



# Natura 2000 in the Atlantic Region



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**European Commission  
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Jutland coastline, Denmark Photo © John Houston

## The Atlantic Region

### – Europe's western fringe

The Atlantic Region stretches from the top of the United Kingdom and Ireland down to the northern shores of Spain and Portugal, encompassing all of the Netherlands and parts of Germany, Denmark, Belgium and France along the way. Nowhere is more than 300 km away from the sea and because much of the land is flat and low-lying, the oceanic climate penetrates far inland bringing mild winters, cool summers, predominantly westerly winds and moderate rainfall throughout the year.

This region includes over half of Europe's long, indented coastline and two of the most productive seas in the world: the North Sea and North-east Atlantic Ocean.

The powerful forces of tide, wind and waves acting upon an alternating substratum of hard bedrock and soft sedimentary stone are largely responsible for the formation of this very varied and dynamic coastline, rich in habitats and species. Wind swept cliffs, exposed rocky headlands and narrow tidal inlets contrast sharply with long stretches of sandy beaches, sheltered bays and extensive intertidal mudflats.

Several of Europe's most important rivers drain off into the sea along the Atlantic coast, (the Gironde, Loire, Rhine, Thames, Seine, Schelde) creating vast estuaries of high economic and biological value.

In terms of species, the Atlantic Region may not exhibit the high levels of biodiversity found in other regions but it more than makes up for this in terms of sheer animal abundance. The Waddensea alone harbours

around 12 million migratory birds at various times of the year.

This abundance of life continues beneath the waves. The Gulf Stream, which travels right up to the north coast of Scotland and Norway, brings warm currents all year round and a rich supply of nutrients from the Caribbean. In the shallower waters of the continental shelf and the North Sea, this creates an ideal environment for a wide array of marine organisms from plankton, crustaceans, bivalves and fish to seabirds and mammals at the top of the food-chain.

The North-east Atlantic is in fact one of the richest oceans in the world, but it is also one of the most heavily used. As such it is under constant pressure from overfishing, pollution, abstraction and shipping traffic.

On land, the situation is rather different. The most recent glaciation, which ended some 10,000 years ago, had a considerable effect in reducing the biodiversity of the region. So too has the long history of human exploitation, which has created a heavily altered and often degraded environment.

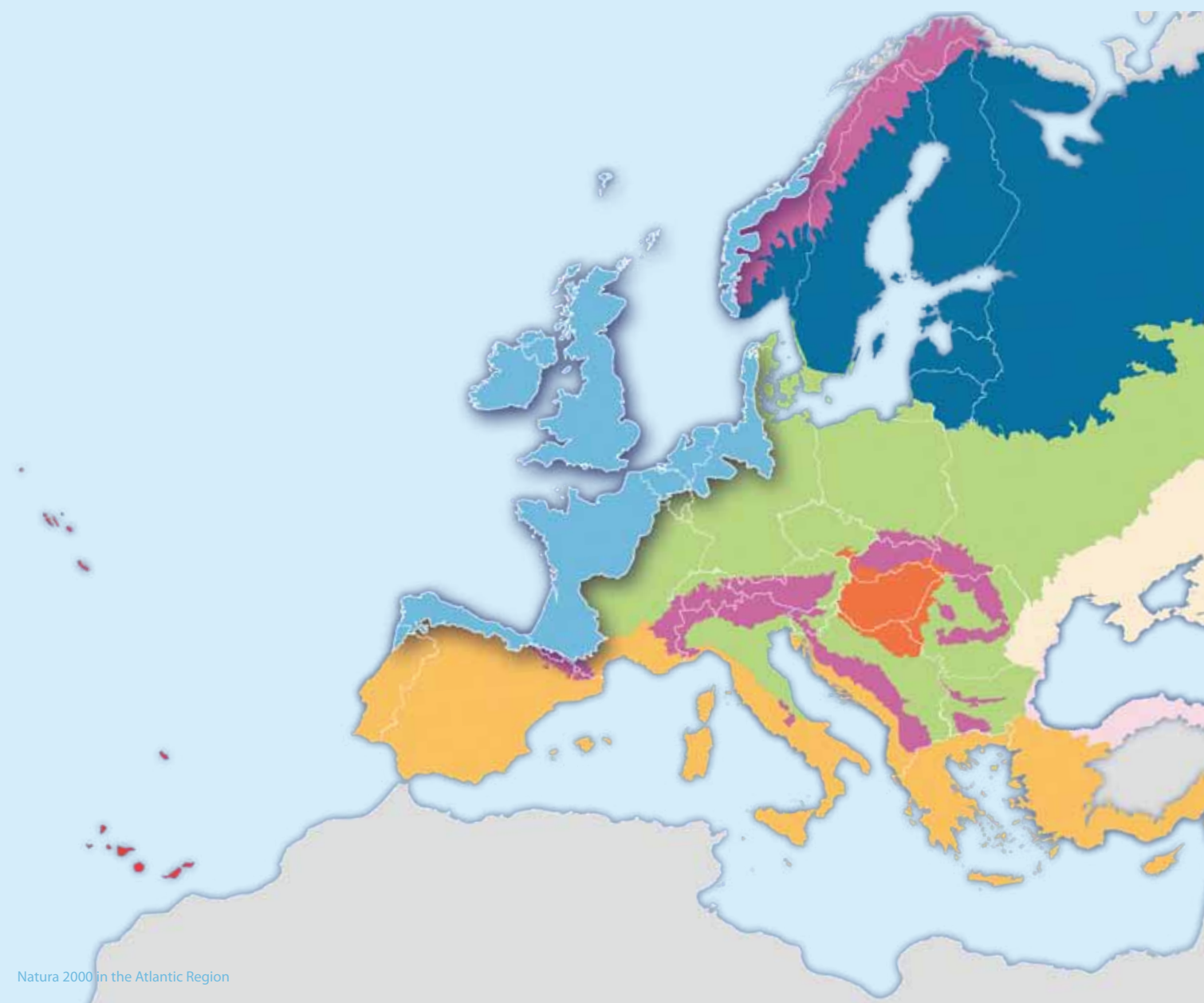
Under natural conditions, forests would have been the dominant habitat but these have been systematically cleared since the Middle Ages. The undulating topography and long growing seasons provide ideal conditions for modern production systems that now cover a significant part of the countryside.

Today, the landscape is predominantly agricultural, with heavily urbanised areas. As a result, many natural and semi-natural habitats now only exist as isolated, fragmented patches scattered amidst an otherwise mostly artificial landscape. Pollution from heavy pesticide or fertiliser use and industrial effluents further exacerbate these problems.

The Atlantic Region is indeed one of the most heavily populated and intensely managed areas in Europe. Over 100 million people live and work in the area (almost a quarter of the EU population). Outside the capital cities of Paris, London, Brussels or Amsterdam, human densities can still reach 360 inhabitants/km<sup>2</sup> in certain areas. This puts massive pressure on the natural environment and presents a particular challenge for the conservation of rare species and habitats both within and outside Natura 2000 sites.

Region	Countries involved	% of EU territory
Atlantic	Belgium, Germany, Denmark, Spain, France, Ireland, Portugal, Netherlands, United Kingdom	18.4
Boreal	Estonia, Finland, Latvia, Lithuania, Sweden	18.8
Continental	Austria, Belgium, Bulgaria, Czech Republic, Germany, Denmark, France, Italy, Luxembourg, Poland, Romania, Sweden, Slovenia	29.3
Alpine	Austria, Bulgaria, Germany, Spain, Finland, France, Italy, Poland, Romania, Sweden, Slovenia, Slovakia	8.6
Pannonian	Czech Republic, Hungary, Romania, Slovakia	3.0
Steppic	Romania	0.9
Black Sea	Bulgaria, Romania	0.3
Mediterranean	Cyprus, Spain, France, Greece, Italy, Malta, Portugal	20.6
Macaronesian	Spain, Portugal	0.2

Source: European Topic Centre on Biological Diversity (European Environment Agency) <http://biodiversity.eionet.europa.eu> October 2008



# Natura 2000 species in the Atlantic Region

Despite favourable climatic conditions, the number of species present in the Atlantic Region is relatively poor, reflecting the durable effects of the last Ice Age and the long history of human settlements. Fifty-two of the flora species listed in Annex II of the Habitats Directive are present here, of which 14 are endemic. The rate of endemism is the lowest of all the biogeographical regions and is generally restricted to the northern Iberian Peninsula.

Many of the listed flora species are closely associated with typical Atlantic habitats. They include the grass *Festuca summilusitana* which is found only in the Northern Iberian coastal heaths, *Angelica heterocarpa* which thrives on the banks of the estuaries along the French Atlantic coast, and the early gentian *Gentianella anglica* which occurs in chalk grasslands in the UK.

Bryophytes are also well represented. Amongst them is the rare petalwort *Petalophyllum ralfsii* which is confined to the wet slack habitats of the sand dunes. It is an excellent indicator of the overall health of dynamic dune systems as it requires new wind-formed damp hollows in the sand to survive. It is not found in dunes that are over-stabilised.

In terms of fauna, 80 species listed on the Habitats Directive are found in the Atlantic Region. Over a third are invertebrates, ranging from rare butterflies and dragonflies to land snails such as the tiny Desmoulin's whorl snail *Vertigo angustior* and the freshwater pearl mussel *Margaritifera durrovensis* which is endemic to the region. Many species of bats are also present especially around the border regions of Belgium and France where the extensive cave systems and ancient fortifications provide ideal roosting sites for these species.

The Atlantic Region is perhaps best known for its abundant marine life. Europe's greatest concentrations of harbour seals are located around the shores of the



Photo © Jim Asher

## The marsh fritillary *Euphydryas aurinia*

The marsh fritillary is a characteristic species of flower-rich wet or dry grassland habitats. It is entirely dependent on a single host plant, the devil's-bit scabious *Succisa pratensis* which is found in abundance in extensively grazed grasslands. The species survives in ever-changing meta-populations, formed by a number of linked subpopulations which may frequently die out and re-establish themselves nearby.

Much of the unimproved grassland has disappeared in the last century, causing severe fragmentation of the remaining habitat and a massive drop in butterfly populations across Europe. Nowadays the butterfly only survives in areas where there is a sufficient cluster of suitable sites within the wider countryside to allow for the natural cycle of recolonisation and local extinction. This in turn requires a landscape approach to their conservation.

British Isles and the Waddensea. Bottlenose dolphins and harbour porpoises are present in significant numbers all the way along the coast from Denmark to Northern Spain. Although populations appear high (350,000 harbour porpoises) they are under constant pressure from unacceptably high levels of by-catch in fisheries and the harmful effects of pollutants such as PCBs, cadmium and mercury which bio-accumulate in their bodies.

Waterfowl and waders also flock to the area in large numbers, especially during the winter, to escape the harsh conditions of the Arctic North and to find shelter in the nutrient-rich coastal wetlands of the Atlantic and North Sea coasts.

## St Kilda – Europe's largest seabird colony

Located 70 km west of the Outer Hebrides in Scotland, the remote volcanic islands of St Kilda harbour the largest breeding colony of seabirds in the North-east Atlantic, and probably in Europe. A staggering half a million birds vie for space on the high cliff tops during the summer months. Amongst them are the world's largest breeding population of northern gannets as well as fulmars, puffins, Leach's storm petrels, kittiwakes, guillemots and Manx shearwaters.

They are attracted by the abundance of marine life within the clear waters that surround the islands and the lack of disturbance from humans and other predators. The recent drop in breeding numbers is however a cause for concern. The exact reasons are not yet known but the marked decrease in sand eels, be it from fishing or changing climatic conditions, could be a major contributing factor.



Photo © Scottish Natural Heritage



Falcon clints, Upper Teesdale, UK INSET Birdseye primrose © Peter Creed

## Map of Natura 2000 sites in the Atlantic Region

The list of Natura 2000 sites in the Atlantic Region was first adopted in December 2004 and later updated in November 2007 and again in December 2008. Altogether, within the Atlantic Region there are 2,747 Sites of Community Importance (SCIs) under the Habitats Directive covering over 109,500 km<sup>2</sup> and further 882 Special Protection Areas (SPAs) under the Birds Directive. There is often considerable overlap between some SCIs and SPAs which means that the figures are not cumulative. Nevertheless, it is estimated that together they cover more than 8% of the total land area in this region.

### Number of habitat types in annex I and species or sub-species in annex II of the Habitats Directive.

Region	Habitat types	Animals	Plants
Atlantic	117	80	52
Boreal	88	70	61
Continental	159	184	102
Alpine	119	161	107
Pannonian	56	118	46
Steppic	25	25	14
Black Sea	58	79	6
Mediterranean	146	158	270
Macaronesian	38	22	159

Source: European Topic Centre on Biological Diversity (European Environment Agency) <http://biodiversity.eionet.europa.eu>

- The figures are not cumulative since many habitats and species occur in two or more biogeographical regions
- Birds from Annex I of the Birds Directive are not listed as they are not categorized according to biogeographical region

Region	N° SCI	Total area covered (km <sup>2</sup> )	Terrestrial area covered (km <sup>2</sup> )	% of total terrestrial area	N° SPA	Total area covered (km <sup>2</sup> )	Terrestrial area covered (km <sup>2</sup> )	% of total terrestrial area
Atlantic	2,747	109,684	68,794	8.7	882	76,572	50,572	6.4
Boreal	6,266	111,278	96,549	12.0	1,165	70,341	54,904	6.8
Continental	7,475	150,014	135,120	10.8	1,478	147,559	128,432	12.4
Alpine	1,496	145,643	145,643	39.7	365	93,397	93,397	31.1
Pannonian	756	15,858	15,858	12.3	100	19,965	19,965	17.5
Steppic	34	7,210	7,210	19.4	40	8,628*	8,628	24.4
Black Sea	40	10,243	8,298	71.8	27	4,100	3,561	30.8
Mediterranean	2,928	188,580	174,930	19.8	999	147,358	142,350	16.0
Macaronesian	211	5,385	3,516	33.5	65	3,448	3,388	32.3
<b>TOTAL</b>	<b>21,612</b>	<b>655,968</b>	<b>568,463</b>	<b>13.3</b>	<b>5,004</b>	<b>486,571</b>	<b>429,615</b>	<b>10.5</b>

Source: European Topic Centre on Biological Diversity (European Environment Agency) <http://biodiversity.eionet.europa.eu> October 2008

- SPAs and SCIs are not cumulative as there is considerable overlap between them
- Some sites are on the border between two regions, the database does not allow for the possibility to split sites between regions, therefore some sites may be counted twice
- Percentage of marine areas not available
- SPAs are not selected according to biogeographical region
- SPA area for the Steppic Region are calculated according to available GIS data



Photo © K. Santibañy



2 Glenveagh



Photo © M. O'Sullivan

3 Bass Rock



Photo © Sue Scott/SNH

Photos © www.burrenbox.com



1 The Burren



- SACs
- SPAs
- SPA and SAC

Map based on site coordinates supplied by the European Commission through the University of Leuven, DIVISION SADL, October 2008



Photo © Mike Reed



Photo © English Nature

5 Dorset heaths



Photos © Peter Creed

10 Aquitaine



Photo © Unknown

6 Vézère River



Photo © M. Stock

7 Waddensea



Photo © Lorne Gib/SNH

Photo © E. Barboletta, LPO



Photo © SEO



Photo © www.viganfotos.com

11 Ria de Vigo



Photo © K. Taskinen

9 Hallebor bluebell woods



Photo © Jim Asher



Photo © Natuurmonumenten

8 Nieuwkoopse plassen



Dunes along Aquitaine, France © Jean Favennec, Office National des Forêt, inset Dune hound's tongue © Peter Creed

## Natura 2000 habitat types in the Atlantic Region

Altogether, 117 habitat types listed in the Habitats Directive (just over half) are found in the Atlantic Region. The large number reflects the area's clement climate and rich soils, its close association with the Continental and Mediterranean Regions which share the same habitats, and, in particular, its long and diverse coastline. Around half of the coastal and halophytic habitats in the Directive are present in this region, as are 17 of the 21 coastal and inland dunes.

The range of sand dunes is particularly impressive: from mobile shifting dunes, grey dunes, decalcified heathland dunes to wooded dunes and machairs. They harbour many plant species including rare endemics, such as *Rumex rupestris* or *Omphalodes littoralis*. Machair is one of the few

habitat types restricted to the Atlantic Region. Present only in Ireland and the north of the UK, this sandy coastal grassland supports a profusion of flowering plants and is of great importance for ground nesting coastal birds, such as dunlin, twite, and ringed plover.

Like most soft coastal habitats, sand dune systems are dynamic and mobile. They have an important function in reducing the erosive impact of the sea by absorbing wave energy and acting as a vital buffer between land and water. Unfortunately, over 50% of the Atlantic dunes have disappeared or been transformed since the 1950s. Tourism and urban developments are the main causes, although afforestation has also had a significant impact in certain areas, especially along the Aquitaine coast of the Bay of Biscay.

Other typical coastal habitats for the Atlantic Region include the intertidal mudflats and salt meadows. These develop in the more sheltered locations around the coast, for instance, at the mouth of an estuary or behind barrier islands and sandbanks. The large tidal range and important salinity gradient create a rapid succession of halophytic vegetation up the shoreline. Sparsely covered mudflats eventually give way to a more diverse type of

Photo © Greenpeace



### Coldwater reefs

*Lophelia pertusa* is an offshore reef-forming coral that grows along underwater escarpments in the Atlantic Ocean, at a depth of 200 m or more. *Lophelia* reefs have a wide distribution, extending from Ireland down to Portugal. Like their warm water counterparts, *Lophelia* reefs exhibit a high level of biodiversity. Some 850 species have been recorded so far. Unlike tropical corals though, they do not contain symbiotic algae. Instead they capture their food on strong currents.

Usually they form coral thickets some 10–50 m across and several metres high but in the Bay of Biscay they have grown to such an extent that they have become extensive massifs, many kilometres long. Their delicate structure and slow growth (6 mm a year), makes *Lophelia pertusa* vulnerable to physical damage. The principal threat comes from damaging fishing gear, especially bottom trawling which destroys the reef structure. It is estimated that up to one third of these cold water reefs have already been damaged. Their overall conservation status, however, remains unknown.





Salisbury plain, UK © Steven Davis, English Nature inset © Stone curlew Mike Read

vegetation in the salt marshes. Centuries of grazing by domestic livestock has contributed further to this diversity.

The complex mosaics of mudflats and saltmarshes are also of great importance for wildlife. Although low in species diversity, the intertidal mud supports dense populations of invertebrates, resulting in an extremely high overall biomass. This, in turn, attracts huge numbers of over-wintering and staging waders and wildfowl.

Further inland, much of the conservation interest lies in those habitats that were originally formed by low key management practices, such as the natural and semi-natural grasslands. Overall, grasslands cover around 30% of the Atlantic Region, and although most have been transformed or impoverished by intensive agriculture, important vestiges of species-rich habitats remain. Seventeen different types listed in the Habitats Directive are found here, including various forms of calcareous grasslands, rich in lime-loving plants and butterflies.

Heathland is another typical habitat of the Atlantic Region. Pockets of lowland Atlantic heaths are found right across the region from the northern shores of Denmark to the coastal cliffs of Spain and Portugal. Some types of heath,

such as the Atlantic wet heaths, with *Erica ciliaris* and *Erica tetralix* and the dry Atlantic heath with *Erica vagans* have become so rare that they are now a priority under the Habitats Directive.

The heavy rainfall and low evaporation of the Atlantic Region has also encouraged the formation of characteristic blanket bog and raised bog habitats. The UK and Ireland host some of the largest and most significant tracts of blanket bogs in Europe. This is however only a fraction of what originally existed. Up to 90% has already been lost through large-scale extraction, afforestation and drainage schemes.

Although natural deciduous forests were once widespread, most have since been cleared or replaced with coniferous plantations. Only 13% of the Atlantic Region is now forested, mostly for commercial use. Nevertheless, patches of more natural temperate forests, such as Atlantic acidophilous beech forests still exist in parts of the region where they provide an important refuge for many woodland species. Some forests are endemic to the Atlantic Region like the yew woodlands and old sessile oak woods which are found only in the United Kingdom and Ireland.

## Waddensea

The Waddensea is a vast ever-changing landscape of intertidal mudflats, saltmarshes, shallow seas, sandbanks, creeks and channels stretching across three countries: Germany, Netherlands and Denmark. The area covers over 25,000 km<sup>2</sup> and is of immense biological and commercial value. It is also Europe's largest wetland, holding the greatest expanse of mudflats in the world. The shallow waters are important nurseries for commercial fish stocks such as sole, herring and plaice whilst the extensive mudflats provide rich pickings for millions of birds that flock here at different times of the year. The shores also host large concentrations of harbour seals.

However, because it is located in one of the most densely populated and intensively used regions of Europe it is under heavy pressure from a whole range of uses from gas exploitation, fishing and water sports, tourism and military activities, amongst others. To ensure the sustainable management of this vast area, the three countries have signed a trilateral agreement to coordinate their conservation actions and included a substantial part of the entire Waddensea in the Natura 2000 Network.



Photo © M.Stock /NFA www.wattermeerbilder.de



Many Scottish estuaries are also important bird areas Photo © Lorne Gill/Scottish Natural History



Dune regeneration, Picardie, France Photo © Eurosite

## Management issues in the Atlantic Region

The Atlantic Region is one of the most heavily populated and intensely managed regions in Europe. The long presence of human settlements has shaped the countryside to a considerable degree. Originally, much of the land was transformed and used for small scale extensive agricultural activities. This helped create semi-natural habitats of high biodiversity interest such as saltmarshes, heathlands and grasslands, which owe much of their species diversity to a long tradition of extensive low key management.

However, with time, agricultural practices became more efficient and intensive and semi-natural habitats were ploughed over or transformed to make way for new largescale monocultures or intensive animal production systems. These now dominate much of the landscape, squeezing out the original habitats. Today, all the habitats of conservation interest have been severely reduced and only exist, for the most part, as small isolated pockets in a largely impoverished landscape.

The use of pesticides, fertilisers and manure has further exacerbated the problem causing problems of eutrophication and nutrient enrichment far away from the site, for instance in places like the mouth of the major rivers like the Rhine and Rhône.

The first priority for conservation is clearly to protect the remaining areas from further development. But this in itself will not be enough, efforts are also needed across the broader countryside to help reconnect the otherwise

### Atlantic heathland

Atlantic heaths once covered a large expanse of the Atlantic Region. Although the soil was too poor for agricultural use, they nevertheless formed an important part of the rural economy, providing grazing for cattle and ponies, turf and gorse for fuel ...

Such low-key activities generated ideal conditions for certain specialist plants and animals that have come to depend upon the heaths for their survival, such as the nightjar, woodlark, sand lizard and southern damselfly.

But after World War II, the heaths lost their economic value and were either ploughed over for large scale afforestation or agricultural improvement schemes or abandoned and treated as 'wasteland'. Most countries lost up to 80–90% of their heaths as a consequence. Today, heathlands cover just 8% of the Atlantic Region. Whilst this may sound significant it masks the fact that most sites are highly fragmented and exist in small isolated patches of no more than 10–50 ha each. Efforts are now underway to reconnect these fragments into larger more coherent areas by restoring existing sites and recreating heath in the areas in between. The results are encouraging, in southern England for instance, it is once again possible to walk through large areas of unbroken heathland.



Photo MAIN © Peter Creed, INSET © B. Gibbons/Natural Image

isolated fragments of valuable habitats that remain. This is vital if these Natura 2000 sites are to be ecologically viable over the long term.

This not only means restoring the sites and reintroducing appropriate management practices but also reconnecting them to each other and adopting a more nature friendly approach across the wider countryside, for instance by maintaining or encouraging natural features such as hedgerows and river corridors for species migration or reducing fertiliser use within the wider catchment area. Only then will the habitats and species have any long term prospect of survival.

Another major problem for the Atlantic Region is the increasing level of urbanisation and industrialisation. At least 5% of the area is completely artificial and for the most part covered in concrete or buildings. The road network has increased by 30% in the last 20 years, criss-crossing the countryside in every direction, and contributing further to the fragmentation of the remaining areas of natural value.

With so many people living close to the sea the pressure on the region's coastline is particularly intense. Coastal tourism and recreational pursuits are a major pastime for the millions of inhabitants working in cities and towns. Sandy beaches and dunes in particular have been lost and degraded through numerous tourism development schemes. Heavy recreational use – walking, caravans, golfing, motorised vehicles, sailing, etc... add to the problems, causing substantial damage to the fragile coastal and marine ecosystems.

Industrial activities and the commercial exploitation of natural resources are the other main drivers of the Atlantic Region's economy. The seas provide some of the richest fishing grounds anywhere in the world and are high in natural sources of gas, construction aggregates and oil. Over 1,000 species of fish inhabit the waters of which 10% are harvested commercially. Although abundant, the fish resources have been put under considerable pressure in recent years through the rapid expansion of industrial scale fishing fleets. Most are now being fished outside safe biological limits.

Modern fishing techniques also produce a high rate of discards in terms of unwanted fish and other marine organisms. It is estimated that over half of the catch from bottom trawls in particular is composed of under-sized fish or non target species, such as dolphins or sharks. These animals are thrown back into the sea, usually dead. Studies in Denmark have indicated that fishing bycatch is a major problem for harbour porpoises in particular, possibly affecting as much as 5–7% of the population. Efforts are now underway to try to limit the bycatch rates of key marine mammal species to less than 1% of their estimated populations, for instance through the use of 'pingers', or noise emitters, on the nets to ward off the animals.



Photo © El Correo Gallego

### Maritime oil spills

The coastal waters of the Atlantic Region contain some of the busiest shipping lanes in Europe. Whilst the traffic is regulated to some degree there are still major concerns over the safety of transporting crude oil by ship. Recent disasters like the Sea Empress in 1996, the Erika in 1999, the Prestige in 2002 and the Tricolor in 2003 have drawn worldwide attention to the devastating consequences of a major oil spill. The Prestige disaster off the coast of Spain alone affected over 3,000 km of the Spanish coastline, killing an estimated 300,000 birds and costing around €5 billion in lost revenues. Approximately 30,000 people in the fisheries and mariculture sectors were directly affected.

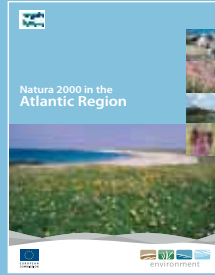
Since then, EU governments have been working towards tightening legislation on transporting crude oil by sea around EU waters, not only to avoid major disasters but also to tackle the more insidious problem of small leaks and oil spills eg from ship cleaning which has equally damaging effects on the marine environment.

In addition to these direct threats, marine animals also suffer from increasingly high concentrations of toxic contaminants such as PCBs, cadmium and mercury which bio-accumulate in their organisms. Much of this originates from effluent discharges close to the sea or along the rivers. Pollution is a general problem in the coastal waters, whether from urban, industrial or agricultural origin. Large algal blooms and shellfish poisoning are unfortunately still a common occurrence despite efforts to regulate and reduce the pollution outputs.

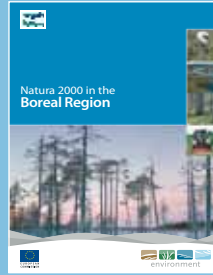
In view of all these problems the European Union adopted an ambitious Marine Strategy Framework Directive in 2008 to protect the marine environment across Europe. Its ultimate objective is to achieve a good environmental status for all EU marine waters by 2021.

Implementing Natura 2000 at sea in the Atlantic Region presents a particular challenge in view of the wide range of human pressures and activities and the general lack of knowledge about the marine environment. Recognising this, some large areas have been designated as marine Natura 2000 sites but additional efforts are needed to complete the network for most marine habitats and species.

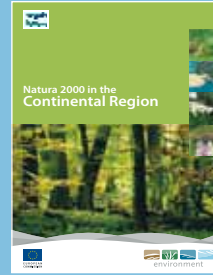
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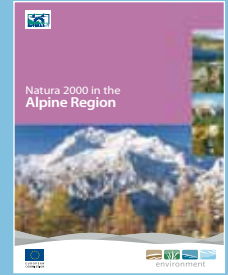
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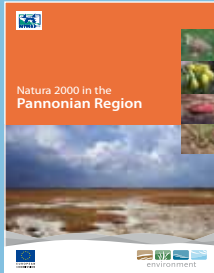
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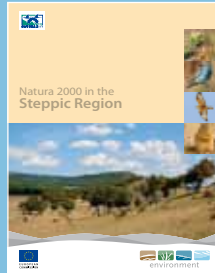
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Natura 2000 in the  
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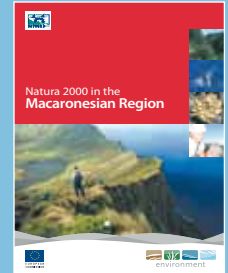
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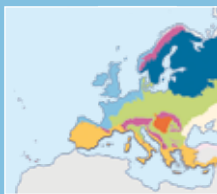
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Mediterranean Region



Natura 2000 in the  
Macaronesian Region



The European Union has nine biogeographical regions, each with its own characteristic blend of vegetation, climate and geology. Sites of Community Importance are selected according to each region on the basis of national lists submitted by each Member State within that region. Working at this level makes it easier to conserve species and habitat types under similar natural conditions across a suite of countries, irrespective of political and administrative boundaries. Together with the Special Protection Areas designated under the Birds Directive, the Sites of Community Importance selected for each biogeographical region make up the ecological Natura 2000 network which spans all 27 countries of the EU.

