally associated with the rural world.

Fuerteventura's arid landscape has largely been shaped over the centuries by farmers, adapting to a harsh environment, characterised by the low fertility of the soil and the climate. Much of the island's countryside, especially those areas where the natural features such as the plains and ravines remain, unique cultural landscapes of aridity, which have miraculously survived to the present day. The gavias,

nateros and cadenas, traditional water-gathering systems, are ideal for the practice of conservation agriculture, age-old, sustainable methods of utilising nature. Alongside these manifestations, there is also a rich architectural heritage, with the islands windmills and the traditional livestock farms known as gambuesas or resguardos deserving special mention, as well as other elements such as the lime kilns or the coastal salt flats. One can visit 80 Assets of Cultural Interest and 13 museums dedicated to a variety of areas (salt, volcanology, agriculture, fishing, archaeology and ethnography).



Island landscape



Products

The most important traditional product on the island is the majorero cheese, granted Protected Designation of Origin status and an award-winner at a number of international events. Among the horticultural produce, the local tomatoes, prickly pears and figs take pride of place. The wide variety of fresh fish available should be highlighted, especially the traditionally line-caught fish. Goat and a hearty stew known as puchero complete the island's gastronomic picture. As is the case with the other islands, the traditional red and green mojo sauces, and the jacket potatoes known as papas arrugadas accompany all local dishes. Among other important crops we should also mention aloë.

Fuerteventura has gradually lost its position as an agricultural area, due to the periodic droughts and the mass exodus they provoked. Since the last third of the 20th century, Fuerteventura has embarked upon a new economic phase based on tourist development.

Fuerteventura's size and its late inclusion in the mass tourism boom have meant that the island's urban development has been concentrated on three main areas: north, central and south, whilst majority of the island and practically all the coast have escaped this urban development. This has meant that today, Fuerteventura is an island with a low density of land use.

As a result, Fuerteventura's Cabildo (lo-

cal government) has initiated a policy of promoting sustainable development, through the application of planning restrictions regarding tourist developments. A series of policies focusing on greater quality /less quantity have been proposed, with new future scenarios planned for the current plans that outline responsible tourism within the World Network of Biosphere Reserves. Even so, aspects relating to energy generation, refuse disposal, urban planning and unsustainable fishing practices represent an important challenge yet one which is replete with opportunities that are a perfect fit to the principles that inspire the concept of a Biosphere Reserve, reflecting an ambitious action plan backed by all the island's institutions and social agents.



The Reserve's contribution to sustainable development

Due to its geo-paleontology, the Reserve is a privileged observatory for the study of phenomena of global change, especially the planet's paleoclimate, as well as the fight against desertification, serving as a laboratory in which to observe sustainability and global change. The waters that surround the island, today given Biosphere Reserve, are considered biodiversity hotspots. The commitment shown in ensuring the establishment of Macaronesia as a Cetacean Protection Area, agreed upon at a recent WATCH meeting, has made the region a place of reunion and reflexion for conservation in the Atlantic. As far as economic development is concerned, the commitment to containing the growth of tourism and developing policies of sustainability has made Fuerteventura the only Reserve that is an associate member of the United Nations World Tourism Organization (UNWTO).

"Fuerteventura: the Renewable Island". The challenge, in the medium term, is to implement policies promoting mobility and energy saving as well as the development of clean technology in the production of recycled water.

Fuerteventura's adhesion to UNESCO's Starlight programme aimed at protecting the night sky puts the island at the forefront of recovering the rich universal heritage of our starry skies.

Strengthening the traditions and applying the criteria of sustainability in primary sector activities are the objectives which will have a significant repercussion on people's quality of life. The Biosphere market, solar-powered cooling systems for fishermen's associations and a composting plant, are other steps that have been taken on the path toward a sustainable island.



Projects

Projects and programmes, such as:

- * The reintroduction of the loggerhead sea turtle *Caretta caretta* in the Canary Islands
- * The recuperation of the Canarian Egyptian vulture
- * The conservation of steppeland birds such as the Houbara bustard and the cream-coloured courser
 - * The fight against the use of poisons in the environment
- * The recuperation of the island's vegetation
- * The declaration of Fuerteventura's west coast as a National park are all examples of active conservation being sought within the Reserve.

Public use and tourism

The island has a network of 13 museum centres among which the following deserve special mention: The Museum of Traditional Fishing in the Tostón Lighthouse, the Carmen Salt Flats - Museum of Salt, the Llano Cave (volcanology), the Poblado de Atalayita settlement, the Museo del Grano, the Museo de la Silla, the Alcogida Ecomuseum (ethnography) and the Betancuria Archaeological Museum.

The Lobos Natural Park, the area dedicated to the Monk Seal, the Jandía Marine Life Interpretation Centre at the lighthouse on Jandía point, in the Natural Park of the same name and the Morro Velosa centre-panoramic viewpoint in the Betancuria Rural Park.

17 footpaths have been created, covering the areas of greatest interest, including a long distance footpath that goes from the north of the island to the south.

In support of research on the island, the Cabildo local government has opened



Palm trees punctuate the horizon.

the La Oliva Biological Station. In the field of environmental education, the local government have opened the Parra Medina Natural World Education Centre. There is also an extensive network of duly registered rural accommodation spread throughout the island interior, as well as other tourist accommodation awarded the “Q” for Quality and Responsible Tourism.

website: www.fuerteventurabiosfera.es



Salt flats

GRAN CANARIA

Gran Canaria has an extraordinarily rich natural heritage, despite its relatively small size. The uniqueness of its ecosystems, high degree of endemism as well as its flora and fauna, which include exclusive species, and its geology have led to the declaration of numerous natural protected areas across the island. There are currently 33 such protected areas, virtually all of which are part of the EU's Natura 2000 network, representing approximately 43% of the island.

Zoning

Core zone: The Inagua Integrated Nature Reserve and the Güigüi Special Natural Reserve. Here the objective is conservation and research.

Buffer Zone: The Nublo Rural Park, the Tamadaba Natural Park, the Pilacones Natural Park and a small 500-metre strip near Güigüi. Environmentally-friendly activities are being developed, as are the traditional use of natural resources, research, training, leisure, rural tourism and the manufacture of local produce.

Transition Zone: This includes part of the municipalities of Agaete, San Bartolomé de Tirajana, Mogán, Artenara, San Mateo and all of the Aldea de San Nicolás Valley. As far as the marine environment is concerned, it also includes the area from Punta de Maspalomas to the *Dedo de Dios* rock formation. This area provides the main support for the island's economic activities and where the bulk of its population can be found.



View of the Reserve

Date declared biosphere reserve: 29 June 2005
Surface area: 100,459 hectares [65,595 hectares on land], (Core zone: 7%.

Buffer zone: 33%. **Transition zone:** 60 %)

Location: Island of Gran Canaria. Canary Islands

Municipalities: 7

Management body: Cabildo de Gran Canaria Environmental Department

Address: Agustín Millares Carlo, Edificio Administrativo I

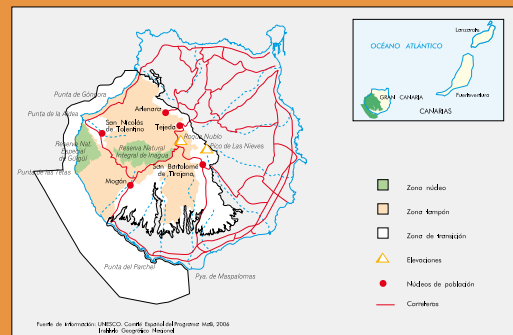
Telephone: 928 219 465

Email: scaro@grancanaria.com

Website: www.grancanaria.com

Other protection: Natural Park (2), Rural Park Natural Monument (3), Integrated Nature Reserve Especial, Protected Landscape Nature Reserve, Site of Community Importance (SCI), as a Special Protection Area (SPA).

Biogeographical Region: Macaronesia



Natural Heritage



The Reserve's marine environment



The island of Gran Canaria is a volcanic land mass which emerged from rifts in the oceanic crust 14.5 million years ago, coinciding with the first underwater volcanic eruptions. The Reserve features the island's oldest rocks.

The most representative vegetation of Macaronesia's complex biogeography can be found on the Reserve. The mountain ridges and southern slopes are covered by Canary Island Pine groves, whilst the northern side features relic laurel woodland and Myrica-Erica scrub. A thermophilic ring runs around the whole island at medium-low altitudes, whilst from the coast to a height of 300 metres above sea level the landscape is dominated by arid and hyper-arid ter-

rain, where Canary Island and balsamic spurge are the principal elements. The ravine walls and valley environments feature palm groves and other characteristic vegetation of the region (saltcedar, birch and willow groves).

The Reserve's marine environment represents the part of the island with the largest continental shelf, on the Mogán coast. The Reserve includes the area of greatest productivity amongst the island's waters, with large banks of Neptune grass, a basic ecosystem in the marine food chain.



Blue chaffinch

1,094 species of animals

There is a high degree of endemism amongst the island's flora - of the 600 taxa catalogued in the area, 95 are endemic to Gran Canaria, 101 endemic to the Canary Islands archipelago and a further 32 species endemic to Macaronesia. Over the past five years, 5 new species have been noted, among them the Gran Canaria drago, *Dracena Tamaranae*. The Reserve is also home to 1,094 catalogued species. 543 of these are endemic to the Canary Islands, 52% of its fauna.



The culture of water

The culture of water, an intangible asset, highlights the popular knowledge of the various roles that water can play, or its use in popular medicine: from the numerous infusions based on local flora, known as *agua guisada* - stewed water - to the mineral-medical waters, known as *aguas agrias* - bitter water, whose properties were known in ancient times; the interpretation of atmospheric phenomena, such as the signs known as *aberruntos*, or religious beliefs.

* Cultural Heritage and Landscape

The Reserve includes an exceptional legacy from pre-Hispanic times, with excellently conserved archaeological sites amidst a landscape that evokes the past: the Poblado de Acusa settlement and the Cuevas de Caballero caves in Artenara; Bentayga, or the Cueva del Rey caves in Tejeda; the Poblados de Caserones settlements at San Nicolás; Castillete de Tabaibales in Mogán; the Maipez Necropolis in Agaete and the Arteara Necropolis in San Bartolomé de Tirajana, the largest indigenous cemetery in the Canary Islands, with over 800 tubular dry-stone tombs, in whose interior was the chamber in which the body was placed.

The architectural heritage features ancient settlements, dwellings with painted rooms, funerary caves, cave dwellings,

magic-religious spaces, granaries, funerary tumuli and necropolises.

Traditional fiestas take those present back to pre-colonial times, such as the Charco (“Pool”) festival in San Nicolás de Tolentino centred around a coastal wetland known as La Mar Ciega (“The Blind Sea”) which revives the ancient tradition of *embarbasca*, fishing in tidal rock pools using the bitter latex from local spurge as a narcotic, dulling the fishes and allowing them to be easily caught.

The Rama or “Branch” fiesta in Agaete also merits mention. This was a pre-Hispanic rainmaking ritual in which Gran Canaria’s indigenous people carried branches down from Tirma mountain to beat the sea with them as they sang and prayed.



On the edge



Harvesting

Socio-Economics of the Reserve



Local economy

Terrace farming, lime kilns, roof-tile furnaces and tar ovens, and a dense network of roads and footpaths, used in the past to move about the interior of the island. Special mention should be made of the structures built to service the local economy.

The Reserve is dotted with idyllic traditional settlements whose population stands at 18,322, approximately 1% of the island's population. The countless structures that are the legacy of traditional society are of incalculable value, used by those who lived on the Reserve until around the 1960s to make use of local natural resources.



Local cuisine

The upkeep of traditional trades is another of the Reserve's revitalising cultural service elements. Examples

of this are the Canary Islands knife and traditional basket weaving and pottery. Potters' workshops used to be in caves excavated from volcanic tufa, with their work fired in stone kilns or in the open air.

Livestock farming tends to be of a traditional nature, given the mountainous terrain.

Here we should highlight the herds of sheep which are driven about the island in search of the best grazing, whose milk is used in the locally made cheeses, and the *cochino negro* - an autochthonous breed of black pig.

Export farming, a highly technical operation, is located between sea level and an altitude of 300 metres, with production focusing on tomatoes, bananas, sub-tropical fruit, peppers, flowers and ornamental plants.

Farming for the local market, located between mid and high altitudes, centres on fruit, vegetables, potatoes and cereals.

CURRENT DISTRIBUTION OF THE RESERVE'S POPULATION

Agáete	395	2,10%
Artenara	1.357	7,50%
Mogán	2.905	15,80%
S. Bartolomé de Tirajana	3.255	17,70%
S. Nicolás	8.089	44,10%
Tejeda	2.351	12,80%
S. Mateo	0	0,00%
Total	18.322	100%

Municipalities - Population within the Biosphere Reserve - % of the total population



The Reserve's contribution to sustainable development

The Reserve includes 60 large dams, with a storage capacity of some 76.8 cubic hectometres, with the Soria dam, with a storage capacity of 40%, the largest. Associated with this dam, as with others at a lower altitude (Las Niñas and Chira), a reversible hydroelectric plant is planned, due to have an installed capacity of 170 MW, which will allow excess renewable energy generated on the island to be stored. As far as agriculture is concerned, there are a number of interesting initiatives aimed at recovering traditional crops such as prickly pears, guava, figs, almonds and olives, as well as coffee in the Agaete valley, virtually the only place it is grown in the Canary Islands. Organic farming accounts for an area covering 148.9 hectares, representing 17.4% of organic cultivation in the Canaries.

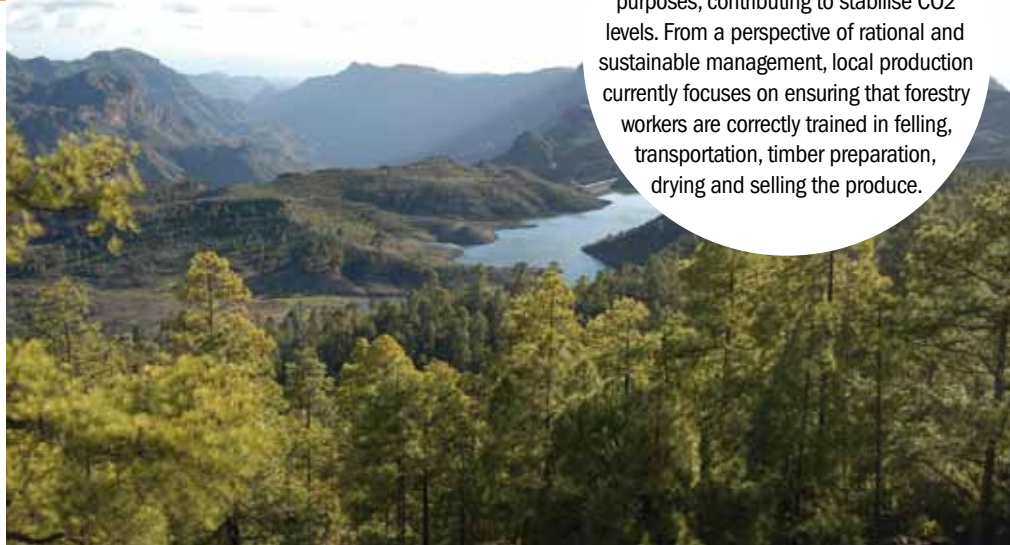
In order to recover the seagrass, certain invasive species such as the long-spined sea urchin are being eliminated.

The Canary Islands Botanical Garden has undertaken a research project, financed by the Ministry of the Environ-



ment and Rural and Marine Affairs, under the title “Development of a molecular barcode for the Gran Canaria Biosphere Reserve”

In its role as a research body, the Viera y Clavijo Canary Islands Botanical Garden is associated with the Spanish National Research Council (CSIC), and has a UNESCO chair dedicated to the study of Macaronesian and West African flora.



Woodland

Woodland in Gran Canaria is for conservation rather than forestry purposes, contributing to stabilise CO2 levels. From a perspective of rational and sustainable management, local production currently focuses on ensuring that forestry workers are correctly trained in felling, transportation, timber preparation, drying and selling the produce.

Public use and tourism

The Reserve has a number of leisure activities on offer, including active tourism in a natural setting, hiking, sport and nature and recreational activities.

The footpaths link the Reserve's public facilities to a total of 20 recreational areas and authorised camp sites. There are also 3 Nature Learning Centres, one in the Inagua core zone, recognised for the quality of its environmental education, with another in the "La Palmita" buffer zone, in Agaete, offering splendid accommodation, recreating the pre-Hispanic way of life in a stunning cruciform building. The offer is completed with two hostels, Chira and Cortijo de Huertas, with a series of wood cabins, a main kitchen area and an activities room. The average number of visitors per year stands at 250,000, meaning that the Biosphere Reserve acts as the lungs of the island, with its population of 800,000 inhabitants, with peo-



ple speaking of another Gran Canaria, with its low density of population, far removed from the mass tourism model in the south of the island. In this sense, the Reserve is close to the island's tourist areas: the number of visitors to Gran Canaria currently stands at 2.5 million people a year. The reserve plays a key role as a complementary active and nature tourism attraction, contributing to provide added value to package holidays. La Reserve has 2 rural hotels and 37 holiday houses, representing 42% of the island's rural tourism.

Footpaths

The Biosphere Reserve features a 1,330 km-long network of footpaths, with 193 paths catalogued. For all of these there are pamphlets containing maps, information and photos of the routes.

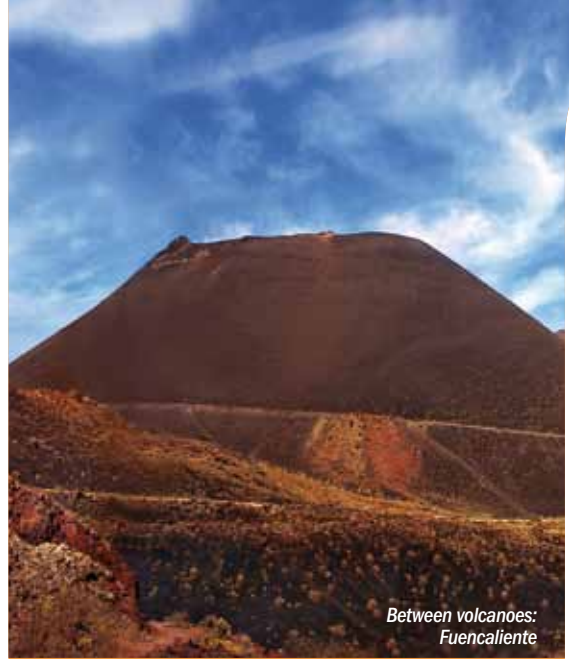


LA PALMA

La Palma was the first island in Spain to receive the international recognition through its designation as a Biosphere Reserve for part of its territory - La Finca El Canal and Los Tiles, (1983). This area covers 511 hectares, and includes the relic woodland dating back to the Tertiary Period, with outstanding species of flora such as til (*Ocotea foetens*), Madeira mahogany (*Persea indica*), laurel, small-leaved holly (*Ilex canariensis*), lemonwood (*Calycophyllum multiflorum*), plumed cockscomb (*Celosia argentea*) and laurestine (*Viburnum rigidum*) among others. En 1998, the declared territory was extended, including the north-eastern arc of the island, to now cover a total of 13,931.15 hectares (19.67% of the island).

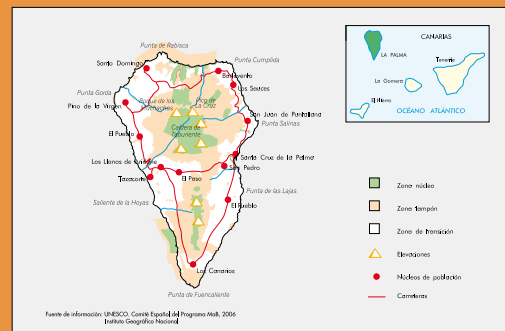
On 6 November 2002, the entire island was declared a world Biosphere Reserve, also including two Special Marine Conservation Areas. In one of these the Marine Reserve can be found.

Within the context of the new territory a large number of the habitats of the Canary Islands and the Macaronesia Bio-Geographical Region are represented, with all the diversity provided by the transition from the coast to the mountain peak, and with the role of the inhabitants as artifices of a new model of development integrated within the Biosphere Reserve's objectives of special importance.



Between volcanoes:
Fuencaliente

Date declared biosphere reserve: 21 April 1983 (El Canal and Los Tiles).
First extension: 15 December 1997 (Los Tiles).
Extension to include the whole island: 6 November 2002
Surface area: 80,702 hectares [70,832 hectares on land]
Core Zone: 17 %; **Buffer zone:** 40%.
Transition zone: 43%.
Location: Island of La Palma Canary Islands
Municipalities: The island's 14 municipalities
Management body: Consorcio*
Address: Calle Francisco Abreu n^o9
Telephone: 922 415 417
Email: info@lapalmabiosfera.es
Website: www.lapalmabiosfera.es
Other protection: National Park - Natural Park (2), Fully Protected Nature Reserve, Special Site of Scientific Interest (3), Natural Monument (8), Protected landscape (4), Special Protection Area for Birds (SPA) (2), Special Marine Protection Area (2), Special Marine Reserve
Biogeographical Region / Province: Macaronesia



Natural Heritage

La Palma's flora offers great biodiversity, the result of geographical isolation and its complex orography. The numerous endemic species - not just to the Canaries but exclusive to La Palma should be highlighted, forming as they do a key part in the different communities of vegetation, from the Canary Island and balsamic spurges to the mountain scrub, and including laurel and Canary Island pine. Therefore, of the 879 vascular flora species found on the island, 173 are

Special Conservation Areas

Within the context of the natural heritage of an island such as La Palma, marine ecosystems are of great relevance. The small island shelf with a complex rocky sea floor, volcanic in nature, with its subtropical marine fauna and flora, makes the narrow marine strip that encircles the island a rich habitat in terms of biodiversity and abundance of life, albeit one which is highly vulnerable to human intervention. The existence of a Marine Reserve of fishery interest and two Special Marine Protection Areas, declared in recognition of the abundance of caves and the observation of cetaceans and reptiles, is a sign of both the importance and the fragility of this environment.



Red-billed chough

taxa exclusive to La Palma, 20% of the total. Among the endemic species we should mention *Cheirolophus junoniaus*, *Viola palmensis* and Tree Echium (*Echium pininana*).

The island's fauna is characterised by the large number of exclusive genera, species and sub-species. These days, the discovery of new species has become commonplace. The group of invertebrates is dominated by arthropods, especially beetles and molluscs (with a percentage of endemism in excess of 60%).

Among the native vertebrates the species and sub-species of reptiles and bats are noteworthy, such as the La Palma lizard (*Gallotia galloti palmae*) and the striking Canary big-eared bat (*Plecotus teneriffae*), which does indeed have dramatically oversized ears. The largest group however is represented by the island's birds, with species as characteristic as the red-billed Chough (*Pyrrhocorax pyrrhocorax barbarus*), a wildlife symbol of the island, Bolle's Pigeon (*Columba bollii*) and the laurel pigeon (*Columba junoniae*), both native to the island's laurel woods and other many subspecies exclusive to La Palma.



Red finger gorgonia



In flower

Cultural Heritage and Landscape

The accounts of the great voyagers who visited the island are full of praise for the La Palma landscape, whose dramatic references to the “abysses of La Caldera de Taburiente”, “the savage yet breathtaking cliffs to the north”, and “the tenebrous jaws of the Cumbre Vieja Volcanoes”, sought not only to feed the imaginations of Europeans of the time, but also to tell of the strangeness of the lands they found.

The natural values of the island are well known. It is no surprise to learn that 51% of La Palma is protected. The exuberant vegetation, the whimsical forms of its relief, and even the clearness of its blue skies, are all qualities which bring further prestige to the island. The same cannot be said however of its cultural landscape, which despite its outstanding variety, is one of the great unknowns as far as the visitor is concerned. The island of La Palma has as many distinct cultural landscapes as the ingenuity and persistence of the island’s people have made it possible to carve out in a territory that is especially complicated as far as coexistence is concerned. It is therefore the agricultural landscape -



Cliffs on the north of the island

on mountainsides and eroded volcanic rock - in which La Palma has maintained unique elements, great personality and beauty, characteristics that have only increased its scenic value, whilst also creating a profound sense of identity amongst the island’s population.

This exceptional relationship between man and the environment has ensured that La Palma represents one of the finest examples of sustainable development.

LA PALMA

BIOSPHERE RESERVES



Hacienda de San Jorge

Civil architecture

It should not be forgotten that La Palma’s landscapes are also firmly rooted in its cultural traditions, or else derived from its own history, as can be seen in the important examples of civil, religious and military architecture - as well as the traditional Canarian residential architecture of course - found throughout the island.

Socio-Economics of the Reserve

The La Palma Biosphere Reserve has a population of 86,996, of which 43 % live in Santa Cruz de La Palma and Los Llanos de Aridane.

Traditionally, and almost exclusively, the island's economy has long been based on agriculture, with sustainable tourism and a thriving service sector added over past decades.



Crop and livestock farming and the fine local cuisine are concepts which are closely tied in with the territory. The island's past, with its subsistence farming and gastronomy, has evolved to a present of quality farming and gastronomy which nevertheless remains true to tradition, without losing its cultural identity that La Palma has inherited from its ancestors. Crops such as banana, grapes, potatoes, cereals, fruit, avocados etc, continue to play an important role on La Palma, as does the livestock population of sheep, goats and pigs.

The island, declared a Sustainable Tourism Destination, has shown a commitment to of differentiated quality-based



Traditional farming with yoked palmera cattle



Puerto de Tazacorte beach

tourist sector, with nature tourism at the forefront. The climate, with a pleasant temperature year round, the high level of environmental protection, 20 protected natural areas, of which special mention should be made of the Caldera de Taburiente National Park, an extensive network of footpaths, a wide range of quality accommodation and complementary services and many other elements, all making La Palma the ideal tourist destination.

It is also worth noting the economic situation and the commercial and business advances that have been made, thanks to improvements to infrastructures and the transportation of goods and people, without forgetting the continued relative success of a small crafts industry, focusing especially on embroidery, cigars, basket weaving and ceramics.

The La Palma Biosphere Reserve therefore represents the perfect harmonisation of modernity and tradition, of nature and development.

* The Reserve's contribution to sustainable development

The La Palma Biosphere Reserve works toward meeting the functions and objectives that UNESCO set it. To this end the island has drawn up and is implementing an Action Plan in order to better meet the present and future challenges that La Palma faces.

Conservation area

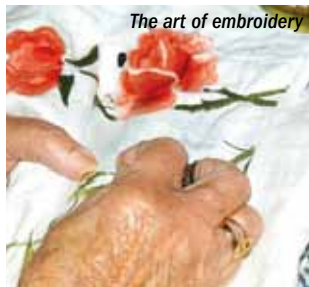
- * Knowledge of the present state of biodiversity
- * Protection of biodiversity, both on land and at sea.
- * Special Territorial Development Plan

Area of development

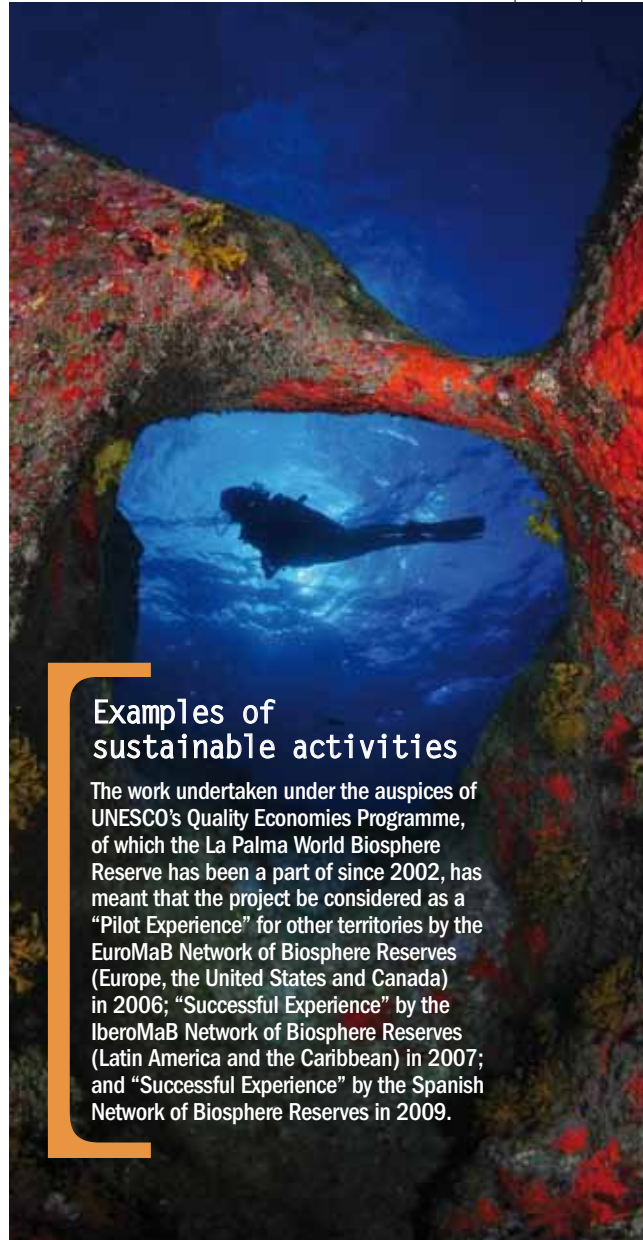
- * Quality Economies Programme: La Palma World Biosphere Reserve Framework
- * Improvements to the production, marketing and sale of island products
- * Improvements to farming infrastructures
- * La Palma as a Sustainable Tourism Destination
- * Tourism Certification Programme



Cigar making, El Sittio



The art of embroidery



Examples of sustainable activities

The work undertaken under the auspices of UNESCO's Quality Economies Programme, of which the La Palma World Biosphere Reserve has been a part since 2002, has meant that the project be considered as a "Pilot Experience" for other territories by the EuroMaB Network of Biosphere Reserves (Europe, the United States and Canada) in 2006; "Successful Experience" by the IberoMaB Network of Biosphere Reserves (Latin America and the Caribbean) in 2007; and "Successful Experience" by the Spanish Network of Biosphere Reserves in 2009.

Logistics

- * The International Starlight Initiative, in defence of the quality of the night sky
- * Sustainability Indicators System
- * The promotion and development of New Technologies and the IT Society.
- * Participation in the Local 21 Agenda
- * Environmental Education Programme
- * Training Programmes
- * International cooperation and networking

Public use and tourism

The La Palma World Biosphere Reserve (RMB La Palma) and the Institute of Responsible Tourism, are working together to develop joint activities aimed at effectively contributing to the maintenance and protection of cultural and natural resources, using the quality standards reflected by the “Biosphere” certificate for hotels, apartments, rural tourism houses, restaurants, visitor centres, museums and active leisure companies.

Following these sustainability guidelines, in 2010 the Reserve signed up to the

Spanish Biosphere Reserve Tourist Products Club.

The night sky over the La Palma Biosphere Reserve is unique in the world as far as astronomy tourism is concerned.

The Biosphere Reserve offers the opportunity to enjoy the unforgettable experience of its night sky. Its privileged geographical location makes the island's night sky a unique setting from which to watch the stars. In order to protect this unparalleled natural asset, in 1988 the Protection of Astronomical Quality of the Canary Islands Astrophysics Institute Act was passed, whilst in 2007 the “World Declaration on the Right to the Starlight” was approved.

A land for hikers

The Biosphere Reserve has an extensive network of footpaths, covering the whole island and taking advantage of the traditional paths the island's inhabitants have used for centuries. The network features 2 long distance GR footpaths (one of which forms a part of the European Footpath E7), 38 short-distance paths and 24 local paths - all together, a total of 1,000 kilometres duly marked out and signposted.

This network of paths is complemented by a Network of Scenic Routes, promoted by the Biosphere Reserve, the aim of which is to highlight the island's cultural heritage and promote enjoyment of its countryside through laying new groundwork and re-using existing infrastructures which had fallen into disuse, offering the best views and set amongst the finest scenery.

Support facilities

- * Astronomical Observatory of El Roque de Los Muchachos
- * Network of Protected Natural Areas
- * Important archaeological sites
- * Natural astronomical vantage points
- * Rich historical and cultural heritage
- * Interesting museums, craft centres and cultural theme parks
- * Interesting folk heritage and popular fiestas
- * Wide range of hotel accommodation
- * Wide range of rural accommodation in private houses (some of which feature astronomical equipment)



LANZAROTE

The island of Lanzarote, together with all its towns and villages, was declared a Biosphere Reserve by UNESCO on 7 October 1993

The island is tackling all the most important challenges facing modern societies today, such as the need to combine economic development and environmental sustainability, as well as the maintenance of its own cultural identity, recovering the primary sector in order that it may offer support to the strong tourist industry and expressing a commitment to the diversification of the island's economy, which has been somewhat scarce until now with the mass tourism that endangered Lanzarote's economic model.

Similarly, through the *Cabildo* de Lanzarote local government, since 1991 the island has pioneered the imposing of limits on tourist development and urban planning excesses through policies of growth containment, reinforced by the Canary Islands Government in 2003, through Ordinance Directives and the support given by local people who have shown themselves to be in favour of sustainability initiatives.

All of this makes Lanzarote a valuable Biosphere Reserve yet nevertheless a vulnerable one due to its limited resources. Despite this, the main objective that has been achieved has been to ensure that the island's social conscience has not diminished, as the majority of the population continues to approve harmonious and respectful development, with limits placed on unchecked expansion.



Timanfaya National Park

Date declared biosphere reserve: 7 October 1993

Surface area: 122,610 hectares
(84,610 hectares on land)

Core Zone: 11%. **Buffer zone:**

36%. Transition zone: 53%.

Location: Island of Lanzarote, Canary Islands

Municipalities: Arrecife, Harías, San Bartolomé, Tegüise, Tinajo, Tías, Yaiza.

Management body: Cabildo de Lanzarote

Address: Avenida Fred Olsen s/n. 35500 Arrecife

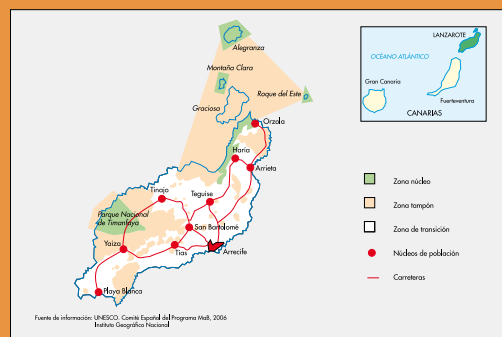
Telephone: 928 810 100 ext. 2355,
2356, 2357. Fax: 928 597779

Email: biosfera@cabildodelanzarote.com

Website: www.cabildodelanzarote.com

Other protection: Island Ordinance Plan (1), National Park - Natural Park (2), Fully Protected Nature Reserve (1), Special Site of Scientific Interest (1), Natural Monument (5), Protected Landscape (2), Scientific Interest Site (2), State Marine Reserve (1), Special Protection Area for Birds (SPA) (5), Special Marine Protection Area (2), Sites of Community Importance (SCI) (11)

Biogeographical Region / Province: Macaronesia





La Corona Natural Monument

Lanzarote has over 2,500 land-based species and subspecies, the majority of which are arthropods. A total of 468 species and 94 subspecies are exclusive to the Canary Islands. 97 species and 19 subspecies are endemic to the island. This fact, together with the singular nature of Lanzarote's ecosystems and beauty of landscapes, mean that 41.6% of the islands area is protected by one of the categories designated by the Canary Islands Network of Protected Natural Areas.

It should also be pointed out that Lanzarote is a flat island - the maximum height above sea level is 670 metres.

The rock is of volcanic origin, with extensive lava fields, known locally as malpaíses, as well as a profusion de craters, recently formed in the case of the Timanfaya National Park, and sea beds of great biological richness.

Its climate can be described as dry subtropical, with frequent trade winds, and an annual rainfall of 115 mm, with no permanent water courses. Erosion is common, above all attacking a hillsides and high ridges.

Vegetation is xerophilous, adapting to retain and store humidity. The island's flora and fauna can be characterised by the high number of endemic species.

Island culture has also developed adaptations in order to catch and use the scarce and unpredictable rainfall. This can be seen in the peculiar agricultural techniques, such as sowing seed under volcanic ash and lava flow and in holes, creating landscapes as unusual as La Geria.



A strategic area due to the abundance and diversity of the whales and dolphins in its waters

Caldera
Guigua. Cra-
ter with crops
sown under
volcanic ash



Cultural Heritage and Landscape

Lanzarote's Cultural heritage is the result of a lengthy period of time which began with the first human settlers arriving from the north of Africa. Before this period, around 100 years B.C. was known about and indeed visited, without there being any evidence at all of any permanent settlement.

The archaeological legacy of the Berber culture survives to this day with approximately one thousand archaeological sites as well as countless cultural elements to which we must add those left by subsequent visitors, especially the moriscos and Europeans.

The Berber past can be seen at its best in their cultural effects: idols, the stone industry, and their use of stone and bone. Amongst the significant early architectural heritage we should mention the cave dwellings where wall carvings

document the use of two script types - one Lybico-Berber, the other Lybico-Canarian.

The heritage from all the island's historical periods, protect through specific cataloguing, include 56 monuments, two historic urban complexes, 3 gardens, 4 historic sites and 16 archaeological or paleontological areas, 11 places of ethnological or industrial interest, 2 sub-aquatic areas, various cultural landscapes and a number of architectural heritage elements.



The Quesera de Zonzamas, used for making cheese, of indigenous origin



Mareta de Tinajo - Circular wall to retain water runoff

Cultural heritage

There is a wealth of cultural heritage associated with the so-called Indigenous period which lasted until 1402, the year of the Norman Conquest on behalf of the Castilian crown. After this date, European occupation of Lanzarote continued, with moriscos arriving from north Africa as slave labour to work for the European contingent.



Tourism
and demographic
information

(2009, Cabildo Information Centre)

- * Resident population 132,336 inhabitants
- * Tourists (daily average) 48,013 people
- * Total population 180,349 residents and tourists per day
- * Annual number of foreign visitors 1,618,215 tourists per year
- * Tourist accommodation capacity - 64,464 people in legally-registered accommodation
- * Island density - 216.5 inhabitants/km²

Famara
foto(c) Je beach and cliffs

The island's demography has been marked in recent years by a spectacular increase in population. If we only look at the period from 1996 to 2006, the rate of growth was ten times than the total for Spain and twice the total for the Canary Islands. Over the past 20 years Lanzarote has more than doubled its number of inhabitants.

Although Lanzarote has the highest birth rate in the Canaries (12.7 per thousand) and the second lowest death rate (4.3 per thousand), his dizzying increase in population has mainly been the result of immigration, representing 83% of the increase over the past decade.

With regard to the socioeconomic activities, whilst in the past these were based on fishing and farming, between the 1960s and 1970s, they changed dramati-

cally in favour of tourism, with a change in the land-use model, with a boom in the 1980s under enormous urban planning pressure.

Despite the islanders' environmental awareness, some aspects of the development and environmentally unsustainable model as implemented in other tourist destinations began to be noticed in Lanzarote from the late 1980s onwards. Since then, the growth in tourism has been a constant factor over recent years, with the island going from having a hotel accommodation capacity of 50,000 in 2001 to more than 65,000 in 2009. This growth has taken place despite the pioneering urban planning regulations implemented in Lanzarote through the successive Island Territorial Ordinance Plans and the moratoria that have been declared regarding new building.

The Cueva de los Verdes, CACT del Cabildo, is a guided visit to the La Corona volcanic tube system



Meeting of the Reserve's ruling council

* The Reserve's contribution to sustainable development

The Biosphere Reserve Council was founded in 1996 as a consultative body under the auspice of the Cabildo local government, in order to monitor the application of the island's commitment to UNESCO. Two successive Life projects have offered diagnosis and proposals, meaning that this council was left with no authority within the political debate on the island.

The Reserve Council created the Sustainability and Quality of Life Monitoring Centre (2000), with specialists from the island and outside, and a Scientific Cabinet (2002) with the participation of foreign experts. These bodies have reflected upon territorial legality, oil, photovoltaic power, the Canary Islands Investment Reserve, local development and environment.

The 1991 Island Territorial Ordinance Plan backed the declaration of Lanzarote as Reserve in 1993. Nevertheless, since 1997, urban planning pres-

sure has made this Ordinance Plan the object of conflict, impeding its modernisation for many years. It is currently being redrawn and the Reserve's financing has also approved another key planning initiative, the Special Territorial Tourism Development Plan.

This long-running conflict comes with the usual political instability and legal charges of corruption. Many sustainability policies have not been applied due to a lack of time. Nonetheless, environmental awareness has improved, both amongst the political class and the general public.

There are a series of notable initiatives in place regarding native forage crops, the production and distribution of organic agricultural produce (weekly farmer's markets, restaurants, week baskets of goods delivered to the door etc.), with the Reserve also financing research into the effect of irrigation using desalinated water on fragile soil.

Achievements

- * Raised awareness and diagnosis of possible future scenarios
- * Strengthening social participation and technical assessment
- * Tourism development moratorium which ended in 2010
- * Proposed eco-ordinance regarding water and energy and other initiatives
- * Environmental awareness raising campaigns
- * Support for the Cabildo in intervening in territorial ordinance matters, control over tourism, waste management, biodiversity, renewable energy etc.



Swimming pool at Los Jameos del Agua

Public use and tourism

There has been a desire to promote a tourism experience that is more intense, diverse and locally focussed: wine tourism, gastronomy, ornithology, hiking, diving, nautical tourism, cycle tourism and other nature activities. The future headquarters of the Reserve will ensure greater interpretation and understanding of the island and its history.

Lanzarote has been chosen as the first Green Airport by AENA, the Spanish airport authority, who have signed an environmental accord with the Cabildo, considering as priorities pedestrian and cycle access to its terminals and an informative area installed on the current coastal walk, as well as promoting a series of renewable energy and educational projects.

Lanzarote council's Art, Culture and Tourism Centre Network was established between 1966 and 1990 thanks to the creative input from artist César Manrique, among others, and the impetus provided by the Cabildo as well as the enormous generosity and effort the workers and local people of Lanzarote.

The history of tourism on the island cannot be properly understood without this network of Centres, dominated by the Art-Nature style as expounded by Manrique and his collaborators, who designed and adapted an extensive and singular catalogue of natural sites for visitors.

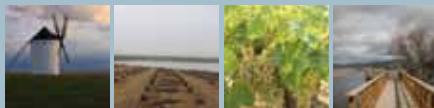
Sustainable urban mobility

As the central thrust, various initiatives have been implemented to strengthen the alternative mobility of pedestrians and bicycles, and improving public transport. Inter-institutional cooperation coincides in the commitment shown to the adaptation of a 30-kilometre stretch of coast (Costa Teguise-Puerto Mármoles-Arrecife-Playa Honda-Airport-Puerto del Carmen-Puerto Calero) to suit bicycles, connecting various seafront promenades which have always been popular with those taking a stroll and yet have not been ordered to ensure coexistence with the numerous cyclists. In 2010, these five towns, as well as the Cabildo local council, also requested subsidies in order to implement Sustainable Urban Mobility Plans.

Cycle race in Timanfaya



Castilla | La Mancha



* MANCHA HÚMEDA

LA MANCHA HÚMEDA

La Mancha Húmeda consists of a series of wetland systems spread across the La Mancha region, including endorheic lagoons, aquifers, floodplains etc. from the Rivers Gigüela, Záncara, Riánsares and Guadiana, as well as the wetlands associated with the karstic system around Ruidera.

The Reserve is at the head of the Guadiana river basin, where the landscape, encompassing towns and villages from the provinces of Albacete, Ciudad Real, Toledo and Cuenca is exceptionally flat.

La Mancha Húmeda is currently undergoing intense changes to its management and administration, on the one hand adapting to the new economic, social and climatic reality, requiring new models of wetland sustainability due to the excessive consumption of water and the meagre rainfall, whilst on the other, ensuring adjustment to new MaB Programme objectives and requirements.

Since it was declared as such, the Reserve has consisted of permanent lakes, river overflows and seasonal wetlands without any formal delimitation, constituting essential points of support for aquatic birds in which the Tablas de Daimiel National Park was the main nucleus.

There are currently plans underway to extend the reserve to 400,000 hectares.



Ruidera waterfalls

Date declared biosphere reserve: 30 November 1980

Surface area: Official area: 25,000 hectares.

Planned area: greater than 400,000 hectares

Location: Centre of the Iberian Peninsula, in the Castilla-La Mancha Region.

Municipalities: 29

Management body: General Directorate for Protected Spaces and Biodiversity. Castilla La Mancha Regional Government Department of the Environment

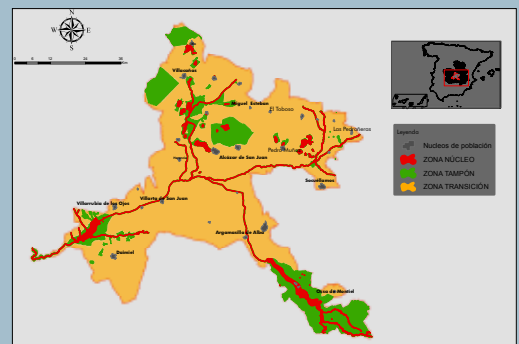
Address: C/ Quintanar de la Orden s/n 45071 Toledo; **Telephone:** 925 26 67 00

Email: oaespaciosnaturales@jccm.es

http://pagina.jccm.es/medioambiente/espacios_naturales/listRB_04_manchahumeda.pdf

Other protection: Las Tablas de Daimiel National Park, Lagunas de Ruidera Natural Park, Special Protection Area for Birds (SPA) (3), Site of Community Importance (SCI) (3), Ramsar Wetland of International Importance (5), Natural Reserve (10), Micro-Reserve (1), Natural Resources Management Plan (2)

Biogeographical Region / Province: Mediterranean





Flamingos

The Ruidera Lagoons

In the case of the Ruidera lagoons, the clearness of its waters has allowed an intense development of the submerged vegetation, whilst its banks are also home to emerging plants and numerous wading birds. The most exceptional element at Ruidera is the result of the karstic formations and the tophaceous barriers, which contribute to the pooling of water and the subsequent formation of lagoons.

The most important natural values are the result of its geographic position, very possible among migratory birds, the types of wetland the Reserve contains and the wealth of fauna therein. The salinity of certain wetlands fosters a development of biomass that is fundamental to supporting large communities of birds. Biodiversity is undoubtedly the Reserve's most noteworthy natural value.

The most characteristic vegetation in the Tablas de Daimiel is made up of aquatic communities such as its reed beds, banks of great fen sedge (*Cladium mariscus*), bulrushes and rushes, as well as amphibious woodland populated with willows and tamarisk. Within this landscape, the abundance of marsh vegetation and the salinity of the River Gigüela's water, have attracted an exceptional avian community, and is an established breeding, resting and wintering site. This has led

to the creation of an ecosystem that is unique within an international context, recognised through its inclusion as a Ramsar Convention Wetland of International Importance and a Special Protection Area for Birds and Site of Community Importance.

The other wetlands can be characterised by their endorheism, salinity and the seasonal nature of the water surface. The wetlands are home to significant vegetation which has adapted to the conditions of extreme salinity, temperature and scarceness of water. Some represent ecosystems similar to the most primitive on earth, due to the phenomena of the differentiated precipitation of the salts which cause saline crust to form. These ecosystems are home to a number of unusual species of flora such as *Microcnemus coralloides* and *Juncus maritimus*.



Cultural Heritage and Landscape

The Reserve has a rich cultural and ethnological heritage, with remains from human settlements since the Bronze Age: There have been significant finds from Roman, Visigoth, Muslim, medieval, renaissance and baroque periods.

The majority of the municipalities within the reserve have monuments declared Assets of Cultural Interest, castles, churches, convents and archaeological sites. There are also many characteristic manifestations of popular art and crafts, as can be seen in the museums at Alcázar de San Juan, Ruidera, Alhambra and Campo de Criptana, all of which feature valuable testimonies of the remains that have been found.

The castles at Rochafriada, Peñarroya and Alhambra are also historical monuments of unquestionable cultural value.

A large number of museums and craft workshops demonstrate the region's ethnographic legacy and its popular art: The



Peñarroya Castle

Museo de la Tía Sandalia de Villacañas, the Casa Medrano de Argamasilla de Alba, the Museo de Alfarería Pottery Museum at Alcázar de San Juan and Ossa de Montiel.

As far as traditions and popular fiestas are concerned, we could mention any of the municipalities within the reserve as each has its own unique and enthusiastically celebrated festivals. Special mention should be made of the celebrating of Carnival in Alcázar de San Juan and Herencia, deemed to be of regional tourist interest, *Las Paces* in Villarta de San Juan, *Los Mayos* in Pedro Muñoz and the Easter week processions in most towns and villages in the region.

LA MANCHA HÚMEDA

Popular architecture

As far as popular architecture is concerned, we should highlight the region's grain silos, caves, ancestral homes, palaces and houses displaying coats of arms. *Pósitos* - traditional granaries used to establish credit for farmers - can still be found in Argamasilla de Alba y Campo de Criptana. La Mancha's windmills are among the Region's most characteristic features, with the examples at Mota del Cuervo and Campo de Criptana, notable for their dramatic setting.

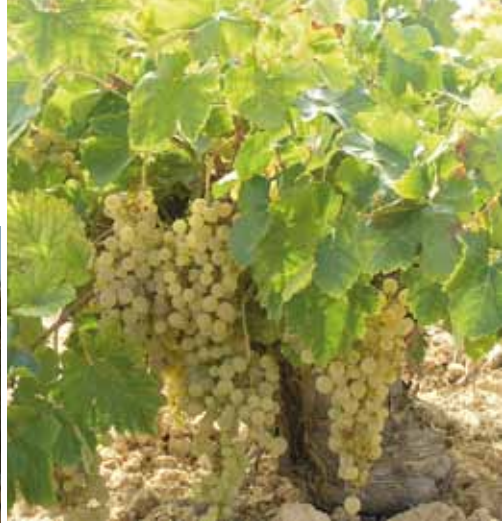
Windmills



Socio-Economics of the Reserve



Sign at Laguna de Tirez



wine, Campo de Montiel olive oil, Manchego lamb and the local purple garlic and melon.

The main sectors of economic activity are crop and livestock farming, although in recent years there has been a marked increase in activities related to nature tourism and agro-tourism. Although commerce represents a large percentage of the local economy, the farming industry is one of its main motors, with a number of quality trademarks such as Manchego cheese, La Mancha saffron, La Mancha

The most widely grown crop in the region is grape, with vineyards also employing the most people.

Livestock farming is another sector of vital importance to the Reserve's economy, with sheep farming the most important (44 % of the total) followed by pig farming (21%).

Agrarian policy

Changes in the crops grown over the past 25 years, with the move toward irrigated agriculture due to its high profitability and subsidies through the Common Agricultural Policy, have significantly increased income from agriculture. On the other hand, the demand for water that this creates has led to important alterations in the water system, which reached an extreme with Aquifer 23 which covers the Reserve's core zone as represented by the Tablas de Daimiel declared as "over-exploited" in 1987. This is the main problem facing "La Mancha Húmeda". The Special Alto Guadiana Plan, approved in 2008, saw political and social efforts focused on the restoration of the aquifer, guaranteeing the availability of water, recuperating the area's wetlands and administering extraction, objectives that are also set out in the La Mancha Húmeda Biosphere Reserve Management Plan in order to contribute to the sharing of the use of available resources, ensuring economic growth within a context of sustainable development.

The Reserve's environment offers many and varied tourist activities, such as the growing area of nature tourism, for which Tablas de Daimiel, the Manjavacas lagoon and Pedro Muñoz are the favourite destinations. Artistic-cultural tourism is also a big attraction, through the rich heritage of villages such as El Toboso, Campo de Criptana, Argamasilla de Alba, Herencia and Alcázar de San Juan. We should not forget the growth there has been in gastronomy, given the wide variety of produce on offer: *gachas*, *migas*, local cheeses, *duelos y quebrantes* (a scrambled egg and chorizo dish much liked by Don Quixote), *morteruelo* (a hot meat pate) etc.



The Reserve's contribution to sustainable development



Crops growing beside a lagoon

The Reserve is a key element in the conservation of the biodiversity associated with lake and riparian ecosystems. It also plays a major role as an element that fosters local involvement and the collaboration of the local administration in matters of conservation, offering new possibilities and proposals for approaches to sustainable development.

As has been mentioned, the *Junta de Comunidades de Castilla-La Mancha* regional government is drawing up a Reserve Management Plan, as a specific tool through which to implement models and directives that focus on the Reserve's three fundamental cornerstones: conservation, development and logistic support. The first step is the new delimitation, in line with the Reserve Statutory Framework, whose zoning represents a significant improvement with respect to the original situation, by offering greater protection to wetlands and an improved territorial definition that will help to channel efforts aimed at promoting and encouraging sustainable socio-economic development.

It should also be pointed out that the importance of municipalities contributing to the maintenance and conservation of the Biosphere Reserve, based on the benefits derived from tourism, the landscape, on quality trademarks related to the farming sector and the creation of employment through the setting up of new companies to take advantage of specific projects in line with the Reserve's objectives.

The recuperation of wetlands, the application of alternative management models that seek out other water resources, the quest for efficiency in water usage projects, declining employment and changes to farming are some of the new challenges facing La Mancha Húmeda.



Solar energy



La Mancha Húmeda's extensive area includes a number of facilities aimed at specialised nature tourism. In Daimiel, the National Park features a Visitors Centre providing detailed information on the Tablas de Daimiel with prepared routes for all kinds of visitors. There is also a Water Interpretation Centre in the town. Ruidera has a Visitor Interpretation Centre, which runs environmental

education programmes and recreates the various environments around the Ruidera Lagoons. In Alcázar de San Juan, the Lagoon Complex, catalogued as a Natural Reserve, also has an Interpretation Centre, as well as specialist bird observatories.

Wine- and gastro-tourism is well established in the region. Products such as wine and cheese are the major attraction for tourists. Some cheese and winemakers allow visitors to see the traditional manufacturing process.

Literature, Miguel de Cervantes's Don Quixote, has become an important tourist attraction. A number of municipalities have recreated scenarios that the author may have known that typify the region's charm: windmills, historic houses, wineries and the Ruidera Lagoons.



Castilla y León



- * ALTO BERNESGA
- * ANCARES LEONESES
- * BABIA
- * LOS ARGÜELLOS
- * SIERRAS DE BÉJAR Y FRANCIA
- * VALLE DE LACIANA
- * VALLES DE OMAÑA Y LUNA

ALTO BERNESGA

The Alto Bernesga Biosphere Reserve covers two municipalities, La Pola de Gordón and Villamanín. Both town councils, situated in León's Central Mountain region and part of the Leon side of the Cantabrian chain massif, are 32 and 45 kilometres respectively from the city of León. The municipality of Villamanín, covering 176,25 Km2 consisting of 19 villages, occupies the north of the Reserve, with the municipality of La Pola de Gordón, covering 157,64 Km2 and containing 17 villages, is to the south.

The Reserve, which covers a total of 33,442 hectares, borders the municipalities of Aller y Lena in Asturias to the north, with Cármenes, Vegacervera and Matallana (in León) to the east, with La Robla and Carrocera (in León) to the south and with Sena de Luna and Los Barrios de Luna (also in León) to the west.

The River Bernesga, from which the Reserve takes its name, rises in the Cantabrian Mountains and is fed from waters from the Arbás mountain, part of the Duero river basin. The river has had a profound on the relief, shaping it in a way that is intimately related to river processes over the past two million years.

The Reserve complies with Biosphere Reserves zoning based on three basic functions: conservation, logistics and development.



Reflections in the reservoir

Date declared biosphere reserve: 29 June 2005

Surface area: 33,442 hectares (Core zone: 26%.

Buffer zone: 44%. Transition zone: 30%).

Location: The Leon side of the Cantabrian Mountains, Castilla y León

Municipalities: La Pola de Gordón and Villamanín.

Management body: La Pola de Gordón Town Council

Address: Plaza Mayor S/N 24600

La Pola de Gordón, León

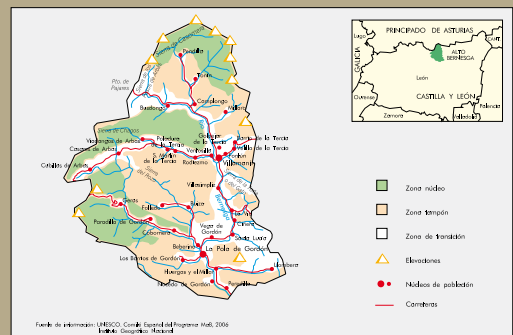
Telephone: 987 588 003 Ext. 3

Email: c.desarrollo@ayto-lapoladegordon.es

Website: www.ayto-lapoladegordon.es

Other protection: Site of Community Importance (SCI), Biological Point of Interest (2). Geological Place of Interest., Important Bird Areas (2).

Biogeographical Region: Transition between the Euro-Siberian region with Mediterranean influence





Great tit

The core zone contains the areas of greatest ecological value, as well as the most characteristic flora and fauna, including many species covered by directives, regulations, catalogues and conservation, protection and endangerment lists. For these reasons this is a strictly protected area.

The core zone comprises five main areas: Casomera, Chagos, Aralla-Cabornera, the River Casares Valley and Bernesga.

The region's biological diversity is also the result of its bio-geographical situation, a transition area between Mediterranean Spain and Atlantic Spain, with tree species from both regions separated by just a few metres.

This entire core zone is contained within the León Central Mountain Site of Community Importance. Two of these areas also fall within the two Important Bird Areas (IBA): IBA Babia- Somiedo (Chagos core zone) and the IBA Canta-

Natural Heritage

brian Mountains Central Sierras (Casomera core zone).

The buffer zone is the largest area within the reserve, containing notable elements such as the Faedo de Ciñera (winner of the 2008 Best Maintained Woodland award, given by the Ministry of the Environment and Rural and Marine Affairs and the NGO Forests Without Borders), relic woodland containing holm oak in the valley of Huergas and Llombera, catalogued as Biological Points of Interest. The geology, and especially, the palaeontology, is exceptional in this region, with around twenty Geological Places of Interest, where the carboniferous and Devonian period reef system account for the greatest number of sites.

The transition zone contains all the Reserves towns and villages, infrastructures and industry.



Foxglove



El Faedo

Landscape diversity

In these areas the widely diverse nature of the landscape should be highlighted, following an altitudinal gradient - high-mountain pastureland with limestone cliffs and rocky ground inhabited by chamois, golden eagles and falcons, beech and birch groves which contain grey partridge, wolves, capercaillie and occasionally brown bears, as well as broom hare, Spanish juniper and gallery forests.

Cultural Heritage and Landscape



Due their strategic situation León's Central Mountains, the territories of the upper Bernesga river have been an area of connection between the east and west of the province, and an area of passage since time immemorial to the Astur region. This is an area criss-crossed by countless paths and tracks, which for centuries have been used by all manner of people - pilgrims, monks and priests, shepherds, drovers, noblemen etc.

The La Carisa Roman road provided access to Asturias, passing through the Cantabrian chain. The road was named after the Roman consul Titus Carisius, who laid siege from this point between 29 and 19 B. C.

Another thousand-year old route is the northern spur of the Camino de Santiago or St. James Way, known as the Ruta de San Salvador, which set out from the Real Colegiata de San Isidoro in León for Oviedo in order to visit the San Salvador Chapel, continuing west to Santiago de Compostela.

Livestock farming and droving have long been the economic pillar of the Alto Bernesga region, with local shepherds taking their flocks from the mountain passes around here to Extremadura and back, a tradition that continued until the 20th century was well underway, leaving a legacy in the form of the nu-

merous paths known as veredas that criss-cross the territory: the Vereda de Buiza, Vereda de Aralla and the Vereda de Cármenes, all of which belong to the La Cañada Leonesa Occidental network of drovers paths.

Mining has long been an economic activity of great importance. There is evidence of at least two pre-Roman exploitations and a number of mines extracting copper, nickel, cobalt and villamaninite, with this latter discover within the municipality of Villamanín. These days, coal mining is the pillar of the local economy. Special mention should be made of the declaration of the Pozo Ibarra headframe as an Asset of Cultural Interest, the first element of industrial architecture from the mining sector to receive such recognition in Castilla y León.





The valley of the River Casares

Economic activities

Livestock farming was the traditional backbone of economic activity in the region, although today it has been replaced by mining, the sector in which over half the local people work. The rest work in local commerce, livestock farming - with a number of cured meat companies worthy of mention here, organic agriculture and various public and private services.

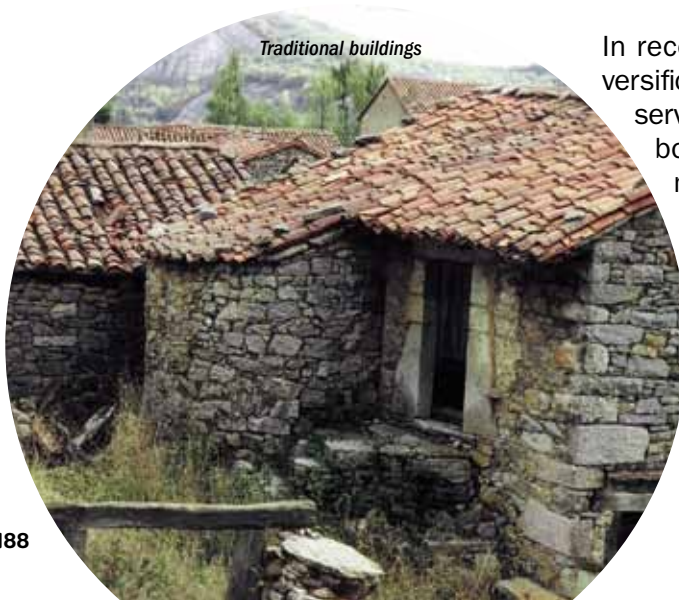
The population of Alto Bernesga is spread across 36 villages belonging to the municipalities of Villamanín and La Pola de Gordón. In general, these are small villages with very few inhabitants, where it is essential to revitalise the use of natural resources in order to maintain without the local population disappearing.

La Pola de Gordón currently has 4,170 inhabitants within an area of land mea-

suring 157.64 km², representing a density of 26.45 of inhabitants per km². Villamanín has a population of 1,091 within an area of 176.25 km², a density of 6.19 inhabitants per km².

The population of both municipalities has experienced a marked descent since the year 2000 mainly as a consequence of the rural exodus in search of employment within the same province, due to the loss of jobs as a result of the conversion of the coal-mining sector.

In recent years there has been a diversification of the economy toward the service and tourism sector, which are both doing well as a result of the many possibilities that the Alto Bernesga offers for rural and active tourism. There is also a full range of extreme sports on offer such as mountain climbing (at Cubillas and Fontún), skiing (at Valgrande de Pajares), sailing (on Casares Reservoir), hiking etc.



Traditional buildings



The Reserve's contribution to sustainable development

Since the area was declared a Biosphere Reserve in 2005, there have been numerous steps that have had to be taken in order to consolidate its position, all based on programmes and processes where public participation is the priority. The constitution of a management body is currently in its final phase and will be undertaken through the Fundación Reserva de la Biosfera Alto Bernesga.

An Action Plan is being drawn up within the framework of agreements signed with the Ministry of the Environment and Rural and Marine Affairs, and a Visitors Centre has been opened in a former school building in the village of Geras de Gordón.

A number of inventory projects have allowed information to be gathered regarding the Reserve's natural, cultural and ethnographic heritage which can be consulted in the following publications: Reserva de Biosfera, Territorio de Contrastes, Guía del Patrimonio Industrial, Arquitectónico, Cultural y Etnográfico de Gordón and Catálogo de Flora Endémica y/o Amenazada del Alto Bernesga. This allows the local population to feel closer to and value more the Reserve.

Waste-water treatment through the building of a treatment plant, the establishment of a Recycling Point and the selective collection of refuse, the gradual elimination of rubbish tips, the provision of site for dumping rubble are all environmental management policies that are reinforced by the Biosphere Reserve.



Key Projects

In 2010, five years after the status of Biosphere Reserve was announced, a number of development projects focusing on women and employment were initiated, young people and their lives in rural communities, the visual promotion of the Reserve through signs and information panels, the application cartographic techniques for use in tourism, the signposting of over 50 kilometres traditional paths and a new inventory of Places of Geological Interest, as well as intense environmental training are all good examples of the work being undertaken in the fields of knowledge sharing and sustainable development.

The CONAMA 2010 award.

The Women and Employment Project

* Public use and tourism



The Reserve offers a wide range of attractions in the rural and active tourism sector. All manner of extreme sports can be practiced such as mountain climbing (there are also two climbing schools), skiing at Valgrande-Pajares, sailing in the Casares reservoir, mountain hiking, fishing etc, with the option of doing these activities through companies specialising in active tourism

Here we should highlight Alto Bernesga Biosphere Reserve Visitors Centro in Geras de Gordón, where there is a wealth of information on the region's resources, and the Clima de la Vid Interpretation Centre, the only of its kind in Castilla y León.



Landscape eco-culture

Also worthy of mention here is the large number of tourist routes intersecting the Reserve and which are set to be increased by a further 50 km through the Theme Route Project, where the concept of public footpaths will be extended through an eco-cultural interpretation of the landscape, all backed by the Castilla y León Mountaineering Federation. Cultural activities further extend the offer, including the region's museums of an ethnographic nature or the Cesar Barroso watercolours museum.

There are a large number of restaurants and bars in both municipalities in order to satisfy the needs of visitors, as well as hotel accommodation, which can be divided into two main groups: rural and traditional. The range of accommodation therefore includes rural houses, hostels, pensions, camp sites, rural tourism centres etc.

There are two free hostels (Buiza de Gordón and Poladura de La Tercia) for pilgrims taking the northern spur of the St. James Way, also known as the Ruta de San Salvador or for those walkers on the millennia old trade route, the Vía de La Plata.

The visitor will be able to enjoy the extraordinary landscape of the Cantabrian Mountains, as well as the hospitality of local peoples and the region's magnificent cuisine.

ANCARES LEONESES

This Reserve is situated at the western end of the Cantabrian Mountains, with other ranges and mountains to the north and west, as well as deep valleys which on occasions drop to an altitude of 800 metres. This is an abrupt, heavily-wooded terrain (mainly dominated by oak, beech and pine groves), with intermediate degraded areas covered by crops and scrub, small orchards and vegetable gardens, and hay meadows and pastureland in the valleys. Certain stretches of river still maintain riverine woodlands of interest.

There are vestiges of popular culture that are of great ethnographic value, spread across the numerous villages in the Reserve's principal municipalities.

Date declared biosphere reserve: 27 October 2006

Surface area: 56,786 hectares (Core zone: 28%.

Buffer zone: 55%. Transition zone: 17%)

Location: North-west of the province of León, bordering Galicia and Asturias.

Municipalities: Vega de Espinareda, Villafranca del Bierzo, Candín and Peranzanes

Management body: The Ancares Biosphere Reserve Consortium (Town Councils of Candín, Peranzanes, Vega de Espinareda, Villafranca del Bierzo and the Fundación Ciudad de la Energía).

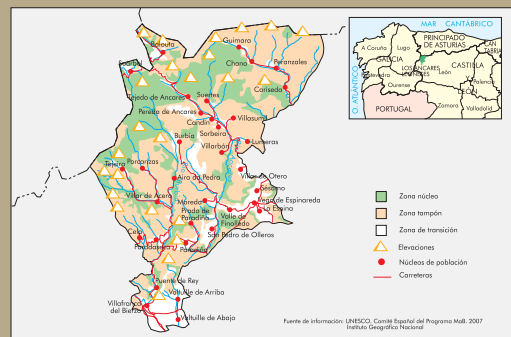
Other protection: Site of Community Important (SCI), Special Protection Area for Birds (SPA), National Hunting Reserve

Biogeographical Region / Province:

Euro-Siberian / European Atlantic



La Leitosa.





Horses in the Campo del Agua

Within the Cantabrian Mountains, the Los Ancares reserve has its own differentiating elements that define the region's identity and offer aspects of real value and variety.

Scrubland is abundant - often abandoned pastureland that is gradually being taken over by old-growth forest and mixed scrubland and grazing pasture. The variety of lithology and the complexity of its orography have allowed the presence of numerous species of flora, many of which are of special value and nearly fifty of which are endemic to the Iberian Peninsula.

The reserve's fauna is also extremely representative thanks to the diversity of habitats, with over two hundred recognised species of vertebrates, almost all of which are protected to some extent.

Witness to the past

There is evidence of the existence of woodland formations, an organic witness to the vegetative cover that once occupied a large part of the region, where the meadows and pastureland have maintained the current human communities, basing their economy on livestock farming.

There are a significant number of birds of prey; the presence of the capercaillie reveals the importance of the area in maintaining biodiversity, one of the signs that show the health of habitats of great value. An area of the reserve is of enormous importance to one of the Iberian Peninsula's most endangered species, the brown bear.

Cultural Heritage and Landscape

With abundant vestiges from bygone era, the Reserve's legacy dates back to the Neolithic period, with axes, spearheads, and what is believed to be an idol from the Bronze Age.

Moving forward in time we come to the Roman occupation, where gold finds brought them to the Bierzo region. There are significant remains from this period, such as the Roman bridges over the Rivers Cúa and Burbia.

However, the main splendour of the region was during the Middle Ages, with this being one of the rest stops for pilgrims on the St. James Way, the *Camino de Santiago*. There are numerous monasteries, churches, hospitals and hostels for pilgrims, most notably, the collegiate church of Santa María in Villafranca del Bierzo.

During the 17th and 18th centuries the area became an important commercial,



artistic and cultural centre. Here we should highlight the rebuilding that was undertaken at this time, such as the San Andrés Benedictine Monastery in Vega de Espinareda.

Villafranca del Bierzo is a St. James Way town *par excellence*. This *Villa de Francos* - "Town of the French" where they would come en route their pilgrimage destination at Santiago, although many actually stayed here - was granted its royal town privileges in 1192 from King Alphonse IX. For centuries, the town has given shelter to passing pilgrims in its many hospitals. The Hospital de Santiago, founded in medieval times and which still stands today, was famous for its huge pharmacy dating back to the 15th century and which was run by a brotherhood of monks in the 16th century, as well as their own church. A Papal bull annexed the San Esteban de Robledo Hermitage. The hospital was totally renovated in the 18th century, and was still in full use throughout the 19th century. Today it is considered by historians to be the finest of its kind in the region between Lugo and Astorga.

Remnants of Castro culture

Pre-Roman activities are well documented in the area, with numerous remains of Castro culture, such as the castros at Chano and Trascastro, in Peranzanes. Also worthy of mention are the traditional round house-barns known as pallozas, fine examples of which can be found in Balouta and Campo del Agua, Assets of Cultural Interest catalogued as an Ethnological Ensemble.





Small vegetable plots in Burbia.

The main economic activity in the area is livestock farming, based on grazing sheep, cattle and horses on the high-mountain pastures. Crop farming is also of great importance, especially vine growing, and hunting. In recent years there has been a significant increase in rural tourism. The St. James Way is another important source of tourist income, which passes through a number of places on the Reserve, most notably Villafranca del Bierzo, a town which is a traditional stage start and finish.

For a while, mining activities were of considerable importance, associated with the Bierzo region, in which the Ancares Reserve can be found: from gold mining in Roman times to coal mining in more recent times.

Until the mid-20th century, towns such as Villafranca del Bierzo were able to maintain their hegemony, with an economy based on local crafts and commerce, local fairs and administrative

The threat of fire

The great natural potential has been somewhat conditioned by local farming practices concerning the indiscriminate and uncontrolled use of fire, with the subsequent forest fires and damage to the countryside and its ecosystems.

activities, making it the third largest town in the province, after the capital, León, and Astorga. This strength declined during the second half of the century, replaced by neighbouring Ponferrada, which had greater industrial activity, mainly mining.

This demographic fall-off has not been so evident over recent years. Even so, there has been greater depopulation in the smaller villages, with an exodus to nearby larger towns and cities, such as Ponferrada and León. This tendency can be clearly seen in Villafranca del Bierzo, where the drop in population is far more marked on a municipal level than in the town itself.



The Reserve's contribution to sustainable development

Nature, rural tourism, the delicious local cuisine and the St. James Way all represent real attractions associated with the region. For centuries, pilgrims have passed through these villages on route to Santiago de Compostela, staying in the hostels dotted throughout the Reserve and enjoying local produce: market gardens and orchards, chestnuts from age-old trees, water, hunting etc.

The commitment shown by local people to their heritage can be seen in villages such as Campo del Agua, where a number of old pallozas have been restored and reoccupied, with other buildings rehabilitated such as the village church, destroyed by lightning, and now completely restored along with some of the walls dating back Romanesque times.

As well as the peace and quiet that these mountains and valleys offer the visitor, we should not forget the delicious local cuisine based on fresh mountain and river produce, as well as the fine



Campo del Agua.

local sheep, cattle and pigs. Caldo gallego, trout, partridge, wild rabbit, wild boar, the various cold meats, kid, red meat, leche frita, cottage cheese, honey, roast chestnuts, cecina and potatoes with salt cod are just some of the dishes that will tempt visitors. Any local fair, fiesta or celebration is sufficient reason to enjoy a fine dish of pulpo con cachelols, octopus with potatoes.

The small town of Candín is at the heart of an area that produces four quality products: reineta apples, botillo - a meat-stuffed pork intestine, cecina - cured beef - and pears.

ANCARES LEONESES

The Fornela Valley

Quality produce

The following products have been awarded Quality Produce status:

- * Protected Designation of Origin (PDO) "Bierzo Reineta Apples"
- * Protected Geographical indication (PGI) "Bierzo Botillo "
- * Protected Geographical indication (PGI) "Bierzo Cecina"
- * Quality Trademark "Bierzo Conference pears"



BIOSPHERE RESERVES



La Mirada Circular

La Mirada Circular - "The Circular View" - is an ecotourism initiative that goes beyond the limits of the Reserve, but nevertheless bisects it north-east to south-west (www.lamiradacircular.com). Organised as a walking route through the El Bierzo region in which the Reserve is situated, areas of environmental interest are connected to fine landscape and cultural heritage elements.

The Castro de Chano Historical Heritage Site

Outside Castro de Chano, heading toward Guimara, is the Castro de Chano Historical Heritage Site, named after the nearby archaeological site. This site dates back to a period between the late 1st century B.C. and the early 2nd century A.D, featuring typical Celtic buildings of the time. Despite the fact that the site, excavated during the 1980s, is not so very large, it has provided more than sufficient information that indicates that the settlement extended throughout the mountains. At the feet of the site, alongside the road, is the Historical Heritage Site, where visitors can see exact replicas of the buildings as well as rec-

reations of the activities and crops that were typical of the period. The aim is to give a true and realistic impression of how life was for the inhabitants of the Castro.

Alongside the replicas of the huts are the Tourist Information office and the Palloza-museum-bar, in which souvenirs can be bought, information obtained and typical local products sampled.

The route through the Reserve can be done in four stages, in which visitors can fully appreciate the elements of greatest ecological and cultural-historical value. The website contains extensive information regarding itineraries and services.

BABIA

If there is one defining characteristic in Babia it is the serenity of its valleys and mountains, covered by countless meadows and pastures, the tranquillity of the Rivers Luna and Sil, and the wide horizon crested with snow covered peaks.

The whole landscape responds to natural values that have been shaped by the hand of man since time immemorial. The traditional work undertaken by the inhabitants of Babia have left their mark on the environment, resulting in a unique landscape and rich biodiversity.

The declaration of Babia as a Biosphere Reserve in 2004 has served as recognition of this traditional use, strengthening the natural values of the region and the cultural values derived from centuries of human habitation.

You are in Babia

This region has left its mark on the language through the well-known Spanish expression *estar en Babia* - "to be in Babia" - used to describe someone who is distracted and unaware of what is happening around them. Although the origin of this expression is not clear, one of the more appealing theories put forward by Victor de la Serna refers to the Kings of León, who came to Babia to escape the endless comings and goings and intrigues of the Court. For them, this was a paradise where they could hunt the deer, bear and boar that ran free. Of course, with the King absent, the tongues of the courtesans would begin to wag, leading local people to say: "The King is in Babia" to mean that the King wanted nothing to do with anything that was going on.



View of the Babia valley

Date declared biosphere reserve: 29 October 2004

Surface area: 38,018 hectares (Core zone: 32%. Buffer zone: 60%. Transition zone: 8 %)

Location: Province of León. Castilla y León

Municipalities: Cabrillanes and San Emiliano

Management body: Babia Biosphere Reserve Management Consortium

Address: Ctra. León, km. 17.

24142. Cabrillanes, León

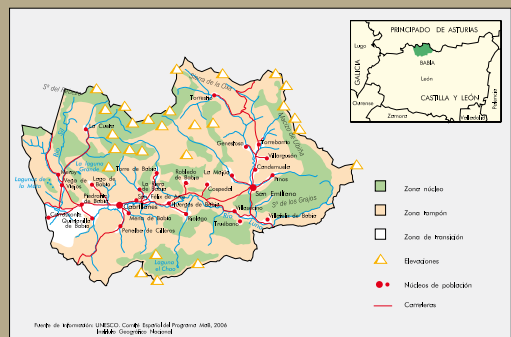
Telephone: 987 488 831

Email: medioambiente@cabrillanes.com

Other protection: Babia and Luna Valleys Natural Park (pending declaration), Site of Community Importance, Special Protection Area for Birds.

Biogeographical Region / Province:

Euro-Siberian /European Atlantic Province



Natural Heritage



Fuente Michan in Las Murias.

The topography of the region is determined by the presence of two great mountain ranges, rising steeply to peaks over 2,000 metres at points. The sierra runs east-west, with an extensive valley at an altitude between 1,100 and 1,300 metros running between the two massifs, the river basin for the Luna and Sil.

En Babia there are numerous points of geological interest, generally derived from glacial and riverine landforms. One of the most impressive points can be seen from the Puente de las Palmas bridge: the stream capture of the River Luna by the River Sil. This due to the fact that the River Sil has to span a difference in altitude from its source to where it meets the sea, resulting in greater erosive force than normal and a phenomenon known as headwater ero-



Saxifraga babiana.



Chao Lake in Riolago de Babia

sion, through which the river “captures” headwaters which drained into another river basin, in this case, the River Luna.

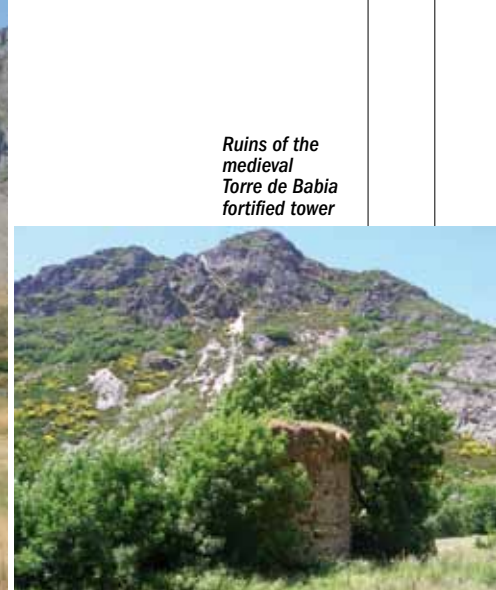
Babia’s flora and fauna are closely related to traditional livestock farming. Woodland formations - beech, birch and oak groves - witness to the ancient vegetative cover, have given way to meadows and pastures that have been essential to the upkeep of human communities who have based their economy on raising livestock. Between them, abundant scrubland - in many cases abandoned pastures gradually being taken over by old-growth forest - areas in which underbrush and pasture coexist, and both alpine and subalpine environments (rocky land, shale and rubble) where productive use of the land is practically impossible. Although less populated, the lagoons and highland moor are the real focal points of biodiversity in the region.

One of the most important alternative sources of income in the region can also be found on the Reserve’s meadows, the St. George’s mushroom (*Calocybe gambosa*).

Cultural Heritage and Landscape



Cattle grazing near the La Fonfria pass



Ruins of the medieval Torre de Babia fortified tower

Without doubt the droving of merino sheep has been the key factor in establishing Babia's natural heritage and culture. In comparison to the neighbouring mountainous districts and the high plains of the mountain passes, the wide valleys favoured local livestock farming with permanent flocks who were joined by large numbers of sheep brought up from the south in those summer months where the lack of water and high temperatures make grazing impossible.

This phenomenon, known as transhumance, has been carried out since time immemorial, although its origin as an organised activity can be traced back to the 13th century, with the creation of the Honoured Council of the Mesta, and survived until the mid-20th century, shaping the countryside. During the heyday of the Mesta, between the 16th and 18th

centuries, three and a half million merino sheep were driven along the cañadas reales or drovers roads, mainly coming from Andalusia and Extremadura on route to the Cantabrian mountains and the Pyrenees. The need to feed these animals in the summer meant that new grazing land had to be found at the expense of tree cover, explaining the scarcity of woodland in Babia. The mountain passes at Babia, La Cueta, Torre, La Majúa and Torrestío, acquiring great fame among shepherds and the leasing of the pastures was an important source of income for landowners.



BABIA

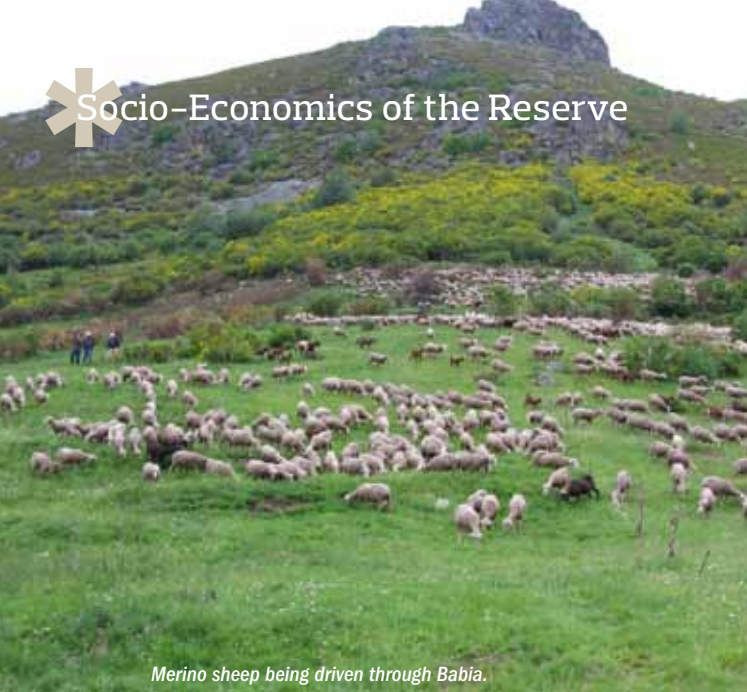
BIOSPHERE RESERVES

These livestock practices have coexisted perfectly, even in intimate co-dependence, with a number of species of endemic flora, a coexistence that can be seen in the balance that exists between man's intervention and biological diversity.



Hispano-Breton horse fair, held in San Emiliano

Socio-Economics of the Reserve



Merino sheep being driven through Babia.

Transhumance

In the 13th century the Honrado Concejo de la Mesta - the Honoured Council of the Mesta - was founded, which, over the following centuries, consolidated transhumance in Babia, with the Spanish statesman, author and philosopher Jovellanos to comment "In summer in Babia three hundred thousand head of merino sheep can be found grazing..." during a trip he made from 1790 to 1792

The Babia Biosphere Reserve covers two municipalities, Cabrillanes and San Emiliano, which in turn are made up of 28 villages and slightly less than 2,000 inhabitants.

Livestock farming has long been the main traditional economic activity in the region, taking two main forms: Transhumant herds which summer in Babia and the permanent livestock, who would be driven between the valley and the mountain within the Babia.

Communal ownership of the land, regulated through the intervention of councils, meant that the leasing of mountain pastureland was a significant source of income.

In the early 20th century a new economic activity came into the picture, albeit undertaken with most intensity in peripheral areas of the Reserve: coal mining.

In addition to the general decline that extensive livestock farming has experienced throughout Spain since the mid-20th century, Babia has also seen how coal mining has taken the place of traditional farming, meaning that today the practice of transhumant farming is virtually non-existent.

There are still open-cast mining activities undertaken within the Reserve, although the restructuring of the sector over recent years has meant that it too has gone into decline, meaning it is now necessary to return to what had previously been the main economic activity in the region - livestock farming.



Traditional architecture associated with livestock farming



The Reserve's contribution to sustainable development

The declaration of Babia as a Biosphere Reserve comes in addition to the granting of Site of Community Importance and Special Protection Area for Birds status, within the Natura 2000 Network, as well as the forthcoming declaration of the region as the Valles de Babia y Luna Natural Park. Under the auspices of the Cabrillanes and San Emiliano town councils, the Babia Biosphere Reserve Management Council was founded in 2009. This body not only includes representatives from these town councils, but also land owners and public land managers (neighbourhood councils and the Junta de Castilla y León regional government), the University of León and local associations and businesses in order to develop sustainable management and economics projects in this mountain area. A large part of this sustainable development is in the area of strengthening activities that promote the conservation of traditional ways of life and Babia's culture, as well as improving the quality of life for local people. This includes the upkeep of transhumant farming, which



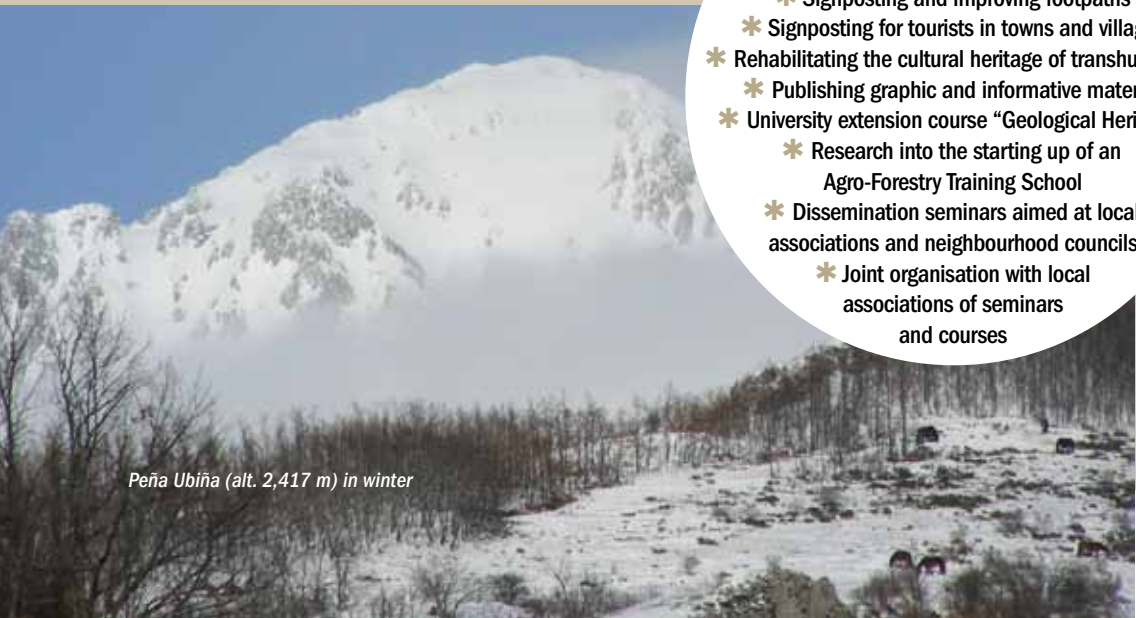
The Las Verdes glacial lagoon

BABIA

is seen as a key objective, both in terms of the fundamental role it plays in Babia's culture, and as a conservation tool for the Reserve's biodiversity.

Key Projects

- * Consolidation and visualisation of the Biosphere Reserve
- * Signposting and improving footpaths
- * Signposting for tourists in towns and villages
- * Rehabilitating the cultural heritage of transhumance
- * Publishing graphic and informative material
- * University extension course "Geological Heritage"
 - * Research into the starting up of an Agro-Forestry Training School
- * Dissemination seminars aimed at local associations and neighbourhood councils
 - * Joint organisation with local associations of seminars and courses



Peña Ubiña (alt. 2,417 m) in winter

Public use and tourism

The main activity in Babia in terms of public use of land is still livestock farming, although no longer involving transhumance.

Woodland activities represent another important use of land, with the gathering of wild mushrooms and gentians especially popular in Babia. The gathering of wild mushrooms especially, the St. George's mushroom, in spring, has led to the forming of the Setas de Babia mycological association to oversee these activities in a number of villages in the region.

The gentian, a plant that has important organoleptic and medicinal characteristics, has lost a significant part of the economic importance it had in earlier times, and is hardly used these days.

Both livestock farming and wild mushrooms are two important resources which are also of tourist interest. Through the special gastronomic days organised by the Estás en Babia Association, in which most restaurants in the region are involved, locals and tourists alike are made aware of the quality of Babia's wild mushrooms in spring and the Hispano-Breton colt meat in autumn. However, it is perfectly possible



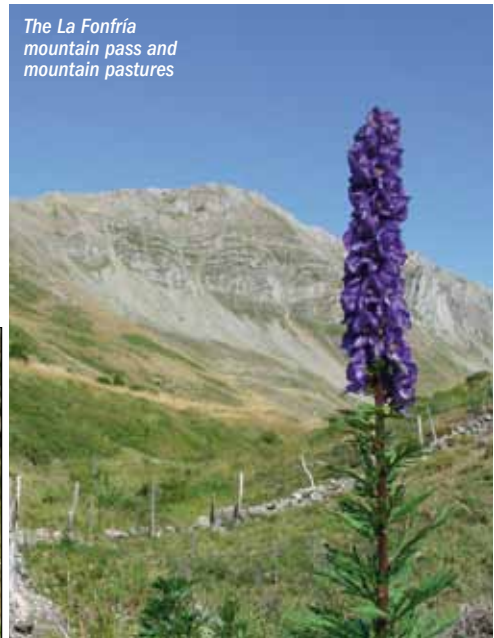
St. George's mushroom (*Calocybe gambosa*).

to enjoy the rich heritage of local transhumance farming throughout the year, for example, by sampling the delicious traditional local cuisine, defined by its quality, simplicity and the economy of its ingredients.

In recent years the Biosphere Reserve has sought to improve tourist infrastructures through the upkeep and upgrading of footpaths, signposting for tourists in towns and villages and the publishing of tourist material for dissemination outside the Reserve.



Traditional Babia granary



The La Fonfría mountain pass and mountain pastures

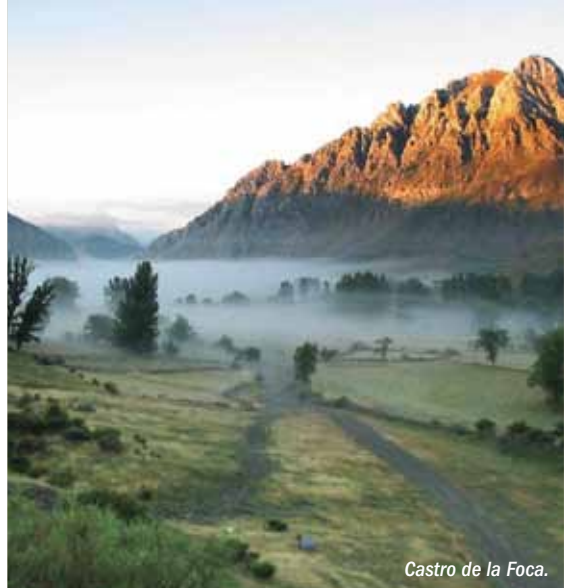
LOS ARGÜELLOS

Declared a Biosphere Reserve in 2005, Los Argüellos is situated in the north of the province of León, bordering Asturias.

There are three municipalities within the Reserve, each with authority over a number of villages (17 in Cármenes, 4 in Vegacervera and 12 in Lugueros).

Los Argüellos is an example of a typical Cantabrian mountain ecosystem, in which the meagre resources have been wisely used by local people for centuries, resulting in a unique landscape.

The River Torío, which has shaped the Hoces de Vegacervera gorge, splitting an enormous block of rock, consolidated limestone from the Mesozoic era, producing a gash that is almost 500 metres deep and where the width never exceeds 15 metres. Another of the arteries cutting through this Reserve is the River Curueño, crossed by numerous Roman bridges.



Castro de la Foca.

Date declared biosphere reserve: 29 June 2005

Surface area: 33,260 hectares (Core zone: 18%. Buffer zone: 75%. Transition zone: 7%)

Location: North of the province of León, bordering Asturias.

Municipalities: 3 (Cármenes, Valdelugeros and Vegacervera)

Management body: The Los Argüellos Biosphere Reserve Management Body

Address: Avda. Suero de Quiñones 32 Bajo, 24002 León.

Telephone: Tel. No.: 987 07 32 03

Fax: 987 07 32 04

Email: oficina@arguellos.eu, coordinación@arguellos.eu, eduardo@arguellos.eu

Website: <http://arguellos.eu/>

Other protection: Site of Community Importance (SCI) (2)

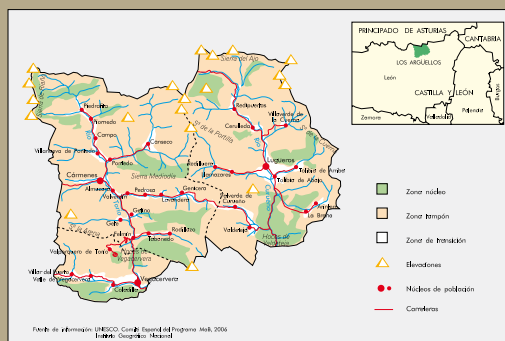
Natural Space

Points of Geological Interest

Points of Biological Interest

Biogeographical Region / Province:

Euro-Siberian / European Atlantic



Natural Heritage



Wild carnation



Griffon vultures



Wild mushroom



Waterfall

The Reserve features undeniably attractive geo-morphological forms, most notably, numerous caves, such as Valporquero, Llamazares and Barredo, all of which are of great tourist and scientific interest. Water has also shaped - albeit through completely different processes - the spectacularly narrow Hoces de Vegacervera and Valdeteja gorges which open out into valleys where material has succumbed to the excavation caused by water courses. The region presents widely-varied vegetation, which includes ranging from alpine pastures to Pyrenean oak groves more typical of a Mediterranean environment, and featuring large numbers of endemic species, such as the endemic juniper woods.

There are also other notable ecosystems, such as the sub-steppe areas with annual grasses, active peatland or mires, and petrifying springs with tufa formation. In the numerous caves and sinkholes 15 of the 26 species of bats on the Iberian Peninsula can be found. There are also significant numbers of birds of prey, as well as two of the vertebrates most typical of the Cantabria Mountains: the grey partridge and broom hare.

As far as the Reserve's fauna is concerned, mention should also be made of the brown bear, one of the most endangered species on the Iberian Peninsula. The three-year (2009-2011) LIFE+ Communication Corridors for Brown Bear Conservation project is currently being implemented in the inter-population corridor which seeks to promote action which seeks to bring together the eastern and western bear communities through the local towns and villages, including Cármenes, Valdelugeros and Vegacervera.

As well as the previously mentioned protected spaces it is also worth mentioning the Point of Geological Interest (PGI) - the aforementioned Hoces de Vegacervera gorge - and the Point of Biological Interest - the pre-Roman mines at La Profunda. These are partially accessible from the Collada de Cármenes where it is still possible to find rock samples in the rubble with traces of minerals such as chalcopyrite in its transition to bornite, and thin veins of tennantite and the strangely beautiful zeunerite.

The steep rugged relief of Los Argüellos



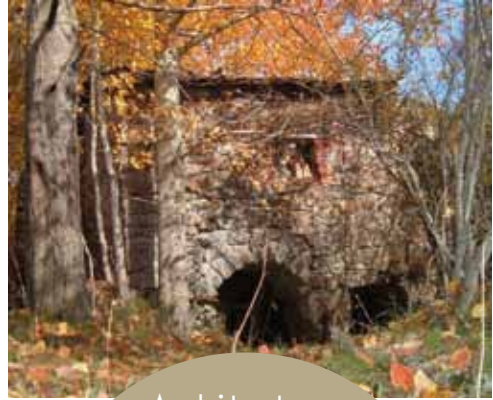
Cultural Heritage and Landscape

Returning to the Neolithic period we find signs of settlements and other vestiges of the past, such as the Bueyes Cave in Cármenes. The next inhabitants of this mountainous region were the Asturs, with the remains of castros found in a number of locations across the Reserve.

With the arrival of the Romans, who christened this mythical land Arbolio, the origin of the current name of Los Argüellos, a number of structures began to appear which still survive today: bridges and Roman roads; as well as numerous place names that hark back to that period: The prefix “Busto-” and the suffix “-quemado” can be found throughout the three municipalities. For example, Busticesar and Bustefrades in Cármenes, Bustarquera in Valdelugueros etc.

The Valdelugueros town limits have an important Roman legacy, with numerous roads and bridges that the Curueño upriver. These bridges were connected by a road of Roman origin, today known Calzada de la Vegarada (the name of the mountain pass that provides access to Asturias).

The Middle Ages saw the writing region's key history, with repopulation, neighbour-



Architecture

Architecturally, we should highlight the solid, almost hermetic buildings, made from worked stone or cobblestone, almost always featuring an inner patio and sun porch, as well as space for livestock (pens for cattle and sheep). The centres of the region's villages have largely conserved the traditional building styles and techniques.

hood councils set up etc. Vegacervera (the name is a reference to the deer that were once abundant, just as Valporquero indicates the profusion of wild boar) had an important pilgrims' hospital.

The Cármenes Cultural Week, held each year in August for over twenty-five years, is the oldest of its kind in León.



Dusk



The Cristo fiesta in Lugueros

Socio-Economics of the Reserve



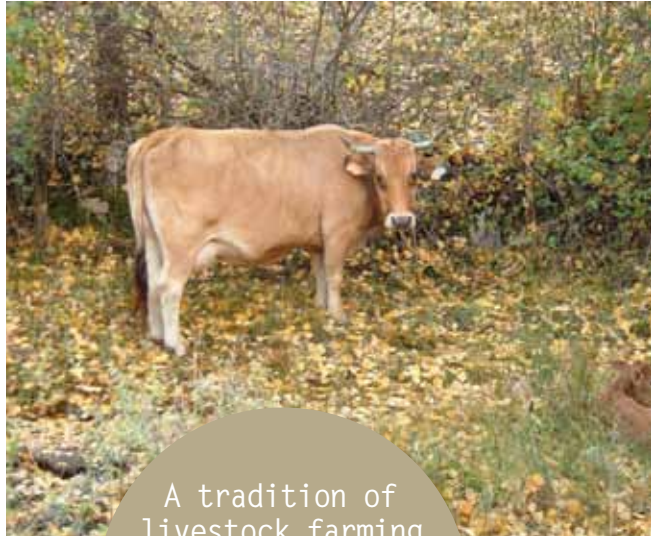
Winter scene

Its demographic highpoint came in the early 20th century, when municipalities such as Cármenes exceeded 2,200 inhabitants, Vegacervera approached 1,000 people and so on.

The demographic tendency from the second half of the 20th century to the present day has been markedly downward: none of the three municipalities within the Reserve exceed 500 inhabitants.

The Spanish Civil War had a devastating effect on the region, as has rural depopulation and an insufficient network of basic infrastructures. We should also add the decline in activities such as mining, the precarious nature of local education (an absence of open schools) etc.

In the municipality of Valdelugueros, within the Reserve, is the San Isidro Ski Station, which has been operating since the 1970s. In spite of the economic contribution this makes, the ski station is nevertheless an environmental danger to species such as the brown bear which lives in these mountains and highly vulnerable to human activity. The



A tradition of livestock farming

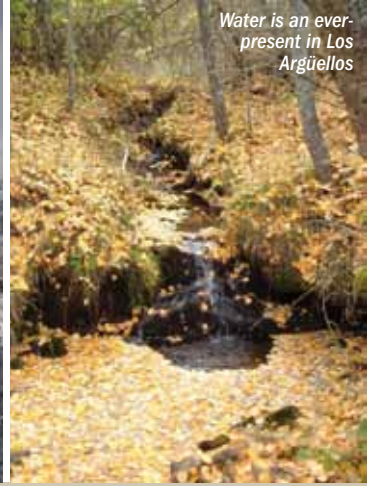
Livestock farming, especially cattle, is very important to the region, as are the livestock fairs held in the area, despite their gradual disappearance in a number of village.

León Central Mountain Site of Community Importance is split into two separate parts due to the existence of the ski station.



Equine livestock

The Reserve's contribution to sustainable development



LOS ARGÜELLOS

Making good use of the area's potential, such as meat and dairy products, craft produce, the strengthening of selected quality crops, such as the French green lentil, leisure, rural and nature tourism, representing activities that allow economic development without hindering the Reserve's ecological potential. Thus the countless natural attractions in the area and the know-how to take full advantage of them should mean infinite possibilities for the tourist sector.

The growth of gastro-tourism is also noteworthy: cheeses, cecinas, lomo or cured pork loin, and cured ham are among the specialities, favoured by the region's climatic and biological characteristics. This allows traditional craft activities that have been passed down from generation to generation to continue.

The Cecina de Chivo fair in Vegacervera

On the second Sunday of November each year, Vegacervera hold a popular local fair at which the focus is on cold and cured meat, such as the exceptional cecina de castrón, made from cured goat meat, also popularly known as Dios nos libre cecina - "Heaven forbid cecina". The tradition of local fairs is completed by Las Borregadas, an age-old custom of eating borregas - lamb that is one or two years old - in large groups.



BIOSPHERE RESERVES

Public use and tourism



There is a marked difference between seasons on the Reserve



Cueto Ancino.



Footpaths represent the perfect way to enjoy and conserve natural and ethnographic values, as well as being a resource that has hardly been exploited to date and one with great potential.

The Valporquero cave is especially noteworthy for its subterranean formations which are characteristic of karstic environments. The first level of the cave is open to the public (of over 3 km, only 1,300 metres can be visited).

The Biosphere Reserve features a large number of signposted routes on which visitors can fully appreciate its countryside, culture and customs.

Some of the existing routes have been marked and signed by the Asociación Cuatro Valles, who have also published informative pamphlets for each path. These include:



- * Valporquero to Valle and Coladilla
- * The Pico del Gallo Route
- * Ubierzo to Sancenas

Others have been prepared by the local town councils, such as the Rutas del Paraíso, created by Valdelugeros town councils. Further information of this route is available at the town hall.

There is also plenty of rural accommodation and restaurants available to those visiting the region.

Jesús Pierna Chamorro, Miriam Muñoz Delgado,
Ana Domínguez García, Jaime Sánchez Rocha
Carolina Martínez Jaraíz

SIERRAS DE BÉJAR Y FRANCIA

The Sierras de Béjar y Francia Biosphere Reserve is located in the south-east of the province of Salamanca, bordering the provinces of Ávila and Cáceres. From a bio-geographic point of view it is deemed to be in the Mediterranean Region, although various areas show a clear Euro-Siberian influence. This ensures a reserve that is rich in natural beauty, with areas of great interest where the two regions converge.

Zoning

The core zone coincides with the areas of greatest interest from a nature protection perspective, such as the Natura 2000 Network, the Natural Protected Areas Network and the designated Critical Areas for the black stork, and the “El Berrueco” archaeological site (in the municipality of El Tejado) due to its cultural importance. The buffer zones surround the core zone, with no inhabitants, are the areas in which the main economic activities, such as crop and livestock farming, take place, as well as the greatest amount of forestry operations and hunting reserves. The transition zone is where the local towns and villages can be found, as well as transport links, quarries and reservoirs. Here we can also find traditional crops grown close to villages, as well as local tourist activities.



Woodland in autumn

Date declared biosphere reserve: October 2006

Location: South-east of the province of Salamanca, Castilla y León.

Surface area: 199,140.28 Hectares

Municipalities: 88 municipalities

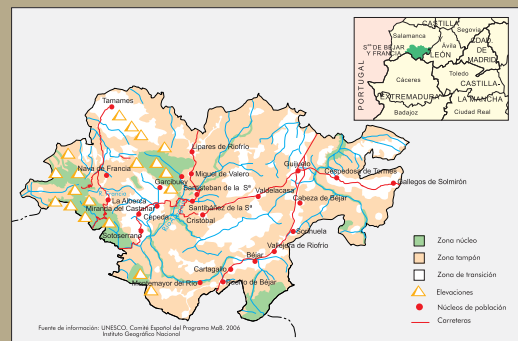
Management body (contact details ASAM (Asociación Salmantina de Agricultura de Montaña), c/ Castillo nº 1, 37671, San Esteban de la Sierra, Salamanca.

Telephone: 923 43 51 55

Email: info-biosfera@bejar-francia.org

Website: www.bejar-francia.org

Other protection: Las Batuecas-Sierra de Francia Natural Park, “Quilamas” and “Candelario” Protected Natural Areas, Sites of Community Importance (8), Special Protection Areas for Birds (5), The Las Batuecas National Hunting Reserve
Biogeographical Region / Province: Mediterranean



Natural Heritage



Hoya Moros



Griffon vulture flying over the Sierra de Béjar

Fauna

The wide variety of flora (over 2,000 species) ensures there is a similarly extensive diversity of habitats, home to over 5,000 species of invertebrates and 300 vertebrates. Here we should highlight two important endemic species, *Cobitis vettonica*, a ray-finned fish in the Cobitidae family, and the Peña de Francia rock lizard (*Iberolacerta martinezricae*), as well as emblematic species such as the griffon and black vultures, Bonellis eagles, black stork, salamanders, wild boar, red deer and the near-mythical Iberian lynx.

The Biosphere Reserve is defined by the Sierras de Francia, Quilamas and Béjar-Candelario. The materials that make up these mountain ranges are among the oldest in Spain, most notable the slate and quartzite in the Francia and Quilamas mountains, with the famous *Cruzianas* (trace fossils of extinct trilobites) visible in the walls of buildings in villages such as Monsagro. The Sierra de Quilamas features a narrow strip of limestone which was quarried to extract lime and which gave its name to the area.

Flora

Oak and holm oak groves can be found throughout the Reserve, with these trees and ash growing in the region's famous *dehesas* in the milder areas. In many areas there are chestnut groves, most notably in Montemayor del Río where the wood is used in basket-making. Alongside these woods, there are a number of unique formations such as the strawberry tree (*Arbutus unedo*) wood in Miranda del Castañar, holly groves in the Honfría Woods in Linares de Riofrío and the English oak groves in San Martín del Castañar.

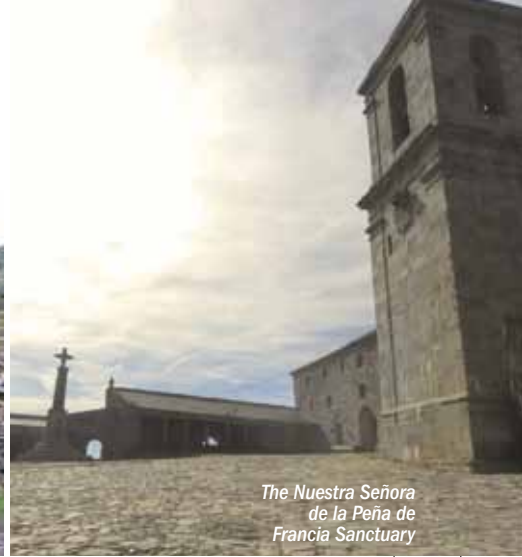
Panoramic view over the Sierra de Quilama



Cultural Heritage and Landscape



Grapevines growing on terraces



The Nuestra Señora de la Peña de Francia Sanctuary

There are 34 Assets of Cultural Interest dotted around the Reserve. Notable among these are the Palaeolithic remains, cave paintings, Roman mining or the *Vía de la Plata* Roman road. Monuments in the region include its sanctuaries, castles, churches, hermitages, palaces, bullrings, and the *rollos de justicia* or justice columns etc.

In addition to this long list we should add the declaration of 8 villages as Sites of Special Historical-Artistic Interest. The architecture of the Sierra de Francia can be characterised by the curious oak or chestnut half-timbered houses. In the Sierra de Béjar-Candelario the ashlar stone complements the characteristic *batipuerta* wooden doors

in Candelario, whilst on the plains the timbering combines with whitewashed adobe and granite.

The region's cultural wealth can be seen in the local musical instruments, such as the *gaita* or Spanish bagpipes and the *tabor*; the traditional clothing with its *serrano* embroidery or the sumptuous gold, silver and coral jewellery and the work of local basket makers, potters and gold- and silversmiths. The delicious local cuisine with the products from the traditional autumn butchering of pigs and numerous other fine dishes, such as *hornazo* a pie containing chorizo, pork and hard-boiled egg, *calboches* or roast chestnuts are associated with an festive extensive calendar.

SIERRAS DE BÉJAR Y FRANCIA

Landscape

The Reserve contains a broad panorama of landscapes. Among these, it is worth highlighting: The sierras, with their full pallet of colours, from the white snows of Béjar and Candelario, to the deep russet browns of the Sierra de Francia and Quilamas, where the lie of the land has dictated it be divided up into smallholdings with fruit and vegetables grown on terraces; passing through the yellows of Entresieras, with its summer wheat and the *dehesas* or meadows dotted with ash and holm oaks, whose fruit feed the prized black Iberian pigs which roam freely and the peculiar granites outcrops.

Mogarraz - Site of Special Historical-Artistic Interest



Socio-Economics of the Reserve

The Reserve has 43,110 inhabitants living in 88 municipalities. Their distribution is not equitable, as only three municipalities have more than 1,000 inhabitants, with the majority having a population of less than 500. This has not always been the case, as there are currently 34,000 inhabitants less than at the start of the 20th century. Although the population is ageing visibly, there is nonetheless a high percentage between 15 and 64 years old.

The textile industry, of great importance in the past, has left a significant industrial legacy on the banks of the Cuerpo de Hombre River. Most important here is the meat product sector with the cured ham “Jamón de Guijuelo” granted Protected Designation of Origin status, covering virtually the whole of the Biosphere Reserve. Mining is also a significant economic activity, most notably the



*Chestnut wood
basket making*

*Cured Guijuelo ham granted
Protected Designation
of Origin status*



extraction of wolfram in the villages of Los Santos and Fuentes de Salavatierra.

The sector which is currently most experiencing a boom is tourism. This is being developed within the framework of the European Charter of Sustainable Tourism in the Batuecas-Sierra de Francia Natural Park, with the forthcoming implementation of a Sierras de Béjar y Francia Biosphere Reserve quality trademark.

Grazing cattle

Main economic activities

The main economic activities are pig, sheep and goat livestock farming, beekeeping and the growing of olives, grapes and cherries. Alongside these traditional activities, an industry has grown up dedicated to the processing of these products, with oil mills, honey producers, cherry cooperatives and wineries that belong to the “Vinos Sierra de Salamanca” Protected Designation of Origin.



La Calería excursion, part of the "Spring in the Sierra" programme



RBSBF Festival of Dance and Traditional Musical



The cover of the book "Paisajes e Impresiones: un recorrido por la Reserva de la Biosfera de las Sierras de Béjar y Francia"



The Reserve's contribution to sustainable development

Projects

"Revitalising the Sierras de Béjar y Francia Biosphere Reserve: the Drawing up of a Strategic Plan" and "Consolidating the Sierras de Béjar y Francia Biosphere Reserve's Identity: A Participative Model", which seeks to create a new model of rural development based on the participation of local people in the management and maintenance of biodiversity and the landscape.

The setting up of a management body and the drawing up of the Management Plan. The drawing up of a 2008-2013 Strategic Plan.

Communication with local people and ensuring their participation: informative workshops, forums, the "Spring in the Sierra" revitalisation programme, Pho-

tography and Painting Competition, Festivals of Dance and Traditional Musical, website, land bank, land stewardship.

Education

The release of an Educational Unit prepared by the reserve.

Research

Cerro del Berrueco Archaeological Site Workshop, scientific committee, the "Sustainable Development" UNESCO Chair at the University of Salamanca.

Landscapes from the Sierras de Béjar y Francia Biosphere Reserve Research into the characterisation and delimitation of the Reserve's landscapes:

- * **Field work:** inventory of unique elements, compilation of information for data sheets, interviews with local people, photographic archive.
- * **Studio work:** the gathering and processing of data and geo-referenced cartography, analysis with GIS tools, final cartography with 18 Reserve landscapes.
- * **Educational publication with the following results:** *Paisajes e Impresiones: un recorrido por la Reserva de la Biosfera de las Sierras de Béjar y Francia* "Landscapes and Impressions - A visit to the Sierras de Béjar y Francia Biosphere Reserve"



Green homes

DERSOS Programme aimed at working with the local administration, schools and colleges and the general public. Energy efficiency and savings, providing domestic energy saving solutions as applied to 250 homes.

Analysis of environmental quality and management within the tourism sector

The "Green Homes" energy-saving programme

* Public use and tourism



The particular conditions in these mountains, with its outstanding natural and cultural heritage, make the Sierras de Béjar y Francia Biosphere Reserve an exceptional tourist destination. Complementing the spectacular countryside is a tourism infrastructure which can handle a large number of visitors as well as a wide range of restaurants and activities which allow visitors to get to know, learn about and enjoy this extraordinary region.



Long-Distance trails

The Sierras de Béjar y Francia Biosphere Reserve features over 450 km of long-distance trails, all well signed and featuring information panels regarding the particular characteristics.

Each of these focus on a relevant aspect of the Biosphere Reserve, covering the natural, cultural and historic areas represented:

Central System trails: GR-10

- * Vía de la Plata: GR-100
- * The Historic Path route: GR-181
- * Quilamas - Peña de Francia: GR-182

Other centres of interest:

- * “Las Cavenes”, the former Roman gold mine in El Cabaco
- * Casa Albercana “Satur Juanela” in La Alberca
- * Textile factories in Béjar Located along the Cuerpo de Hombre River in Béjar
- * “Casa Chacinería” in Candelario
- * Montemayor del Río Castle
- * The “Zahoz” Centre for the Conservation of Ethno-Botany and Agro-Biodiversity in Cepeda

- * Cañada Real - Soriana Occidental: GR-183
- * The Mountain Landscapes route: GR-184
- * The *Corredor Verde del Tormes* eco-route: GR-189

Interpretation Centres

Biosphere Reserve Interpretation Centre: Located in San Martín del Castañar Castle, this centre outlines the Reserve’s characteristics in an interpretative and innovative fashion.

The Batuecas-Sierra de Francia Natural Park Centre: situated in La Alberca.

VALLE DE LACIANA

The Valle de Laciana Biosphere Reserve is in the north-west of León province, in the heart of the Cantabrian Mountains. To the north and west it borders the Muniellos and Somiedo Biosphere Reserves in Asturias, to the east and south the Babia and Valle de Omaña y Luna Biosphere Reserves in León and to the south west with Palacios del Sil, also in León. The valley is well defined geographically, watered by the River Sil and its small streams and tributaries. Although climatically the reserve is within the Euro-Siberian zone, there is still a Mediterranean influence. This is a very mountainous area, with altitudes between 950 m and 2,188 m above sea level.

Zoning

The core zone consists of four areas of considerable ecological value: Barroso-Brañarronda, Alto de Reciecho, Buzongo and Muxivén. In total they cover over 2,500 hectares. Within the Reserve there are also a number of critical areas which are home to capercaillie and brown bears which are governed by specific regulations. The buffer zone is the largest area, covering most of the Reserve and characterised by a mosaic of woodland, meadows, high pastureland, bilberry shrubs and rocky outcrops, with vast areas of great environmental interest. Extensive livestock farming accounts for a large part of this region. Finally, the villages and main economic activities can be found in the transition zone. The entire Reserve has been declared a Site of Community Importance, Special Protection Area for Birds and Protected Natural Area.



View of Cornón, the highest peak in the Laciana Valley

Date declared biosphere reserve: 10 July 2003

Surface area: 21,700 hectares.

Core Zone: 12 %. **Buffer zone:** 80%. **Transition zone:** 8%.

Location: North west of León province, in the Cantabrian Mountains

Municipalities: 1 municipality (Villablino), 14 villages.

Management body: Laciana Biosphere Reserve Foundation

Address: Avda. de la Constitución, s/n. 24100 Villablino, León

Telephone: 987 47 00 01

e-mail: info@fundacionlaciana.com

director@fundacionlaciana.com

Website: www.fundacionlaciana.com

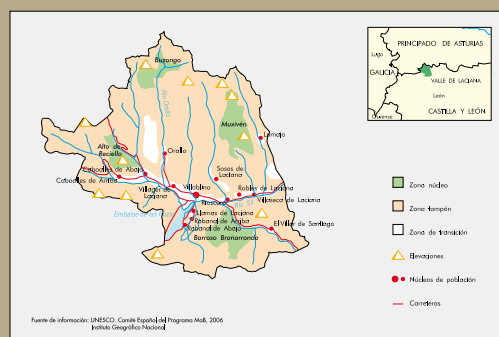
Other protection: Alto Sil Natural Protected Area

Alto Sil Site of Community Importance (SCI) Alto Sil

Special Protection Area for Birds (SPA)

Biogeographical Region / Province:

Euro-Siberian / European Atlantic





Chamois, commonly found on Laciana's northerly peaks

Natural Heritage

Flora

The Laciana Valley is also home to extensive birch groves and mixed woodland of extraordinary ecological value, some of the finest examples in all Spain. Birch, rowan trees, maples, yews, holly, hazel trees, ash and beech trees cover over 3,500 hectares of the Reserve, creating woodland areas of outstanding beauty. Above the woodland bilberry shrubs are common, as are the mounting pastures, mixed with creeping scrub, all of which have adapted to the harsh climatic conditions.

The Reserve is an evidently mountainous area, situated right in the heart of the Cantabrian chain, with a number of peaks over 2,000 m in altitude. The valley streams divide up this area, bringing together the high mountain and the lower meadows, situated between 950 m and 1,200 m above sea level. There are numerous points of geological interest in the Laciana Valley, which gives us a vision of the geological and geo-morphological evolution of the region. Noteworthy here are the abundant glacial remains, especially the Castro and La Tsagunona lagoons. Laciana also features one of Spain's largest coal fields, which have been mined since the early 20th century.

Fauna

The rich biotopes in the Laciana district make it home to numerous species of great interest. Noteworthy among these are the brown bear and the Cantabrian capercaillie, which have stable populations within a core zone that is fundamental to its survival. Among other species of interest, special mention should be made of the wolves, chamois, deer, broom hare, grey partridge, otters, the Pyrenean desman, horseshoe bats, salamanders and Alpine, marbled and palmate newts.



Mixed woodland in Barroso

View over Tsagunona, of glacial origin, in Sosas de Laciana



Autumn woodland colours,
El Villar de Santiago

The Laciana Valley has a rich cultural heritage, especially the numerous *brañas* that dot these mountains. *Brañas* are mountain meadows at altitudes between 1,200 and 1,600 m where livestock is kept during summer. These pastures are especially notable for the small stone barns in which the animals can shelter. Above the *brañas* are the *majadas*, the higher pastures where transhumant sheep grazed. Here visitors can see the traditional stone *corrales* and *chozos*, some of which have been recently restored, most notably those in Sosas de Laciana.

Local villages also conserve their characteristic traditional architecture, with their *hórreos* or raised stone granaries, semicircular houses and cobbled streets. Villages such as Lumajo, Robles and Sosas all still have a very special charm. Mention should also be made of the San Xulián church at Robles, the Carrasconte Sanctuary and the anthropomorphic tombs in Sosas church.

Landscape

The meadows, market gardens and villages in the valley, mixed woodland combined with heathland and high-mountain meadow on the hill side and peaks, frequently covered by snow, bilberry shrubs, grazing pastureland and rocky land all create a spectacularly colourful mosaic. The many shades of green in summer, the contrast with the white mountain peaks and the brown of the woodland in winter and the yellows and reds of autumn, outstanding here due to the great variety of trees all create unforgettable sensations.

Also noteworthy is the region's mining heritage, an area of growing interest. The Roman era has left its legacy in the form of remains of gold mining operations, as well as a number of *castros*, currently undergoing renovation.

We should finally highlight the existence of *Patsuezu*, a dialect of the Astur-Leonese language which, although spoken by very few people, is kept alive in the numerous place names and traditional activities, and games such as milk churn races, tug-of-war and *bolos* the local version of boules.

Cabin on the San Justo braña
(El Villar de Santiago)





Horses grazing on the Vallerona Braña (Caboalles de Abaj)

Socio-Economics of the Reserve

through projects such as the Villablino *Parador Nacional*, the *Castros Interpretation Centre*, the *Senderos de Laciána* network of public footpaths and trails, and new realities, such as the *Leitariegos Ski Station*, *la Vía Verde de Laciána*, a “green path” that runs along a disused mining railway line, the *Centro del Urogallo* (capercaillie centre) and a wealth of cultural and natural history heritage. Tourism should also be complemented with traditional livestock farming, local products and cottage industries.

The local population has been growing gradually, peaking firstly in 1960 with over 15,000 inhabitants. After a slight drop, the population of the Valley reached an all time high in 1991, with 15,628 people. From this point, the population began to fall off, slowly until 1998, then much more rapidly. Between 1998 and 2009, an average of 390 people a year left Villablino. This drop is due to the gradual reconversion that the coal sector has undergone, with the accompanying loss of thousands of mining-related jobs.



View over Villablino from Cueto Nidio

There is currently an attempt to halt the exodus with the promotion of new economic activities, such as tourism,

N° habitants	10,660
Population density	49,1 inhabitants per km2
Evolution of the population (2000-2009)	-3509 inhabitants
Birth rate	5,91
Death rate	11,64
Dependency ratio	44,84%
Rate of population ageing	20,84%
Unemployment (march-2009)	9,8%
Population by age group	
0-14 years of age	1.062 (10%)
15-64 years of age	7.364 (69%)
Más de 65 years of age	2.234 (21%)
Evolution of the population	
1900	2877
1930	6798
1960	15529
1991	15628
2000	14169
2008	10860
2009	10660



Miners going to work in Orallo

Mining

The evolution of the Reserve's population has been closely dependent on the main economic activity over the past 90 years: coal mining. Until 1910, the Valle had a population of less than 3,000 people, spread over the 15 villages of the municipality and who lived from livestock and subsistence farming. By the 1920, mining on a greater scale was commonplace with the building of the railway line that linked Villablino to Ponferrada, meaning that the mineral could be mined at a lower cost. Mining attracted large numbers of workers, firstly from neighbouring areas and then from elsewhere in Spain and abroad.



The Reserve's contribution to sustainable development

The Laciana Biosphere Reserve Foundation and Villablino Town Council are jointly promoting courses of action that contribute to sustainable development in the region, seeking to find alternatives to the fall in employment in the mining sector. Despite existing limitations a number of projects have been undertaken, most notably: “Promoting the Biosphere Reserve: The Elaboration of a Strategic Plan” and “The Development of an Action Plan for the Reserve”, which have been prepared since 2008, thanks to the support of the Biodiversity Foundation.



Environmental training course

Mention should be made here of the other initiatives promoted by the Biosphere Reserve, such as the Laciana

Botanical Park, the Villablino to Villaseca de Laciana *Vía Verde*, the “Green Patrol” or the Landscape Recuperation Plan.



Environmental education activities for schools Brañarronda (Rioscuro).

Action taken

- * Inventory and assessment of resources and damage
- * Mapping of the Biosphere Reserve and the preparation of a Geographic Information System
- * Drawing up of an Action Plan for the Reserve
- * Holding Promotional Days for the Reserve
- * Preparation of informative material
- * Public information and involvement campaigns
- * Environmental courses
- * Environmental education activities for schools, colleges and other organisations
- * Stimulate new initiatives in the private sector
- * Cataloguing of flora

Public use and tourism



Leitariegos ski station

As far as tourism is concerned, the Laciana Valley offers a landscape of extraordinary natural value, as well as a cultural heritage that is of great interest, and characteristic elements which are increasingly the subject of greater interest, such as the legacy of coal mining or the region's *castros*. Villablino is the centre of the area, where local services can be found as well as its hotels, pensions, pubs and restaurants. There are also numerous local homes offering rural accommodation and hostels in Villablino's 14 villages.

Tourist routes

A number of tourist trails throughout the region are being created. Here we should highlight the 6 km -long Laciana *Vía Verde* which runs from Villablino to the *Centro del Urogallo* (capercaillie centre) and which will soon be complemented by the *Vía Verde* which goes to Villaseca de Laciana. A path to the *Mirador del Castro* panoramic viewpoint which runs alongside the Villaseca lagoon has recently been signposted.

Centres of interest

Interpretation centres:

- * Natural Area Interpretation Centre, in Caboalles de Arriba, providing information on natural values in the region

Other centres of interest:

- * The Leitariegos Ski Station, at the Leitariegos Pass (Caboalles de Abajo)
- * Villablino Tourist Information Office. Avda. Constitución, 23, Villablino
- * Casona de Sierra Pambley (C/ La Brañina, 13, Villablino)
- * Laciana Social and Health Centre. Avda. de Asturias, s/n. Villablino



View over the village of Orallo

Within the Reserve there are other signposted trails promoted by *Cuatro Valles*: Cueto Nidio, La Zamora and Braña de Robles. As far as cycle tourism is concerned, the Valle de Laciana forms a part of the Mountain Bike Routes network which runs north-south through the old coal fields in the provinces of León and Palencia.

There is also the Los Molinos guided trail in Sosas de Laciana.

The *Senderos de Laciana* network of public footpaths allows visitors to walk a circular trail around the municipality.

Websites of interest:

www.fundacionlaciana.com
www.aytovillablino.com
www.leitariegos.net
www.cuatrovalles.es
www.patrimonionatural.org

VALLES DE OMAÑA Y LUNA

The Valles de Omaña y Luna Biosphere Reserve is situated to the north west of León province. The valleys are located between two distinctive bioclimatic regions - the Euro-Siberian and Mediterranean regions.

Zoning

The core zone coincides almost completely with other protected areas, such as the Natura 2000 Network and a future Natural Park. The buffer zone surrounds this core zone, in which activities such as extensive livestock farming and other compatible work is undertaken. Finally the transition zone contains the region's towns and villages, and the areas where human activity is more noted.

Values of an integrated heritage

* High biodiversity, due to the transition between two climates. The woodland is outstanding, with birch and Spanish juniper groves as well as endangered species of fauna, such as the brown bear and the Cantabrian capercaillie.

* Markedly traditional fiestas and *Romerías*, or local pilgrimages, such as the Fiesta del Pastor, and *romerías* such as the Pandorado and the Valdesamario.

The state of this region is the result of sustainable use of natural resources.



Date declared biosphere reserve: 29 June 2005

Surface area: 81,159 hectares (Core zone: 19%. Buffer zone: 74%. Transition zone: 7%)

Location: North-west of the province of León.

Municipalities: Los Barrios de Luna, Murias de Paredes, Riello, Sena de Luna, Soto y Amío and Valdesamario

Management body: A Consortium is currently being established as the management body

At Present: Murias de Paredes Town Council

Address: Plaza del Ayuntamiento, nº 2.

24130 Murias de Paredes, León

Telephone: 987593007

Email: Los Barrios de Luna Town Council:

secretario@aytolosbarriosdeluna.es

Murias de Paredes Town Council:

aytomuriasdeparedes@hotmail.com

Riello Town Council: aytoriello@gmail.com

Sena de Luna Town Council: info@aytosenadeluna.es

Soto y Amío Town Council: amio1@picos.com

Valdesamario Town Council: info@aytovaldesamario.es

Other protection: Valles de Babia y Luna

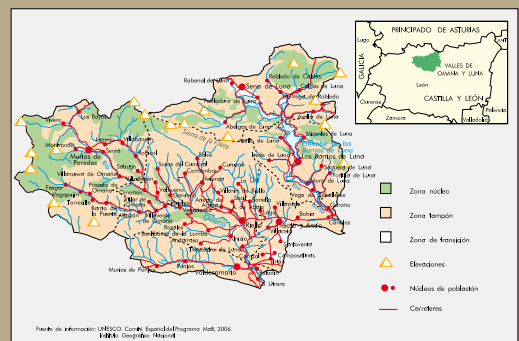
Natural Area (pending designation as a Natural

Park). Sites of Community Importance (2).

Special Protection Area for Birds (SPA)

Biogeographical Region / Province: Euro-

Siberian /European Atlantic





Red deer

This is a mountain reserve, part of the Cantabrian chain and surrounded by other important sierras. Notably, there are eight Points of Geological Interest, as well as a Global Geosite, in the valley of the River Luna, designated a Place of International Geological Interest. Places of particular interest:

- * Trilobite and Palaeozoic Series Site, Los Barrios de Luna
- * Angular discordance between the Pre-Cambrian and the Cambrian, Irede de Luna and Portilla de Luna
- * Glacial - Peri-Glacial ensemble at Arcos de Agua and Peña Cefera, Murias de Paredes
- * Boeza glacial valley, Murias de Paredes and Igüeña
- * Faults in limestone, Mallo de Luna
- * Stream capture and glacial lake deposits, Puerto de La Magdalena
- * Continental carboniferous site, Valdesmario

Fauna

The diversity of its ecosystems, the transition between two climates and the varied geology, among other factors, favour the presence of other characteristic species of fauna: bears, wolves, grey partridge, golden eagles, broom hares, and the famous Cantabrian capercaillie.

Flora

There are a number of plant formations of special importance, such as riverside formations on valley floors, giving way to broom scrub etc. Oak groves are dominated by the Pyrenean oak (*Quercus pyrenaica*), and share the reserve with birch and beech woods. Also worthy of mention is the Spanish juniper grove at Mirantes de Luna, a relic of the Tertiary era. The natural heritage involved in economic development is based on the grazing of a sizeable livestock population on pastureland, as well as the gathering of firewood, wild fruit and hunting.

The rivers, the Luna reservoir and wetlands allow the presence of water birds, such as anatidae, rallidae and ardeidae; otters and brown trout - one of the main attractions for tourists.

St. Georges mushrooms



Cultural Heritage and Landscape

Old ways of live and economic activities has left an important historical legacy. As far as religious heritage is concerned there is the hermitage of Nuestra Señora de la Pruneda, in Rabanal de Luna (15th century) and the church at Portilla de Luna, a beautiful yet understated image of the religious architecture that characterises León's mountains. From the civil and military world, Benal Castle in El Castillo, and the *casonas blasonadas* - the fine houses bearing coats of arms, such as the Conde de Nava mansion in Caldas de Luna, and the Luna family mansion in Murias de Paredes. Associated with the many rivers there are numerous traditional elements such as water mills, saw-mills, fountains and dairies, as well as Roman bridges, such as those at Murias de Paredes and Fasgar. Nonetheless, the main vestige left behind by the Reserve's first inhabitants is the Idol of Rodicol, dating back to the Bronze Age.

The Reserve's landscape is rustic and wild, mountain countryside that has been shaped since time immemorial by man. This shaping has mainly been the result of landscape farming, the main economic activity. The presence of pastureland, both in the high mountain and the fertile

river plains, and the need for small market gardens and vegetable plots to feed local people, make León's mountains a rich and unique mosaic. There are some spectacular views to be seen in Barrios de Luna, with the reservoir backed by limestone mountains covered with juniper groves and in Cueto Rosales, where the views of Omaña and its forests are remarkable. All of this is an open invitation to visitors and locals alike to enjoy the natural beauty that the Omaña and Luna valleys offer.



Traditions

Local culture can be seen in the region's buildings: the stone *majadas* and *chozos*, the place names and cuisine, especially the rich *caldereta* country stew; folklore, with the region's *pendones* - banner flags whose design is unique to each village - and traditional dances: the *balle chano*, accompanied by *tambourines*, accordions and flageolets, as well as the traditional games: *bolos leoneses* - a local version of French boules, *la calva* and *la rana*.

Socio-Economics of the Reserve

The demographic tendency has been downward since the mid-20th century. In the 1950s the population was in excess of 10,000 inhabitants, whilst today it is less than 3,500 (3,217 to be precise). As far as the structure of the population is concerned, the majority are aged around 60.

The main economic activities that are undertaken on this Reserve are closely tied to its natural resources. From the prime cattle, horses and sheep grazing on the rich pastures to the use of the mountains for firewood, honey, gentians and wild mushrooms. The rural exodus the Reserve has suffered over the past century, due to industrial development and the harsh life in the country, also led to the abandonment of many farming operations and the loss of traditional crop and livestock farming practices, meaning that these areas were quickly taken over by vegetation. Another of the key economic sectors is the tertiary sector. On the one hand, this means providing the basic services to the local population, such as food, health and primary education whilst on the other it implies developing a tourism based on the Reserve's cultural and natural wealth. Most



Horses grazing

notably there are two key tourist areas: the Barrios de Luna reservoir, in the Luna valley, one of the few that are navigable in León province, and the oak and birch groves in the Omaña valley, which are home to emblematic species such as the brown bear and the Cantabrian capercaillie.

Well-managed tourism, and the promotion of crop and livestock farming, should be the tools that permit sustainable development. The declaration of the region as a Biosphere Reserve is a further incentive to the many others that this area offers.



Collected firewood



Beehives



The Reserve's contribution to sustainable development

Projects

1. "Revitalising the Valles de Omaña y Luna Biosphere Reserve" (2008-2010). The main objective of this project is to ensure operations are independent and sustainable. This will be based on a series of partial objectives, among them:

- * The creation of its own administrative structure
- * The preparation of mapped socio-environmental inventory to be used, in collaboration with all the Reserve's sectors, as a basis for a Reserve Draft Action Plan
- * Public communication and awareness-raising campaign, in order to better develop the following areas: geology course, talks and information sessions, brochure outlining the main aspects of the Reserve and finally, educational units which pass on the importance of the Reserve to school students

2. "A study into the state of conservation of forest mass based on traditional usage and the involvement of the local population in the participative processes of the Reserve", 2010-2011, Currently in preparation, this seeks to outline models allowing the conservation of woodland mass and facilitate new approaches to economic development, ensuring the continuity of the previous project and consolidate the Reserve within the region



Geology course

3. A number of agreements have also been signed between the Ministry of the Environment and Rural and Marine Affairs, (2008, 2009, 2010), as well as numerous courses of action being undertaken in order to recover the ethnographic heritage, landscape and emphasising the value of the territory.



Point of Geological Interest:
Limestone faults

Public use and tourism

The diversity of possibilities offered by this region, on a natural, cultural ethnographic level, represents a real attraction, along with the wide range of accommodation on offer, make the Reserve a real draw as far as tourism is concerned.

There are a series of trails which highlight the most interesting corners of the region, with the Roman mine in Valle Gordo deserving special mention, a research project and the development of a region where the infrastructures created by the Roman for gold mining have been turned into trails and footpaths, with information panels allowing visitors to easily understand the various extrac-



tion processes from within a landscape of stunning beauty.

Another of the projects underway is the renovation of the *casa blasonada* - a nobleman's house bearing a coat of arms - belonging to the Counts of Luna, in Murias de Paredes, for future use as a Visitors and Interpretation Centre for the Reserve.

Points of interest

- * Forge at Sena de Luna
- * Traditional architecture in Paladín
- * Cabin in Villanueva de Omaña
- * Roman mining trails: the Campo de Santiago, Río Valle Gordo, Virgen de la Casa, Mortera and Presa Antigua paths
- * Church and castle ruins at Barrios de Luna
- * Medieval bridges in Barrio de La Puente, Fasgar and Murias de Paredes
- * Benal Castle in El Castillo
- * The Flórez de Quiñones Mansion House in Curueña
- * Traditional *patín* architecture in Abelgas de Luna
- * The Virgen de Pruneda Hermitage in Rabanal de Luna
- * The Nuestra Señora de la Garandilla Sanctuary
- * The *Museo del Pastor* shepherding museum in Barrios de Luna



Cataluña



* MONTSENY

EL MONTSENY

The Montseny Biosphere Reserve begins at altitudes of less than 200 m on the eastern slopes, rising to a height of slightly over 1,700 m above sea level. The River Tordera divides the mountain into three separate sections: to the west, Pla de la Calma and Puig Drau (1,344 m); to the north, Matagalls (1,693 m) and to the east Les Agudes (1,705 m) and Turó de l'Home (1,706 m), the highest point of the massif.

The special orography of the terrain, the differences in altitude and the distance from the sea all favour an outstanding climatic diversity. In general terms, the higher one gets, one moves from a Mediterranean climate to a Sub-Alpine climate, with different intermediate states that vary according to the orientation of the mountain sides. The mosaic formed by the diversity of environments ensures the Reserves rich landscape and biodiversity: sierras, torrents, woodland, cultivated land and high plains. Since time immemorial human presence has shaped a landscape which further highlights the fragmentation of the mountain. To all this we should add the socio-economic values associated with the reserve: Montseny has traditionally supported significant farming and forestry activities. Over recent decades, these traditional uses have gradually given way to a notable rise in activities associated with the tertiary sector, mainly linked to leisure and tourism.



Date declared biosphere reserve: 28 April 1978

Location: The Prelitoral Catalan Mountain chain, with Montseny the highest massif.

Surface area: 30,120 hectares (**Core zone:** 3%. **Buffer zone:** 55%. **Transition zone:** 42%)

Municipalities: 18.

Management bodies: Barcelona and Girona provincial governments.

Address: Diputació de Barcelona. Department of Natural Areas. Comte d'Urgell, 187, 3a pl. 08036 Barcelona.

Tel. 934 022 428

xaxaparc@diba.cat www.diba.cat/parcsn

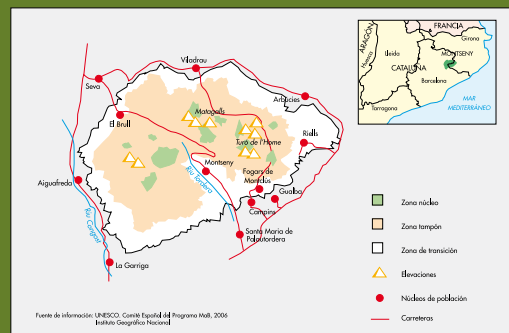
Diputació de Girona. Environment and Territory, Pujada de Sant Martí 5, 17004 Girona.

Tel. 972 185 000 [medi.ambient@](mailto:medi.ambient@ddgi.cat)

ddgi.cat www.ddgi.cat

Other protection: Natural Park

Biogeographical Region / Province: Transition between Mediterranean and Euro-Siberian





Winter

The Montseny massif is situated in the Prelitoral Catalan Mountain chain, which rises from the surrounding plains to a height of 1,706 metros. There is a truly exceptional diversity of bio-geographical environments, which is often cited as an example of an essentially European landscape. The two factors that propitiate these landscapes are the sharp relief and human intervention since the Neolithic period.

The singular values represented by Montseny's natural heritage are numerous; worthy of special mention are those in habitats of community interest, such as the alder groves, the acidophilic and calcicolous xerothermophyllic beech woods, the stream-fed riverine woods and the Atlantic and Sub-Atlantic moorland.

The flora is rich and very diverse, with greater representation in Mediterra-

Fauna

The fauna is typically Mediterranean, with wild boar the largest species. Among all the species we should highlight those that are of Community interest, certain invertebrates such as the native crayfish and various species of bats. As far as conservation is concerned, the most endangered species is *Calotriton arnoldi*, a newt endemic to the Montseny massif, whose survival depends especially on the ecological flow of mountain streams.



Extensive livestock farming

nean environments. However, due to the geographical location of the Montseny massif, there also large numbers of boreo-Alpine, Euro-Siberian and Atlantic species, natural treasures which have the greatest priority in terms of conservation. It is worth highlighting the twenty taxa of vascular flora endemic to the Catalanian region, of which three are exclusive to Montseny.

Montseny's natural wealth has favoured an intense exploitation of the land, especially the region's forestry, hunting, water, geological and mycological resources. This exploitation is more significant due to the fact that 86% of the land is privately owned and the large number of visitors, as a result of its proximity to large towns and cities.



Cultural Heritage and Landscape

The first signs of human settlement in the Montseny region date from the Palaeolithic era, as can be seen from various finds by the Riera de Breda stream, El Congost, El Brull, El Montseny and Sant Marçal. There are also megaliths from the Neolithic era in the Serra de l'Arca and in Les Pinedes, among other places.

From the Iberian period we should mention the Turó del Montgròs walls in El Brull, the most important prehistoric archaeological site in the region, as well as a number of fortified settlements.

From the Roman period there are constructions such as the Can Tarrés Roman villa in La Garriga and others in the plains, following the Via Augusta and the Via Ausa.

The Middle Ages are well represented

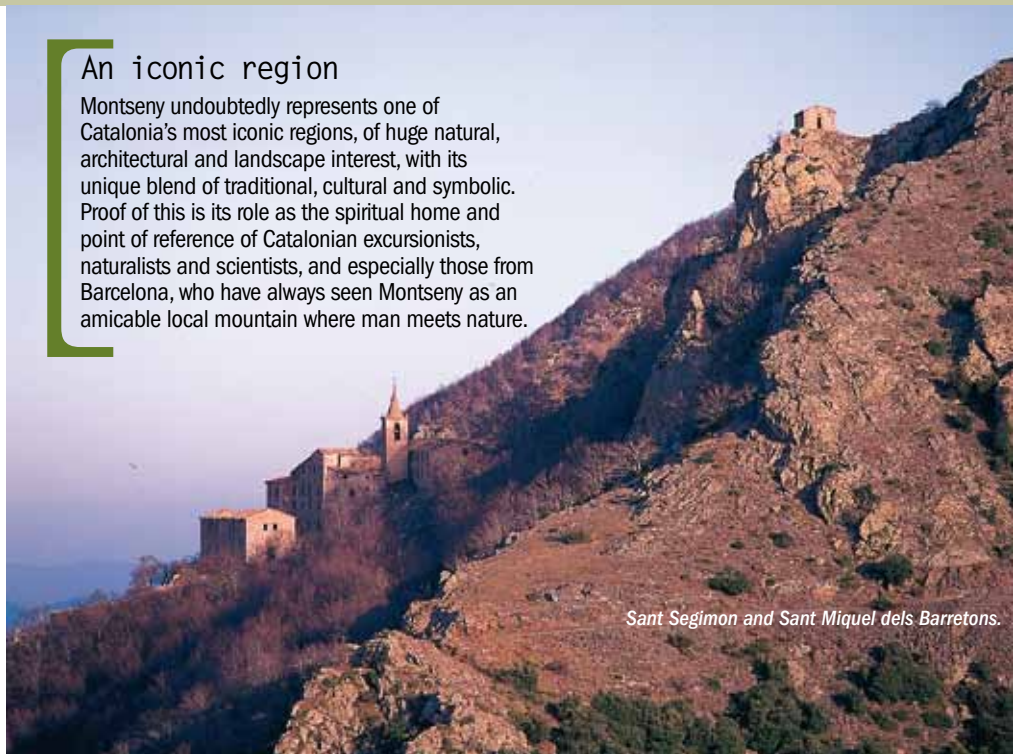
through the Romanesque religious architecture, with over a dozen small mountain churches.

There are important remains of military structures, such as castles. Montsoriu castle (10th to 15th centuries) is the most important example of gothic military architecture in Spain, although we should also mention the importance of Montclús, Fluvià, El Brull and Cruïlles, and the fortified towers at El Bellver and La Sala. There are also ensemble sites such as Tagamanent, with constructions from the Romanesque and gothic periods, and Sant Segimon, an important 17th century hermitage.

The massif has numerous manifestations of popular culture, such as *gozos*, fiestas and dances, all of which are widely enjoyed and which today are the object of study and conservation.

An iconic region

Montseny undoubtedly represents one of Catalonia's most iconic regions, of huge natural, architectural and landscape interest, with its unique blend of traditional, cultural and symbolic. Proof of this is its role as the spiritual home and point of reference of Catalanian excursionists, naturalists and scientists, and especially those from Barcelona, who have always seen Montseny as an amicable local mountain where man meets nature.



Sant Segimon and Sant Miquel dels Barretons.

Socio-Economics of the Reserve



Houses on the hillside

As has been the experience of many of Europe's mountain areas, over the course of the 20th century Montseny has undergone a process of transformation, motivated by three closely interrelated processes: industrialisation, urban expansion and the crisis experienced by traditional rural development models. Over recent decades a significant fourth factor has entered the equation, which can be called "outsourcing of mountain areas", with the growth in economic activities related to the service sector, specifically tourism.

This process of profound structural change can be seen in the evolution of the population in the region. Population within the reserve had been falling, with people leaving for the Barcelona metropolitan area and the towns within the Reserve. This process began to turn around in the 1980s, when economic activities in the service sector and improvements to communications and transport links have helped to consolidate the population on the mountain and even see an upturn in numbers. As far as the decline

Evolution of the population living within the Montseny Biosphere Reserve

1994	759
1995	803
1996	860
1997	824
1998	876
1999	901
2000	922
2001	931
2002	946
2003	939
2004	971
2005	1029
2006	973
2007	954
2008	998

in the primary sector is concerned, farming activities, and especially forestry, maintain significant levels. Two aspects should be remembered: the percentage of the active population working in the primary sector is less than 3% (2.89%) and yet above the average for Catalonia as a whole (2.46%) and the structured forest area covered by a management plan (41.37%) is far higher than the proportion of total Catalan woodland (10.81%).

Due to the proximity of Barcelona, the tertiary sector has developed swiftly in Montseny, expanding to the point where it is now the driving force behind the local economy. Over 1,000 hotel rooms, 2000 camp site spaces, almost 200 rooms available in the rural tourism sector and over thirty restaurants in the Reserve's towns and villages, the service sector occupies over half Montseny's active population (51.89%).



The Reserve's contribution to sustainable development



Environmental education for school children

Montseny is a dynamic area, where a number of productive activities take place. Not only the special plan but also - significantly - the management plan have included, through the implementation of the development programme, a number of lines of action aimed at strengthening economic activities that are compatible with protection status.

The regulations on which the special protection plan is based establishes the activities that are compatible and those that are not, with the basic aim of preserving natural and cultural values. The activities associated with the primary and service sectors are therefore considered to be fundamental, as are the requirements the plan introduces, in order to define a sustainable development model.

During the first, lengthy period of Reserve management, promotion policies

were of a fairly extensive nature, with a view to “compensating” local people, forest owners and town councils for the limitations that would presumably result from the creation of a protected area, strengthening the perception of its benefits. Luckily, this phase has concluded and any supposed “comparable injustice” can be considered abundantly compensated. Within this framework and through its annual programmes, management of the Reserve has developed the following lines of action: Direct investment in collaboration with town councils in order to create and improve infrastructures, promote the use of renewable energy, subsidies for individuals and companies, and the creation of public services and equipments for social use, consequently creating micro-enterprises and jobs, associated with management formulas not directly associated with this public use offer.



Every day Montseny draws a large number of visitors, who come to the Reserve attracted by the leisure, cultural, sports and education activities on offer in this privileged and protected natural setting.

One of the basic objectives is ensure the necessary balance between the social aspect, the conservation of natural and cultural values and the promotion of local people.

In order to achieve this balance, visitors are offered public facilities with a view to guaranteeing they have the necessary information and documentation, as well as ensuring that visitor flow monitoring can be ordered and improved.

The Administration Office has centralised all technical services whilst also offering visitors and local people information on the Reserve and space in which meetings may be held, as well as permanent exhibition. In order to provide information there are also information points and centres at the main access points, in the Reserve's towns and villages and its most visited areas. The majority are only open at the weekend and on public holidays, although some are open every day. At the weekend there is a personalised information service available, consisting of a group of guides spread over the Reserve whose job is to orientate visitors and attend to any questions they might have.

Montseny also has a wide range of cultural facilities (museums, exhibition spaces with information panels and audiovisual presentations), environmental education centres (nature schools and summer camps) and leisure areas (recreation and relaxation areas, panoramic viewpoints and parking areas), as well as study centres and student hostels.

There are also numerous tourist services available, generally provided by private companies, with a wide range of restaurants, hotels and pensions, rural houses and camp sites available. A guide service is also available, as well as accompanied excursions, hiking and sports activities.

For further information:
<http://www.diba.cat/parcsn/parcs/index.asp?Parc=3>

Extremadura



* MONFRAGÜE

MONFRAGÜE

The Monfragüe Biosphere Reserve was declared as such due to it being a region deemed to be representative of Mediterranean vegetation in which a harmony has been maintained between natural values and a gradual and well-balanced human intervention.

The space occupied by peneplain within a mid-mountain region with a small alluvial plain formed by the River Tiétar, with Mediterranean evergreen woodland and scrub. This is a region with great biodiversity which is even more important due to the large number of vulnerable species.

Zoning

The core zones are made up of an area around the banks and sierras of the Tajo, Tiétar and Arroyo de la Vid rivers, a region with an outstanding level of conservation in which birds of great importance nest, part of the area protected as a National park.

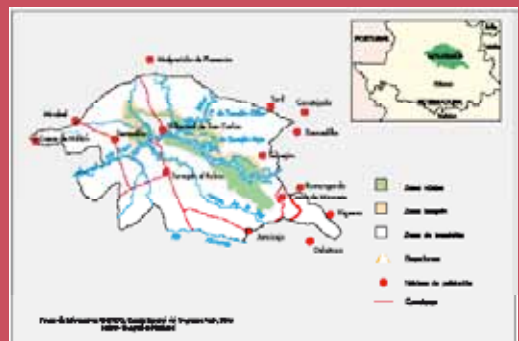
The buffer zone, which surrounds the core zone, also corresponds to the rest of the National Park protected area, and is the area in which education, research and tourist activities take place.

The transition zone is scarcely populated (within the reserve there are five villages with a total of slightly over 3,000 inhabitants), with a predominance of traditional *dehesa* meadow systems, extensive-used mainly for livestock grazing, forestry and hunting.



Meadowland in spring

Date declared biosphere reserve: 9 September 2003
Surface area: 116,160 hectares (Core zone: 11.05%.
Buffer zone: 13.22 %; Transition zone: 75.33%)
Location: Province of Cáceres. Extremadura
Municipalities: 14 (3 fully within the Reserve)
Management body: Extremadura Regional Government, through the Head of the Environmental Department and the Director General responsible for Protected Areas
Address: Paseo de Roma, s/n, Módulo A, Planta Baja (Edificio Morería) 06800 Mérida
Telephone: 924 006 400
Email: extremambiente@juntaextremadura.net
Website: <http://www.extremambiente.es>
Other protection: National Park, Site of Community Important (SCI), Special Protection Area for Birds (SPA)
Biogeographical Region: Mediterranean



Natural Heritage

Farming use

Within this criss-crossing of ancient roads that unite and separate the main towns in the province of Cáceres, with the Tajo valley the irregular spine running through the region. There is a predominance of traditional *dehesa* meadows, which has mainly been used for seasonal livestock grazing on the region's pastures and the products derived from the holm and cork oaks that grow there, land which is also home to numerous wild and domesticated species.

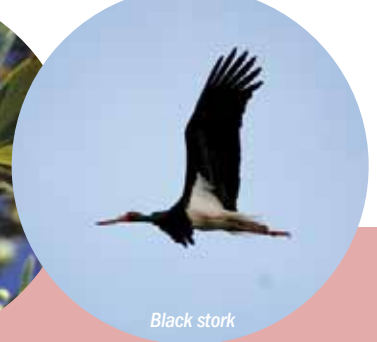
Flora

According to published sources, which mainly refer to the existing National Park, the number of taxa within the territory is close to 1,300 species of vascular plants. Noteworthy are the species that are endemic and exclusive to the south east of the Iberian Peninsula, as well as those related to the north of Africa, with magnificent fine examples in Monfragüe.

Extensive tamujo (*Flueggea tinctoria*), heather and broom scrub, which occupy



Strawberry tree



Black stork

the rocky land so poor in soil, or land that is in the process of being recovered, from the narrow gallery woods featuring alder, hackberry and ash associated with narrow riverine environments.

As this is also an area of transition between the south and the centre of the Peninsula, it is also a magnificent laboratory in which to analyse and evaluate the changes that have been made to both our landscape and on a global level.

Special mention should also be of the species of fungi, traditionally associated with the study of flora, and which have been subjected to exhaustive study in this region. Numerous species of fungi grow throughout the Reserva, with autumn an especially abundant season, with the proliferation of edible mushrooms an important supplementary source of income for local families.



Eagle owl

Fauna

Nevertheless, Monfragüe is most famous for its bird life. Some of the largest colonies in Europe, and indeed, the world, of black vultures, imperial eagles, black storks, eagle owls and griffon vultures, among others, breed and raise their young in the Reserve. Mammals, reptiles, amphibians and fish complete the extensive list of vertebrates.

Cultural Heritage and Landscape



Cardenal bridge

Major areas of transit

Directly associated with the Reserve's water courses are three great works of art and engineering: the Cardenal bridge over the River Tajo, built in 1450, the Albalat bridge from the 16th century, also crossing the Tajo, and the bridge over the River Almonte, in Jaraicejo, dating from the 15th and 17th centuries.

Monfragüe's landscape has always been marked by the course of its history. The verdant vegetation alongside the region's rivers and streams, and the rocky shelters on the sierra's quartzite peaks, were home to some of the first human settlements, which have left a rich legacy of cave paintings in a simple, schematic style which date back to between the third millennium and the mid-first millennium B.C. (Epipaleolithic, Copper and Bronze Age). In the heart of the Park, visitors can see one of the finest examples of such sites, the cave known as Cueva del Castillo.

The highest part of the sierra has long been the perfect place to control access between the two great bodies of water (the Rivers Tajo and Tiétar) and roads that date back to time immemorial, such as the Vía de la Plata. Since Roman times and until the Napoleonic invasion, having seen the Moorish invasion and the Christian reconquest in the meantime, watchtowers, castle and fortifications were built along the road at strategic points.

Within the towns and villages in the area there are numerous notable gothic-renaissance churches which are of great architectural and artistic interest (four of which have been declared Assets of Cultural Interest), the majority of which were built under the auspices of the Bishop of Plasencia, Gutierre de Vargas y Carvajal.

San Pedro church



Cave painting





Iberian pigs, grazing freely in the dehesa

Protected Designations of Origin

The region has long been famous for its quality produce, associated with the traditional use of natural resources. Many of these have been recognised with special guarantee seals and Protected Designation of Origin status: Jamón Dehesa de Extremadura cured ham, Queso Ibores cheese, Miel Villuercas Ibores honey, Pimentón de la Vera paprika, Ternera de Extremadura beef and Corderex Extremaduran lamb.

The low population density is one of the main characteristics of the Reserve. Bearing in mind the total area of the fourteen municipalities, the demographic density barely reaches 6.7 inhabitants per km². The municipality with the largest population is Malpartida de Plasencia, with almost 4,500 people, whilst the smallest is Higuera, with just over 100 people.

Across the Reserve there is a clear predominance of traditional dehesa meadows and their associated uses. Dehesas occupy 61.1% of Monfragüe's total area. Dry-farming crops are currently in

sharp decline, only seen outside the region's towns and villages and in certain olive groves. Mention should be made of the small irrigated area around the River Tiétar's floodplain. The farming sector employs 27.4% of workers in the area. The industrial sector is of little importance, accounting for 15.2% of the total number of workers. Finally, the service sector, which employs 40.2% of the region's workers, is gradually growing in importance due above all to the workforce employed in the hotel and restaurant sector etc, in other words, areas that are expanding thanks to rural tourism.



Cork stripping



Beehives



The Reserve's contribution to sustainable development



Casas de Miravete

Environmental dangers

- * The appearance and proliferation of introduced species of flora and fauna (eucalyptus, Jimson weed, American crayfish, American mink, Wels catfish etc.)
- * Partial abandonment of the traditional exploitation due to their low short-term profitability
- * High fire risk throughout the protected natural area
- * Incomplete or deficient infrastructures (communication networks, roads and public transport, waste treatment etc.)
- * Numerous endangered or highly vulnerable species

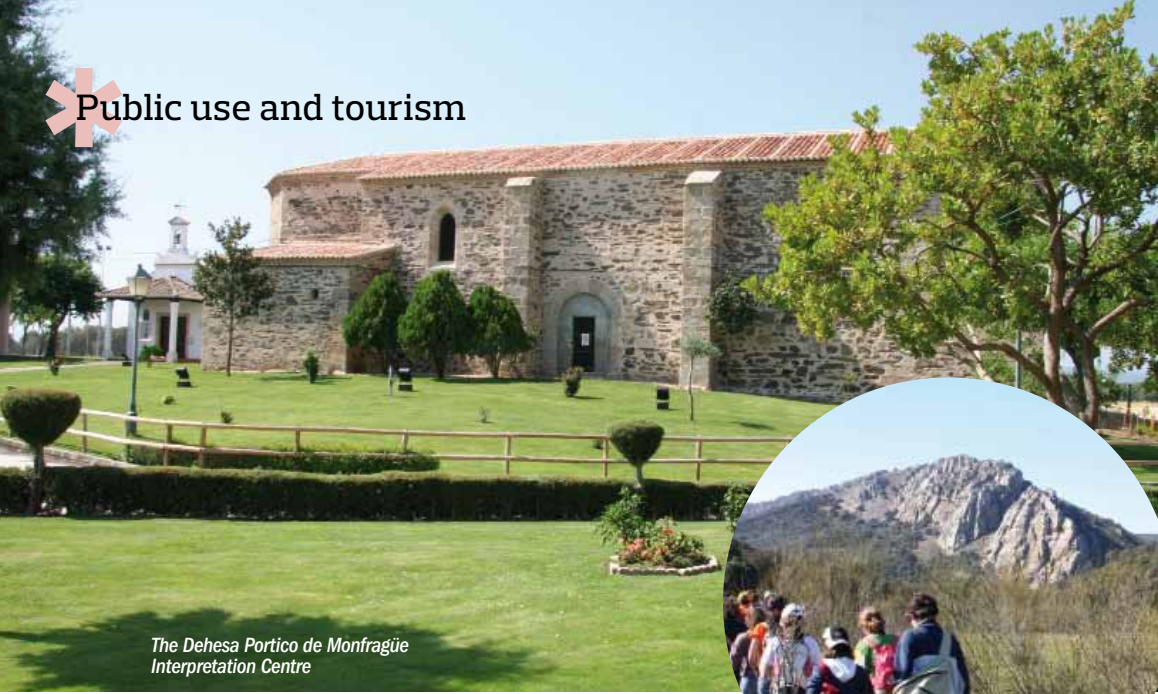
Corrective action

- * Elimination of eucalypti and the recuperation of autochthonous scrub and woodland
- * Building of a waste water treatment plant, elimination of overhead electricity with a significant environmental impact
- * Institutional and economic support for the upkeep of traditional operations
- * Drawing up and implementing specific plans for the conservation and recuperation of endangered species



Extensive livestock farming

Public use and tourism



The Dehesa Portico de Monfragüe Interpretation Centre

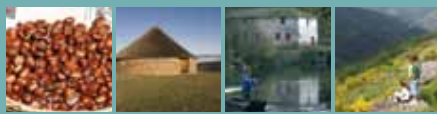
Monfragüe Reserve is criss-crossed by a numerous network of drovers roads which highlight the importance of the region to transhumance. The Cañada Real de la Plata, the Cañada Real Leonesa Occidental and the network of paths and byways that interconnect them are all routes with a great natural and cultural importance. To this resource we should add the signposted trails through the Public Use Area of the National Park.

Support facilities

- * **Information and visitor centre.** The National Park's public use facilities can be found in the hamlet of Villarreal de San Carlos, founded in the late 18th century by Charles III to watch over the Plasencia to Trujillo road at the danger points at the Serrana mountain pass and Cardenal bridge.
- * **Water and Nature Interpretation Centres.** These two centres, also in Villarreal de San Carlos, are designed to initiate or complete the visit with information on natural history and Monfragüe's past.
- * **The Dehesa Portico de Monfragüe Interpretation Centre.** This centre is dedicated to providing information on the resources and usage of a landscape as essential to the area as its dehesas, and is located in the former San Blas Church in Toril, a 16th century building which is noteworthy for its fine sgraffiti decoration.
- * **The Casa del Tío Cáscoles tradicional architecture ecomuseum,** in an old renovated building in the village of Romangordo
- * **The Serradilla Ethnographic Museum,** with an extensive collection of cultural material
- * **The "Casa de los Aromas" Interpretation Centre,** in Romangordo
- * **The Geology Interpretation Centre** in Casas de Miravete



Galicia



- * ALLARIZ
- * OS ANCARES LUCENSES
Y MONTES DE
CERVANTES, NAVÍA Y
BECERREÁ
- * TERRAS DO MIÑO
- * TRANSFRONTERIZA
GÊRES-XURÉS

ÁREA DE ALLARIZ

The Área de Allariz Biosphere Reserve, comprising the town councils of Vilar de Santos, Rairiz de Veiga, A Bola and Allariz, is one of the most interesting geographical and territorial areas in Galicia, forming a semi-endorheic morphotectonic depression with a flat base with a height of 600 m above sea level through which the River Limia flows, bordered by a mountain ridge that in the north is characterized by the Allariz granitic massif bisected by the confined Arnoia River. The area is of great biogeographic importance, as it represents the border between the Iberian Peninsula's two large phytogeographic regions - the Mediterranean and the Euro-Siberian. This location guarantees the Reserve's extensive biodiversity and unique landscapes.

The wealth and variety of habitats found within the Reserve allow for the existence of a wide range of fauna, with numerous species of Community interest or considered to be in danger of extinction in Spain.



A Carballa da Sainza, a fine example of care of the environment



Muíño de Escadas, a symbol of the Área de Allariz Biosphere Reserve

Date declared biosphere reserve: 29 June 2005

Surface area: 21,482 hectares (Core zone: 1%; Buffer zones: 5%. Transition zone: 94%)

Location: Province of Ourense. Galicia

Municipalities: A Bola, Allariz, Rairiz de Veiga and Vilar de Santos

Management body: Asociación para o Desenvolvemento do Medio Rural da Reserva da Biosfera Área de Allariz

Address: R/ Portelo, 4 – 2º Andar.

32660 Allariz, Ourense

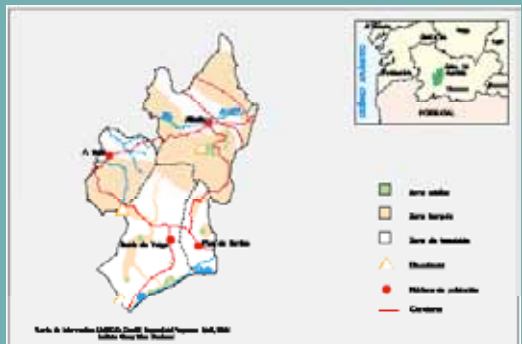
Telephone: +34 988 442 210

Email: info@areadeallariz.com

Website: www.areadeallariz.com

Other protection: Ramsar Wetland of International Importance, Special Protection Area for Birds (SPA), Site of Community Importance (SCI)

Biogeographical Region / Province: Transition between Mediterranean and Euro-Siberian



Natural Heritage

The Reserve is situated on a plain surrounded by low hills (the highest peak is around 900 m above sea level) to the south, whilst in the north the terrain is more abrupt, with rolling heather-covered hills alternating with broom scrub, dotted with areas of verdant autochthonous flora and other, more rugged hills. There is also highland crisscrossed with small rivers that still conserve the

riverbank vegetation, whilst on the margins irrigated meadows can be found. The valleys between these hills are well watered, with good pastureland and very fertile soil. There are also low uncultivated floodplains. The variety of vegetation provides a rich contrast of colour, form and texture.

Worthy of mention here is the River Limia, which, from the point where it rises in a lagoon to the point where it receives the River Xinzo is known as the Antela. Into this river flow a number of smaller tributaries and streams which have different names depending on the region they flow through, and which flow down from the hills that surround the plain. In total, the Limia flows 75 km through Galicia and the area of its river basin is 1,328.8 km². Another significant statistic is its absolute flow, 280 m³ per second, making it the fifth most important river in Galicia. Within the Reserve, the river flows through the towns of Vilar de Santos and Rairiz de Veiga. This section represents the minimum gradient of its entire length, an average of 0.4%, highlighting the flatness of the terrain.

The Área de Allariz, a young Reserve, is ready to fly



A privileged location

The Reserve is in a privileged location due to it being the transition between two ecological regions. It is home to numerous species of birds such as the stork, heron and kingfisher, and a large number of birds of prey. Among the Reserve's mammals, the wolf, red deer and otter deserve special mention.

Also noteworthy are the various species of amphibians.





The importance of water

The veigas or water meadows are the stretches of land alongside the riverbank, especially alongside the River Limia. This is hygro-peaty fen-like land, with herbaceous vegetation and scrub. The former is subject to temporary flooding which in some cases is permanent. This is a transition between a riverine environment and the touzas, a patchwork of meadows and cultivated areas separated by woods, forming a landscape of great environmental interest.

The importance of water

As well as the natural heritage, we should highlight also the area's tangible and intangible cultural legacy. This region, one of the most privileged in Galicia in this respect, has managed to conserve its traditional activities and a countryside that has been shaped by their practice over thousands of years. The traditional farming values of the whole area are of great natural and cultural interest, which also have added value that the region can be seen as a redoubt the current context of Galicia, as use of land here has undergone significant transformation over recent decades. Within the framework of the protecting of archaeological, ethnographical and cultural elements we should also consider the extraordinary wealth presented by the remains of Castro culture (2nd millennium B. C.) and moving through the Bronze and Iron Ages, the Roman period, the Middle Ages etc,

as well as the remains of religious and civil architecture, such as the pazos and casas solariegas - country manors and houses of the nobility.

The touzas are a mosaic of fields and meadows dotted with trees. These are either used as grazing land or for growing crops. Touzas feature two basic components, the sebes - small copses of trees or shrubs - and productive land, i.e. land for agriculture, horticulture. The sebes comprise mature trees, shrubs, lianas and a number of other herbaceous species, representing significant ecological advantages in an area dedicated to agricultural crops. The productive land can be divided into that used for livestock farming, mono-specific crops (with less species diversity) and abandoned land where an ecological progression of species has taken place.

* Socio-Economics of the Reserve



The land is rural in the main, to a varying extent. Analysing the results obtained from a perspective of the study of land use, we can see its distribution forms a mosaic which corresponds both to the state of the terrain (predominantly agricultural and livestock use on the flatter land and the areas close to villages in the mountain areas; wood and scrubland on the mountain slopes), and to the aptitude of the land for cultivation purposes, proximity to towns and villages etc. Among other things, the area can be characterised by an extraordinary water system.



Chestnuts are an important local product



Extensive livestock farming in A Bola

The towns and villages on the Biosphere Reserve, both on the veigas and in the foothills, are generally on the flatter land, at transition points between the river

plain and the hillside, in other words, at the foot of the hills, in order that maximum use can be made of the fertile land.



The renovated hamlet of Congostro in Rairiz de Veiga



The Reserve's contribution to sustainable development

The main human activities in the Área de Allariz are shepherding and traditional farming. Land use is regulated through local council plans integrated within the Biosphere Reserve. These plans establish the basis for ensuring sustainable development, through which traditional land use is strengthened, a usage which

has made it possible that the area today has such fine natural, social, cultural and economic foundations.

Traditional practices

The Área de Allariz Biosphere Reserve is also important due to its cultural legacy, as this is one of the few regions in Galicia in which traditional activities and practices that favour environmental conservation are maintained.

Historical heritage

The Reserve is also home to an important cultural heritage, such as the magnificent Allariz Historic-Artistic Site. The historic centre of Allariz, of medieval origin, has been the object of a number of renovation programmes, resulting in the town receiving the European Urban and Regional Planning Award in 1994.



The renovation of the medieval centre of Allariz saw it win the European Urban and Regional Planning Award in 1994



Public use and tourism

*Jam making in the
A Limia Agricultural
Innovation Centre in
Vilar de Santos*



A young Reserve, undergoing a process of consolidation

The Asociación para o Desenvolvemento do Medio Rural da Reserva da Biosfera Área de Allariz is responsible for the management and administration of the Biosphere Reserve, a joint body formed by representatives from the four town councils. The objectives proposed are related to the conservation of the region's biodiversity and the development of a sustainable economy including tourist orientated promotion of the Área de Allariz, restoration of traditional houses, environmental education and/or the promotion of organic agriculture.

Gastronomic appeal

The Vilar de Santos town council has created the A Limia Agricultural Innovation and Transformation Centre de la Limia, promoting the development of delicatessen products, made from quality local materials. Craft produce such as jams, cheeses, liqueurs, almendrados - traditional almond biscuits - and horticultural produce, are an important attraction as far as the Reserve is concerned, all of which can be enjoyed in the area's many cafés and restaurants.



*The intervention
of man, the Allariz
International
Garden Festival*

OS ANCARES LUCENSES, Y MONTES DE NAVIA, CERVANTES Y BECERREÁ

Declared a Reserve in 2006, this area is considered to be part of the future Gran Cantábrica Biosphere Reserve. It occupies 6% of the total area of the province of Lugo, including three municipalities.

Practically all the Reserve's territory is a Protected Natural Area (P.N.A.), under the Special Protection Area of Natural Values programme (the Spanish Nature Conservation Act nº 9/2001). The area declared a P.N.A. (under Act nº 42/2007) is, in turn, part of the Natura 2000 Network, designated as a Site of Community Importance (Os Ancares – O Courel SCI, Cruzul-Agüeira SCI) and a Special Protection Area for Birds (Ancares SPA). The Reserve is also a Special Protection Area for the brown bear, as well including the Ancares de Lugo National Hunting Reserve.

Os Ancares Lucenses is of great interest from a biogeographic perspective, as it constitutes a border area between two regions, the Euro-Siberian and the Mediterranean, meaning that northern and more Mediterranean species coexist in the region.

With an altitude difference of over 1,600 metres, an intricate water network which flows into the River Navia, and the geological nature of the Reserve (plutonic granite among other materials) share the terrain with a variety of geomorpho-



An aerial view over Os Ancares Lucenses

Date declared biosphere reserve: 27 October 2006

Surface area: Official area: 53,664 hectares

(Core zone: 26.5%. Buffer zone: 59.6%.

Transition zone: 13.9%)

Location: Province of Lugo, Galicia

Municipalities: Navia, Cervantes and Becerreá

Management body: INLUDES-

Lugo Provincial Government

Address: Ronda da Muralla 140, 27004 LUGO

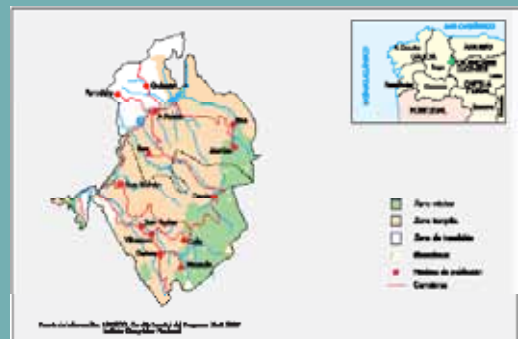
Telephone: 982 227 812

Email: andream@deputacionlugo.org

Website: www.deputacionlugo.org

Other protection: Special Protection Area of Natural Values (2), Site of Community Importance (SCI), Special Protection Area for Birds (SPA), Special Protection Area for Brown bears, National Hunting Reserve

Biogeographical Region: Euro-Siberian / Mediterranean



logical deformations of glacial and fluvial origin. There are also minor calcareous outcrops with the consequent structuring of the landscape and its vegetation, increasing the structural heterogeneity of the region's ecological mosaic.



Natural Heritage

A total of 35 types of habitats of Community interest have been recognised, of which 10 have priority status.

Amongst the endangered species of flora, the Reserve is home to inundated club moss (*Lycopodiella inundata*) and the bryophyte zygodon moss (*Zygodon conoideus*).

Amongst its fauna are a number species of high conservation value, most notably the native freshwater white-clawed crayfish (*Austropotamobius pallipes*), the capercaillie and the brown bear.

Among the land management practices employed, mention should be made of the use of semi-natural pastures for harvesting, the conversion of scrubland for grazing, small-scale cutting of natural and semi-natural forest, and chestnut gathering.



An ancient chestnut tree, a natural monument

There are agro-pastoral environments of great ecological interest, given that they are home to species associated with, and even dependent on traditional human activities.

Traditional extensive livestock farming, as well as the existence of communities of wild ungulates, means that there is a significant wolf population, undoubtedly represents a fine example of the interaction between man and nature.

Over the course of time, Ancares Lucenses has maintained a well-balanced agro-forestry system, with its geographical isolation and the complexity of its orography favouring the persistence of a well-conserved environment.

Important forests

This is a typically Atlantic medium-high mountain region in which there is a notable presence of oak and birch forest, as well as holly, among other species, protected throughout Galicia, and of great interest from the point of view of fauna. Ancares Lucenses represents the westernmost limit of beech trees

in Europe (the Hayedo da Pintinidoira beech grove), with holm oak found in certain points (the Encinar de Cruzul holm oak grove), as well as other Mediterranean species. The peat bogs, of great ecological importance and of intrinsic value from a palynological perspective, also further enrich the environment.

Dense autochthonous forest

Cultural Heritage and Landscape

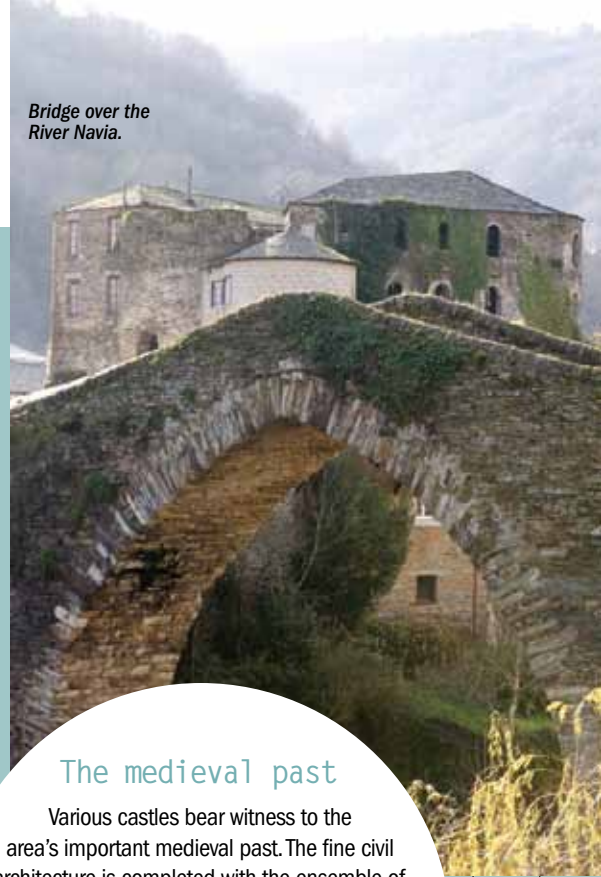
From prehistoric times there are noteworthy remains of burial mounds and megalithic chambers, known locally as *mâmoas* and *medorras*, the first known “monuments” as such.

There are also numerous of *castros*, pre-historic hill forts, the majority of which are yet to be excavated.

The Reserve was of immense importance to Romans. The region’s mineral wealth was exploited to the full, as can be seen in the 155 sites that have been found in the area, the majority gold mines.

Another sign of how natural resources are well utilised, in this case the work undertaken by bees, are the *cortines* or *talameiros*, rustic walled enclosures built on hillsides to protect the beehives from marauding bears.

The most important example of this traditional architecture is the *palloza*, with its stone walls and conical thatched roof, formed from clumps of dried Provence broom (*Cytisus purgans*), known locally as *piornos*, hence the name of the village of Piornedo, with its many *pallozas* that characterise these hills. These buildings, partly used as family homes and partly to stable their animals, are used as the logo for the Reserve.



Bridge over the River Navia.

The medieval past

Various castles bear witness to the area’s important medieval past. The fine civil architecture is completed with the ensemble of houses, towers and *pazos* - country manor houses. The religious architecture is represented by the wealth of parish churches and chapels, spread across the region and which seem to blend into the environment. The building of bridges, *hórreos* or raised stone granaries, mills and smithies are a testimony to the human use of the area’s rivers should also be highlighted.

The Ancares Lucenses stand at a crossroads, with paths (Tres Obispos and Campa da Braña) and old Roman roads (Via Romana XIX) which take us into the heart of the Reserve, allowing us to enjoy nature in all its purity.

There are numerous oral legends, festivals and traditional trades. Among these legends we should mention that of a blind woman who talks of witchcraft and spells and the duality that exists between man and animal.

Socio-Economics of the Reserve



Small village in Ancares

The municipalities that make up the Reserve have a total population of 6,546 inhabitants, with the majority (4,688 people, 72% of the total) living in small villages dotted across the area. The main towns in these municipalities are home to at least a third of the population (1,858 inhabitants, 28% of the total). The population is of a permanent nature, albeit with certain seasonal variations. Population density is around 9.5 inhabitants per km², slightly less than the Spanish, Galician and Lugo province average.

In this sense it is important to point out here that in Ancares it is man who is an endangered species, given the serious depopulation problem that exists in the area. Conservation and development bring together forces that help to ensure the *in situ* preservation of man in harmony with nature.

The Reserve has a clear farming vocation, above all in the buffer and transition zones, whilst in the core area the woodland is of greatest importance, given that in this area there is predominance

of scrubland and siliceous rock, as well as a significant percentage of the area covered with old-growth forests.

The territory includes mountain farming areas, and has been included in Rural Development programmes such as LEADER and FSE, focusing on most relevant traditional activities in line with the objectives of the Reserve - extensive livestock farming, semi-natural hay meadows with grazing land of high biodiversity, domestic horticultural farming of smallholdings, cheese makers, the elaboration of meat products and the packing of local food product (spring greens, honey, cranberries etc). This has resulted in a wide range of quality-differentiated products, with a number granted protected designation of origin (PDO) status, including *Queso do Cebreiro* cheese or the Galician beef, *Lacón* ham, chestnuts and honey, all which enjoy Protected Geographical Status. There are also three further products awaiting Protected Geographical Status - *Botelo Galego*, "*Androlla Galega*" (two types of cold pressed meat) and Galician spring greens.



Local people enjoying the view



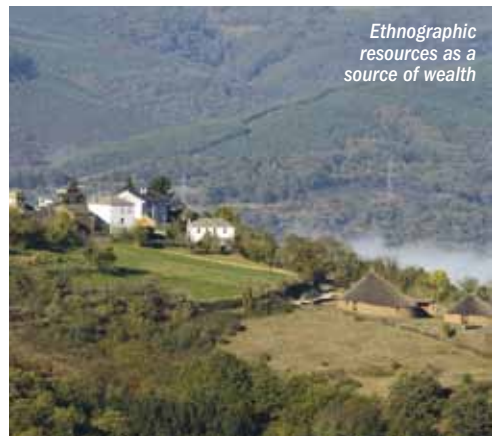
The Reserve's contribution to sustainable development



Part of a rebuilt palloza

Reserve management is currently supported by the Lugo O2 project, directly administered by the Lugo Provincial Government, which, as part of its local development strategy and using the information society as a vehicle, promotes a series of projects co-financed by the Spanish Government and the European Union in order to improve the provision of services to local people and institutions. Together these initiatives constitute a project that promotes the internally-generated development of the municipalities included within the natural protected areas within the province of Lugo, mainly within the territorial framework of the three Reserves that exist in the province: Terras do Miño, Os Ancares Lucenses and the Galician part of the Río Eo, Oscos y Terras de Burón Reserve, through the evaluation of natural resources available and the environmental awareness raising amongst local people and visitors.

As an internal element of support regarding local people's knowledge and assessment of the natural and cultural environment, the Kilómetro 0 Programme has been implemented. This aims to promote the resources and values of the province of Lugo, with an emphasis on Biosphere Reserves and increasing knowledge of it among the local community. This is a Programme organised and sponsored by the Lugo Provincial Government and further backed by the European Union, bringing together all groups within the province.



Ethnographic resources as a source of wealth



Public use and tourism

Footpaths represent a perfect way to enjoy and conserve natural and ethnographic values, as well as being a resource that has hardly been exploited to date and one with great potential. Over 30 trails through the Reserve represent an ideal way to get to know the countryside, its culture and its people.

In order to obtain further information on the area, the Os Ancares Nature Learning Centre offers the opportunity to see all the mountain peaks in this sierra.

Fine local cuisine and quality rural tourism are two fine reasons to choose Os Ancares Lucenses as a holiday destination.

Pork-based products are always recommendable, as are dishes prepared with the exquisite beef from local cattle. In season local game and fish, such as freshly-caught trout and partridge also come highly recommended.

All these dishes can be accompanied by the region's rustic bread, freshly-baked in traditional ovens. Mention should also be made of the mountain honey, local chestnuts and milk.



Doiras castle

Os Ancares Lucenses is a veritable paradise for hunting (red deer, wild boar, partridge, quail and rabbit) and fishing aficionados. All the Ancares region is watered by numerous cold rivers brimming with trout.

Traditional crafts are still maintained in the region, the legacy of the day-to-day use of resources by local people and the isolation resulting from the mountainous terrain. Wood crafts, clog and basket making, leather work and textiles, as well as pottery are the most noteworthy trades. Accommodation in the area comes in the form of 10 hotels of various categories throughout the Reserve and 10 rural tourism establishments, where gastronomy goes hand-in-hand with knowledge and enjoyment of the natural environment.

To visit Os Ancares Lucenses is to lose oneself in a solitary, silent and tranquil land.

Landscape as a source of enjoyment



TERRAS DO MIÑO

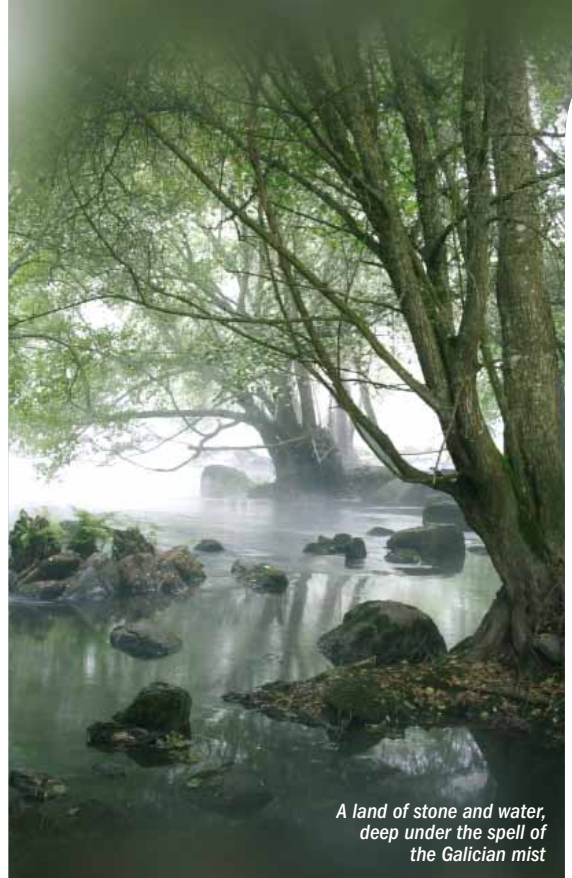
If there is a Spanish Biosphere Reserve in which water is the outstanding protagonist of its ecosystems and habitats, then it is undoubtedly Terras do Miño, Galicia's first Reserve, declared in 2002 and occupying 39% of the province of Lugo.

Lugo, the provincial capital, falls within the Reserve. The name of this age-old city, known by Romans as *Lucus Augusti* - "the holy forest of the Emperor Augustus" - was an early sign of its great natural wealth.

The Reserve falls within the Atlantic or Euro-Siberian Biogeographic Region, with siliceous mountains in the north and centre, an area coincides with the old sedimentary basin, with its limestone formations.

Practically all the core zones are Protected Natural Areas (P.N.A.), under the Special Protection Area of Natural Values programme (the Spanish Nature Conservation Act nº 9/2001).

To the north of the reserve, the high peat moor and blanket bog in the Serra do Xistral is the only such active system (> 50 hectares) in southern Europe. With glacial and pre-glacial deposits, over 50,000 years old, this is one of the areas of greatest interest for research into climate and landscape dynamics in the NW Iberian Peninsula.



A land of stone and water, deep under the spell of the Galician mist

Date declared biosphere reserve: 07 November 2002

Surface area: 363,669 hectares (Core zone: 10%. Buffer zone: 22%. Transition zone: 68%).

Location: Province of Lugo. Galicia

Municipalities: 26

Management body: INLUDES-Lugo Provincial Government

Address: Ronda da Muralla 140, 27004 LUGO

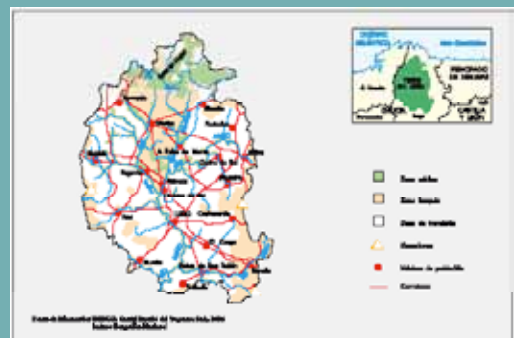
Telephone: 982 227 812

Email: andream@deputacionlugo.org

Website: www.deputacionlugo.org

Other protection: Special Protection Area of Natural Values (5), Site of Community Interest (SCI)

Biogeographical Region: Euro-Siberian



Natural Heritage

The reserve is a veritable mosaic of lagoons, ponds, peat bogs and other water systems of great biological interest, offering habitats that are ideal for an important number of species that are endemic, rare or endangered (32 habitats of Community interest, 10 of which have priority status)

Fauna

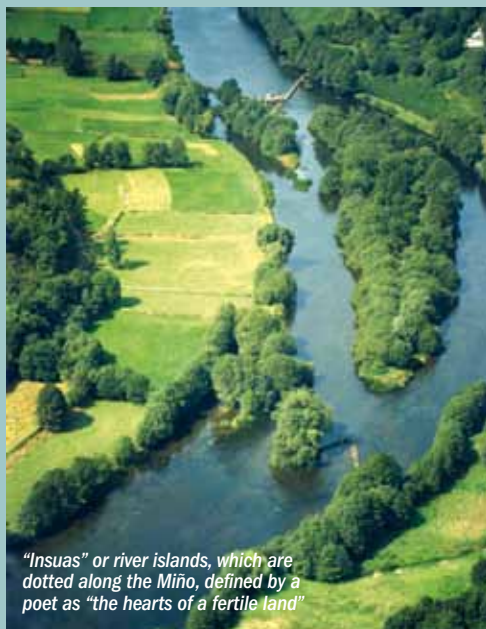
Water birds, with over 40 resident species and 22 migrant and vagrant species, are the largest group of vertebrates in the *Terra Chá*, the flat land at the heart of the reserve. In winter, the Reserve as a whole is home to over 1,500 of such birds (110 protected species)

There are a large number of aquatic invertebrate species, most notably the freshwater mussel and freshwater pearl oyster, both of which are seriously en-



dangered. Among the fish species in the Reserve's rivers we should mention the stickleback, as well as other species of great interest such as the otter and numerous species bats.

The most common practices in these forests are the natural and semi-natural cutting, chestnut gathering, extensive livestock farming (semi-free grazing cattle and horses) and hay-meadow systems offering great biodiversity.



"Insuas" or river islands, which are dotted along the Miño, defined by a poet as "the hearts of a fertile land"

Flora

The Terras do Miño Reserve features over 700 species of vascular plants, at least 250 of which are water or marsh plants. 20% of Galicia's endangered flora can be found in the upper Miño basin, associated with the more than 53 catalogued wetland environments. The Reserve is also a fine example of old-growth forest, mainly formed by various species of oak. The rivers that flow through the lowlands probably represent the finest examples of riverine and gallery woodland in the northern Iberian Peninsula, with the region also serving as the westernmost limit for a large number of species, most notable the beech.



Cultural Heritage and Landscape

Terras do Miño, known in the Galician language as *As Terras de pedra e auga*, - "the land of stone and water" - where the hand of man and water have shaped the land, the customs, traditions, legends and buildings, giving rise to "water landscapes and culture".

Within the Reserve, a number of different natural and cultural landscapes can be distinguished.

Traditional buildings, *insuas* and *fragas* - remnants of relict woodland - make these riverbanks areas of transit and fine examples of age-old sustainability. Witness to this are the wide variety of bridges and river crossings, mills and *mazos*, the *caneiros* (covered canals) and boats that highlight human activity. The *batuxo*, the traditional punts that can be seen on the River Miño and the Reserve's logo, is the



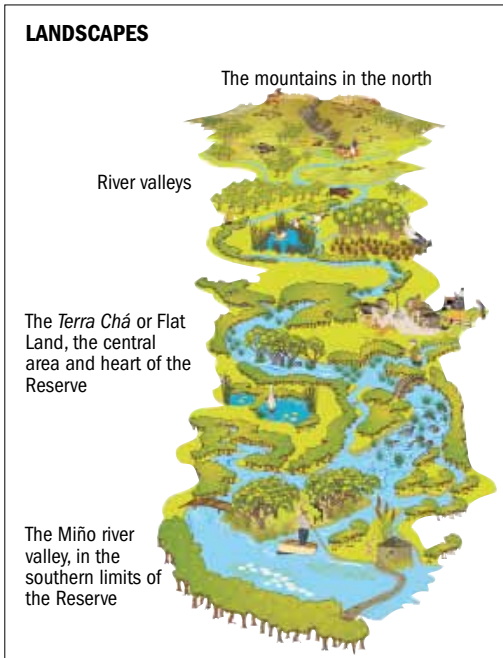
Terras do Miño, where ethnography and tradition are ever-present

symbol of the communion between man and river and a deeply-rooted way of life.

The Terras do Miño Interpretation Centre, the Mazo de Santa Comba, the A Ferenza Ethnographic Ensemble and the Bonxe Pottery, among others, are all a symbol of the ethnographic and craft diversity in the region. Earth, water and fire are fused together in the oldest pottery known in Galicia.

The Reserve also features a large number of archaeological sites, either funerary (known here as *medoñas*) or defensive structures (*castros*). The Roman period has left us Lugo's city walls, built between 260 and 310 and declared a UNESCO World Heritage Site in 2000. The same status has also been granted to the early St. James Way the *Camino de Santiago* or *Camino del Norte*. The numerous constructions of a religious and civil nature bear witness to the legacy that has accumulated over the centuries.

The intangible heritage is also of great importance and can be seen in the numerous oral legends, festivals and traditional trades. Age-old stories such as that of the *home peixe* or fish man, who crosses the rivers on a boat wearing a red hat, or the *xacios* (amphibians with a human form), are just two of the mythical figures hidden away in the Terras do Miño.



TERRAS DO MIÑO



BIOSPHERE RESERVES

Socio-Economics of the Reserve



The majority of the land is dedicated to farming and forestry

The estimated number of towns, villages and hamlets within the Reserve exceeds 600. The total population stands at 185,644 inhabitants, of which 104,303 (56.2 %) live in the main municipalities, including the city of Lugo, whilst the remaining 81,341 people live in the small towns and villages dependent on these municipalities. Population density within the Reserve is 74.95 inhabitants per km², making it one of Spain's most populated Reserves.

The majority of the land is dedicated to farming and forestry, above all in the buf-

fer and transition zones, whilst in the core zone there is a large percentage of natural habitats (wetlands, lagoons, rivers, alluvial woodland, peat bogs and scrub) which are not used intensively, ecosystems that are only compatible with low-intensity livestock grazing.

The joint evolution of man and nature has also resulted in a selection of crop varieties that can adapt to the particular conditions of the land: varieties of wheat, rye, fruit trees, turnips and peppers, and livestock breeds such as *Gallego de Monte* horse or the *Mos* hen.

All of this has led to the existence of a variety of differentiated quality produce, such as the protected designation of origin and protected geographical Status products: *San Simón da Costa* cheese, *Tetilla* cheese, Galician beef, Galician *Lacón* ham, *Botelo Galego*, "*Androlla Galega*" (two types of cold pressed meat), Galician spring greens, potatoes and chestnuts and Galician honey.

Economic activities

The Reserve has been included within the Rural Development programmes (LEADER, PRODER, FSE), with an emphasis on the most relevant traditional activities such as extensive livestock grazing on priority habitats, traditional pastureland systems, traditional small-scale horticulture, non-industrial cheese making, the preparation of traditional meat products and the packing of local food produce (spring greens, honey etc.)

Elimination of invasive species water fern using batuxos on the River Miño

The Terras do Miño Interpretation Centre in the old "Do Tendeiro" water mill



The Reserve's contribution to sustainable development

Threats to the region

- * The planting of non-native species (eucalyptus, pine and poplar)
- * The appearance of invasive species, such as water fern (*Azolla filiculoides*) which compete with and endanger the existence of endemic species
- * The deterioration of the environmental quality of the water and land, due to the dumping of slurry and other contaminants
- * The accumulation of organic waste in canals and areas bordering rivers and lagoons
- * Unsustainable urban pressure
- * Lack of knowledge and appreciation of the natural and cultural values in the area

Within the Parga-Ladra-Támoga SCI, in the Reserve's core zone, the EU - through the LIFENatura 2000 programme - is co-financing the "Conservation of Floodable Forest and Dystrophic Lakes" project, a pilot conservation programme, focusing on environmental management, sustainable development and environmental education within the Reserve.

The project promotes a wide range of teaching material and environmental edu-

cation activities, with the Terras do Miño Interpretation Centre responsible for passing on the values associated with water, stone, nature, culture and tradition.

Management of the Reserve is currently supported by Lugo O2 project and the Kilómetro 0 Visitor Programme, encouraging internal development of the Reserve's municipalities and their knowledge and valuation of the natural and cultural landscape by local people.

Action-solutions

- * Protection, restoration and active management of species of Community interest
- * The cleaning of channels, the creation of vegetation screens and the elimination of invasive non-native species
- * The planting of autochthonous species in order to create copses
- * The creation of vegetation buffer strips to act as ecological filters or purifiers.
- * The purchase of 110 hectares of land for the exclusive purpose of natural conservation.
- * The drawing up of a Natural Resource Ordinance Plan for the Parga-Ladra-Támoga SCI.



*Environmental education activities.
The Terras do Miño Interpretation Centre*



Public use and tourism

Fine local cuisine and quality rural tourism are two excellent reasons to choose Terras do Miño as a holiday destination. As the old Spanish saying goes - To eat well, go to Lugo.

The walking trails highlight the many ethnographic resources connected to the river: the Camiño do Miño trail, with over 100 kilometres of footpath along the riverbank, the Ruta de Chousas, where we can see the sustainable use of carballeiras, the local name for English oak groves and the Ruta das Insuas, which winds through protected natural countryside.

Fishing tourism is also popular on a number of the Reserve's rivers: the Miño, Neira, Chamoso, Azúmara, Mera, Narla, Ladra and Parga, among others.

Accommodation in the area comes in the form of the Parador Nacional de Vilalba as well as 100 hotels and 30 rural tourism establishments, where gastronomy goes hand-in-hand with knowledge and enjoyment of the natural environment.

The Terras do Miño Biosphere Reserve is a fine example of the co-existence of man and nature.



La Reserva de la Biosfera Terras do Miño, reflejo de la integración hombre-naturaleza.

Spa Tourism can be found at the Balneario de Lugo, and the city's Roman thermal baths, and the Balneario de Guiriz. Visitors can also seek out the many pools and wetlands which have the area's magical curing properties (Charca de Alligal, Riocaldo etc.)

Nature, culture, history, legend and tradition all come together in this land of stone and water, bathed by the River Miño, the mother of all Galician rivers.

Support facilities

The Terras do Miño Interpretation Centre. Just outside Lugo, in a renovated 19th century Molino do Tendeiro house and mill building, set amongst age-old oak trees.

The Lagoa de Cospeito Interpretation Centre. In situ and in vivo exhibition

Mazo de Santa Comba. Former industrial complex, in which the force of water moves pumps, mills, forges, saws, dynamos etc.

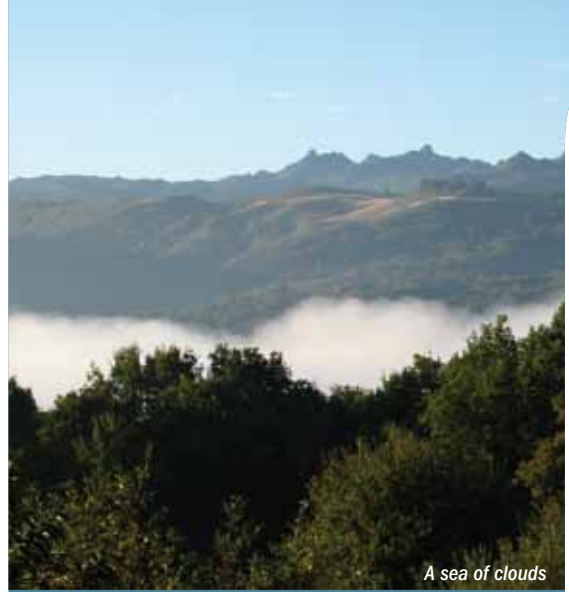
The A Fervenza Ethnographic Ensemble, founded by an enlightened priest in the 17th century, featuring: a water mill, forge, bellows, water wheels, hand sharpening stones and looms, as well as clog-making workshop and a spectacular waterfall.

Water mill



TRANSFRONTERIZA GERÊS-XURÉS

The Transfronteriza Gerês-Xurés Biosphere Reserve (Transboundary Gerês-Xurés Biosphere Reserve) was declared by UNESCO on 27 May 2009, and stretches over part of Galicia in Spain and part of the Região Norte in Portugal. In total it covers 267,958 hectares of protected land in two natural areas divided by borders yet united by nature and culture.



A sea of clouds

Date declared biosphere reserve: 27 May 2009
Total surface: 330,874 hectares. Portugal: 267,958 hectares, Spain (Galicia): 62,916 hectares

Location: Spain / Portugal

Municipalities: Bande, Calvos de Randín, Entrimo, Lobeira, Lobios and Muíños in Galicia and Arcos de Valdevez, Melgaço, Montalegre, Ponte da Barca and Terras de Bouro in the north of Portugal

Management body: Xunta de Galicia Regional Government Department for Rural Affairs.

General Directorate for Conservation of Nature

Address: Santiago de Compostela

Telephone: 981 547 201

Email: Rogelio.fernandez.diaz@xunta.es

Other protection: Baixa Limia Serra do Xurés

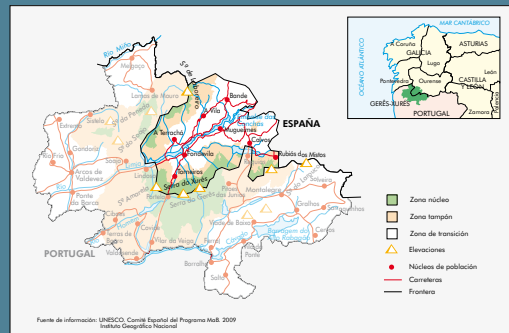
Natural Park, Peneda Gêres National Park (Portugal), Serras da Peneda e Gerês SCI, PTCO

0001 Matas de Palheiros-Albergaria Biogenetic Reserve, PT 930003 (European Council Biogenetic

Reserve Network), Site of Community Importance (SCI), Special Protection Area for Birds (SPA)

Biogeographical Region / Province:

Trans-Border Mediterranean and Euro-Siberian





Golden eagle

Fauna

The diversity of habitats, the varied flora and the unique physiography of this Reserve mean that the area as a whole has the ideal conditions for a wide diversity of fauna. Examples of this can be seen in species such as the wolf (*Canis lupus*), red deer (*Capreolus capreolus*), endangered species of bats, or species of particular importance, such as the European pine marten (*Martes martes*), or snakes such as Lataste's viper (*Vipera latastei*) and the Baskian or Portuguese viper (*Vipera seoanei*).

147 species of birds have been identified within the Reserve, many of which are migratory. Most notably, due to their conservation status and limited distribution within the Iberian Peninsula, we should mention the golden eagle (*Aquila chrysaetos*), red-billed chough (*Pyrrhocorax pyrrhocorax*), eagle owl (*Bubo bubo*), the European honey buzzard (*Pernis apivorus*) and the whinchat (*Saxicola rubetra*).



Golden eagle



Flora

The rugged relief, the sudden variations in altitude and the influence of the Atlantic, Mediterranean and continental climates mean that there is a great diversity of microclimates. These, associated with the essentially granite bedrock, create particular characteristics, resulting in very special botanical aspects, making the area a real point of reference as far as Iberian flora is concerned. Here one can find species that vary from characteristic of Mediterranean and sub-tropical zones to those which predominate in Euro-Siberian and Alpine areas, as well as endemic species such as *Iris Boissieri*, *Thymelaea broterana* and *Armeria humilllis* Subs. *Humilllis*.

Cultural Heritage and Landscape

Architectural value

In the most inaccessible mountain peaks we can find numerous castros - fortified structures that date back to the Iron Age. Watchmen, guarding a territory that was still under construction, used to dominate these peaks until the Romans came, who also left numerous vestiges of immense architectural and cultural value, such as the military encampments, (*Aquis Querquernis* and *Aquis Originis*), and the *Via Nova (Via XVIII - Bracara Augusta-Asturica Augusta)*.



A Pica na Illa.

TRANSFRONTERIZA GERÊS-XURÉS

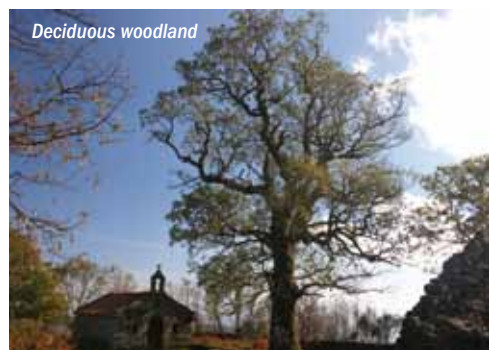
The territory occupied by the Transfronteriza Gerês-Xurés Reserve was conquered by man thousands of years ago. Overcoming the harsh natural conditions and co-existing with the region's ecosystems, man has occupied this land since the remotest of times, with vestiges of a human presence that dates back to pre-historic times, where the builders of megalithic monuments used the vast high plains, the valleys and the *portelas* to create their holy sites.



The Casola do Foxo Dolmen

In more recent times, co-existence has taken the form of numerous examples of community organisation, marked by the need for a sense of union and mutual assistance, always combining with the region's enormous intangible material, characteristic of the Galicia of *meigas* or local witches, incantations and legends. The ephemeral nature of this intangible legacy makes it vulnerable

whilst also representing a vital source of an identity that is profoundly rooted in history, forming a culture that is traditional, popular and with a strong folklore element, in other words, the collective body of work emanating from a culture and based in tradition. These traditions are transmitted orally or through gestures and modified over the course of time through a process of collective recreation. These include oral traditions, customs, languages, rituals, fiestas, traditional medicine and pharmacopeia, culinary arts and all other special skills related to the material aspects of culture.



Deciduous woodland

BIOSPHERE RESERVES

* Socio-Economics of the Reserve

The Transfronteriza Gerês Xurés Biosphere Reserve includes 1,144 towns, villages and hamlets in which 76,301 people live, according to data from the Spanish and Portuguese Statistical Offices (2007 figures).

On a municipal level, the population of the Biosphere Reserve live in Bande, Calvos de Randín, Entrimo, Lobeira, Lobios and Muíños in Galicia and Arcos de Valdevez, Melgaço, Montalegre, Ponte da Barca and Terras de Bouro in the north of Portugal. The 76,301 peoples, distributed over the 2,594.96 Km² of the Reserve, represent a population density of 29.42 inhabitants per Km².

Traditionally, in the rural areas of the Reserve, practically all the local people work in farming. This is almost always for family sustenance, producing everything that is needed for survival, and is an ever-present practice in the region. Although livestock and crop farming is very much on the decline these days,



Traditional activities

autochthonous breeds such as *barrosa* and *cachena* cattle for example, are still important sources of income. This is an area which is now beginning to open up to tourism.



Horses



The Reserve's contribution to sustainable development



View of the Reserve

TRANSFRONTERIZA GERÊS-XURÉS

As this is a cross-border Biosphere Reserve, cooperation between the two territories and countries, when establishing common objectives, defining priorities, and implementing management strategies, seeks to consolidate the image of Parque Transfronterizo Gerês-Xurés, created from the Parque Natural Baixa Limia Serra do Xurés and the Parque Nacional de Peneda Gerês, created in 1997, forming an environmental unit with extensive biodiversity.

More than a mere designation, the Transfronteriza Gerês-Xurés Biosphere Reserve seeks to provide recognition of the need to make a common and clearly expressed effort regarding the immense value of the region's flora, fauna and landscape, spread over two protected areas, promoting sustainable economic development, and encouraging the active participation of all the agents within the territory, in favour of a balanced relationship between people and nature.

BIOSPHERE RESERVES





Dolmen



Corga da Fecha

Interpretation and Information Centres allow visitors to orientate themselves within the Reserve, as well as raising awareness regarding knowledge and conservation of its heritage.

Among the main activities on offer, we should highlight spa and thermal bath tourism, one of the oldest tourist activities in the area. The existence of hot springs with therapeutic properties makes Riocaldo in Galicia and Caldas do Gerês in Portugal area of great spa interest and a hugely important tourist attraction.

Support facilities

The Biosphere Reserve currently features important fundamental structures regarding information and attention to the public in general, for environmental education and raising awareness among visitors and local people alike (Portas del Parque Nacional in Portugal, and Interpretation Centres in Galicia), as well as nature learning centres and museums. Through the Reserve's trails and footpaths, visitors can visit the heart of this cross-border region, forgetting all about frontiers and losing themselves within a land that is waiting to be discovered.



Rioja



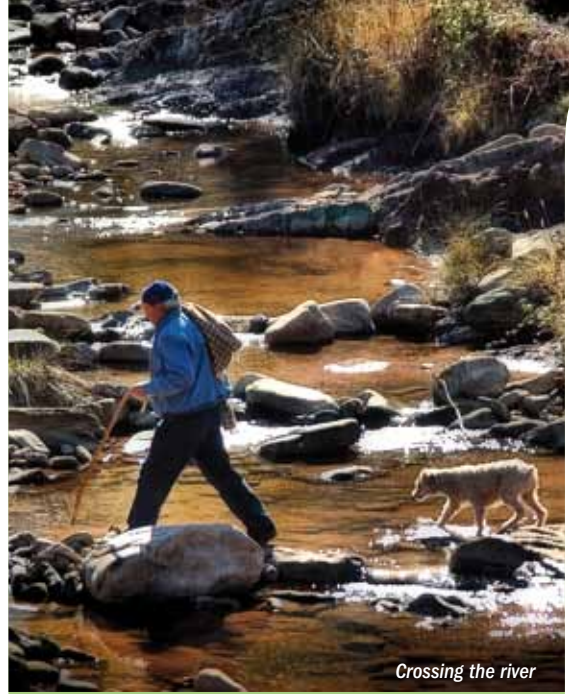
* VALLES DE LEZA, JUBERA,
CIDACOS Y ALHAMA

VALLES DEL LEZA, JUBERA, CIDACOS Y ALHAMA

The area declared as a Biosphere Reserve in La Rioja is bisected by valleys of the Rivers Leza, Jubera, Cidacos and Alhama, all of which run perpendicular to and flow into the River Ebro. Only the southernmost river basins, which coincide with the Sierras de la Ibérica, fall within the Reserve. To the south it borders the provinces of Soria and with Navarra to the east. Its core zones coincide with the Natura 2000 Network protected spaces; these are conservation zones with landscapes which can be characterised for their aridity and austerity, but which nonetheless are of great importance from a geological perspective, where rocky outcrops and gullies alternate with notable flat anticlines and synclines marked in the rock.

The protected areas within the core zones are places with significant natural values, mainly turned over to traditional livestock farming and other activities such as hunting and fishing.

The majority of the ageing population live in the transition zone, with a low density of population, meagre industrialisation and making a living from the area's hot springs, its palaeontology and the appeal of its natural heritage. Here visitors can enjoy the fascinating paleontological remains and the vestiges left by early Celtiberian settlers.



Crossing the river

Date declared biosphere reserve: 10 July 2003

Surface area: 119,669 hectares (Core zone: 5%. Buffer zone: 10%. Transition zone: 85%.)

Location: South-eastern mountain ranges of the La Rioja Region

Municipalities: 26 fully within the reserve and 13 partially within the reserve

Management body: Biosphere Reserve Management Board (Regulated by Decree 31/2006, 19 May [BOR n° 70, 27 May 2006])

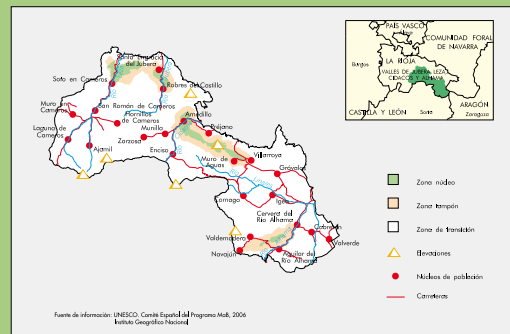
Contact

Dirección General de Calidad Ambiental y Agua
Consejería de Turismo, Medio Ambiente y Política Territorial. Prado Viejo, 62 -bis. 26071 Logroño, La Rioja
Telephone: 941291427; @: reserva.biosfera@larioja.org

Protected areas within the Reserve. 3 Conservation Sites of Special Community Importance, Special Protection Area for Birds (SPA) (3)

Biogeographical Region / Province:

Mediterranean /Aragonese





Bee on dog rose

Specific natural heritage values

The region features 8 trees that have been catalogued as of special interest, the holm oak in Villarroya, the Spanish junipers in Torremuña, Ajamil, the mulberry trees in Jubera and the La Redonda prickly cedar in Munilla. The Leza canyon, a refuge for griffon vultures, is an unmissable beauty spot, where the river has created a 700 m-deep ravine, 6 km long and up to 100 m wide. Visitors should not leave without have seen the two spectacular sinkholes, one of which is cylindrical, the other conical, formed in the limestone near the village of Zenzano.

General description of the physical and biological environment

This is a region with a wealth of natural values with a landscape marked by its geological characteristics, where carrion birds and birds of prey oversee the craggy outcrops of rock and the wild river canyons which surge through the limestone.

Rock shares the terrain with large areas of aromatic Mediterranean scrubland, in contrast to the beech, holm oak, oak and pine groves.

In the highlands of Leza and Jubera there are large numbers of Pyrenean oak (*Quercus pyrenaica*), which in the highest areas form fine *dehesa* meadows that are kept in check by grazing livestock. The most noteworthy species of tree, however, is undoubtedly the holm oak, which grows on the intermediate hill sides and in the valleys.

The mosaic patterns of the fields of traditional crops are a fundamental ele-

ment of the landscape: Olive and almond groves and traditional smallholdings blend seamlessly into the environment with the local villages and the hillsides with their woodland and scrub, with abandoned terraces providing the link to the past and an indication of man's interaction with the countryside.

Natural heritage - a source of resources to be carefully used

This heritage is also a source of resources that man can make use of, albeit rationally: The truffle woods are a key element in the conservation and protection of the hillside as well as being an important source of income for local people.

The same is true of the wild mushrooms that grow in the area, and the verdant vegetation means that bees are able to make honey of the highest quality, especially the Jara and Estepa Pollen, without overlooking the medicinal aromatic plant, such as the bearberry.



White water

Cultural Heritage and Landscape

This land has been continuously inhabited since at least the Neolithic era, as can be seen in the vestiges of the various civilizations that have lived in the different parts of the region. Apart from man, there are also important remains of other who once walked this land: the dinosaurs, whose footprints can be seen in the rocks that form these valleys, at a large number of visitable sites, especially in the Cidacos valley.

Returning to man, the Reserve was home to Neolithic, Iron Age man, Celtiberians and Romans, Visigoths and Arabs, and each has contributed to the formation of the territory we know today.

The Collado del Mayo Dolmen in Trevijano is a 4,640-year old Neolithic funerary monument. Important remains from this era can also be found in Torre and San Román de Cameros.

Celtiberian man's presence on the Reserve can be seen at its clearest at the Contrebia Leukade settlement at Aguilar del Río Alhama, which was occupied since the Iron Age (10th century B. C.) and Celtiberians (7th to 2nd centuries B. C.), considered to be one of the most



Canyon on the River Leza

important in Spain. It was subsequently settled by Romans (1st century B.C.) and Visigoths. Their arrival, and the fear of attack, led to profound changes taking place in local people, who opted to fortify their settlements or move them to areas where access was more difficult, as the artificial caves and columbarium in Inestrillas.



The Arabs left their mark on the architecture, with their characteristic horseshoe arches such as those at the Virgen del Monte Hermitage in Cervera del Río Alhama. The Arabs' fight against the Christians, and subsequent conflicts between the Kingdoms of Navarra, Castile and Aragon, made it necessary to build defensive castles, such as those at Cornago and Clavijo, declared national monuments in 1931.



Amigos de los Ríos

The intangible heritage related to water can be seen in its myths, legends, in the place names and countless other lesser stories, and which tell of man's fears, his confrontations and the distribution of the land are being rescued from neglect and obscurity by volunteers from the *Amigos de los Ríos* ("Friends of the rivers") programme, through an interesting network of footpaths.

Socio-Economics of the Reserve



Abandoned villages

La Rioja's Biosphere Reserve has 7,664 inhabitants according to the 2009 census, who live in the 27 municipalities within the territory that is fully declared biosphere reserve.

The ageing population is a cause for concern, reflected by the population pyramid, and conserving the number of inhabitants is the main challenge facing these villages and the Reserve's management body, implementing initiatives that make the area a little more appealing and habitable.

The main economic activities are traditional livestock farming and tourism, with the latter of increasing importance as a way of life for young people in these rural communities. Neither of these activities is profitable in itself, meaning that the majority of local people opt to diversify their sources of income, supplementing their earnings with the sale of natural non-forestry resources, traditional crafts etc.



Sheep on a drovers road

Abandoned villages

Gutur *** Villanueva De San Prudencio
*** Antoñanzas ***

La Monjía Ribalmagullo *** La Santa
*** Buzarra *** Dehesillas *** Oliván
Valtrujal *** Santa María En Cameros ***
Avellaneda *** Montalvo En Cameros
*** Reinares *** Bucesta ***

One of the most desolating elements in the region is that of its abandoned villages. These villages have a special beauty and yet living conditions are very harsh, without the modern creature comforts that city dwellers tend to take for granted: electricity, running water, asphalted roads etc. These villages, once thriving communities, have seen the locals leave one by one until none were left. Closed doors, holes in the roofs, weeds taking over...

These villages have now disappeared, threatening the conservation of the environment, with the inevitable loss of local knowledge and traditions. The Reserve seeks to preserve these traditions from falling into obscurity, with the development of initiatives as part of its annual action and investment plan.



The Reserve's contribution to sustainable development

Truffles

Truffle culture has been a driving force in the La Rioja Biosphere Reserve as a project that seeks to conserve the natural heritage and the role of man in the territory.

A specialist truffle nursery has been established in the Leza valley. Visitors can

go on guided truffle excursions and enjoy a range of truffle products in a number of establishments throughout the Reserve and during the *Feria de la Trufa de Soto* in Cameros.

Riojan truffles can be found in La Plaza de Abastos in Logroño, thanks to the promotion of their direct-to-the-public sale.



Products with a badge of quality

The promotion of local products and services involves the implementation of the “La Rioja, Reserva de la Biosfera” Social Responsibility Trademark, through which the La Rioja Regional Government allows all those interested and who so request it to use the corporate image of the Biosphere Reserve, on the condition that they comply with a series of general requisites and the Decree governing their use. The products currently bearing this “badge of quality” are the Dog Rose and Blackberry Bush pollen that beekeepers in these valleys have obtained, as well as the fine honey. The organic olive oil from the Añamaza valley, is also a flagship for the brand, the fruit of a project to convert the almond and olive orchards in the valley to organic production and the building of a cooperative oil mill for the farmers participating in the project.

Almond trees





Public use and tourism

Barranco Perdido

Barranco Perdido - "Lost Gully" - is a paleo-adventure park that opened to the public in July 2010, in the village of Enciso, in which visitors can complement their visit to the important ichnite sites and the paleontological centre. The park is a leisure and culture centre, far removed from conventional adventure parks, in which the visitor can live his or her own adventure, putting themselves in a palaeontologist's shoes.

www.elbarrancoperdido.com

Paleontological Centre:

Information and reservations:

Tel. 941 396 093

<http://www.dinosaurios-larioja.org>

Long-Distance Trail GR-93

Sierras de La Rioja

An excellent way to discover the Reserve is to explore it on foot along the various footpaths that run through Camero Viejo (Leza), Ato Cidacos and the Alhama-Linares valleys. This is a mid-mountain trail that passes from one valley to the next across the hills and sierras, along the old bridle paths that joined villages.

Trail stages on the Reserve:

- * Stage 5 - Ortigosa
- Laguna de Cameros
- * Stage 6 - Laguna de Cameros-San Román
- * Stage 7 - San Román de Cameros-Munilla
- * Stage 8 - Munilla-Enciso
- * Stage 9 - Enciso-Cornago
- * Stage 10
- Cornago-Cervera del Río Alhama
- * Stage 11 - Cervera del Río Alhama-Valverde



Hot springs

The origins of the use of hot springs on the Reserve date back to Roman times. The Romans, aware of the health benefits of hot mud and water, made these thermal baths something more than just a health treatment however, turning them into a sociological and cultural event.

Arnedillo: Arnedillo Spa. Hot springs for public use

Cervera del Río Alhama: La Albotea Spa

Grávalos: Grávalos Spa

Navajún: Sulphur water springs

Contrebia Leukade

Archaeological site and Interpretation Centre. In the village of Aguilar del Río Alhama is the site of the Contrebia Leukade Celtiberian settlement, one of the most important remains from this period in the Iberian Peninsula.

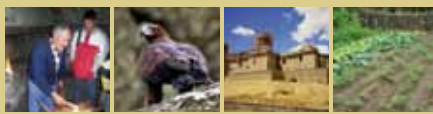
The visit can be complemented by visiting the site's Interpretation Centre, an exhibition space that evokes the spirit of the Celtiberian world with its wealth of symbolism in five rooms.

Guided visits:

Reservations 941 19 71 19

www.contrebialeucade.com

Madrid



- * CUENCA ALTA DEL RÍO MANZANARES
- * SIERRA DEL RINCÓN

CUENCA ALTA DEL RÍO MANZANARES

The territory of this Reserve coincides with the Cuenca Alta del Manzanares Regional Park, at the time it was included within the International Network of Biosphere Reserves. It is situated in the Mediterranean-Iberian-Atlantic region, Carpetano-Iberian province, Guadarrama sector. Its northernmost limit borders peaks of the Cuerda Larga range, one of the main sections of the Sierra de Guadarrama, which includes the highest peak on the Reserve (Cabeza de Hierro, 2,383 metres), and which extend like a ramp down toward the Monte de El Pardo, very close to the city of Madrid. The Pueblas estate, at 620 m above sea level, is the lowest point on the Reserve.

Zoning is based on the existing Regional Park, and thus the Reserve's core zones coincide with the corresponding zones within the Cuenca Alta del Manzanares Regional Park Natural Reserve, whilst the rest is included within the buffer zones. No transition zones have been designated.

The Reserve contains a mosaic of ecological systems that are representative of the biogeographical region that they belong to, as well as a range of ecosystems that have been transformed by man over the centuries, ensuring a heterogeneity of landscapes of great aesthetic value and enormous ecological wealth. This is also an area of significant natural and scientific interest, due to the presence of numerous examples of vegetation, flora and fauna, geomorphology and countryside



Manzanares el Real castle

Date declared biosphere reserve: 9 November 1992

Surface area: 46, 778 hectares (Core zone: 39%. Buffer zone: 61%)

Location: The province of Madrid

Municipalities: 16

Management body: Madrid Regional Government
Department of Environment, Housing and Land Planning

Address: C/ Alcalá 16, 28014 Madrid

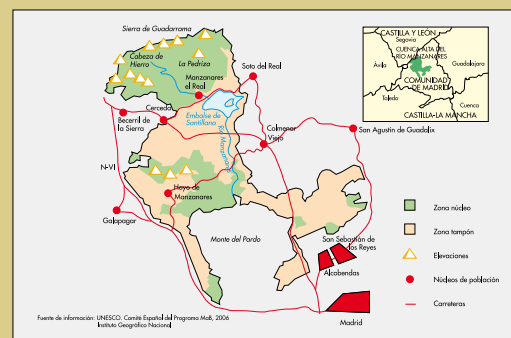
Telephone: 914 382 200

Website: www.madrid.org

Other protection: Regional Park, Special Protection Area for Birds (SPA), Site of Community Importance (SCI)

Biogeographical Region / Province:

Mediterranean-Iberian-Atlantic region



worthy of special consideration, including some ecosystems that have barely been altered. There are also numerous species of endangered and vulnerable flora and fauna, of great biogeographical interest.

Natural Heritage

The large area covered by the Reserve mean that the terrain is extremely heterogeneous from a landscape perspective. There is a clearly mountainous area, consisting of a high mountain chain, an area of foothills, with moderate altitudes leading up the sierra, and a southerly plains section.

The geology of the region shows two clearly differentiated sections, which meet along the Torrelodones fault: the sierra, with a predominance of outcrops of siliceous rock, and the sedimentary ramp.



Wild daffodil

The potential vegetation corresponds to differing series depending on the bioclimatic level. The most important are: The Carpetano Meso-Mediterranean holm oak groves; the Supra-Mediterranean Carpetano-Iberian sub-humid silicolous Pyrenean oak groves (*Quercus pyrenaica*); the Oro-Mediterranean Guadarrama silicolous Alpine juniper (*Juniperus communis* subsp. *alpina*) and the Crioro-Mediterranean Guadarrama silicolous tufted grasses *Festuca indigesta*



Mountain goat

Nevertheless, this general scheme becomes significantly more complicated, due to orographic complexity of the terrain and the human activities developed in the area, which has enriched the variety of environments, forming a great mosaic of ecosystems within the Reserve, together with the high level of conservation in many of these ensures the area as a whole has extensive biological diversity.

As far as man's usage of this natural heritage is concerned we should highlight the traditional *dehesas*, a fine example of sustainable development, combining traditional land use with the conservation of ecosystems. The Reserve has two types of *dehesas*, those which feature holm oaks (*Quercus ilex* subsp. *rotundifolia*), and those which are very characteristic of the foothills of the Sierra de Guadarrama, the ash *dehesa* (*Fraxinus angustifolia*), widely used in extensive livestock farming, due to their high productivity.

CHARACTERISTIC ELEMENT	DESCRIPTION
Hillside vegetation	Notable representation of flora endemic to the Sierra de Guadarrama
Becerril juniper grove	A formation that is very rare in the Madrid Region
Hundred year-old Scots Pines	Spectacular old tress with an extraordinary biogeographical value due to their natural origin
La Pedriza del Manzanares	Stunning granite formation with an important representation of rock-based flora and fauna
Communities of endangered species	Iberian imperial eagle, black vulture, European pond turtle, Apollo butterfly, wild daffodil etc.
Santillana reservoir	Fauna and landscape interest
Cork oak groves in the Sierra de Hoyo	Great biogeographic value, due to be it being one of the highest and most continental communities of cork oaks on the Iberian Peninsula.
The Camorchos pools	Fauna and botanical interest
Monte de Viñuelas Special Protection Area for Birds	Mediterranean forest with Iberian imperial eagles and other woodland birds of prey

Cultural Heritage and Landscape

Many peoples have established themselves within what today is the territory of the Biosphere Reserve, leaving behind a rich legacy of buildings and other archaeological remains which bear witness to their culture. Since prehistory, man has habited these lands, as the archaeological remains found in La Pedriza bear witness to. Although many of the cultures left vestiges of their presence in the area (cave paintings, the remains of Roman roads, watchtowers from the time of the Moorish occupation etc.), the Renaissance represents the period in which human activity intensified, significantly influencing the landscape.



River Manzanares



Hueco de San Blas



View over the mountain peaks

Over the past century, the local population have gradually broken their ties with the natural environment in which they live, a factor which has had a negative influence on the conservation of the area's tradition and folklore. Nonetheless, the villages within the Reserve and its sphere of influence do still maintain these traditions, such as the Saint's Day fiestas and *romerías* - local pilgrimages - which ensure that their roots are not lost.

The variety of the landscape is closely related to the traditional uses which have been undertaken over hundreds of years and still are. *Dehesa*-based farming and forestry has been of fundamental importance to the traditional economy in the region, as was, in the past, firewood gathering and charcoal making before the arrival of combustible fossil fuels.

Pine forests planted in the 1940s and 1950s, made wholesale changes to the countryside, as they were introduced to what had largely been deforested areas, in areas where the potential vegetation had been dominated by Pyrenean oak.

MOST NOTABLE CULTURAL ELEMENTS	DESCRIPTION	LOCATION
Cave paintings at Los Aljibes	Painting on the wall of a natural shelter dating back to the Bronze Age	Manzanares el Real
Watchtower	Tower built by the Moors after having occupied the area	Torrelodones
Peña Sacra Hermitage	17th century Christian hermitage	Manzanares el Real
Manzanares el Real castle	Castle built by the Mendoza family in 1482	Manzanares el Real
Viñuelas Castle	17th-18th century castle	Madrid
The Canto del Pico House	Artistic Historical Monument, built in 1920	Torrelodones

Socio-Economics of the Reserve



As far as the socio-economic activities undertaken in the Reserve and its evolution, we should highlight the decline in the farming and fishing sector in recent decades. Traditionally, extensive livestock farming has always been one of the pillars of the local economy within the Reserve, especially in mountain areas, associated with the use of ash and holm oak *dehesas*. This activity has gradually fallen off in terms of its importance, although a number of good examples remain and should be conserved. The change in the use of the land has led to a growth in the tertiary sector which predominates



in the current local economy. The increase in this sector is due both to the increase in tourism in the area, due to the attraction of the region's natural values, and the chance to carry out outdoor activities (walking, mountaineering, mountain biking), as well as to the growth in the resident population in the towns and villages which fall totally or partially within the Reserve, motivated by the new tendency among Madrid's population to choose as their first residence places outside the main city, in search of lower housing prices and greater quality of life.





The Reserve's contribution to sustainable development

Since its declaration, the Reserve has benefited from existing protection regulations covering the Cuenca Alta del Manzanares Regional Park, given that both the Park and the Reserve cover the same territory (although currently the Cuenca Alta del Manzanares Regional Park is larger than the Reserve, after it was enlarged in 2003). Furthermore, after the inclusion of the Regional Park within the International Network of Biosphere Reserves, certain improvements introduced in the planning of this protected area via a new Plan for Governing Usage and Management, in order to adapt the park to the new biosphere reserve management

recommendations and obtain a new international scientific management reference framework. Therefore, in the aforementioned document 6 Regional Park management priority areas have been outlined.

Among the sustainable socio-economic activities undertaken within the Reserve we should highlight extensive livestock farming, for the impact it has had on the current landscape. The productive land within the Regional Park's area of influence has been used for grazing livestock since time immemorial, favouring the conservation of the environment with its high ecological value.



Priority areas in Regional Park management

- * The conservation of biodiversity
- * The conservation of traditional land use systems
- * Management of leisure activities
- * Research and ongoing monitoring
- * Education and training
- * Cooperation

Public use and tourism

The Reserve shares an Environmental Education Centre with the Regional Park, situated in Manzanares el Real. Here programmes are given that are aimed at the local population, schools and visitors. It features a large space in which the permanent exhibition is housed, with information panels, cabinets, models and audiovisual presentations which focus on the most important characteristics concerning the Regional Park and the Reserve. A smaller building holds temporary exhibitions. The centre's garden features autochthonous species with various themed areas. It has also been adapted for use by people with mobility difficulties or visual impairment.

The Reserve has excellent potential for outdoor activities. Applicable environmental legislation allows those activities which do not have a negative impact on the environment in which

they take place. One of the most popular of these is hiking. Visitors who simply wish to spend a pleasant day in the country also features a good number of leisure areas, adapted for public use.

For those who wish to spend the night on the Reserve there is the possibility of using one of its two camp sites - La Fresneda in Soto del Real and El Ortigal in Manzanares el Real.

Finally we should mention that in the small town of Soto del Real, the Park has a Management Centre, staffed by technical and administrative workers who support the General management team. This office also attends to the public, mainly local people, administering certain matters on their behalf with the local, regional and national Government. Information is also provided regarding Park legislation and zoning.

PROPERTY, FACILITIES AND SERVICES	CONDITION	USAGE	INTEREST
The "El Ortigal" camp site	2ª Category	High - open all year	High
The " La Fresneda" camp site	2ª Category	High - open all year	High
Health services in villages within the reserve	Good	High	High
"La Barranca" Leisure area (Navacerrada)	Good	Medium	High
"Canto Cochino" Leisure area (Manzanares el Real)	Average	Very high	Very high
"Chopera de Samburiel" Leisure area (Manzanares el Real)	Good	High	High
"Arroyo del Mediano" Leisure area (Soto del Real)	Good	Medium	Medium
"Dehesa de San Sebastián" Leisure area (San Sebastián de los Reyes)	Good	Very high	Very high
"Parque Cerca Cabilda" Leisure area (Hoyo de Manzanares)	Good	High	High
PRCAM Management Office (Soto del Real)	Good	High	Very high
Manzanares Environmental Education Centre	Good	Very high	Very high
Comarca XIII Forestry Agents Office (Cercedilla)	Average	Normal/high	High
Comarca XIV Forestry Agents Office (Soto del Real)	Good	High	High
Comarca XV Forestry Agents Office (Colmenar Viejo)	Average	High	High
Autochthonous woodland flora nursery (Manzanares del Real)	Good	High	High
"Giner de los Rios" Mountain Refuge, La Pedriza	Good	High/Very high	High

SIERRA DEL RINCÓN

The Reserve belongs to the Mediterranean biogeographical region, the Carpetano-Iberian Leonese province. Zoning is as follows:

Core zone: Public mountain land: “El Chaparral and La Solana” (Hayedo de Montejo) and “Dehesa Boyal” in Puebla de la Sierra. (588 hectares).

Buffer zone: Other public mountain land around the core zones. (7,017 hectares).

Transition Zone: Rural villages, smallholdings, meadows and *dehesas* (public and private) in the valleys. (7,626 hectares).

Respectful coexistence between Man and Nature within this mountain environment has, over the centuries, shaped a spectacular landscape of Mediterranean ecosystems, conserving a wide cultural natural diversity that is difficult to imagine so close to Madrid. It was as a result of this sustainable relationship, that UNESCO declared the Sierra del Rincón a Biosphere Reserve. Today, visitors can enjoy the tranquillity of this idyllic setting, thanks to an architecture in keeping with its surroundings, and the local people, always happy to share their stories and legends.



A mosaic of various ecosystems

Date declared biosphere reserve: 29 June 2005

Location: The extreme north-east of the Madrid Region. Borders to the east with Guadalajara

Surface area: 15,231 hectares (Core zone: 4%. Buffer zone: 46 %. Transition zone: 50 %)

Municipalities: Horcajuelo de la Sierra, La Hiruela, Montejo de la Sierra, Prádena del Rincón and Puebla de la Sierra.

Management body: Madrid Regional Government Department of Environment, Housing and Land Planning. Environment Directorate-General. Department of Environmental Education.

C/ Alcalá 16, 28014 Madrid

www.sierradelrincon.org; www.madrid.org

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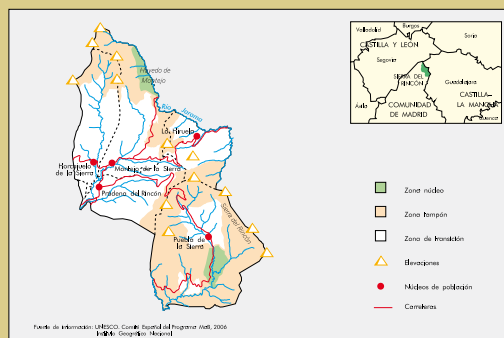
Other protection: The Hayedo de Montejo Beech Grove Natural Site of National Interest, Sonsaz National Hunting Reserve, Site of Community Importance (SCI)

Biogeographical Region / Province:

Mediterranean / Ibero-Atlantic.



Footpaths whose rich natural palette invites walkers to pass down them





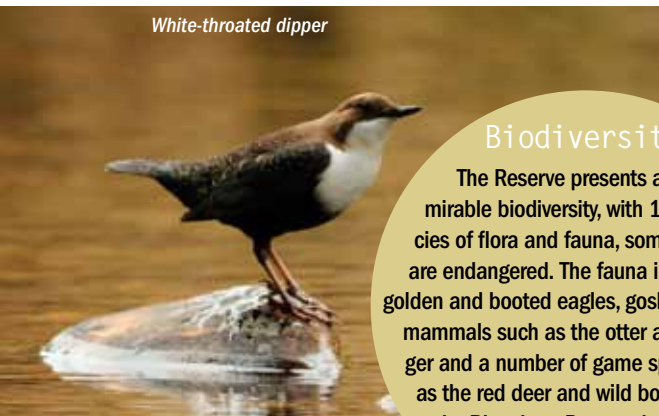
Puebla de la Sierra stream, flowing amidst a verdant alder grove

The Sierra del Rincón can be characterised as a clearly rugged mountainous, rural area with a wealth of different ecosystems: *dehesas* populated with Pyrenean oak and some ash trees in its valleys and low-lying hillsides, with a notable presence of sessile oaks and beech trees; rocky outcrops and scree, pine trees from replanting programmes and broom scrub on higher land; as well as riverine species such as willow, aspen, birch and alder.

The relief and the variety of geological material formed by quartzite, slate, gneiss and shale, together with the palette of colours from the various habitats, make this a scene worthy of unhurried consideration.

Making use of natural resources has traditionally gone hand in hand with extensive livestock farming, which has shaped the countryside with its *dehesas*, and an agriculture that is based on family-owned smallholdings. The painstaking labour of the present generation's forebears can be seen in the *dehesas boyales*, the grazing meadows in Puebla de la Sierra and La Hiruela, enclosed by dry stone walls, and populated by extraordinary age-old oaks, beeches and yews, some of which are catalogued as noteworthy trees.

The harvesting of produce such as honey and the crops grown in the smallholdings, as well as the gathering of firewood and medicinal plants by local people forms a part of the traditional usage of this land which in recent times has been recovered, as has the domestic biodiversity of autochthonous plants and livestock.



White-throated dipper



Golden eagle

Biodiversity

The Reserve presents an admirable biodiversity, with 1072 species of flora and fauna, some of which are endangered. The fauna includes the golden and booted eagles, goshawks, certain mammals such as the otter and the badger and a number of game species such as the red deer and wild boar (part of the Biosphere Reserve belongs to the Sonsaz National Hunting Reserve).

Cultural Heritage and Landscape



Winter view of Horcajuelo de la Sierra



Charcoal stack in the Dehesa de la Hiruela

Farming architecture is of great interest, with its vestiges of a traditional livestock husbandry that is still perceptible. The stone villages form one of the most attractive rural ensembles in the province. The traditional *serrana* style of housing, built with materials in the area, is a reflection of the human essence of the Sierra.

Local churches, other communal buildings and the network of irrigation ditches are all part of a notable historical legacy which is set out in the table below.

The celebration of popular fiestas and *romerías*, *El Mayo* and *El Hornazo* are the setting for traditions, dances and popular music from the numerous cultural associations in the Sierra.

Throughout the four seasons, the extensive network of signposted footpaths allows visitors to fully appreciate the stunning colours offered by the shrubs, rowan trees, maples, aspen and oak, within a natural setting that has been shaped by traditional livestock farming and hillside smallholdings, without urban alterations or pressure.



The forge at Puebla de la Sierra

SIERRA DEL RINCÓN

BIOSPHERE RESERVES

La Hiruela	18th century San Miguel Arcángel Church. Flour mill. Traditional beehives. Charcoal stack. Virgen del Rosario Fiesta. The Recolección del Pero fiesta, based on the local pear harvest.
Horcajuelo de la Sierra	15th century San Nicolás de Bari Church. Forge. San Nicolás Fiesta.
Montejo de la Sierra	15th century San Pedro Church. Bull pen. Shoeing frame. Livestock stables. Wood-burning oven. Old mill. Nazaret and La Soledad hermitages. Virgen de Nazaret Fiesta. The burning of Judas in Easter Week. Public bake on Easter Monday. Group of jotos - traditional dancers.
Prádena del Rincón	18th century Santo Domingo de Silos Church. Shoeing frame. Troughs. Traditional huts. Nuestra Señora del Carmen Fiesta. Association of Traditional Dance.
Puebla de la Sierra	17th century Purísima Parish Bari Church. Arabic fountain. Washhouse. Forge. Nuestra Señora de la Soledad hermitage. Valle de los Sueños sculptures. Virgen de los Dolores Fiesta. Día de la Botarga carnival. Group of traditional minstrels.

* Socio-Economics of the Reserve



Traditional vegetable garden



Herd of cattle, the main players in the local economy and landscape

The peace and quiet experienced in each of these villages is due to the scarce population and their economic activities. In 2007, La Hiruela had less than 100 inhabitants, whilst Montejo, the largest village in the region, had a population of 330 people. As is the case with the rest of the Spanish geography, in the 1960s the Sierra del Rincón suffered significant depopulation; nevertheless, the tendency over recent years is toward a slight recovery in resident numbers.

The typical inhabitant who lives in the Biosphere Reserve is 40 to 55 years old, with a primary or secondary school education, employed in the service sector, working in health, social services and education. Building, livestock farm-

ing and rural tourism offer alternative or complementary sources of income. Gross disposable income per inhabitant was less than €10,500 in 2007.

Socio-economic impact on the Reserve is minimal, as the economic activities that take place within it are sustainable. The high percentage of undeveloped land, nearly 90 %, ensures controlled and well-balanced use of the environment.

The negative impact is the result of marked seasonality and the location of tourism in sensitive areas, as well as the low population density.

Years	N° inhabitants per village		Population density	Birth rate	Death rate	Population growth
	1900	2007	2007	2007	2007	2007
La Hiruela	191	74	4,3	0	0	0
Horcajuelo de la Sierra	352	103	4,3	0	0	0
Montejo de la Sierra	494	330	10,3	5,8	20,4	-14,6
Prádena del Rincón	303	110	4,9	0	17,9	-17,9
Puebla de la Sierra	305	109	1,9	9'3	9,3	0
Media	339,2	150,9	4,7	4,7	10,4	-5,7



On an environmental education and awareness-raising trail. Peña la Cabra

✦ The Reserve's contribution to sustainable development

The Sierra del Rincón is an outstanding environment in which to develop a balanced socio-economic and environmental model through the promotion and appreciation of local product, the upkeep of traditions and popular customs, the diversification of the local economy, the promotion of sustainable tourism and the overall encouragement of employment.

Itineraries and guided excursions have been developed to promote education and awareness-raising, training and the diffusion of natural and cultural heritage values, as well as activities aimed at

promoting the territory. These initiatives are aimed both at visitors and the local community, who are a cornerstone of the management of the Reserve.

The participation of local people and institutions is a constant factor in the management of the Reserve, through numerous communication, collaboration and support initiatives. The creation of local associations is another of the challenges facing the Reserve.

The large number of rural tourism establishments guarantees a relaxing, warm and welcoming stay.



An extensive network of signposted paths

Public use

The importance of public use is clear in the action that has been taken on the Reserve, such as the signposting and upkeep of paths, maintenance of and improvements to infrastructures, leisure and information facilities. Research has also been undertaken regarding the recuperation of orchard diversity, the sustainable development of the Hayedo de Montejo beech grove, forest biomass research, Reserve declaration impact study etc.

Public use and tourism



INTEGRATED HERITAGE RESOURCES	
Gastronomy	Roast meat, pulses and vegetables, especially the judión, a butter bean-like pulse
Landscapes	Well-conserved mountain landscapes, shaped by traditional activities, and outstanding rural architecture.
Infrastructures Public facilities and services	
<p>Services: Guided weekend and public holiday excursions in spring and autumn. Activities, events and special days Guided visits to the Hayedo de Montejo beech grove all year round Leisure areas and network of signed paths</p>	
<p>La Hiruela: Río Jarama flour mill Ethnographic Museum</p> <p>Horcajuelo de la Sierra Ethnological Museum Forge</p> <p>Puebla de la Sierra: Forge Molino de Abajo mill</p>	<p>Montejo de la Sierra: Resource and Information Centre Sierra del Rincón Biosphere Reserve Tourist office El Hayedo Environmental Education Centre</p> <p>Prádena del Rincón: Salmoral lagoon, Rock garden and bird-watching hide, Transhumance Interpretation Area</p>
Tourist Services	
<p>La Hiruela: Rural accommodation: Entremelajos, El Rincón de la Sierra, El Rincón de La Hiruela, El Bulín de La Hiruela, Casa Aldaba. Bars and Restaurants: Bar Restaurante La Hiruela, Casa Aldaba, Ad Libitum.</p> <p>Horcajuelo de la Sierra: Rural accommodation: Reserva de la Biosfera, La Ladera, La Posada. Bars and Restaurants: Bar Social, La Posada, Hayedum.</p> <p>Montejo de la Sierra: Rural accommodation: Fuente del Arca, El Horno, Las Tres Casitas, El Hayedo, La Hontanilla. Rural Hotel: Fuente del Tejo. Bars and Restaurants: Casa Benito, Mesón Montejo, Mesón El Hayedo, El Cucharón de Lola, La Hontanilla, Bar de la Piscina</p> <p>Prádena del Rincón: Rural accommodation: El Bulín de Prádena, Pradoelegido Bares y Restaurantes: El Trébol, El Rincón</p> <p>Puebla de la Sierra: Rural accommodation: La Posada, Madre Terra. CEA "El Molino de Arriba". Bars and Restaurants: La Posada, Casa Paco</p>	
Further information and contact details	Centro de Recursos e Información de la Reserva de la Biosfera Sierra del Rincón C/ Real 64, Montejo de la Sierra, Madrid 918697058 info.reservabiosferasierradelrincon@fida.es www.sierradelrincon.org www.sierranorte.com www.madrid.org

Navarra



* LAS BARDENAS REALES DE NAVARRA

LAS BARDENAS REALES DE NAVARRA

Las Bardenas Reales de Navarra are situated in the central area of the Ebro Valle, where the Navarra Region borders the province of Zaragoza. Despite this northerly location, the area has a semi-arid climate and a landscape that has been seriously eroded, with altitudes between 280 metres and 659 metres above sea level. Half the region has been cultivated whilst the rest features extensive areas of low-lying vegetation, forming a fine example of northern-Iberian pseudo-steppe. The Reserve occupies 94 % of this territory.

The meagre rainfall means that the dry season is very long, with hot summers and very cold winters. Spring is fleeting, whilst autumn tends to be the most pleasant season of the year, above all when the north wind doesn't blow.

The region's alternating rocks of varying hardness (limestone, sandstone and conglomerates) where there is a clear predominance of soft materials (marl, clay, lime and gypsum) and the almost horizontal lithology, has meant that erosion has been swift and intense, making it the main agent that has shaped the landscape. Its differential action has resulted three distinct areas from a geomorphological point of view: a large depression, known as La Blanca, bordered by two examples of tabular relief, El Plano to the north and other stepped plains to the south, most notably, La Negra.



Date declared biosphere reserve: 7 November 2000

Surface area: 39,273 hectares (Core zone: 1,917 hectares. Buffer Zone: 13,068 hectares.

Transition zone: 24,288 hectares)

Location: South-east Navarra

Municipalities: Las Bardenas is not part of any municipality, nor are there any towns or villages within the area.

Institutions and organisations with rights of use within the Reserve: Nineteen villages, two Pyrenean valleys and a monastery are the only bodies to have rights of use exclusively and in perpetuity. These twenty-two entities known as *congozantes* have, for three centuries, constituted the *Comunidad de Bardenas Reales de Navarra*, a Local Body of a Traditional Nature constituted under an extraordinary and unique legal statute.

Management body: Comunidad de Bardenas Reales de Navarra.

Address: C/ Camino de San Marcial n° 19, 31500 Tudela, Navarra.

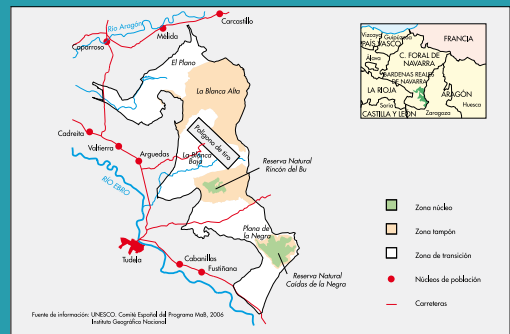
Telephone: 948 82 00 20. Fax: 948 82 34 67

Email: junta@bardenasreales.es

Website: www.bardenasreales.es

Other protection: Natural Park (100 % of the BR), Site of Community Importance (100 % of the BR), Natural Reserves (2), Special Protection Area for Birds (2)

Biogeographical Region / Province: Mediterranean / Mediterranean-Ibero-Levantine -Aragonese





Sheep and egrets

Fauna

The most noteworthy birds in the region are birds of prey and steppe birds. According to the EC Birds Directive there are twenty-seven species which should be protected by habitat conservation measures. According to the Habitats Birds Directive, five species which should be protected by habitat conservation measures whilst thirteen should be strictly protected. To sum up, the most noteworthy value in Las Bardenas is its natural wealth, something the visitor notices immediately.

Four main categories of vegetation can be identified:

1. The holm oak grove series. Includes the species that need “normal” soil, more suitable from an agricultural perspective, and which is deeper and without salts. The best examples in Las Bardenas are the holm and cork oak groves, which must have been abundant in El Plano and La Plana de La Negra, before they were used for timber and charcoal purposes.

2. The Mediterranean pine, kermes oak and juniper grove series. These are most common in poorer soil areas, with a greater gradient and therefore less capacity for water retention. These can be seen on the El Plano and La Negra hillsides and the peaks of La Blanca.

3. The salt marsh series. These can be found in clay and limey soil with a high salt content, on which few species can survive. For this reason the vegetation is more interesting from a botanical and conservation point of view. These can be found in the area’s gullies and the flat, deprived land in La Blanca.

4. Pool and pond vegetation. The majority of these pools and ponds have been artificially created and maintained in order to provide water for livestock or irrigate the fields. They may only last a brief time, as they quickly fill with sediment.

It is interesting to see how, around the mature pools, vegetation grows in almost concentric circles based on the level of humidity. In their interior grow reeds and bulrushes, wetland grasses, whilst beyond the ponds, where salinity increases, there are salt marshes and *Tamaricaceae*.



Caídas de la Negra.

Cultural Heritage and Landscape

Anthropologically, Las Bardenas experienced their splendour during the Bronze Age, four thousand years ago. After this, depopulation was progressive with virtually no stable settlement in the region in the past twenty centuries.

This not to say, however, that the land has not been used by man. Its use has been documented since the 9th century, and its history has seen the implementation of a most peculiar legal and administrative system. The property of the Kings of Navarra since the Christian Reconquest of the region, the subsequent monarchs granted different rights of use to various towns and villages.

The first was the Roncal Valley in 882, marking the beginning of the age-old transhumant livestock farming in Las Bardenas. A number of royal concessions were granted until 1705, the year in which Phillip V's Royal Charter granted 22 entities, known as the *Congozantes*



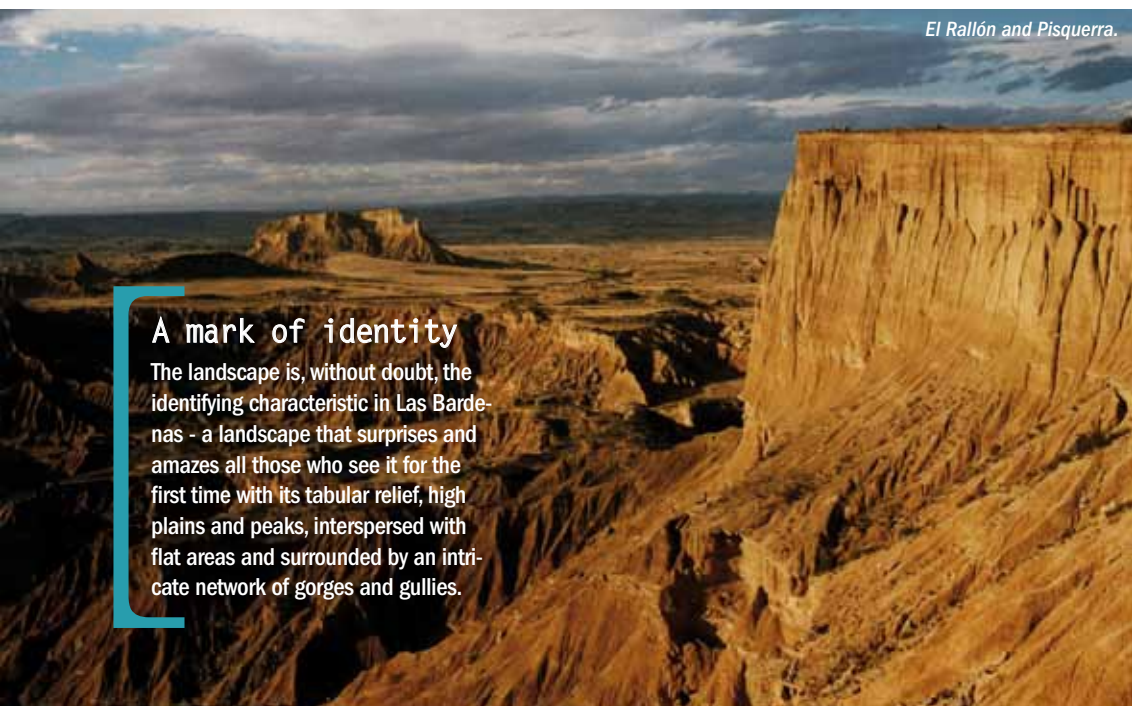
El Plano



Geomorphology of La Blanca

- 19 villages, two Pyrenean valleys and a Cistercian monastery - rights of use, privately, exclusively and in perpetuity.

This historic even led the twenty-two to organise themselves as the *Comunidad de Bardenas*, today recognised as a Local Body of a Traditional Nature, which has, since then, managed this region.



El Rallón and Pisuerra.

A mark of identity

The landscape is, without doubt, the identifying characteristic in Las Bardenas - a landscape that surprises and amazes all those who see it for the first time with its tabular relief, high plains and peaks, interspersed with flat areas and surrounded by an intricate network of gorges and gullies.

Socio-Economics of the Reserve



Ploughing the land



Grazing sheep

Cereals

Agriculture, currently the most important use of the land, is first referred to in 1771, although it was not until the late 19th century that it began to be of significant importance. The main crop these days is cereal harvested *año y vez*, once every two years..

For many centuries Las Bardenas were the destination for large herds of transhumant sheep, which were driven to this grazing land when the cold and the snow meant they couldn't stay in more fertile pastures.

The herds would arrive in early autumn and stay until mid- to late spring, when the snow would melt higher up in the mountains, freeing up the grazing land there, and before the scorching summer heat came to Las Bardenas.

With regard to this seasonal use grazing land, one of the most curious rules, dating back to the 18th century and imposed by the early guardians of the Community, is the prohibition on livestock grazing on this land during summer months.

Along with the livestock farming, other activities include charcoal making, firewood gathering and hunting, as well as the quarrying of stone, lime and gypsum for use in construction in the villages, and the gathering of dung for use as a fertiliser on smallholdings in the rich low-land areas.

All of these are extremely extensive farming practices, adapted to the land, which is generally not particularly fertile. Benefit can therefore still be found without exhausting the resources. The farming style also "socialises" the use of the land, as crop and livestock farmers are able to alternate their activities. Environmentally, the combination, with the resulting mosaic formed by it contrasting with the considerable amount of natural woodland, is fundamental to the conservation of an outstanding fauna.

Although outside the Reserve, we should not overlook the presence of a military Base in Las Bardenas. The Spanish Air Force began training its pilots here in 1951, and today is the only such training area in the country.





The Reserve's contribution to sustainable development



Blanca Alta.

The Las Bardenas *Comunidad* is beginning to implement a project known as *Distritos Agroganaderos* - "Farming Districts". The aim is to encourage agreements between crop and livestock farmers in order to optimise the performance of their respective activities, as well as improving conditions for sustaining wild fauna.

The very high quality of the lamb that is reared in this region makes it the perfect example of an endogenous product. It should also be highlighted that the majority of cereal grown is barley, mainly to be used for animal feed. Giv-

en that sheep can eat this crop in the field, the new system seeks to reduce costs as far as both activities are concerned by eliminating expensive work. The environmental consequences will be positive as the use of agrochemicals will be significantly reduced and agricultural work undertaken more slowly with a better distribution time-wise. There are also plans to gradually introduce mixed crops of cereals and legumes, which would also result in short-term improvements in the various habitats for fauna in the region, and, in the longer term, improved soil quality.



Blanca Baja.



Tourism and Services

Bardenas Reales Visitor Information Centre

Tel: 948 830 308 / Email: turismo@bardenasreales.es

Access to the Information Centre and Biosphere Reserve:

Entrance from the NA-134, km. 15.1 (Tudela-Arguedas)

Carretera del Polígono, km. 6

Opening hours:

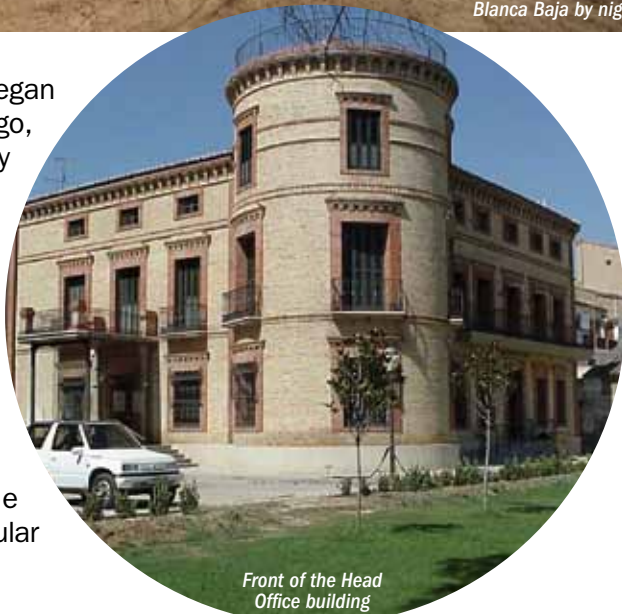
1 September to 15 December: 10 am to 2 pm and 3 pm to 6 pm.

Blanca Baja by night

Tourism in Las Bardenas began in earnest some 15 years ago, and is becoming increasingly important. In fact, in summer 2010 the Bardenas Reales Visitor Information Centre opened, located on the Los Aguilares estate, at the entrance to the Biosphere Reserve and Natural Park.

Nature tourism should be highlighted, given the particular conditions of the Reserve.

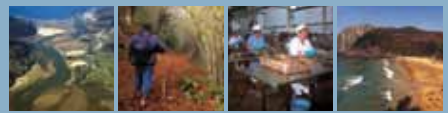
There are a number of signposted trails to be taken through Las Bardenas, from walking itineraries, such as the *Barranco de las Cortinas*, *Cabezo de las Cortinillas* and *El Fraile*; mountain bike trails, such



Front of the Head Office building

as *El Plano*, the route around the Ferial Reservoir, *Plana de la Negra*, etc. and a number of road routes for car, also duly signposted.

País Vasco



* URDAIBAI

URDAIBAI

Urdaibai, made up of 22 municipalities, covers 220 Km², representing 3% of the Basque Country Region. The geography of the Reserve is bordered by the basins of the Rivers Oka and its tributaries, the Artigas and Laga, all of which flow into the Cantabrian Sea.

The River Oka, edged by gallery woodland, has shaped the countryside as has human activity, undertaken on the hillsides and in the valleys. This has resulted in a mosaic of bucolic diversity, with small oak groves and woods with other associated autochthonous species, meadows, cultivated fields, and especially forestry. The valley floor features an interesting estuary whose dynamic is determined by the tides, waves, wind and river currents. The Rivers Artigas and Laga flow directly into the open sea, separated from the estuary by the cliffs that line the bay. Special mention should be made of the limestone massifs with their interesting karstic formations on which a fine Cantabrian holm oak grove grows.

The region has a population of approximately 45,000 inhabitants, of which 80% live in the towns of Bermeo and Gernika-Lumo. Both represent the main routes of communication and access to commercial networks. The Reserve's core zones have differing socioeconomic characteristics relative to their geographic situation and historical trajectory.



*Agricultural mosaic in the Bermeo countryside.
An example of sustainable use of the territory*

Date declared biosphere reserve: 6 December 1984

Surface area: 22,041 hectares (Core zone: 11%.

Buffer zone: 25%. Transition zone: 64%).

Location: Province of Bizkaia. Basque Country

Municipalities: Ajangiz, Arratzu, Arrieta, Bermeo, Busturia, Elantxobe, Ereño, Errigoiti, Foru, Gautegiz-Arteaga, Gernika-Lumo, Ibarangelu, Kortezubi, Mendata, Morga, Mundaka, Munitibar, Murueta, Muxika, Nabarniz, Sukarrieta and Amorebieta-Etxano.

Management body: Patronato de la Reserva de la Biosfera de Urdaibai.

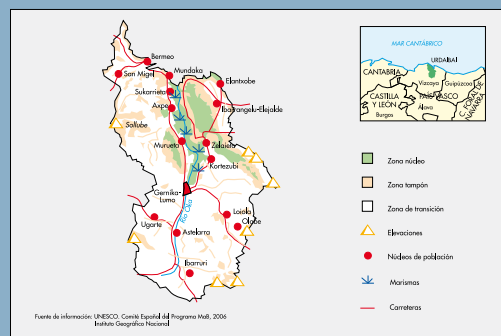
Address: Udetxea Jauregia, P.K.130, 40300 Gernika-Lumo.

Telephone: (0034) 946 257 125.

Fax: (0034) 94. 625.72.53.

Email: urdaibai@ej-gv.es

Other protection: Ramsar Wetland, Special Protection Area for Birds (SPA), Ría de Mundaka-Gernika Hunting Reserve (1987), Site of Community Importance (SCI).



Natural Heritage

Urdaibai has great natural diversity: mountains, valley floors, water meadows, marshes, sand dunes, cliffs and beaches. Mention should be made of the natural systems such as the estuary, the karstic formations and the coastline. Alongside these ecosystems are a series of agricultural systems, with their traditional Basque farm houses, known as *caseríos*, small villages and larger towns.

Flora and vegetation

In Urdaibai it is possible to distinguish natural communities of flora, such as hardwood forests, scrub, meadows and rocky outcrops, as well as water and coastal plants. We should also mention the woodlands, pastures and cultivated fields. Amongst the group of vascular plants alone 615 species have been catalogued.

Of special value are the Cantabrian holm oak groves, of great botanical interest with their wealth of flora. The singular nature of the estuary vegetation



Water birds on the Oka estuary

is also a natural and scientific resource that is recognised within an international context.

Fauna

The diversity of Urdaibai's biotopes is responsible for its varied fauna: birds, mammals, amphibians, reptiles, insects, fish, molluscs and crustacea. The estuary constitutes a hugely valuable area for water birds as it is a stopover for migratory birds, as well as an area for breeding, sedentary and wintering birds and accidental visitors. As well as birds, there is a well-balanced presence of other vertebrates, most notably the European mink (*Mustela lutreola*). Urdaibai's vertebrate fauna is catalogued at 318 species.

Geological heritage

Urdaibai has interesting geodiversity, featuring a chapter of the book that is the history of the world written in rock, from the Triassic period (251 million years ago) to the Quaternary period (2.6 million years to the present day). There are important Sites of Geological Interest (around 80), most notably fossil reefs, current estuaries, turbidic sediments, relicts of prehistoric volcanic periods, outcrop from interesting boundary periods such as the Cretaceous-Tertiary (K-T) etc.



Aerial view of the Oka estuary. The heart of the Urdaibai Biosphere Reserve



Cultural Heritage and Landscape

Caseríos

Since the 16th century to the mid-20th century, Urdaibai's economy centred on crop and livestock farming, contributing to the shaping of the landscape and the existence of the characteristic *caseríos* - traditional Basque farm houses. The industrial activities undertaken in local mills and railways changed both rivers and the coastline. Meanwhile, fishing activities in the ports of Bermeo, Mundaka and Elantxobe have been an important source of revenue.

Significant forestry activities also continue to the present day.

IBAI

Material cultural heritage

Urdaibai has been inhabited for some 35,000 years. This age old relationship between man and Urdaibai can be clearly seen in its archaeological sites such as Santimamiñe (Kortezubi), in the defensive *castro* hill forts on Illuntzar, Arrola and Kosnoaga, the Roman settlement at Forua, house-towers such as those at Madariaga, Montalban and Urdaibai, and medieval castles such as Ereñozar. These medieval buildings are witness to the importance of Gernika-Lumo as the headquarters of the *Juntas de Bizkaia* (where the *Señor de Bizkaia*, the regional equivalent of a king, traditionally swore allegiance) and its position on the *Ruta Juradera*, the *Camino de Santiago* or St. James Way and the *Ruta del Pescado y Vino*, focussing on seafood and wine.

Non-material cultural heritage

It is worth highlighting Urdaibai's traditional farming practices, which have lasted over the centuries. We should also highlight local customs such as rural sports and traditional rites such as *Marijesiak* in Gernika-Lumo and Muxika, *Atorrak* in Mundaka, the *Magdalena fiesta* in Ibarrangelua and Bermeo or the



The Basque caserío is a fine example of the sustainable use of the land. Caserío Undagoitia in Muxika.

Burial of the *Saragi* in Muxika. There are also a number of agricultural fairs, such as the fair on the final Monday in Gernika-Lumo, and fishing fairs, such as the one held in Arrain Azoka in Bermeo.

Urdaibai is also one of the regions with in Bizkaia where, passed down from generation to generation, the millennia-old Basque language *Euskera* is most spoken, one of the oldest languages in Europe.

Fossil reef on the karstic massif Ogoño looms over Laga beach and trans-beach dune systems in Ibarrangelua



BIOSPHERE RESERVES

Socio-Economics of the Reserve

Between 1996 and 2006, Urdaibai's population has increased by 1.6%, although there is a high rate of aging and a low youth rate (8.8%). Since 1986 there has been an increase in labour force participation, from 35.3% to 49.5% whilst employment demand fell between 1997 and 2007 by 20.8%.

In 2001, average per capita income in the area was €10,728, whilst in 2003 household income stood at €33,283. Between 1997 and 2003 household income grew by 35.8%.

55.5% of the population work in the tertiary sector, 26.7% in industry and 9.4% work in the primary sector. Between 1996 and 2001 the number of people working in the primary sector has



Traditional farming is still important although it is in dramatic decline

fallen by 25.5%, industry has increased by 13.5% whilst construction work grew by 31.9%, whilst the service sector increased by 33.1%.

Although the primary sector is important, between 1989 and 1999 the number of cultivated hectares fell by 48.2% whilst the amount of land used in livestock farming decreased by 34.2%. Nevertheless, the amount of land dedicated to organic farming tripled between 2004 and 2006 reaching 76.18 hectares.

Fishing employs 1,146 people (80% of the primary sector). However, the sector is orientated toward cheaper species (Atlantic mackerel and white tuna). White tuna accounts for 62% of the value of the catch in monetary terms with Atlantic mackerel representing 34%.

As far as the sectoral distribution of establishments is concerned, 7.9% are industrial, 17.1% related to construction and 9.9% the restaurant and hotel trade. Urdaibai can be characterised by the amount of small-scale establishments, in which effective employment stands at 12,922 people.



Fishing is an important sector in Urdaibai's coastal towns and villages, mainly in Bermeo but also notably in Elantxobe and Mundaka



Canning and conserving fish needs a specialised workforce and is an important source of employment in Bermeo



The Reserve's contribution to sustainable development



Urdaibai is an excellent place for surfing, with the Mundaka Left Wave known the world over

URDAIBAI

Urdaibai has its own legislation regarding urban planning ordinance and the protection and use of land. Public transport in the area is widely used, with rail travel especially popular. Nevertheless, urban planning lacks a joint regional focus. Low-density housing has proliferated and certain inequalities exist in terms of intra-regional accessibility.

Urdaibai can also be seen as a vast research laboratory looking into environmental and cultural conservation. Advances have been made in the field of water, energy and waste management, creating an increase in habits regarding sustainability. However, there is intense urban development pressure on the environment and the need to reconsider local forestry policy. There has also been a continuous increase in the demand for energy and an excessive dependence on oil and petrol.

Urdaibai still has an important primary sector and great potential for rural tourism based on natural, historical-artistic and cultural heritage. However, the level of training amongst local people is not well-adapted to market demands, with competition existing with other local regions that have greater capacity for industrial attraction and a risk of company relocations. As far as tourism is concerned, excessive seasonality has been noted.

Urdaibai's population has been growing since 2003, accompanied by a strong sense belonging to the area the value placed on living an area which guarantees a high quality of life. Nevertheless the population is aging to an excessive extent, with a depopulation of rural areas, and a demographic concentration in Gernika-Lumo and Bermeo, and a gradual loss of cultural heritage relating to the *caserío* way of life.

BIOSPHERE RESERVES

Public use and tourism

Urdaibai has a Management Plan regarding environmental interpretation, investigation and education which proposes action concerning public facilities. Furthermore, one of the Reserve's Use and Management Plan stated aims is to better organise recreational use of the region and tourism.

The Palacio Udetxea in Gernika-Lumo therefore has an administration centre which includes the Reserve Technical Office and the Head Office of the *Patronato de Urdaibai*, as well as a bird-watching hide in Busturia and an extensive network of footpaths and panoramic viewpoints with information panels.

Special mention should be made of the Torre Madariaga Euskadi Biodiversity Centre in Busturia which hosts conferences and offers guided visits and a range of activities related to the environ-

ment and the Elaia Bird Migration Centre in Gautegiz-Arteaga. There are also two farm schools in Gautegiz-Arteaga and Ajangiz and a refuge in Gorozika, Muxika dedicated to environmental education.

The region also has a number of museums: focusing on the history of Gernika-Lumo, the history of the Basque Country, Peace, in Gernika-Lumo, as well as another dedicated to fishing, in Bermeo. It is also interesting to visit the *Casa de Juntas* Building in Gernika which as well as being the premises of the Provincial Government provides extensive information of the history of Bizkaia.

In Mendata there is a Rural Interpretation Centre and a mountain bike centre which suggests a number of trails, whilst in Arketa, Ibarrangelua, and Portuondo, Mundaka, there are campsites. There are two botanical gardens in the region, in Gernika-Lumo (the Europa Park) and Sukarrieta (Txatxarramendi Park).

The Urdaibai coast is a paradise for surfers, those practicing other water sports or those who simply wish to enjoy their leisure time, always respecting the coastal environment.

For further information, a visit to the Tourist Offices in Muxika, Gernika-Lumo and Bermeo is recommended.



Urdaibai offers a wide range of trails and paths which allow walkers of all types to enjoy the region's natural and cultural heritage. Mailuku Valley in Busturia

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