Natura 2000 in the Atlantic region
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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.

As for 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 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 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 may be one of the richest oceans in the world, but it is also one that is under increasing threat 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 the modern production systems that now cover a significant part of the countryside.

Today, the landscape is predominantly agricultural, with increasingly large urban and industrial areas. Many natural and semi natural habitats now only exist as isolated, fragmented patches in a largely 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 third of the EU population). Outside the capital cities of Paris, London, Brussels or Amsterdam, human densities can still reach 360 inhabitants/km² in certain areas. This puts massive pressure on the natural environment and presents a particular challenge for Natura 2000.

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries involved</th>
<th>% of EU 25 territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>Ireland, United Kingdom, France, Belgium, Germany, Netherlands, Denmark, Spain, Portugal</td>
<td>20.0</td>
</tr>
<tr>
<td>Boreal</td>
<td>Sweden, Finland, Estonia, Latvia, Lithuania</td>
<td>20.4</td>
</tr>
<tr>
<td>Continental</td>
<td>Denmark, Sweden, Germany, Poland, Belgium, Luxemburg, France, Italy, Czech Republic, Slovenia, Austria</td>
<td>26.3</td>
</tr>
<tr>
<td>Alpine</td>
<td>Spain, France, Italy, Germany, Austria, Slovenia, Sweden, Finland, Poland, Slovakia</td>
<td>7.6</td>
</tr>
<tr>
<td>Pannonian</td>
<td>Hungary, Slovakia, Czech Republic</td>
<td>2.9</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>Greece, Cyprus, Malta, Italy, Spain, Portugal, France</td>
<td>22.5</td>
</tr>
<tr>
<td>Macaronesian</td>
<td>Spain, Portugal</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Source: ETC Biological Diversity (European Environment Agency)
http://biodiversity.eionet.eu.int/
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 flora species have been listed in Annex II of the Habitats Directive, 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. These include Festuca summisitanica 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, 81 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 the harbour seals are located around the shores of the 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 remain at risk from unsustainable high levels of by catch in fisheries and the harmful effects of such pollutants as PCBs, cadmium and mercury which bioaccumulate in their bodies.

Waterbirds 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 coast.

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 northern gannets (60,000 pairs – the world’s largest breeding population), fulmars (62,000 pairs) and puffins (120,000 pairs) as well as Leach’s storm petrels, kitiwakes, guillemots and Manx shearwaters. They are attracted by the abundance of marine life in 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.
The list of Natura 2000 sites in the Atlantic region was adopted in December 2004. It contains 2,419 Sites of Community Importance covering almost 94,000 km². The terrestrial area covered by Natura 2000 is around 8% although this varies greatly between countries. In France, for instance, it represents 6% of the territory whereas in Spain it is 27%. Coastal and halophytic habitats are the most common habitat type in most Member States except in Spain and Portugal where the emphasis is on heaths and scrub.

Significant marine areas are also included in the Atlantic list covering some 29,000 km². The largest one is located around the Waddensea, which alone covers 8,500 km².

Although final, the Atlantic list will still need to be completed for certain species and habitats where the present levels of designation are considered insufficient. This is especially true in the marine environment where there is still a general lack of information on the conservation state of the qualifying interests.

### Map of Natura 2000 sites in the Atlantic region

<table>
<thead>
<tr>
<th>Region</th>
<th>Natura 2000 sites</th>
<th>Total area covered</th>
<th>Terrestrial area covered</th>
<th>Marine area covered</th>
<th>% of terrestrial area of region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>2,419</td>
<td>93,811 km²</td>
<td>64,954 km²</td>
<td>28,858 km²</td>
<td>8</td>
</tr>
<tr>
<td>Boreal</td>
<td>5,026</td>
<td>82,377 km²</td>
<td>73,003 km²</td>
<td>9,375 km²</td>
<td>12</td>
</tr>
<tr>
<td>Continental</td>
<td>4,958</td>
<td>49,194 km²</td>
<td>40,838 km²</td>
<td>8,356 km²</td>
<td>6</td>
</tr>
<tr>
<td>Alpine</td>
<td>956</td>
<td>96,751 km²</td>
<td>96,751 km²</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>2,783</td>
<td>180,609 km²</td>
<td>167,898 km²</td>
<td>12,712 km²</td>
<td>19</td>
</tr>
<tr>
<td>Macaronesian</td>
<td>208</td>
<td>5,310 km²</td>
<td>3,516 km²</td>
<td>1,794 km²</td>
<td>34</td>
</tr>
<tr>
<td>Total EU 15</td>
<td>16,193</td>
<td>458,615 km²</td>
<td>397,488 km²</td>
<td>61,127 km²</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: ETC Biological Diversity (European Environment Agency) http://biodiversity.eionet.eu.int/ December 2004
- the number of habitats and species per biogeographical region is not definite since the reference lists for the 10 new Member States have still to be finalised, the exception being the Macaronesian region
- the figures are not cumulative since many habitats and species occur in two or more biogeographical regions
- Figures for 10 new Member States are not included as the process of selection is still underway
- Figures for Mediterranean region are provisional since the list was not yet officially adopted at the time of publication of this brochure
- Some sites are on a 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

Photos © 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. Over 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 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 reptendis 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 creates a rapid succession of halophytic vegetation up the shoreline. Sparsely covered mudflats eventually give way to a more diverse type of Coldwater reefs

Lophelia pertusa is an offshore reef-forming coral that grows along the slopes of the continental shelf or on underwater escarpments in the Atlantic Ocean, at a depth of 200 m or more. 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 the food brought in on strong currents. Lophelia reefs have a wide distribution, extending from Ireland down to Portugal. 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, on the flanks of the offshore banks. The delicate structure and slow growth (6 mm a year), makes Lophelia pertusa very vulnerable to physical damage and human interference. The principal threat is fishing gear, especially bottom trawling which destroys the reef structure. It is estimated that as much as one third of these cold water reefs have already been damaged. Their overall conservation status, however, remains unknown.
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. It covers 25,000 km² 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 act as important nurseries for commercial fish stocks such as sole, herring and plaice whilst the extensive mudflats with their high biomass provide rich pickings at low tide for millions of birds that flock here at different times of the year. The shores also host large concentrations (over 14,000) of harbour seals. However, its location in one of the most densely populated and intensively used regions of Europe puts it 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 and use of this vast area, the three countries have signed a trilateral agreement to coordinate their conservation actions. Some 8,500 km² now also included in Natura 2000.
Management issues in the Atlantic region

The Atlantic region is one of the most heavily populated and intensely managed 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 the saltmarshes, heathlands, grasslands, which owe much of their species diversity to the long tradition of management.

However, with time, agricultural practices became more efficient and intensive. Semi natural habitats were ploughed over or transformed to make way for new large scale 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 by polluting the surrounding areas and water courses, and causing problems of eutrophication and nutrient enrichment far away from the site, for instance at 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 developments. But this in itself will not be enough, efforts are also needed to expand Atlantic heathland

Atlantic heaths once covered an important 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 etc... Such low key activities generated ideal conditions for a wide array of specialised plants and animals who depend on the heaths such as the nightjar, woodlark, sand lizard and southern damselfly.

This type of farming was largely abandoned after World War II. The heath was 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 around 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 usually covering no more than 10–50 ha each. This presents a particular problem for their long term viability.

Efforts are now underway in several areas 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 after ten years of conservation work to walk through large areas of unbroken heathland.
and reconnect the isolated fragments of valuable habitats so that they are ecologically viable over the long term.

This not only means restoring the sites and re-introducing 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 linear 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 sometimes major damage to the fragile coastal and marine ecosystems.

The natural dynamics of the coastline has also been affected by heavy investments in coastal defence systems to protect land and property from inundations or damage from the sea. Not only has this eroded the seaward edge of the saltmarshes and prevented intertidal habitats from developing naturally, a phenomenon known as ‘coastal squeeze’, but it has also caused serious side effects on other parts of the coastline. Experience has shown that hard engineering solutions do not stop the natural dynamics of the coastline but merely transfers the energy elsewhere, causing erosion and damage in these areas instead.

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 1,100 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.

The 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 undersized 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 limits the bycatch rates of key marine mammal species to less than 1% of their estimated populations, for instance through the use of ‘pingers’ on the nets to ward off the animals.

In addition to these direct threats, marine animals also suffer from increasingly high concentrations of toxic contaminants such as PCBs, cadmium and mercury which bioaccumulate in their organisms. Much of this originates from effluent discharges from industrial plants close to the sea or along the rivers. Pollution is a general problem in the coastal waters be it 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.

Like on land, 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. Some large areas have been designated as marine Natura 2000 areas but additional efforts are needed to complete the network for most marine habitats and species.
The European Union has seven biogeographical regions, each with its own characteristic blend of vegetation, climate and geology. Natura 2000 sites 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 Natura 2000 sites selected for each biogeographical region make up the ecological Natura 2000 network which spans all 25 countries of the EU.