



# Natura 2000 in the Black Sea Region



environment

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## European Commission Environment Directorate General

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Pelicans and cattle: daily life in the Danube Delta. Photo © Daniel Petrescu/www.ibis-tours.ro

## The Black Sea Region

– a varied coastline surrounding an inland sea

The Black Sea Region runs anticlockwise around the Black Sea from Romania and Bulgaria, through northern Turkey and onto Georgia. Within the European Union, the region is no more than a thin coastal strip some 20–60 km wide that runs down almost the entire length of Romania and Bulgaria, eventually culminating in a series of low-lying mountains on the border with Turkey.

Altogether, the Black Sea Region covers just 0.3% of the EU territory but it is nevertheless sufficiently distinct in character to be in a category of its own. The sea in particular has an important influence on the climate of the region. The humid coastal air currents moderate the otherwise harsh continental weather. As a result, the winters are generally milder along the coast than further inland, with temperatures hovering just below freezing, whilst in summer a pleasant sea breeze helps to keep the heat down.

Much of the coastline is dominated by long, wide stretches of silvery beaches and low sand dunes that shelve gently into the tideless sea. Occasionally, the sand is replaced by rocky bays and sea cliffs, sometimes up to 70 m high. Blustery headlands, like the Kaliakra Cliffs in northern Bulgaria, are famous for hosting a particularly rich plantlife, with many species reminiscent of the neighbouring Steppic and Mediterranean Regions, like the bright red fernleaf peony *Paeonia tenuifolia* and the yellow pheasant's eye *Adonis vologensis*.

The cliffs are also an ideal vantage point for witnessing the spectacular autumn migration of millions of birds. They are

traveling along the Via Pontica – the second largest bird migration route in Europe. Every autumn, it is estimated that more than 90,000 raptors, 30,000 pelicans, 240,000 storks as well as thousands of waders and passerines travel through the western Black Sea Region on their way to their wintering grounds.

Behind the shoreline, a series of coastal lakes, marshes and lagoons are strategically located to act as stepping stones for these birds. Some stay only a short while, others overwinter here. Wintering populations typically build up from late November and reach a peak during mid-January to mid-February. At this time the wetlands and surrounding fields are a riot of colour and bustling sounds. But then just as mysteriously as they appeared, they are gone again, at least until the next winter.

The most famous wetland is of course the Danube Delta which extends over 4,500 km<sup>2</sup>. It is the largest wetland in Europe after the Volga Delta and hosts an incredible diversity of plants and animals, many of which are extremely rare in the rest of the EU. Little surprise therefore that it is one of the top biodiversity hotspots in Europe, and possibly even amongst the 50 most important wetlands in the world.

The only way around this immense water world is by boat, but once inside the delta, a fantastic wildlife experience awaits – little wonder that the place is fast becoming a magnet for eco-tourists.

In the past 50 years, the Black Sea Region has seen many land-use changes. These are continuing today.

On land, the coastal zone is being increasingly used for intensive agriculture, industry, power generation, mineral works, shipping, urban development and, of course, tourism. As a consequence, significant parts of the coast have been built upon, and development continues to threaten the nature of the Black Sea Region in both Bulgaria and Romania.



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As for the Black Sea itself, this is a very deep inland sea, poor in oxygen. As a result, most of the water column is practically devoid of marine life, except for some forms of bacteria, and, although it is linked to the Mediterranean Sea by the Bosphorus, it only harbours a third of the number of species.

Until the 1960s it was a very productive sea yielding abundant fish catches and providing important feeding areas for commercially important species that migrate here at regular intervals from the Mediterranean. But fish stocks have since collapsed through a combination of overfishing, pollution and the invasion of alien species.

Despite these serious threats, the Black Sea Region remains a vitally important refuge for wildlife, especially during the bird migration period.

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 habitat types in the Black Sea Region



Almost a quarter of the habitat types listed in the Habitats Directive can be found in the Black Sea Region. Not surprisingly many are located in the intertidal zone and are consequently heavily influenced by the presence of salt water and continuous wave action. They include extensive areas of mud and sand flats, salt meadows and marshes, and, of course, long stretches of white sandy beaches.

Behind the beaches a whole range of different types of sand dunes appear. Some like the embryonic shifting dunes, white dunes and grey dunes are present in areas right along the Black Sea Coast. Others like the wooded dunes tend to be much more localised. Occasionally the flat shoreline is replaced by high sea cliffs. These rocky promontories host a variety of rare species like the yellow pheasant's eye *Adonis vologensis* and bright red fernleaf peony *Paeonia tenuifolia*. They are also key habitats for the rose-coloured starling *Sturnus roseus* and European shag *Phalacrocorax aristotelis*.

The Black Sea Region is equally famous for its many wetlands. None is more spectacular than the Danube Delta – an immense watery wonderland extending over thousands of kilometres. But in addition to this one vast area, there are many other smaller coastal lagoons, marshes and lakes dotted around the countryside. Several other rivers and streams also reach their final destination along the Black Sea Coast.

These different waterbodies are not only a magnet for breeding and migrating birds but they are also an important breeding ground for a wide variety of fish, amphibians and invertebrates. Unfortunately, many are now suffering from the effects of pollution from agriculture, industry and housing as well as from large-scale developments.



Photo: © Evgeni Dinev www.evgenidinev.com

## The forests of Strandzha

Strandzha is situated on the most southerly point of Bulgaria's long coastline. It offers a picture postcard view of undulating mountains and lush valleys interspersed by gentle rivers and streams which meander down to the Black Sea Coast through a series of tight twists and turns. Much of the terrain is covered in a large expanse of oak forests with *Quercus polycarpa*, *Q. frainetto*, *Q. cerris*.

Strandzha is also the only location in Europe where one can find the rare Western Pontic beech forests of *Fagus orientalis*. Found along ravines and steep slopes, it is characterized by having a rich undergrowth of evergreen shrubs which include some tertiary relict species like *Rhododendron ponticum*, *Vaccinium arctostaphylos* and *Daphne pontica*. Because of the sheer diversity of habitats present and their relatively pristine state, Strandzha is an important addition to the Natura 2000 network.

Further inland, grasslands become more prominent as the region begins to merge with the neighbouring Mediterranean, Continental and Steppic Regions. Semi-natural dry grasslands dominated by annuals and succulents are relatively widespread whereas the rare Ponto-Sarmatic steppes only occur in small patches here and there, where the conditions are right.

Forests are also well represented, especially on the low-lying hills in the south of Bulgaria and within the Danube Delta. They include a variety of rare habitat types listed in the Habitats Directive such as the Western Pontic beech forests as well as floodplain forests, alluvial and mixed riparian forests, all of which are important roosting and resting habitats for bats and birds.

## The Danube Delta

At the end of its long journey through Europe, the Danube River reaches its final destination on the Black Sea Coast in eastern Romania. Here it transforms into a labyrinth of water channels, floating islands, reedbeds, lakes, ancient forests and shifting sandbanks. Stretching over 4,500 km<sup>2</sup> the Danube Delta is, without exaggeration, Europe's most spectacular wetland.

It is also an unrivalled paradise for wildlife. Millions of birds breed on the lakes and floating islands or in the reeds and forests. Amongst these are white pelicans *Pelecanus onocrotalus*, black-crowned night-herons *Nycticorax nycticorax*, squacco herons *Ardeola ralloides*, glossy ibis *Plegadis falcinellus*, little terns *Sterna albifrons*, pygmy cormorants *Phalacrocorax pygmeus* and marsh harriers *Circus aeruginosus*. The list seems to go on forever. The Danube Delta is also very important for fish. Over 70 species have been recorded here so far, and include several which are endemic to the region.



Photo © Deltaresort.com



Varvara, Strandzha. Photo © Evgeni Dinev/www.evgenidinev.com

## Map of Natura 2000 sites in the Black Sea Region

The initial list of Natura 2000 sites in the Black Sea Region was adopted in December 2008. Altogether, there are 40 Sites of Community Importance (SCIs) under the Habitats Directive and further 27 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 over half of the land area of 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



- SCIs
- SPAs
- SPA and SCI

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



**1**  
Danube Delta

Photo © D. Petrescu  
www.ibis-tours.ro

Photo © J. Sevcik/naturfoto.cz

**2**  
Danube Delta

Photo © D. Petrescu  
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**3**  
Danube Delta

Photo © D. Petrescu  
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**4**  
Durankulak Lake

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**5**  
Kalkanin

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**7**  
Atanasovsko Lake

Photo © R. Tzenova

Photo © I. Zafirov

**6**  
Kamchia Marshes

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Photo © B. Petrov

**8**  
Strandzha

Photos © R. Tzenova





The Danube Delta, a magnet for birds. Photo © Daniel Petrescu/www.ibis-tours.ro

## Natura 2000 species in the Black Sea Region

The clement climate and sheer variety of coastal habitats and wetlands in the Black Sea Region makes it exceptionally rich in wildlife despite its small size. Its strategic location along a major migration route – the Via Pontica Flyway – stands out in particular. Twice a year the skies along the Black Sea Coast fill with the sights and sounds of millions of birds migrating to or from their wintering or breeding grounds. Many stop over on route to rest and refuel or to spend the winter in the Danube Delta or in one of the other wetlands along the coast.

In total no less than 12 globally threatened bird species occur in the EU Black Sea Region. They include, amongst others, the Dalmatian pelican *Pelecanus crispus*, red-breasted goose *Branta ruficollis*, lesser white-fronted goose *Anser erythropus*, ferruginous duck *Aythya nyroca*, pallid harrier *Circus macrourus*, pygmy cormorant *Phalacrocorax pygmeus* and the critically endangered slender-billed curlew *Numenius tenuirostris*.

The wetlands are also home to a large number of fish, invertebrates and amphibians. Almost a third of the fish species listed in the Habitats Directive are found in the Black Sea Region. The Danube Delta alone is said to have up to 70 different species including such rarities as the starry sturgeon *Acipenser stellatus*, and the Pontic shad *Alosa pontica*.

Altogether 79 animal species and six plant species listed in the Habitats Directive occur in the region as well as over a third of the bird species listed in the Birds Directive. Amongst them are 12 species of bats which roost in the

numerous rock cliffs, caves and forests. Like birds, bats also perform long distance migrations. Consequently, places like the Danube Delta or the riverine woods in Strandzha are a vital lifeline for them during their long journeys.

The otter *Lutra lutra* and the endangered European mink *Mustela lutreola* are amongst the rare mammals present around the Black Sea. The latter is said to inhabit the Danube Delta but no-one is quite sure how large the population is, it could be one of the largest in the EU.

Some of the plant species listed in the Habitats Directive are characteristic of the region such as the cinquefoil *Potentilla emilii-popii*, the orchid *Himantoglossum caprinum*, and the floating water plantain *Luronium natans* with its pretty white flowers. The bright red fernleaf peony *Paeonia tenuifolia* and the yellow pheasant's-eye *Adonis vogensis* are reminiscent of the neighbouring Steppic and Mediterranean Regions.

As for the Black Sea, this deep inland sea harbours a number of marine mammals that have over time evolved into distinct sub-species which are now endemic to this sea. They include the Black Sea bottlenose dolphin *Tursiops truncatus ponticus*, the common dolphin *Delphinus delphis ponticus* and the Black Sea harbour porpoise *Phocaena phocaena relicta*.



*Linum tauricum bulgaricum* © Rosen Tzonev





### Red-breasted goose *Branta ruficollis*

The red-breasted goose is easily recognised by its distinctive red, black and white markings. It breeds in the arctic tundra of Russia and Europe and overwinters in the Black Sea Region. Ninety percent of the world population congregates in winter at only five sites. They include Shabla and Durankulak Lakes, both are situated in northeastern Bulgaria. Every year, these sites can host up to 35,000 birds during the winter months, offering a truly spectacular sight.

However this dependence on a very small number of winter roosts is a very risky business. It only needs a few negative changes in these sites to put the whole population at risk. Because the wintering geese feed mostly on winter wheat, barley, maize and pastureland, they are especially vulnerable to changing agricultural practices as well as disturbance from hunting and tourism development.

### Black Sea bottlenose dolphin *Tursiops truncatus ponticus*

Three sub-species of dolphin occur in the Black Sea. All three are descended from Mediterranean populations. They occur throughout the Black Sea but in ever decreasing numbers. The Black Sea bottlenose dolphin population is estimated to have fallen to just a few thousand individuals. In the past, the species was subjected to extensive commercial hunting for their oil and meat. Over five million dolphins are believed to have been killed before the hunting was finally outlawed in 1983. Populations have never really recovered since and are now under permanent threat from pollution, overfishing and heavy marine traffic. Added to this is the fact that female bottlenose dolphins are slow to mature and bear a single calf only every 2–3 years. Efforts are now underway to conserve the Black Sea populations through the Agreement on the Conservation of Cetaceans of the Black Sea and Mediterranean Sea (ASCOBAMS) within the framework of the Bonn Convention on Migratory Species (CMS).



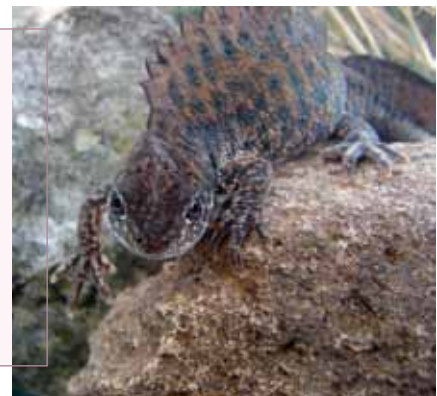
### Dalmatian pelican *Pelecanus crispus*

There are two species of pelican in Europe: the white pelican *Pelecanus onocrotalus* and the much rarer Dalmatian pelican *Pelecanus crispus*. Both are very distinctive with their snowy white feathers, large bills and extensible pouches. They are found mainly in freshwater habitats and river deltas or coastal lagoons where they breed in large colonies of up to 250 pairs. They tend to nest on floating or stationary islands that are isolated from the mainland. This is to avoid predation from mammals.

The Dalmatian pelican is now rare: its total world population stands at around 4,200 individuals. Within the EU, it breeds in only a handful of sites in the eastern Mediterranean and Black Sea in places like the Danube Delta and on Srebarna Lake on the Danube River. Large declines have been noted in recent years primarily as a result of wetland drainage, hunting and persecution by fishermen. Additional threats include disturbance from tourists and fishermen, wetland degradation, water pollution, collision with overhead power-lines and overfishing.

### Southern crested newt *Triturus karelinii*

Listed in the Habitats Directive, the southern crested newt inhabits the southern coastline around the Black Sea. Its distribution range extends from Bulgaria and Serbia all the way through to Azerbaijan and the northern tip of Iran. It is found mainly in mountainous areas within forests and meadows that harbour small stagnant swamps, ponds, lakes and other suitable freshwater bodies. Here it forms independent populations which can contain anything from a few dozen to several hundred individuals. Adults are mainly nocturnal and hibernation usually occurs from October to March. Like other species of newt, the southern crested newt is highly sensitive to water eutrophication. Consequently, activities that impact on its habitat, such as deforestation and water pollution, are a major cause of the species decline through its distribution range.





A built-up skyline beyond Atanasovsko Lake, Bulgaria. Photo © Evgeni Dinev/www.evgenidinev.com

## Management issues in the Black Sea Region

For centuries, the western Black Sea Coast has been an important gateway and major trade route towards the rest of Europe. Over time, cities like Varna and Burgas in Bulgaria, and Constanta in Romania, have grown into large metropolitan areas and economic centres. Each has over 400,000 inhabitants which makes them the countries' most important cities after Sofia and Bucharest.

Constanta alone contains the biggest seaport in the Black Sea and one of the ten largest ports in the EU. Stretching over 30 kms, it can carry up to 62 million tonnes of cargo a year. Its importance as a major transport hub has increased significantly since the opening of the Danube–Black Sea Canal in 1987 which connects the port to the Danube River.

As for the Black Sea Coast, it has long been a magnet for tourists thanks to its endless stretches of golden sandy beaches. Under the Communist Regime the coast was known as the 'Red Riviera'. Since EU accession it has been rebranded and now attracts over five million tourists from across the EU, and beyond. Varna and Burgas both have their own international airports to help meet this high tourism demand.

As a result, the western Black Sea Coast has seen a lot of development over the last 50 years and space is at a premium. In Bulgaria, major holiday destinations have developed into an almost continuous strip of high rise hotel complexes, resorts, restaurants, casinos, shopping centres and holiday villas. The Golden Sands resort, alone, stretches for tens of kilometres in both directions and has over 30,000 beds.

Yet despite this, there are still many areas along the coast that remain intact. Places like Kamchia, the Danube Delta and Strandzha continue to host complex ecosystems that provide a vital refuge for many rare habitats and species.

### Invasive species: a major problem for the Black Sea

The American comb jelly, *Mnemiopsis leidyi*, was accidentally introduced into the Black Sea through ship's ballast water in the early 1980s. With no natural enemies in sight, its population soon exploded, consuming vast amounts of zooplankton, larvae and fish eggs. This eventually led to the collapse of pelagic fish populations and caused a major shift in the marine ecosystem. The jellyfish had literally eaten its way through the food chain. By the mid-1990s, it was estimated that the Black Sea contained over a billion tons of American jellyfish, which is more than the weight of the world's entire annual commercial fish catch combined.

The mass occurrence of *Mnemiopsis* is now acknowledged to have contributed to the sharp decrease in no less than 26 commercial Black Sea fish stocks, including anchovy and chub mackerel. Local oyster fisheries, indigenous jellyfish and even endemic dolphins also suffered. The impact was all the more devastating as the Black Sea was already under stress for heavy fishing and eutrophication. The economic cost attributed to the collapse of fisheries and tourism industries around the Black Sea is estimated at \$500 million per year.



Photo © Vidar Aas





Traditional pastoral activities are still commonplace in Strandzha hills, Southern Bulgaria. Photo © Evgeni Dinev/www.evgenidinev.com

However, they too are under continuous threat from land reclamation projects and infrastructure developments. In recent years, wind farms have become a particular issue of concern. Famous cliffs like Kaliakra provide ideal locations for such farms as they are almost always windy and already 250 windmills have been built here. North of the port of Constanta, plans were recently announced for the development of the largest onshore wind park in the world, requiring an investment of 1.1 billion Euro.

If not properly planned and assessed, respecting the protection safeguards set out in the Habitats Directive, windfarms and other developments could pose a potentially serious threat to species and habitats in and around Natura 2000 in view of the fact that the Black Sea Coast is strategically located along the Via Pontica – one of the most important migration routes in Europe for birds and bats.

Further inland, agriculture takes over as the main land use, providing an important source of income for many rural populations. Much of it has remained relatively small scale until recently, but here, too things are changing rapidly. Wetlands, important for birds and other species, are being degraded by pollutants or drained and diverted for agriculture.

It is estimated that around 400 km<sup>2</sup> of wetlands in the Danube Delta have been transformed into agricultural and forestry polders. Many of its natural water channels have also been dredged and canalised to facilitate inland waterway transport. All these activities not only affect wildlife but also reduce the delta's ability to retain water and clean itself of pollutants and excess nutrients.

On a more positive note the delta is turning into a major eco-tourism destination. Generally, such activities are much more in keeping with the natural environment and help to accord nature a direct economic value. It also helps supplement the income of some 15,000 people that still live in the Delta.

As for the Black Sea, this is also significantly affected by pollutants and nutrients flushed down through the Danube and other rivers which shed their load into this sea. As a result it now has a serious eutrophication problem. Depending on meteorological, hydrothermal and biological conditions toxic algal blooms appear on a regular basis and much of the water column is now devoid of life.

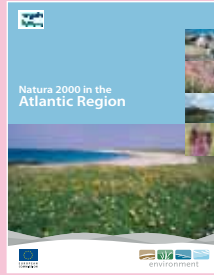
In addition, the Black Sea suffers from regular oil spills and leakages which take their toll on the health of the sea. The long practice of overfishing has also depleted many fish stocks. To help combat these problems the Convention on the Protection of the Black Sea Against Pollution was signed by all range states in 1992. Through coordinated action and international cooperation it aims to control land-based sources of pollution, reduce dumping of waste and develop joint action in case of major accidents such as oil spills.

Pelican killed by wind farm on Kaliakra Cliffs. Photo © Michail Iliev, BSPB





In this series:



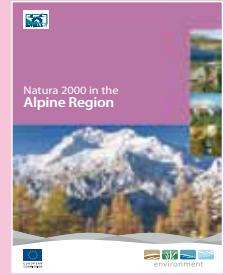
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Atlantic Region



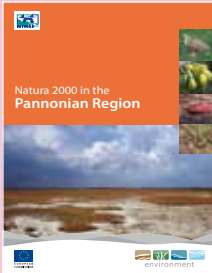
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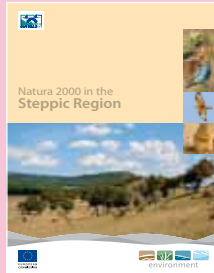
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Alpine Region



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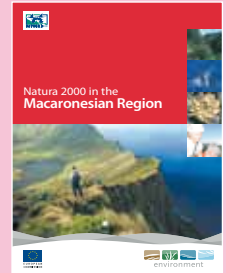
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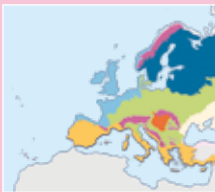
Natura 2000 in the  
Black Sea Region



Natura 2000 in the  
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.

