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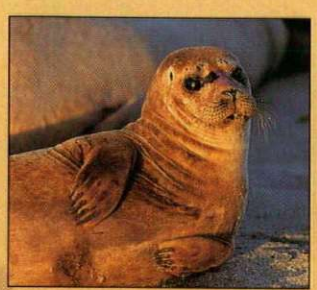
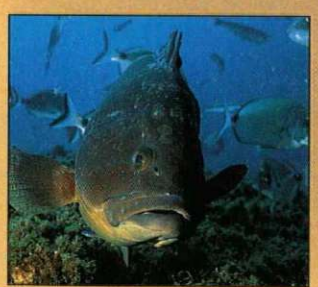
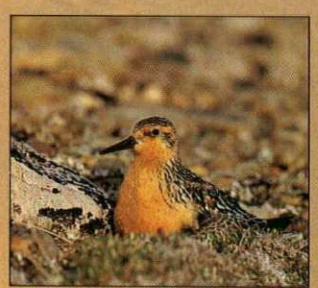
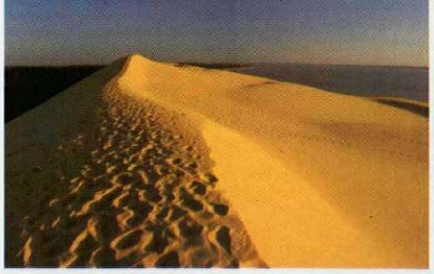






Coastal zones - towards sustainable management



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B. Boisson

Editorial

Coastal zones - towards sustainable management

I am honoured and pleased to introduce this issue of Naturopa, *entirely devoted to the integrated management of coastal areas - in every sense, a vital question.*

Obviously, integrated management is today one of the big theoretical issues if we want to ensure rational development of our coastal areas, which are vulnerable, endangered, and crucially important in territorial, economic, cultural, social and, of course, environmental terms.

Since the Conference of Peripheral Maritime Regions of Europe adopted the European Coastal Charter at its plenary session in Crete on 8 October 1981, various studies, reports and statements - many produced under the Council of Europe's aegis - have appeared. They may not have led, as yet, to binding Community legislation, but they have done much to make national and regional authorities aware of the need for coherent, orderly management of these sensitive areas, bearing in mind the fragility, interdependence and importance of their ecosystems.

Its clear approach and universal character make the United Nations Conference on Environment and Development (Rio, 1991) an inevitable point of reference here. Among other things, it made integrated management the basic principle for maritime areas. As Chapter 17 of Agenda 21 states, "the marine environment - including the oceans and all seas and adjacent coastal areas - forms an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development".

Integrated management may be defined as the pursuit of pre-determined aims with a view to sustainable development, allowing for the physical, social and economic features of the physiographic entity concerned, and combining administrative, financial and legal measures to ensure consistent, unified and simultaneous action by all agencies and programmes.

Alternatively, and following the definition given in the Council of Europe's useful Proposal for a Model Law on Sustainable Management of Coastal Zones, one can say that integrated management means the establishment of institutional and legislative instruments to ensure co-ordination between the parties involved and the actions undertaken from both the territorial and the decision-making points of view. It aims to ensure the development and conservation of coastal zones by dealing with problems, not as they arise, but in a comprehensive manner, taking into account the interaction between all the elements that make up the environment.

The environment is thus the central element in integrated management, and all the other sectoral activities (transport, fisheries, tourism, ports, aquaculture, etc.) must be subordinate to it.

There are various reasons why integrated management of coastal areas is inevitable, for example:
- high levels of use and deterioration of coastal areas over fairly short periods of time (excessive pressure from different uses, often simply juxtaposed and even incompatible);
- the trend towards private ownership of the coastline and towards pushing urban development as close to the sea as possible;
- overuse of natural resources, both marine and coastal;
- fragmented responsibility for the sea and coasts, due to proliferating administrative structures and the wide range of sectoral activities with an impact on these vulnerable areas. Co-ordination is lacking, both between different levels of action and between different sections within the same agencies;
- the need for a comprehensive, coherent and rational response to these problems, and also future ones which are already coming into sight, such as those caused by climate change and rising sea levels.

However, although it is essential in theory, we are still a long way from achieving integrated management in practice. The problems here include:
- lack of a clear, standard legal definition of the term "coast";
- regional planning's failure to allow for the specific features of coastal areas, such as interaction with the marine environment, and the incompatibility of projects with this physical and biological reality;
- lastly, the wide range of major economic interests which target these fragile areas. The resulting pressures and interference are often considerable and at odds with that calm assessment of the issues on which rational coastal planning should be based.

All these and many other aspects are discussed in detail in this issue, marking an essential step forward in Europe's plans for integrated coastal management and conservation of natural resources - plans which we hope to see realised in the near future. ■

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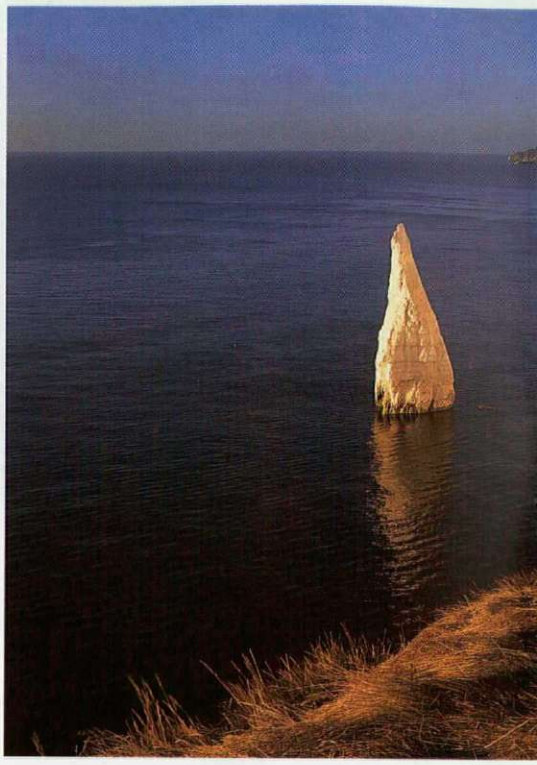
1998: a major effort on behalf of the oceans, the seas and the coasts

The United Nations declared 1998 the "International Year of the Oceans". The World Exposition in Lisbon on the theme of "The oceans, a heritage for the future" comprised of a great many pavilions covering various aspects of the crucial question of safeguarding this world heritage. With this issue of *Naturopa*, devoted to the sustainable management of coastal zones, the Council of Europe wishes to contribute to the international effort on behalf of the oceans.

Owing to their great diversity, coastal areas probably constitute some of Europe's most precious natural assets. But they are also fragile and coveted zones that sustain many economic activities, such as tourism, transport and fishing. Hence the present need to preserve these areas.

This issue recounts the efforts of various international conventions and organisations to protect the sea, the coasts and their natural resources and to promote economic activities more in line with the needs of the environment. A number of national policies for comprehensive coastal management, as well as several interesting local and regional initiatives, are also presented in order to show that it is possible to find solutions and take action at all levels.

Eladio Fernández Galiano
Chief editor



Coastal zones: a high diversity

Their diverse and dynamic nature

Russell Arthurton

An evolutionary perspective

The coastlines of Europe are the modern expression of a constantly changing land-sea boundary that is the product of interacting geological, oceanographic and climatic processes. They have evolved in response to physical changes ranging in duration from single catastrophic events, such as storm surges, to adjustments of the earth's crust acting over millions of years.

Their diversity of landform and habitat reflects the complex geological history of the European landmass. The form of its western margin, between Portugal and Norway, is a function of tectonic processes which caused the opening of the Atlantic Ocean. Its southern margin, formed slightly later, resulted from the enclosure of the Mediterranean Sea by the northward-moving African continental plate. Since these great shaping events many millions of years ago, the interaction of land and sea has continued to respond to tectonic adjustments of the continental crust resulting in elevating and subsiding areas. The Albanian coast in the Mediterranean serves as an example: the mountainous Ionian coast with its deep-water, rocky shore juxtaposed with extensive coastal wetlands of the Adriatic shore, the surface manifestation of a subsiding sedimentary basin.

Fluctuating sea levels

The level of the global ocean has also been changing, fluctuating within vertical limits of some 200 m, mainly as a consequence of climatic change. The most recent major fluctuation was associated with the last ice age, when global sea level fell, some 18 000 years ago, to about 120 m below its present level.

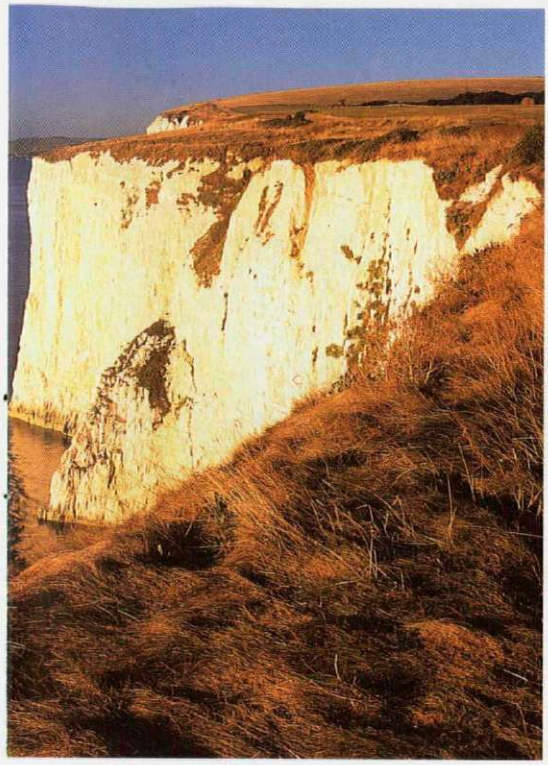
Around much of northern and north-western Europe (though not Norway), repeated fluctuations of sea level over the last few million years have led to the creation of a broad continental shelf, generally with very low relief and bounded by wave-cut cliffs. During sea-level highstands, as at present, the shelf has become submerged. Soft cliffs, such as those in eastern England formed of glacial sediments, are prone to erosion and rapid retreat. The hard rock cliffs of the European Atlantic coast, are the relics of previous highstands. They are home to large colonies of birds including guillemot (*Uria aalge*), kittiwake (*Rissa tridactyla*), fulmar (*Fulmarus glacialis*) and razorbill (*Alca torda*). Where exposed to salt spray, they support roseroot (*Sedum rosea*) and Scot's lovage (*Ligusticum scoticum*). Above the spray zone, species include arctic alpine plants such as purple saxifrage (*Saxifraga oppositifolia*) and moss campion (*Silene acaulis*). In contrast to north-western Europe, the Mediterranean continental shelf is generally much narrower and steeper. Along much of the Greek and Turkish coastline, for instance, rough, rocky shores plunge abruptly to oceanic depths. Associated hard rock cliffs support relict native pine forest.

The legacy of European glaciations

The impacts of ice ages - not only the last, but earlier episodes as well - have been profound. Deformation of the land due to ice loading and unloading has modified, and is still contributing to shoreline change in northern Europe, notably sea-level fall in the Gulf of Bothnia. In the mountainous regions of Norway and Scotland, glaciation has created the deeply erosional, now submerged, fjord landscapes with flanking woodlands rich in western Atlantic bryophytes and lichens. On the shelf and adjoining low hinterlands of the Irish, North and Baltic seas, there has been widespread deposition of glacial sediments, locally forming distinctive coastal landscapes, such as the partly submerged drumlin field in Clew Bay, western Ireland.

Development of accretionary coastal landforms

The landforms that have grown at the coasts over the past few thousand years have accumulated from sediment derived variously from offshore, the coast and rivers. They are



D. Tomlinson/Bruce Coleman Ltd

Handfast Point, Dorset, United Kingdom

naturally ephemeral, changing their shape, for example, through wave and tidal action, even on a decadal timescale; today they provide important refuges for plant and animal communities disrupted by development of the hinterland. With their varied shoreline and associated wetland morphology, they host a complex mosaic of habitats supporting migrating and overwintering waterfowl. The estuarine sediments of Britain and the Wadden Sea, in particular, include abundant and rare invertebrates, fish and birds.

Rivers discharging to the shelf seas of north-western Europe, where the tidal range, and thus tidal currents, are significant, do so through sand- and mud-rich estuaries with broad intertidal grounds. The higher intertidal grounds support saltmarsh, in which plant communities including eelgrass (*Zostera spp.*), cordgrass (*Spartina spp.*) and samphire (*Salicornia spp.*), tolerant to different degrees of tidal submergence, promote the accretion of muddy sediment. Rivers discharging sediment to the coastal waters of the Mediterranean and Black Seas, where the tidal range is generally insignificant - notably the Ebro, Rhone, Po and Danube - have constructed classical deltas. Wave action has redistributed sandy sediment from the outlets at the delta mouths to form beach plains supporting sand dunes, and spits or barriers enclosing lagoons and marshes.

Wind has a direct impact on coastal morphology through the transfer of sand from beaches to dunes. Sand dunes make an important contribution to the diversity of the European coastline and provide a variety of habitats suitable for many invertebrates and rare plants such as the lizard orchis (*Himantoglossum hircinum*). A famous example on the French Atlantic coast is the 100m-high Dune du Pyla. Plants such as *Ammophilla arenaria* are important in the stabilisation of sand dunes. Holland owes its very existence to the sustained wind transfer of sand from the backbeach to the hinterland over the last 4 000 years or so, producing a substantial seaward growth of the shoreline, a natural protective barrier, and bodies which are an important source of freshwater.

Human influences on coastal morphology

This picture of the European coastlines is one of dynamic diversity. Until about 4 000 years ago, the influences on coastal morphology were entirely natural. Since then human activities have increasingly intervened or interrupted these natural processes, directly or indirectly modifying the natural course of coastal change at local to global scales. Such interventions have impacted particularly on low-lying coasts.

The reclamation of coastal wetland or saltmarsh for agriculture has been an important direct human influence. Some of the earliest examples in Europe date from Roman times, for example in The Wash in eastern England. During the last millennium nearly all the lowland coasts of north-western Europe have been reclaimed to some extent, mostly for agricultural usage. The present form of the coast of much of eastern England, the Netherlands and northern Germany is constrained by engineered sea defence banks or barriers. The control of eroding coasts has been another developmental or management objective, particularly over the last 100 years or so. Decisions on whether to protect eroding cliffs are taken largely on economic grounds. Increasingly, beaches are maintained by the artificial addition of sand to improve their effectiveness, both as "soft" sea defences and as recreational assets.

One of the earliest indirect human impacts on the European coastline was that due to Bronze Age forest clearance, which increased soil erosion and thus the delivery of sediment by rivers to the coast. Over the last 100 years, the abstraction of groundwater and natural gas in coastal regions, for instance at Groningen in the Netherlands, has caused the land level to fall and thus a rise in relative sea level.

The coastal zone - a changing resource

The nature of the diverse European coastlines is one of change, both in response to fundamental physical forces and, particularly in recent decades, to human activities. As a coastline changes, so its intrinsic resources change, providing new opportunities as well as new constraints for the coastal ecosystem. One of our greatest concerns in the management of coastal lowlands over the next century is the predicted accelerated sea-level rise as a consequence of global warming through our increased production of "greenhouse" gases. This will impact particularly on coastal lowlands, exacerbating coastal erosion and increasing the likelihood of marine inundation. While it is important to parts of Europe to maintain and enhance defences against inundation, elsewhere there may be opportunities to regenerate coastal wetland by relinquishing land previously reclaimed for agriculture. Similarly the application of policies restricting development on coastal land naturally vulnerable to erosion could promote a varied coastal morphology and habitat diversity. The coastal management challenge is to husband those changing resources so as to maximise opportunities for the ecosystem at large. ■

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Satellite picture of the Albanian coast - Mountainous coast of the south contrasts with the low delta land of the north Landsat TM 186-032, 2 October 1986 - BGS Geospatial Information Systems

Coastal zones: an area for human activity

Shipping and environmental incidents on the North Sea

Coastal countries stand prepared

Gert Verreet

Europe has had its fair share of major marine pollution incidents: the 1967 Torrey Canyon (on the coast of Cornwall, UK) and the 1978 Amoco Cadiz (on the Brittany coast, France), energised the world community as never before to improve marine pollution prevention from tankers, and to create the necessary instruments to tackle oil pollution. Since then, many more incidents have reached the headlines, though none may have had the same environmental impact as these two incidents. That is not in the least because of the benefit derived from a higher level of preparedness developed by the coastal states.

Busy traffic

The North Sea contains some of the busiest shipping lanes in the world (such as the Dover Strait) and sees more than 400 000 shipping movements a year. Many pollution prevention and combating arrangements have been developed under the Agreement for co-operation in dealing with pollution of the North Sea by oil and other harmful substances, (1983 Bonn Agreement; it replaced the 1969 Bonn Agreement, the first regional agreement of its kind). The European Community plays a pivotal role as it is involved in similar arrangements for all the European seas. There is also a multitude of bilateral agreements between neighbouring states. In this way, a continuous network of experienced people stretches all around Europe.

However, there is no room for complacency. Shipping patterns and cargo types change, new types of threat emerge for which adequate solutions need to be developed, such as for dealing with incidents involving hazardous chemicals. A good example is the 1994 Sherbro incident. That ship lost a few containers on the French side of the Channel carrying pesticides packed in very small sachets. Some of the containers were recovered nearby, but at least one managed to escape and thousands of sachets with pesticides were spilled a few weeks later hundreds of kilometres away along the coastline of the Netherlands, notwithstanding an intensive search to track the container adrift.

Continuous surveillance

Enforcement of environmental regulations applicable to shipping is a national responsibility. Ships with poor environmental management (e.g. discharging oily wastes into the sea) could also be more at risk of becoming responsible for an accident. It is therefore appropriate that continuous aerial surveillance of the North Sea targets all possible sources of pollution from shipping. But improved surveillance alone is not enough. The efforts are redoubled to tackle environmental crime with the same vigour at sea as it is done on land. The North Sea countries are currently working to facilitate effective prosecution of discharge offences at sea. For the Bonn Agreement countries, prevention, preparedness and response are all aspects of one big feedback loop. ■

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Oil tanker

G. Klein/Sipa Image

Fishing port

M. Gunther/Bios

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Tourism and urbanisation of Mediterranean coastlines

Example of the Croatian coast

Ante Kutle

For almost three decades, tourism has been one of the basic economic activities in the Republic of Croatia's economic development policy.

The hydrogeological structure of the coast configuration was advantageous to the development of different forms of tourism in the Adriatic Sea region of Croatia. Limestone and dolomite prevail in the coast relief. They conditioned the formation of highly developed coasts with numerous bays, coves, peninsulas and capes, creating a number of exceptional and environmentally different landscapes. Climatological conditions and the sea's hydrographical characteristics, favourable temperatures, high salinity and transparency rates and a calm sea are additional amenities of this area.

Coastal concentration

Although we may say that tourism has been developed over the entire territory of the Republic of Croatia, the biggest concentration of tourist trade in Croatia is in the Adriatic region, in particular on the narrow coastal area. This area accounts for approximately 96% of total commercial accommodation capacity.

In the entire territory of the Republic of Croatia (87 677 km^2), the coastal sea accounts for more than one third (36 067 km^2). The area of the Adriatic river basin covers 22 134 km^2. The total length of the coast is 5 835 km, of which 1 777 km is developed land and 4 058 km belongs to the developed coastline (718 islands, 389 cliffs and 78 reefs).

Being a developed tourism country, Croatia has different kinds of accommodation and other tourist capacities: hotels (478 hotels with 138 000 beds), apartment estates (74 estates with 61 000 beds), other accommodation facilities (135 300), marinas (400 marinas with 10 528 berths), catering establishments (13 700 restaurants, pubs, coffee shops, snack-bars).

The Adriatic Sea alongside the Croatian coast is known for its high quality, except for the areas in the vicinity of big cities and industries (Rijeka, Split) where there are projects for rehabilitation of this situation.

Past use of natural and social tourism resources on the Croatian Adriatic area could be considered as inadequate and inefficient and oriented mostly to mass tourism. This was due to insufficiently detailed analysis of our natural and social amenities, which could not produce an adequate tourist synthesis. Our tourism resource was relatively late in committing itself to nautical, health and other kinds of tourism appropriate to our Adriatic resources.

Inadequate use of tourism resources is apparent in the building trade and urbanism. Few examples exist of buildings featuring dominant elements of architecture and urbanism of that area.

Uneconomical use of tourism resources refers to continuous taking of new free land for construction of tourist and other service facilities, construction of facilities in the most valuable areas (beaches, protected zones, zones close to the sea, etc.) and burdening the resources with more than their actual capacity allows. This has led not only to environmental problems, but also to a low level of tourist comfort, even worse, to the degradation of amenities being the basis of future tourism development in these areas.

National tourism policy

In 1993, Croatia passed a tourism development strategy and a general tourism plan. These documents outline national tourism policy, identify the goals and strategy for tourism development and provide measures for their implementation. The documents also point at the need for good use of basic elements of the tourism offer, with an aim to reconstruct and more completely evaluate and protect the tourism potentials and create a new identity, observing thereby environmental protection requirements. They imply development that does not deteriorate and deplete existing resources and sustainable development which satisfies the needs of present generations without jeopardising those of the future, i.e. further development of tourism in line with the area's capacities and environmental protection.

As well as bringing tourism standards and requirements into line with legal regulations and environmental protection, tourism controls and inspection to protect the environment, the introduction of different administrative and fiscal measures for the improvement of tourism following the "polluter pays principle", a series of measures is being provided to convince all those offering services to tourists, that negligent behaviour towards environmental resources and any degradation of natural ecosystems will burden their operational costs. ■

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Human impact on the Black Sea
Threats and challenges

Volodymyr Domashlinets

As compared with other seas, the Black Sea is situated far from the ocean and has a vast catchment area which includes territories of several countries. The specific geographical location of the Black Sea and its dependence on the associated watershed basin resulted in excessive levels of man-made pollution of the marine environment. This led to drastic changes in marine ecosystems and caused loss of biodiversity.

Various pollution sources

The Black Sea Basin covers 98% of the territory of Ukraine. Most contaminants (up to 80%) come to the Black Sea from large rivers such as the Dnipro, Dniester, Southern Bug, Danube and Don. Twenty per cent of the pollution originates from coastal sources. Last year a reduction in the drainage of used waters from the territory of Ukraine has been observed, mainly as a result of decreasing water consumption by agriculture (by 35%) and industry (by 25%). From 1992 to 1996 marine pollution from water sources has been reduced by 19%. 1 090 million m^3 of used waters were discharged in 1996 into the Azov and Black Seas, including 5% of untreated sewage and 25% of treated waters. 336 700 tons of pollutants, including 8 500 tons of organic substances, 2 900 tons of nitrogen, 215 tons of phosphorus and 61 tons of oil products were brought to the marine environment with these waters.

The municipal sources of pollution (sewage) are the most dangerous for the marine environment quality. Several so-called "hot spots" were identified along the Azov-Black Seas coastline where contamination level is the highest. These are coastal areas near the cities of Odesa, Sebastopol, Mariupol, Yevpatoria, Mykolayiv, Balaklava, Saky, Kerch, Skadovs'k, Gurzuf, Simeiz, Berdians'k, Krasnoperekops'k. New canalisation systems built in Illichivs'k, Berdians'k and other cities made it possible to reduce pollution of the sea in the vicinity of these cities.

Oil products are one of the main pollutants of the Black Sea. Contents in the open part of the sea are mainly less MAC (maximum allowable concentration) as compared to the coastline. The area least contaminated by oil products is the Yalta region and the most polluted is Sevastopol Bay. Industry has greatly contributed to the pollution of the Black Sea. Concentrations of 19 heavy metals which are usually monitored in the marine environment in most cases exceed the MACs in all the Black Sea marine coastal areas. The most widespread are copper, zinc, cadmium, cobalt, nickel and chromium. For example, the level of iron and mercury is rather high (1.5-2 MACs). The level of pollution of coastal water with nutrients and phenols (3-7 MACs) is rather high as well. Distribution of phenols is homogeneous all over the coastal water. Detergents are found practically all over the coastal waters and their average concentration makes 2-3 MACs.

Air pollution in the Black-Azov Seas coastal zone comes from metallurgic, energy, coal mining and chemical industries situated in the Donetsk, Zaporizhia, and Kherson administrative regions. Due to the industrial output decline in the whole of Ukraine and in these industries in particular, total emissions have decreased.

The Chernobyl accident caused a considerable increase in radionuclides content in the region. In the summer of 1986, as a result of the air transfer of radionuclides from Chernobyl NPP, contamination level of the surface seawater increased up to 180 Bq per m^3 (by 137Cs concentration). Only in 1995 did the radionuclide contamination of seawater fall to the pre-Chernobyl level (17 Bq per m^3 of water).

Contamination and human impact on the Black Sea accompanied with global modification of the sea ecosystems has a negative economic effect. Total economic losses caused by different reasons in the Black Sea Basin are estimated to be $ 500 million annually.

Progress achieved

Taking into account the global character of environmental problems in the region, Black Sea countries have combined their efforts to stop degradation, pollution increase and biodiversity decline within the framework of different international agreements and programmes, such as the Bucharest Convention on the Protection of the Black Sea Against Pollution (1992), the Odessa Ministerial Declaration (1993) and the Black Sea Environmental Programme. ■

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Gritsyuk/Sipa Image

Sevastopol, Crimea, Ukraine

Fishery and aquaculture on the Atlantic coast
The example of France

Loïc Antoine

The long seaboard between the Celtic Sea and the Bay of Biscay, extending into a huge continental shelf, affords highly suitable conditions for aquaculture and fishing activities, which have been carried on in this region for several centuries. Their economic and social fall-out is of prime importance to the coastal populations. A broad division may be made between aquaculture in salt marshes, coastal shellfish farming, estuary fishing and marine fishing proper.

IFREMER/O. Barbaroux

Oyster farming in the Arcachon Basin, France

Aquaculture

Aquaculture is one of many uses of the salt marshes along the French Atlantic coast, which have been exploited by human beings since the Middle Ages. Oyster farming in "fattening ponds" is one example of a traditional activity. Shellfish hatcheries were set up in salt marshes in the 1980s, together with marine fish farms (breeding turbot, sea bass and sea bream). In areas featuring significant human activity, the current use of salt marshes for aquaculture is a factor conducive to the conservation of wetlands in the face of an increasing number of more aggressive or destructive uses (such as drainage, intensive farming, real estate and industry).

Shellfish farming

Shellfish farming has a special place among the economic activities on the Atlantic coast. France, which is the leading European producer of farmed shellfish (210 000 tonnes), produces almost two-thirds of its oysters and mussels along its Atlantic seaboard. This traditional activity is an integral part of the economic, social and cultural landscape of coastal regions and helps to maintain the ecological stability of littoral environments. Nonetheless, it is often subject to pressure from various sources: the coastal sea is the repository of numerous discharges which may jeopardise the safety of the products marketed in accordance with the European standards. In resort areas, the rapid expansion of tourism is competing with this activity in some places.

Estuary fishing

A variety of fish species are caught in estuaries, fish which either live in them permanently or pass through them as they migrate. For example, amphihaline species such as salmon, sea trout, shad and elver (the young of the eel), which alternate between salt and fresh water, become the target of professional estuary fishing on their return from the ocean to the rivers. They are of high commercial value and are not safe from over-fishing, despite management measures introduced in the various estuaries concerned (Loire, Adour and Garonne). However, environmental quality (a low level of water pollution, sediment quality and freedom of movement) is also essential in order to ensure the presence of these species in either rivers or the sea. Far from damaging estuaries, therefore, continued fishing for amphihaline species heightens the need to conserve such areas, as well as helping to preserve the coastal economy. Moreover, estuaries, like bays, are nurseries for the young of many species of sea fish. Agricultural and urban waste, construction and other factors all contribute to making such areas vulnerable, and urgent consideration should be given to their conservation.

Sea fishing

Sea fishing in the Bay of Biscay is notable for the variety of species concerned and the fishing gear used to catch them. Bottom-living fish such as crayfish, hake, anglerfish and sole are trawled, but increasing use is being made of setnets. Species living in open water (such as anchovies and sardines) are still caught in rotating seines, but the more efficient pelagic trawl nets have recently appeared. Tuna are fished with rod and line in Spain, and with drift nets and pelagic trawl nets in France. The main effect of fishing is to deplete the large numbers of fish to levels where, unless fleets are limited or equipment selectivity improved, stocks and even whole species may be endangered. Scarcity of a particular fish heightens competition for the chance to catch it, and conflicts between fishermen are becoming increasingly common. It is difficult to establish the necessary conditions for sustainable resource development owing to both the range of species concerned and the variety of economic and social contexts. Little is known as yet about the long-term impact of fishing on marine biodiversity. ■

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A necessity: conservation of European coasts

International instruments

MAP and Barcelona Convention
Three decades of implementation

Ivica Trumbić

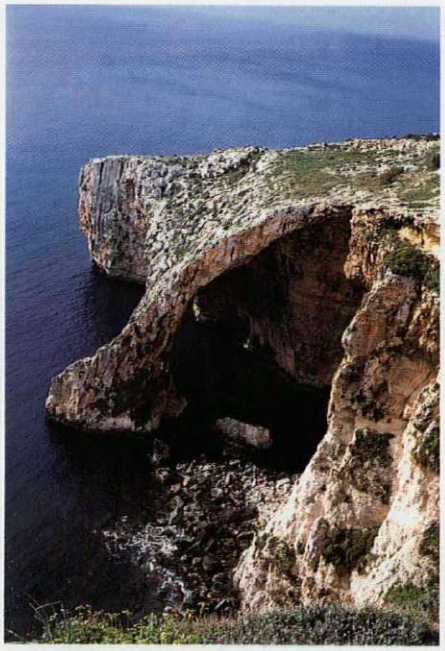
In 1975, the Mediterranean countries and the EEC adopted the Mediterranean Action Plan (MAP), and in 1976 the Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention). The main objectives were to assist the Mediterranean governments to assess and control marine pollution, to formulate their national policies, to improve their ability to identify better options for alternative patterns of development, and to make rational choices for resources allocation. To implement the Convention, the MAP Co-ordinating Unit has been established in Athens, with a number of regional centres to implement the Convention's individual components (Blue Plan, Priority Actions Programme, MEDPOL, Specially Protected Areas, etc.).

State of the sea

During the first decade of MAP (1976-85), the bulk of its activity was focused on the monitoring of the state of the sea, and on interventions aimed at improving it. At the end of that period it was recognised that the sources of pollution problems were mostly (80%) land-based and that there was a necessity to harmonise the regional development with the receptive capacity of the environment. This called for a permanent process of integrated planning and for rational management of the limited resources available.

The beginnings of integrated management

The feature characterising the second MAP's decade (1986-95) was the re-focusing of MAP on activities carried out in coastal areas. In wide consultation with the Mediterranean countries, the Guidelines for Integrated Coastal Area Management were prepared. MAP has launched an ambitious Coastal Areas Management Programme (CAMP) comprising projects implemented in smaller coastal areas of the Mediterranean countries. Projects in Albania, Croatia, Greece, Syria and Turkey have been completed, and the ones in Egypt and Tunisia are in the final phase. Similar projects are in preparation for Algeria, Lebanon, Malta, Morocco and Slovenia. Wherever possible, MAP contacts large donors (EU, World Bank, METAP, etc.) in order to secure follow-up projects. The best known example of such co-operation is the CAMP "Kaštela Bay" in Croatia.



I. Trumbić

Mediterranean coast, Malta

Introduction of effective tools

The start of the third MAP's decade (after the Barcelona Conference in 1995) was characterised by the revision of the Barcelona Convention, adoption of MAP Phase II, and establishment of the Mediterranean Commission for Sustainable Development. These actions were preceded by the Tunis Conference on Sustainable Development in the Mediterranean and the adoption of MEDAgenda 21 (1994) as the follow-up to the Rio Conference.

Although MAP evaluation has not been done yet, a report *Assessment of Integrated Coastal Area Management Initiatives in the Mediterranean: Experiences from METAP and MAP (1988-1996)*, commissioned by the World Bank, tried to answer the questions related to the benefits of ICAM efforts in the region. A part of the study was dedicated to MAP CAMPs. Lessons learned from their implementation were outlined and recommendations for future development formulated. The report suggests that the projects have justified their existence and that they should be continued. Their importance for institutional and capacity building was particularly stressed, as well as for solution of urgent environmental problems, especially in "hot spot" areas.

Model for the future

The Mediterranean Commission for Sustainable Development is gaining an ever more active role in the coastal area management in the region. It consists of 35 equal members (countries - signatories of the Barcelona Convention, NGOs, IGOs, professional associations, cities, etc.). MAP and its regional centres provide technical assistance. As one of the priority tasks, the Commission has established a working group which drafted short- and medium-term proposals for implementation of burning issues of coastal zone management. It is expected that the importance of the Commission will continue growing and become a model for the 21st century of advisory, and maybe even decision-making body in sustainable development matters in the region. ■

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MED Forum

Rafael Madueño

MED Forum is the network of Mediterranean NGOs for ecology and sustainable development. It was created during the 1995 Euro-Mediterranean Conference and after the holding of the III Mediterranean Environmental Forum, which was attended by 200 people belonging to 80 NGOs from 17 countries, and which approved the Barcelona Declaration for the Integrated and Sustainable Management of the Mediterranean Basin. MED Forum now has more than 70 member NGOs from 19 countries from both shores of the Mediterranean and three adjacent countries (Andorra, Jordan and Portugal).

Its aim is to promote the defence and protection of the environment within a framework of sustainable development that allows integrated management based on solidarity within the Mediterranean Basin, by promoting dialogue, co-operation and solidarity between the citizens on the different shores.

The integrated and sustainable management of the Mediterranean coastline has been one of MED Forum's concerns since its creation. The IV Mediterranean Environmental Forum (1996) adopted integrated management as a priority that was later included by official bodies, such as the MCSD (Mediterranean Commission on Sustainable Development) and the SMAP (Euro-Mediterranean environment programme). In 1997, we organised, together with the MCSD, an International Seminar on the Integrated and Sustainable Management of the Mediterranean Coastline in Benidorm (Spain), whose conclusions were adopted by the states party to the Barcelona Convention for the Protection of the Mediterranean.

The Programme of the Mediterranean NGOs for Sustainable Development (MED Forum's Agenda 2000), will be debated during the V Mediterranean Environmental Forum, to be held in Barcelona in November 1998, and includes five priorities: water, desertification, biodiversity, sustainable tourism and, above all, the need for integrated management of the Mediterranean coastline, due to its concentration of population, the economy and tourists.

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Wise use of coastal wetlands
The approach of the Ramsar Convention

Tim Jones

The Convention on Wetlands (Ramsar, 1971) now has 112 Contracting Parties from all regions of the world, including almost all European States. Contracting Parties undertake to formulate and implement their planning to promote the wise (or sustainable) use of wetlands in general, and to implement special measures at sites designated for the Ramsar "List of Wetlands of International Importance".

One of the Operational Objectives of the Convention's Strategic Plan 1997-2002 is "to integrate conservation and wise use of wetlands in all Contracting Parties into national, provincial and local planning and decision-making on land use, groundwater management, catchment/river basin and coastal zone planning". The Convention has a broad definition of the term "wetland", which includes, deltas, estuaries, coastal lagoons, fresh- and salt-water marshes and shallow coastal waters.

More than 570 sites have been designated for the Ramsar List by European Contracting Parties, over 260 of which include coastal components. Many countries have taken specific measures for the wise use of their important coastal wetlands; for example the pioneering trilateral co-operation between Denmark, Germany and the Netherlands for the protection of the Wadden Sea (see page 12).

The concept of wise use of coastal wetlands may be relatively simple to describe - for example, "the sustainable management of wetland area, functions and values in the coastal zone" - but is extremely challenging to deliver in practice. Consider for example the case of a typical Mediterranean delta, where water management and agricultural practices far upstream may have fundamental impacts on the quantity and quality of water and sediment feeding the delta. The same delta may be subject to intensive *in situ* land-uses including farming, aquaculture, tourism and recreation, and urban or industrial development.

To address such complex, and often conflicting, considerations, the Ramsar Convention encourages the development of National Wetland Policies (or the inclusion of a wetland chapter in National Environment Action Plans and National Biodiversity Strategies). Integrated Coastal Zone Management should be a key tool for implementing such policies and delivering wise use of coastal wetlands in the field. ■

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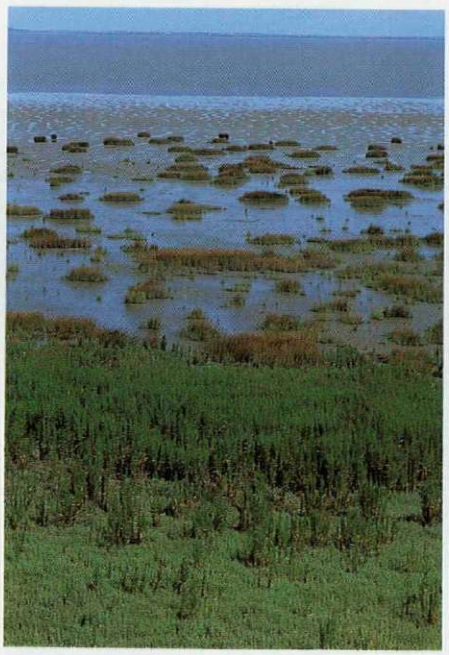
Salt prairies and silt coastline



G. Lacoumette

The Wadden Sea
"A large special protection zone"

Dieter Boedeker

Located between Esbjerg and Den Helder, the Wadden Sea extends for nearly 450 km between the mainland coast and the islands. Sometimes as much as 20 km wide, its average width is about 6 km. The Wadden Sea is a sedimentation basin which formed in the Holocene in the shelter of a string of islands, sand banks, offshore bars and stretches of beach and in protected bays and estuaries. Even today the strand features dynamic sedimentation, erosion phenomena and formation of new reliefs. The nutrients which the tidal currents constantly carry in from the North Sea have resulted in very high productivity, 3 t/ha of animal biomass on average. The most productive element, producing 12 t/ha, is alluvial mud, which follows the local rhythm of the tides and is thus regularly high and dry. Salt meadows, which hardly ever flood any more, constitute a limiting zone between the Wadden Sea and dry land and exhibit exceptionally rich biological diversity. They harbour nearly 1 300 species of fauna, of which at least 250 are endemic. Owing to this very rich biological productivity and diversity, the Wadden Sea is without question one of the great European landscapes that most deserve to be safeguarded.

In view of the growing threat to this natural environment from pollution and other human activities, such as the construction of coastal protection structures, fishing and tourism, the three riparian States, Denmark, Germany and the Netherlands, have decided to take concerted action to protect and manage the region. This three-way co-operation is based on a joint declaration adopted at the third governmental conference of the three countries (the first having been held in 1978). Despite these joint efforts and the placing of a number of sections under national and international protection, the prime objective of preserving this natural area has yet to be achieved. Hence the need for the region to be declared a "large cross-border special protection zone", for example in the context of the European Union's Natura 2000. ■

R. Maier/Bruce Coleman Ltd

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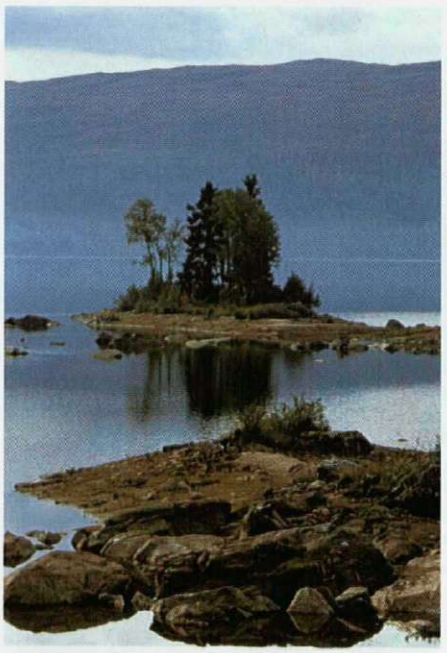
The Baltic Sea and its coast
Fragile and seriously endangered ecosystems

Dieter Boedeker

The Baltic, an inland sea surrounded by continental landmasses, nearly 1 500 km long and with a surface area of about 415 000 km² and a catchment basin of some 1.5 million km², is one of the world's largest expanses of brackish water. Formed in the Holocene, this very young sea has an extremely fragile ecosystem (brackish water, very little mixing with water from the North Sea). Its species and habitats are very specialised, and only a few salt-water and fresh-water species have been able to adapt to these extreme living conditions (on the other hand, they are very prolific). The German Bundestag accordingly concluded in 1993 that the ecosystem of the Baltic Sea is greatly endangered, notably because of the discharge of harmful substances and eutrophication.

Unlike the marine environment, coastal zones have a very rich biodiversity. Owing to its vitality and the wealth of different biotopes found there, the Baltic coast is of enormous ecological importance, as well as being a landscape of great beauty in many places. If only for this reason, it also has considerable economic potential. This state of affairs often leads to conflicts of interest and regularly jeopardises the coast's ecological and cultural assets.

Public opinion and the political leaders of the nine coastal States are aware of the danger that hangs over the environment in this region. Thanks to the 1992 Helsinki Convention, to which all these States are parties, the zone covered by the first Convention of 1974 was extended to include internal waters. Article 15 "Nature Conservation and Protection" contains a statement of intention by the governments of all the coastal States, to the effect that they are prepared to take, either individually or jointly, all appropriate measures to protect and preserve the biotopes, natural processes and biodiversity of the Baltic Sea's ecosystem, including its coastal areas.



S. Rasmussen/Sipa Image

The year 1993 saw the creation of "EC-NATURE", a new standing working group of the Helsinki Commission. At the group's prompting, the Helsinki Commission formulated a number of guidelines and recommendations on nature protection[1].

It is now time for the coastal States to implement these and other recommendations at national level before it is too late for the environment, the marine and coastal biotopes and the many plant and animal species of the Baltic Sea basin. ■

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[1] For example, HELCOM Recommendation 15/1 seeks to delimit a strip extending 100 (minimum) to 300 m from the mean water line landward and seaward, which would be generally protected outside urban areas and existing settlements (above all in order to protect the coastal landscape from uncontrolled urbanisation).

HELCOM Recommendation 15/5 aims to set up a system initially containing 62 protected areas situated in the region covered by the Convention, and which can be increased at a later date to include other areas.

Bucharest Convention

Radu Mihnea

Faced with a rapid deteriorating water quality and the corresponding ecological and economical consequences, the Black Sea countries decided to act in concert to revert this degradation. The negotiations for the Convention on the Protection of the Black Sea against Pollution (the Bucharest Convention) started in 1986 between the former USSR, Romania and Bulgaria. In 1988 Turkey joined the discussions. In April 1992 Bulgaria, Georgia, Romania, the Russian Federation, Turkey and Ukraine signed the convention in Bucharest. With technical and financial assistance from UNEP, the Convention was followed by a Ministerial Declaration signed in Odessa in 1993 (the Odessa Declaration) in an effort to provide guidelines for policy and concrete actions.

The Convention was ratified and entered into force in January 1994. There are three Protocols that are integral part of the Convention:

- Protocol on protection of the Black Sea marine environment against pollution from land-based sources
- Protocol on co-operation in combating pollution of the Black Sea marine environment by oil and other harmful substances in emergency situations
- Protocol on the protection of the Black Sea marine environment against pollution by dumping.

According to article XVII, to achieve the purposes of the Convention the Contracting Parties shall establish a "Commission on the Protection of the Black Sea against Pollution". The Commission shall be assisted in its activities by a permanent Secretariat composed of nationals of all Black Sea States. It was decided the Commission and the Secretariat would have their headquarters in Istanbul.

To become functional, the Commission and the Secretariat should have some working documents. Agreement on the last two of them was reached upon only in April 1998. Because of this the permanent Secretariat has not yet been established and the Convention is still not functional.

After the agreement on the functional documents has been reached, the Convention can become operational. A meeting of the Commission to formally approve the documents, to discuss and approve the Work Plan for the first year and to approve the corresponding budget must be convened. ■

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The Mediterranean and the Black Sea

ACCOBAMS: a tool for co-operation

Marie-Christine van Klaveren

On 24 November 1996, in Monaco, 15 Mediterranean and Black Sea shoreline states, together with the European Union, signed the Final Act of the Negotiation Meeting to adopt the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). The Agreement, concluded in pursuance of Article IV of the Bonn Convention (CMS), and the accompanying Action Plan were signed the same day by representatives of ten states (Albania, Cyprus, France, Georgia, Greece, Italy, Monaco, Portugal, Spain and Tunisia[1]); an eleventh state has since signed (Morocco). To date, only the Principality of Monaco has ratified the Agreement.

F. Gohier/Phone

Common dolphin

The Agreement, which is the result of a process launched under the Bern Convention in 1989, fits into a wider approach to biodiversity conservation in the Mediterranean and Black Sea[2].

It protects all cetaceans in the area against deliberate catching for any purpose, and requires parties to establish networks of specially protected areas to conserve them. As well as dealing with capacity building and applied scientific research, the Action Plan, which is an integral part of the Agreement, also:
- sets out measures to reduce incidental catches, such as limitation of drift gillnets to 2.5 km;
- consolidates provisions in other relevant conventions on preservation of cetaceans' habitats and food resources;
- regulates tourist observation activities;
- establishes emergency procedures.

At institutional level, the negotiators, who were guided by the same principles as those underlying the Pan-European Biological and Landscape Diversity Strategy, were particularly keen to include co-operation between organisations in the Agreement's Final Act. In fact, this provides that the machinery of the Barcelona Convention, the Bucharest Convention and the International Commission for the Scientific Exploration of the Mediterranean Sea are to serve as agencies for its implementation. ■

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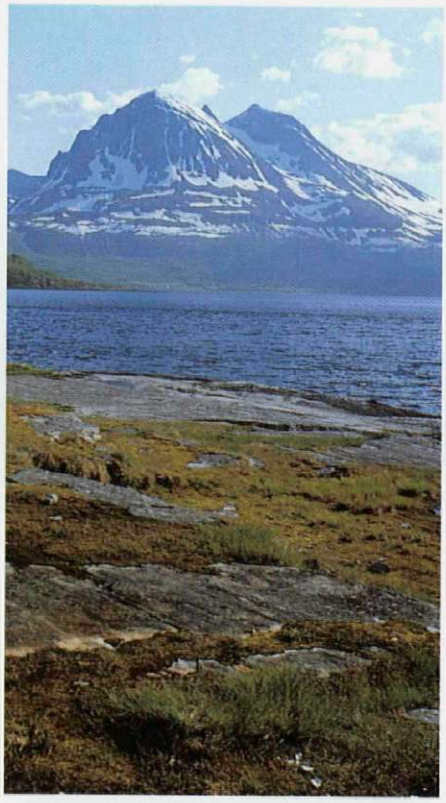
[1] The Agreement is also open for signature by states outside the geographical area in question.

[2] A similar agreement was concluded in 1991 on the conservation of small cetaceans in the Baltic and North Seas (ASCOBANS).

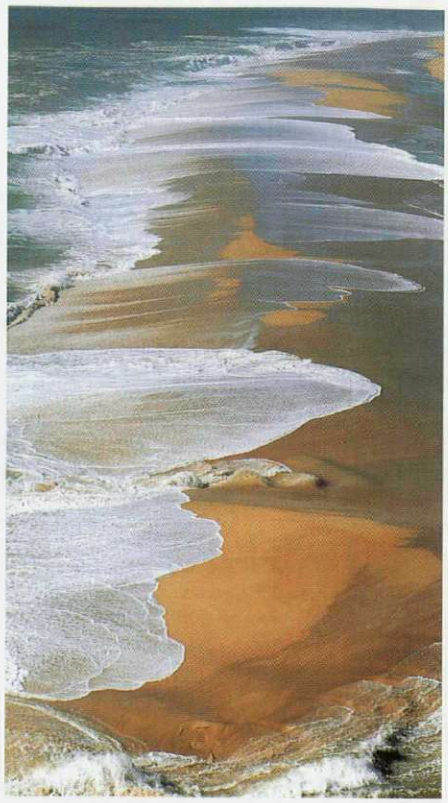
Frilet/Sipa Image

Dodecanese, Greece



F. Tondre

Lofoten Isles, Norway



X. Varela Vilariño

Nazaré, Portugal

Code of Conduct and Model Law
of the Pan-European Biological and Landscape Diversity Strategy

Maguelonne Déjeant-Pons

"Between the scenes in a broad band ran a representation in gold of the swelling sea, but with the surface showing blue, and white wave-crests of foam."
Virgil, The Aeneid

At the fourth Pan-European Conference of Ministers of the Environment, held in Aarhus in June 1998, the Ministers took note of the progress made in developing a Pan-European Code of Conduct for Coastal Zones and a Model Law on Sustainable Management of Coastal Zones. These texts, which are being prepared by the Committee for the Activities of the Council of Europe in the Field of Biological and Landscape Diversity, will be submitted for adoption at the next meeting of the Council for the Pan-European Biological and Landscape Diversity Strategy, in March 1999.

Challenges to be addressed

Having turned its attention to the issue of protecting coastal areas a number of times in the past, the Council of Europe has decided to contribute to the implementation of the "Coastal and Marine Ecosystems" chapter of the Pan-European Strategy. Approved in Sofia in 1995 by the third Pan-European Conference of Ministers of the Environment, the Pan-European Strategy lists the challenges to be addressed in this field: direct loss through development and occupation of coastal areas for residential, touristic and industrial purposes, reclamation, dams and dikes, coastal engineering, pollution, destruction and over-exploitation of benthic systems through industrial fishing practices, destruction of sedimentary systems through mining and drinking water production, and recreational disturbance.

A Group of Specialists on Coastal Protection, set up in 1995 pursuant to a decision by the Committee of Ministers of the Council of Europe and chaired by Mr Lauri Nordberg (Finland), has held discussions with a view to drafting:
- a Pan-European Code of Conduct for Coastal Zones, including precise recommendations, practical and realistic principles as well as rules of good practice for local, regional and national authorities, developers, coastal engineers and other users;
- a Model Law on Sustainable Management of Coastal Areas which defines the concept of integrated management and planning, based on the principle of sustainable development, establishes the main guidelines and makes proposals with regard to the appropriate institutions, procedures and instruments for the implementation and application of integrated management and planning.

The need for co-operation

Government experts, secretariat representatives of international conventions on coastal and marine environments and international organisations took part in these discussions. The preparatory documents were drawn up by the European Union for Coastal Conservation and the Centre for Interdisciplinary Research in Environmental Law.

The international community must join forces and take effective action in order to conserve, safeguard and sustainably manage coastal areas if it genuinely wishes to preserve the magic that emanates from them and the many natural resources they contain. ■

M. Déjeant-Pons
Principal Administrator
Council of Europe

Recommendation on sustainable tourism

Gunnar Zettersten

The Group of Specialists for Tourism and Environment at the Council of Europe is aware that the coastal and marine areas contain many different landscape types with great biological, geophysical and cultural richness, which should be preserved. We are all deeply concerned about the possible damage to nature by the growth of tourism, but are convinced that sustainable tourism has the potential to contribute to the conservation of the valuable sites.

According to Agenda 21, all industries must accept their share of responsibility for the environment. The travel industry itself must also protect nature and culture; these are, after all, the bases of its own existence.

A recommendation on a policy for the development of sustainable environment-friendly tourism in coastal areas (No. R (97) 9) was adopted in 1997 by the Committee of Ministers of the Council of Europe. It recommends the governments of all member States to follow certain principles. The most important are the following:
- maintain the diversity of the natural landscape features of coastal areas and especially to strictly control building within a coastal strip of at least 100 to 300 m from the mean water line landwards and seawards;
- limit tourist development to a level compatible with the ecological and social carrying capacity of the site;
- develop tourism in a way that benefits the local community and protects its socio-economic interests;
- promote quality tourism with respect to each area's specific features;
- control activities likely to harm the environment, e.g. off-road motor car traffic;
- take into account EU standards on drinking water, bathing water, seawater and sewage;
- organise training programmes for tourism professionals and for tourists in order to increase awareness of the attractive features and the vulnerability of the areas and of the local culture and traditions;
- develop interpretation programmes to increase awareness of the coastal heritage;
- encourage free access to the coast in a reasonable manner.

I am convinced that if these recommendations were a reality, they would help us to protect the valuable European coast and at the same time develop tourism in a sustainable way. To reach this goal we need help from the whole tourist industry and from all tourists.

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Turnstone

J.-L. Klein & M.-L. Hubert

Major hazards associated with the sea
European co-operation exists

Jean-Pierre Massué

The activities of the Council of Europe EUR-OPA Major Hazards Agreement with regard to the major hazards associated with the sea have focused primarily on the Mediterranean and the Black Sea, which together form a naturally vulnerable unit: a semi-closed, non-tidal sea with a negative water balance.

Three types of hazard

It is possible to identify three major categories of hazard representing a potential threat to populations living in coastal areas:

Natural hazards:
- the seismic hazard, the Mediterranean coast being one of the planet's worst affected areas;
- "tsunamis", which are tidal waves generated by underwater earthquakes, forming gigantic "walls" of water that hit the coast at speeds of 70 km/h (the last tsunami in the Mediterranean dates back to 1887);
- volcanic activity; there are volcanoes in Greece and Italy;
- the geomorphological hazard, in the form of subsidence, landslips, mud slides, etc.;
- erosion of the coastline, which is usually a slow, gradual phenomenon but can occur on a major scale in exposed areas;
- the flood hazard, coastal zones being particularly vulnerable to destructive torrential and flash floods;
- the risk of forest fires, which are particularly fierce along the Mediterranean coast and affect 200 000 ha each year.

Technological hazards: industry, fishing, tourism, fish farming, transport, yachting etc. cause pollution and other forms of damage in coastal zones; the two main vehicles of coastal pollution are coastal waters and motions of the atmosphere.

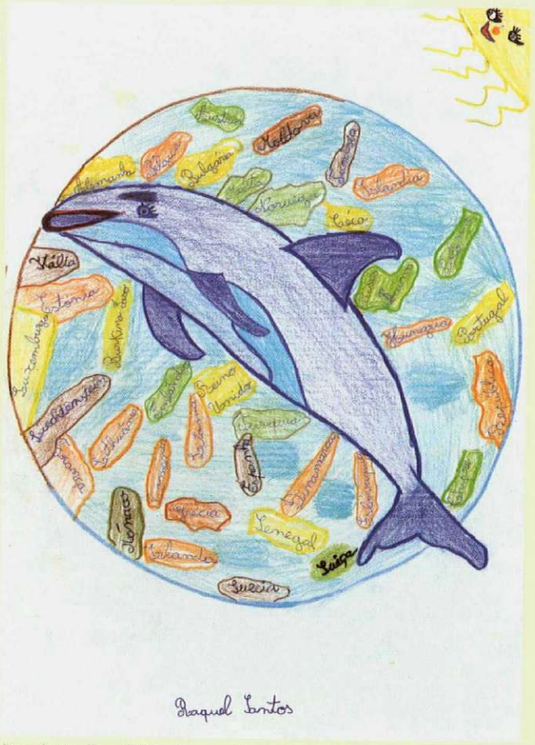
Socio-economic hazards, which are usually associated with the development of coastal areas for tourism purposes.

The Agreement in marine environments

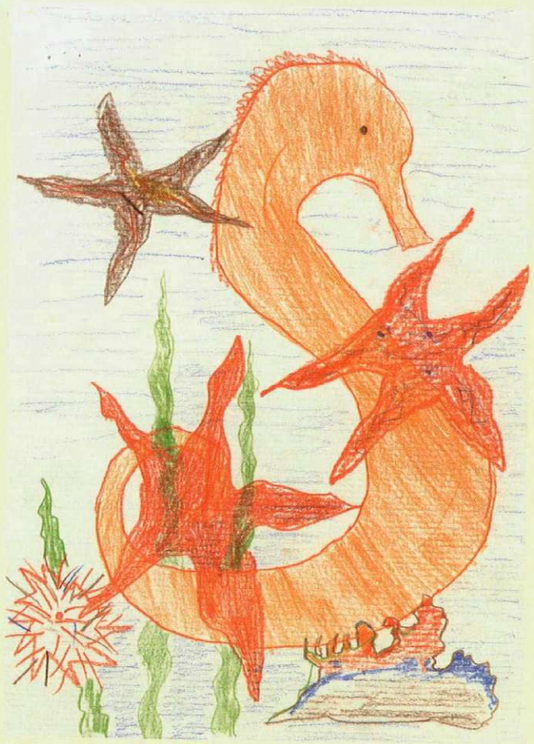
The marine environment contribution made by the EUR-OPA Major Hazards Agreement comprises two main aspects:
- devising machinery to foster Euro-Mediterranean co-operation, assisting risk management officials with decision-making through the EDRIM (*Electronic Discussion Group for Risk Management*) network, which makes new information technologies available, and updating relevant data by means of space techniques through the STRIM programme (*Space Technologies for Risk Management*);
- training activities (FORM-OSE Programme: European Programme of Training in the Field of Risk Sciences), research and consultancy work, drawing on a network of specialised Euro-Mediterranean centres in Algeria, Morocco, Spain, Portugal, France, Monaco, San Marino, Italy, Malta, Greece, Turkey, Bulgaria, Ukraine, Russia and Georgia; the European Observatory of Oceanology in Monaco specialises in identifying the precursors of major sources of marine pollution, while the Euro-Mediterranean Centre in Malta focuses on the particular hazards facing islands.

J.-P. Massué
Executive Secretary
EUR-OPA Major Hazards Agreement
Council of Europe

First prize, Hélène Pineau, France, 12 years old



Second prize, Raquel Filipa Ferreira Santos, Portugal, 7 years old



Third prize, Pedro Filipe Pinto Pinheiro, Portugal, 8 years old

Why is it important that the Bern Convention protects marine species?

Because if not they will dissapear and other children cannot meet them.
Maria Sofia Bajanca Lurado, 6 years old, Portugal.

Because They do Not Know how To defend Themselves.
Joana Vinagre Perpetuo, 5 years old, Portugal.

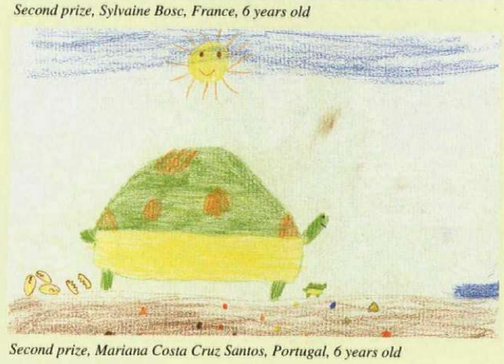
Because the starfish is a jewel of the sea, it lives, it is pretty.
Frédérique Bulon, 6 years old, Belgium

We must protect the turtle because it is slow.
Nerea Grande Martinez, 8 years old, Spain.

We must protect the seagulls because they clean the oceans.
João Rodrigo versos de sousa 6 years old, Portugal

Because the turtles witch sleep under the trees are in dunger and the police should help them, they are pretty.
Olof Hommeberg, 6 years old, Sweden

Second prize, Sylvaine Bosc, France, 6 years old



Second prize, Mariana Costa Cruz Santos, Portugal, 6 years old

I LIKE WALES VERY MUCH BECAUSE THEY ARE BIG and BECAUSE MEN KILL THEM WITHOUT REASON.

MARIANA NETO AFONSO SERRANO, 6 YEARS OLD PORTUGAL.

We must protect the sea urchins because there aren't very many and if there is contamination, they will all die. What's more, they are delicious.
Beatriz López Bermúdez, 8 years old, Spain

J.P. Doody

Limestone cliff, Greece, an important habitat for several species such as the Eleonora's falcon

The European Coastal and Marine Ecological Network

J. Pat Doody

The European Coastal and Marine Ecological Network (ECMEN) uses several migratory species to describe the nature of networks and illustrate the way in which the concept can be used to help conserve the biological diversity of Europe's coastal and marine areas. This paper summarises the conclusions from a detailed report (*Doody et al. 1998*) prepared as a contribution to Action Theme 1 of the Pan-European Biological and Landscape Diversity Strategy.

The illustrative species

The illustrative species have a European (or wider) distribution, encompassing more than one regional sea, different life histories and include marine mammals, fish and migrating birds breeding and/or feeding in coastal locations.

The knot

This subspecies of the knot (*Calidris canutus islandica*) breeds on high Arctic tundra where it feeds on seeds and insects. After breeding the majority of the population migrates southwards, pausing briefly to "refuel" in western Iceland and also along the coast of northern Norway on its return journey in the spring. Throughout the winter they feed on marine molluscs in ice-free muddy British estuaries and in the Wadden Sea. In these areas tidal land has been lost through enclosure for agriculture, the development of ports and harbours and urbanisation. Engineering structures fix the position of the shoreline protecting life and property from erosion and flooding. However at the same time relative sea level is rising causing the shoreline to steepen. This has implications for the knot (and other wading birds of estuaries) as their feeding areas continue to be "squeezed" between these two forces. In south-east England a number of experimental sites have been established where a tactical retreat has been engineered by the responsible statutory Government Agencies. The aim is to recreate tidal land and at the same time provide natural sea defences (mudflats and saltmarsh), meeting the requirements of the conservationist and the coastal engineer.

Puffins and loggerhead sea turtles

The puffin (*Fratercula arctica*) and the loggerhead sea turtle (*Caretta caretta*) are both widely dispersed species which spend a major proportion of their lives at sea, only returning "migrating" to land to breed. The puffin is a seabird of northern waters which nests in crevices on sea cliffs and in burrows on islands away from ground predators. The recent decline in the breeding population follows a long-term trend. This appears to be due, in part, to the apparent depletion in numbers of small fish (sand eels) through over-fishing and collapsing nesting burrows aggravated by overgrazing. The loggerhead sea turtle has also declined throughout its breeding range. Tourist developments, fishing activity, pollution and egg harvesting are amongst the contributory factors.

Why a coastal and marine network?

The identification and designation of protected areas has been the traditional conservation response both nationally and internationally in the face of loss or damage to wildlife and wildlife habitats. However, this approach can only be partially successful in securing conservation of widespread mobile species. Networks of coastal and marine species include sequence of sites for breeding and feeding and/or "corridors" and "stepping stones" during migration. Their geographical range and the fact that some species may be widely dispersed during part or most of their life cycle also means many important areas lie outside protected sites.

The knot shows how decisions made in one policy area (coastal protection in south-east England) can restore lost habitat and at a local scale help secure wintering populations of a variety of waterfowl. However, building on shoreline "refuelling" habitats in Norway or developments in the Arctic may put pressure on the species elsewhere in its range.

Changes in land management practice and the availability of fish prey may be critical to the survival of some seabirds. Both the Common Agricultural Policy and the Common Fisheries Policy, which are outside the control of local management, can influence both of these. Pollution from land or at sea may be one of a number of cumulative impacts, which affect marine animals throughout their range.

The majority of conservation issues affecting migratory species are covered by existing legislative and/or institutional mechanisms. However, these often operate in isolation or are geographically restricted in relation to the needs of the species. The ECMEN study provides an ecological framework for establishing more effective links between them, both within the EU and beyond. ■

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Recent OECD experience

Tom Jones

In 1992, the OECD approved a Recommendation on Integrated Coastal Zone Management (ICZM). In general, this recommendation called for better integration of policy objectives, instruments, and implementation activities. It also called for special attention to be paid to the sustainable management of ocean fisheries and tourism. Finally, it required a review of progress in implementing the recommendation to be carried out within five years. A survey was therefore conducted in 1996, to which 18 OECD countries (plus the European Commission) responded.

Survey results

Coastal zone issues, as well as the policies designed to address them, differ widely across member countries. This implies that countries will approach the harmonisation and integration of coastal policies from their unique national perspectives, which makes it difficult to generalise about progress towards ICZM.

Although only about half of OECD coastal countries have specific legislation to promote ICZM objectives, other legislation which does not refer explicitly to the coastal zone is often used to achieve what are *de facto* ICZM objectives (e.g. land-use planning, water quality objectives).

There is also evidence that ICZM principles are slowly being developed from the "bottom up", especially in the context of pilot-scale initiatives in local areas. Even though these local projects do not yet form a major part of national ICZM frameworks, their emergence is encouraging, because they attempt to apply ICZM principles at the level at which implementation will ultimately have to occur.

In most countries, responsibility for promoting ICZM is shared among national and sub-national authorities. The national level usually sets the broad objectives and may be involved in administering specific sectoral projects. The sub-national level normally plays a key role in implementing ICZM initiatives and is increasingly important in the initial design of these programmes.

Most countries also report the existence of some type of institutional mechanism to co-ordinate coastal policies. This is usually either a government agency with sectoral interests (e.g. Transport Ministry), or a "generic" (as opposed to an ICZM-focused) policy co-ordination committee. Typically, these are co-ordinating committees, without executive power.

Most environmental indicators generated for the coastal zone are still physical or biological in nature (e.g. bathing water quality), rather than focused on management processes. There is evidence, however, that many countries are increasing their efforts to develop broader indicators that would allow an assessment of whether different uses of the coastal zone are actually sustainable over the long term.

Key policy instruments

All countries report that environmental impact assessment (EIA) procedures have been established which apply to the coastal zone. However, these procedures are still often not very effective in achieving their objectives. Official EIA activities still focus more on physical or biological factors and less on the socio-economic elements that would normally be expected to reflect more integrated ICZM activities.

On the other hand, other key policy instruments, such as the Polluter Pays and User Pays Principles, or legally enforceable ICZM objectives, have been implemented only partially. For example, there has been some progress toward "full-cost pricing" in the water sector, but this trend is not being generally observed in the coastal zone.

Many fish stocks are still being exploited beyond sustainable levels. However, it is useful to distinguish here between sedentary fish species (which are generally perceived to be well managed) and international migratory stocks (where management is often regarded as being less than totally successful).

Only five OECD countries reported having established national level co-ordination mechanisms to ensure the sustainable development of tourism. Most countries apparently feel that tourism development and its associated environmental impacts are best considered at the local level.

Most countries also participate in international agreements related to the coastal zone, but few of these agreements include the preparation, implementation and monitoring of an integrated action plan for coastal zone management (as opposed to pollution control alone).

State of progress

Overall, there appears to have been some progress in OECD countries toward reducing "point" sources of coastal pollution; applying land-use planning techniques to the coastal zone; and providing public access to beaches. Progress is also being reported at the international level (e.g. implementation of Agenda 21, expansion of the pan-European view of coastal zone problems).

On the other hand, it is difficult to avoid the conclusion that much of this progress toward better ICZM is occurring at the planning level, rather than in terms of implementation. There has also been a noticeable lack of progress on resolving both offshore and "non-point source" management problems. ■

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The opinions expressed in this paper are those of the author and do not necessarily reflect the views of either the OECD Secretariat or its member countries.

Friess-Irrmann

An European strategy for our coastal zones

Ritt Bjerregaard

More people than ever are attracted to the coasts for recreation and holidays. Some 68 million of Europe's 360 million people live close to the European coastline. In concentration this varies from 3% in Belgium to 70% in Denmark, depending on the season. But at the same time, 90 000 km of coastline in Europe have another role, which is not as flattering as the recreational.

The coasts are also final outlets for pollution, much of it generated far inland. Urbanisation, manufacturing, harbour activities, fishing, tourism and leisure are just a few of the culprits that have an impact on the coastal zones and our coastal ecosystems. Currently, the greatest obstacle to protecting the coastal environment is the huge variety of users and other interested parties at regional, national and international level.

Necessary measures

As pressure on the coastal zones has built up and their natural and cultural resources have been degraded, the need for a more coherent, co-ordinated and long-term approach to their management has become increasingly apparent. Over the years, in response to this need, the European Commission has drawn up and applied an impressive series of measures. The first of these dates from 1973 and relates to the protection of coastal zones. Another European initiative is the Fifth Environmental Action Programme, which in 1993 argued for the formulation of a common strategy for integrated coastline management.

A further example is the European Blue Flag Campaign, which targeted the best environmentally managed beaches.

The ICZM programme

In 1995 the European Commission launched the Demonstration Programme on Integrated Coastal Zone Management - ICZM.

This programme is a joint initiative of DG XI (Environment, Nuclear Safety and Civil Protection), DG XIV (Fisheries) and DG XVI (Regional Policy and Cohesion). The programme has two objectives: to exchange technical information on best practice in coastal zone management and to animate a broad debate among the various actors involved in the planning and implementation of coastal zone management, including those at the local, regional, national and Community levels.

At the heart of the ICZM Demonstration Programme are 35 demonstration projects selected to represent the diversity of conditions and issues in coastal zones across the EU. With the exception of one project entirely funded by the Norwegian government, these demonstration projects are co-funded by Community financial instruments: LIFE-Environment, the TERRA and PHARE programmes. Each project is experimenting with an innovative approach to management of the coastal zone.

The European Commission will later issue a series of study reports, in collaboration with the European Environment Agency.

A strategy in preparation

The Commission is also preparing a discussion document, for distribution in January 1999, provisionally entitled *Towards a European strategy for integrated coastal zone management*. This document will present both technical information on best practice and a series of policy options. A series of fora are planned to generate feedback from regional and sectorial actors. It is my hope that these activities will culminate in a consensus on the fundamental elements necessary for a European strategy on the sustainable management of our coastal zones, so that we can continue to use our coasts as recreational areas for humans and for wildlife and plants. ■

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Fishing: a new EU decision

Hélène Bours

On 8 June 1998, the European Union Fisheries Ministers adopted a ban on the use of drift-nets. It will take effect on 1 January 2002 and applies to a number of species, including tuna, swordfish and billfish, certain sharks and all cephalopods, excluding salmon. This decision is based on two major motivations. On the one hand, it has been widely demonstrated that drift-nets are unselective. More than 80% of the catch in the Italian drift-net for swordfish in the Mediterranean Sea is secondary. Data collected by French scientists in the Northeast Atlantic list 48 species caught in addition to the target species: albacore tuna. On the other hand, the 2.5 km length limit imposed by the EU since 1992 has proven difficult or impossible to enforce.

The EU will provide funding for reconversion to more selective fishing gears. Conversion must be based on strict environmental criteria in order to avoid a repetition of the mistake made by introducing drift-nets without prior assessment of their environmental and social impact.

This decision must be understood as a part of a wider international movement towards responsible fishing and the implementation of the precautionary approach to fisheries management called for by the FAO Code of Conduct for Responsible Fisheries and the 1995 United Nations Agreement on the conservation and management of straddling and highly migratory fish stocks.

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Scottish countryside

EUCC and Green Islands 2000

Alan Pickaver

The European Union for Coastal Conservation (EUCC) is dedicated to preserve the integrity and natural diversity of European coastlines and is the largest coastal network in Europe. In 1993, EUCC prepared two new policies for coastal conservation for the next century:
- the Pan-European Code of Conduct for Coastal Zones;
- the European Coastal and Marine Ecological Network (ECMEN).

Both are within the framework of the Pan-European Biological and Landscape Diversity Strategy, under the auspices of the Council of Europe and UNEP. More information about both initiatives can be found on pages 14 and 18 of this issue.

Now it is most important to put the Code of Conduct and ECMEN ideas into practice. To this end, EUCC has developed a strategy called Green Islands 2000. This is an ambitious, collaborative project aimed at bringing together 2000 partner organisations to work together in the 2000 most important coastal areas of Europe in a Green Islands Network. This network, including local communities, site managers, environmental experts, NGOs and planning agencies will assume responsibility for the conservation and sustainable development of these "green islands" within the European coastal zone.

Organisations in nine countries already participate in Green Islands projects. These are primarily demonstration field projects in central and eastern Europe. For example, in the Lithuanian Nemunas delta, EUCC co-operates with private farmers to improve nature management and the income of local farmers; in Latvia, partners have helped improve the hydrology of Kemiri National Park; in Poland, Russia and Estonia, schools and local communities have been involved in educational programmes on conservation issues in the Oder Delta, Yuntolovsky reserve and Matsalu Bay Reserve.

As a follow-up to the Code of Conduct, the EUCC has started the preparation of a European Coastal Guide. This Guide will be a demand-driven, interactive mechanism to assist members of the Green Islands Network in finding the best information for their work. It will include data concerning the latest trends and developments in coastal policy and management, contacts, best practice case studies, coastal ecology, the Code of Conduct, subsidies and coastal conservation measures. ■

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The Blue Flag Campaign

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The European Blue Flag was introduced in 1987 to recognise beaches and marinas which were well managed and promoted care for the environment. The Blue Flag Campaign is the oldest of the programmes co-ordinated by FEEE (Foundation for Environmental Education in Europe). Originally ten countries were involved but this has now grown to 21. In 1998 there were a total of 1 927 beaches and 571 marinas flying the Blue Flag.

The high profile of the campaign makes it an ideal tool to change visitors' environmental behaviour and raise the awareness of actors in environment and tourism. The Blue Flag Campaign offers a framework for local debate and organisation of coastal resource management. In many countries local level participation is co-ordinated by a Blue Flag committee. The standards set by the Blue Flag enable it to be used as part of a systematic approach specific to the management of beach and marina environments. Existing activities can be assessed in relation to the objectives set and appropriate action taken.

A driving force

In addition to promoting local environmental work and coastal resource management, the campaign aims to promote the integration of environmental concerns in decision-making and management at all levels. It therefore becomes a driver of policy in its four main areas of concern: environmental communication; environmental management; water quality; safety and services.

The benefits of the campaign are commonly acknowledged. It complies with the key checkpoints for eco-label schemes of the recent UNEP report Eco-labels in the tourism industry. Its success derives from:
- raising environmental awareness of the main stakeholders in tourism;
- involvement in environmental activities of small and medium-sized enterprises;
- improving the environmental performance in deliberately targeted areas;
- providing environmental information for consumers, thus helping them make an informed choice.

Incontestable recognition

In a survey of countries participating in the Blue Flag Campaign, 70-75% of visitors were said to prefer Blue Flag sites. This is evidence that the Blue Flag is a trusted symbol of high environmental standards. In the same survey 89% of those surveyed felt that it positively promoted tourism.

The campaign is also an ideal way to increase communications between the local authorities and the community as part of Agenda 21 and with existing and proposed participation in environmental management schemes, all of which work together to benefit tourism throughout Europe. ■

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Midnight sun on the ice field

The Euro-Arctic region of Russia
Situation and prospects

Alvin I. Virin and Vladimir V. Denisov

The coastline of the Kola Peninsula, the Barents Sea and the White Sea is a region of intense economic activity and the resultant combination of extremely variable natural and human factors places the environment (both land and sea) under enormous strain. Another important point is that the legal status of the coastal zone varies greatly.

A project on integrated coastal zone management was started in 1995 under the auspices of the Russian Federation's Ministry of Science. Since 1997 the project has provided a framework for introducing and encouraging this approach in the north of the country. In addition the United Nations is carrying out a northern Europe project on sustainable development in the Murmansk region, the first stage of which is already complete.

This article describes the results achieved by these projects and the prospects for future research.

In connection with sustainable development in coastal zones, frequent recourse is made to the concept of Integrated Coastal Zone Management (ICZM)[1].

The regional stakes

There are various issues for the Euro-Arctic region of Russia:
- conservation of marine biological resources such as fish, invertebrates and seaweed (in relation to fishing, processing and breeding);
- as safe as possible exploration, extraction and transport of petroleum products, minerals and other coastal resources;
- optimisation of shipping movement and development of coastal infrastructure (eg the "great North passage" and new ports at Pechenga, Murmansk and Varandeya);
- introduction of development strategies reconciling ecological with economic concerns in marine economic sectors where conflict is likely (eg between fishing and offshore petroleum and gas extraction).

It is also possible to adopt an integrated approach in other areas of development such as coastal fishing, protecting the ecology (in particular against nuclear radiation), border defence and siting military installations in the north, aquaculture, special conservation zones and restoration of coastal villages.

The importance of zoning

The first outcome of the research was that the Murmansk Atlantic Coastal Zone (MACZ) - which covers a large area of the Barents Sea and the Kola Peninsula - was demarcated on the basis of ecological, geographical, technological and administrative factors so that the area under management was clear.

The MACZ was then sub-divided into smaller zones so that priority sites could be identified. These include districts in the vicinity of potentially hazardous industrial plants. The Kandalaksha Reserve was one area selected, with its three distinct geographical sub-zones comprising the coastline, the islands in the Barents Sea and those in the White Sea (the Ayonovy Islands, the Seven Islands and the Gulf of Kandalaksha). By applying the criterion of nature conservation plus socio-economic pressures, it was possible to identify three separate sites for introduction of modern ecological planning techniques - Varanger Fjord, East Murman and the Gulf of Kandalaksha.

Given systematic adoption of the main principles of integrated management, a gradual approach is the most realistic way of ensuring sustainable development in the coastal zones of the Barents Sea and the White Sea. It requires particular attention to inter-authority co-ordination and to improving the legal basis and regional information networks. ■

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[1] There are four basic components to ICZM: geography (special regional characteristics), timespan (goals and management strategies are long-term ones), a sectoral component (analysis of and allowance for private interests and resource-user groups), and politics (a democratic basis and consultation of all political, socio-economic and public-interest groups).

Around the Baltic Sea
National legislation and policies

Lauri Nordberg

Some of the states around the Baltic Sea have coastal legislation dating back to the first half of this century. In the 1990s the legislation has been much developed and today it can be said that the use of the coast as a natural resource is regulated in all states.

The original reason for legislation concerning the coast was to safeguard public access to the coast and along the coastline for recreational purposes. In the southern part of the Baltic, the fight against erosion was another important reason for laws and regulations. Later, nature conservation became an important issue and protection of coastal habitats for wild flora and fauna added to the reasons for legislation.

The policies of the Baltic Sea states are also visible in some international commitments they have signed. HELCOM recommendations, in particular the 1994 recommendation concerning the protection of the coastal strip, as well as the 1996 common recommendations for spatial planning of the coastal zone in the Baltic Sea Region, have in some states influenced the legislation.

Protection of the coastal strip

All states now have some form of legislation for the protection of the coastal strip outside urban areas and existing settlements. Denmark and Latvia have the largest protected strip extending 300 m landwards from the high-water mark. In most parts of the German and Polish coastline, the strictly protected belt is 200 m. In other states it varies. In Sweden about 70% of the coastline is classified as "coast of national interest" where the protected belt usually extends inland 200-300 m, elsewhere it is 100 m. Estonia has a protected belt of 200 m on the islands and 100 m on the mainland. In Finland development is controlled by a planning requirement on a strip usually 100 m, but sometimes up to 200 m from the coastline. In many countries, such as Denmark and Estonia, the exact delimitation of the protected belt will be determined after a comprehensive coastal survey or during land use planning.

Lithuania has fairly rigorous legislation in order to control development on its short coastline. In Russia, the control is done mostly by administrative regulations but a federal act, which foresees further regional legislation, is being debated.

Habitat protection

Another legislative approach is habitat protection. Germany and Denmark, in particular, have a long list of habitat types which are generally protected by law. In Germany protected habitats, often to be found on the coast, include dunes and sand banks, cliffs and steep shores, heaths, coastal meadows, coastal salt marshes, reedbeds, dry grasslands, wet forests, natural creeks and rivers including their banks. Also, Sweden and Finland have general habitat protection for some coastal habitat types.

The southern and south-eastern Baltic Sea countries from Denmark to Estonia, have fairly strict control of forestry in the coastal zone in order to fight erosion and/or for landscape protection. Concerning farming, there are less restrictions but incentives are often used to discourage intensive farming.

National differences

Many states allow derogations from the above-mentioned legislation. In particular, in those states where the right to grant derogations has been given to local authorities, the aims of the legislation can be considerably watered down.

In the densely populated southern Baltic countries, one problem has been urban encroachment into coastal areas that have remained natural. Denmark has established a 3-km wide planning zone along the coast. In this zone, new development is allowed only when there is a functional justification for a location on or near the coast. Urban development should be directed, not horizontally along the coast, but to the hinterland. New areas for summer houses are not allowed at all.

In Finland and Sweden the main problem has been the growth in the number of private summer houses along the coast. They have tended to occupy large stretches of the coastline and cut off public access to it. While it prevents future generations from satisfying their needs for recreation on the coast, this development has been fundamentally against the principles of sustainable development. The stated policy in both countries has been to ensure sustainable use of the coastal resources. In practice, however, new summer houses are still allowed on the coast by municipal plans and derogations, in particular in Finland.

In Estonia, Latvia and Lithuania, during Soviet time, the use of the coastal areas was strictly restricted for military reasons. Therefore, they have remained mostly intact and have a high biodiversity. Land reform, where land is returned to its former owners, can now threaten these areas. The expressed policy in these states has been that the natural and recreational values of the coast must be preserved. New development is usually allowed only in existing settlements and where a house already existed in the 1930s. ■

Cliff of guillemots, puffins and razorbills

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Conservatoire du Littoral

J.-L. Klein

Sea holly

Conservancy and Coastline Act in France

Christine Lazerges

Let us imagine for a moment that human beings have become rational and politicians are wise and far-sighted. Citizens have rediscovered the joys of living together with due regard to one another's needs. It is the year 2030. People remember the end of the 20th century with a certain feeling of horror: the greenhouse effect, atmospheric pollution, the thorny problem of waste treatment, the dangers of radioactivity, the maddening noise, seas that had once been bountiful and are now exhausted, denatured foods, disfigured landscapes, and so on.

That was yesterday. But what a lot of work, energy and joint action were needed in order to remedy the situation.

Let us come back to the present. Nobody disputes that the situation is extremely alarming. This is no time for procrastination, philosophical questions or legal quibbles.

The world's coastlines have probably been damaged and impoverished more in the last 100 years than over the past two millennia. Economic progress - which is unevenly distributed in global terms - is not the only explanation. We must react as a matter of urgency.

Role of the Conservancy

The Conservancy for Coasts and Lake Shores (Conservatoire de l'espace littoral et des rivages lacustres) was set up in France in 1975. By controlling land ownership, it now ensures the protection of 54 000 ha - 400 outstanding sites covering 10% of the coast, or 738 km of shoreline. The French Government's aim of protecting the remaining "wild third" should result in the Conservancy's building up a heritage of 200 000 ha over the next few decades. Construction is prohibited on Conservancy land, which is inalienable and belongs to the nation. It is open to the public, and serves as the main point of contact with nature for French people and their visitors.

The Coastline Act (loi Littoral), of 3 January 1986, strengthens the statutory protection: building is prohibited within a 100-metre strip along the shoreline, in major natural marine areas and outside existing development zones.

Management plans

Does the answer lie in acquiring vulnerable and endangered areas, as the Conservancy does, or in laying down protective regulations? Different policies must be pursued simultaneously. Far from being mutually exclusive, they complement each other. It is also time to reform fiscal policies so as to penalise dischargers of pollutants and make them contribute to sustainable development, and to provide effective help for those seeking to conserve the environment.

Managing the natural environment calls for imagination: the work is one of restoration, rehabilitation, reallocation and creation. Management requires an increasingly wide range of complex skills. "Ecological engineering" is developing rapidly thanks to the contribution made by scientists, nature conservation associations and field workers. The Conservancy does not manage the land it owns directly. On the basis of detailed agreements based on preliminary ecological assessments and management plans, management is delegated to the local authorities concerned, associations and farmers, who can prove valuable allies in the conservation of natural environments. At the same time, a new approach to decision-making procedures is often necessary. While it is the role of technicians to say "how" something can be done, all parties must be involved in taking the decisions as to "what?", "for whom?" and "at what cost?". It is unrealistic to try and conserve nature and shorelines without the co-operation and goodwill of the entire population. Major educational efforts aimed at children and adults are being made.

Conservancy land is an obvious candidate for registration with the Natura 2000 network. Most of it fulfils the criteria laid down in the European directives on conservation of wild fauna and habitats. The Conservancy will, I promise, be an active partner in the network.

International co-operation

Conservation of shorelines is a European, indeed a global, challenge. The Conservancy for Coasts and Lake Shores, a founding member of the Eurosite association, plays an active role in the World Conservation Union (IUCN) and the international network of the Ramsar Convention on Wetlands. The number of projects and the amount of consultancy work undertaken in other countries are also increasing. At the request of third countries, it works in close co-operation with all the coastal states of the Mediterranean and with our eastern European neighbours such as Romania and Hungary. It is carrying out an increasing number of missions in Africa (in Mauritania, the Ivory Coast and other countries). It has recently been approached by Vietnam, Japan and Uruguay. I hope that such co-operation will continue, and that my dream will one day be realised. ■

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Integrated island management in Greece

Harris Coccossis

Islands, particularly the smaller ones, constitute exemplary cases for integrated coastal zone management from several perspectives. They are often characterised by high biodiversity and strong cultural identities, limited resources (human and natural), limited markets, vulnerability to external factors and a delicate balance between society, economy and the environment. By most definitions and criteria (functional or administrative) the entire island territory is one coastal zone. In theory its size and its clear delimitation of geographical space makes concertation mechanisms manageable and the actors easier to identify. In practice, weak institutional structures and the absence of strong actors may render such tasks dubious. Policy co-ordination leaves something to be desired in as much as it is possible. Because of the strong interdependence between natural and human ecosystems, small islands provide unique opportunities for applying integrated approaches as well as for testing sustainable development strategies.

Key principles

Certain key principles emerge as essential to integrated coastal zone management on islands:
- integration of social and economic development policies with environmental management;
- sustainable development emphasis introducing the long-term perspective in environmental management and socio-economic development;
- protection of local identity, special assets and critical resources as key elements in a sustainable development strategy;
- provision of higher order quality services in basic life sectors (health, education, mobility);
- strong local development basis of planning with focus on capacities of local systems (social/cultural, economic, environmental, infrastructure) to sustain growth;
- growth control and diffusion of development pressures through the creation of development opportunities for hinterland areas.

The special attention needed for islands is reflected in the activities of many international organisations and other agencies which deal with environmental management and development planning issues (i.e. Agenda 21, the programmes of UNEP, UNESCO/CSI, Council of Europe, European Union, etc.

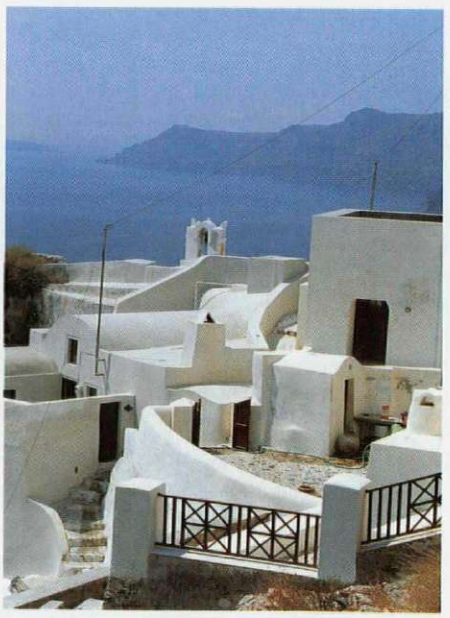
Specificity of islands

Islands constitute a unique element of the Greek territory, representing over 50% of the entire coastline. Over the centuries they have faced periods of social, economic and cultural growth and wealth but also hard times of economic and cultural decline. The majority of them still face significant problems of weakened social and economic structures and abandonment of resources. A few have better prospects due to tourism, but still face important risks of economic monoculture, increased dependence on imports and pressures on local human and natural resources, mostly through urban development dispersion along the coasts.

Cyclades is a typical example, a group of 24 islands at the centre of the Aegean archipelago. Tourism provides unique opportunities for development but also creates significant pressures on the island economies, societies and resources which might threaten the very bases on which it rests: the natural and built environment. Patterns of development and environmental pressures differ from one island to another. For all of them most of the attractions, development opportunities and pressures are concentrated on the coastal strip. What happens on the coastal strip affects directly the entire island in terms of both natural (e.g. water, energy, land) and human (e.g. labour) resources. Local institutional structures are too weak to cope with complex problems, while their small size and geographical dispersion compound the effects on governance mechanisms.

The Cyclades programme

To face the challenges and pressures from/and for development on environmental quality and resources, a special programme has been set up as part of the European Demonstration Programme for Integrated Coastal Zone Management (ICZM)



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The programme concerns the development of innovative co-operation for concerted ICZM actions in ten of the islands of Cyclades, on the basis of principles of sustainable development through the establishment of an island network of public and private actors at the local, regional and national level and the support of local institutions to anticipate and plan for common environmental/development problems.

Co-operation is sought within and among specific sub-groups of islands on the basis of common key features: co-existence of extractive industry and developing tourism; intense tourism development; same sub-regional administrative authority (county); very small islands with some tourism and one-island level co-operation.

The programme involves the network participants with the technical/scientific support from the University of the Aegean in developing concerted actions through the analysis of environment/development conflicts and opportunities, the examination of strategies for sustainable development and the adoption of an action plan for integrated coastal zone management. ■

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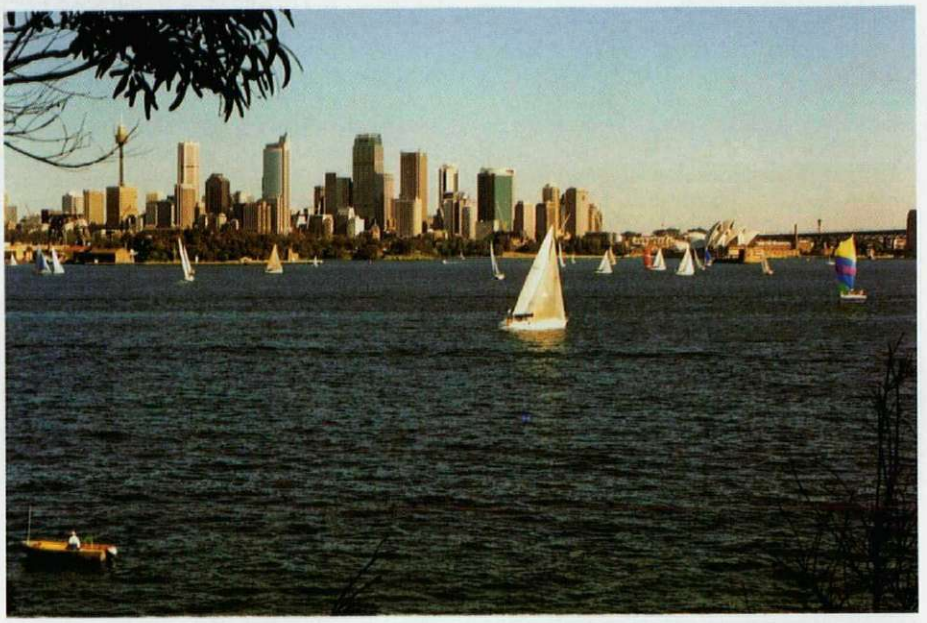
A non-European example
Coastal management in Australia

Catherine Giraud-Kinley

Australia has over 36 000 km of coastal zones, with 86% of the country's 17 million inhabitants living near the coast. Growing problems of marine pollution are now arising for a number of urban centres - Australian provincial state capitals - located in the coastal areas. Australia's coastal zones also exhibit remarkable biological diversity: Australia has the third largest wetland area in the world, and the widest range of sea grass species in the world.



C. Giraud-Kinley

Sydney Bay

Distribution of responsibilities

The political and administrative structure of the Australian continent is that of a federal state and eight provincial states, the latter having primary responsibility for the environment. With regard to the management of coastal zones, the jurisdiction of the provincial states covers an area extending to three nautical miles offshore, beyond which the federal state has jurisdiction. At least in theory, the federal state retains the right to promulgate laws concerning coastal zones; in practice, however, the current policy of "co-operative federalism" means that the federal government consults the states before taking any action, and particularly before passing legislation. Similarly, the role played by the federal state is primarily one of encouragement: it provides funding for conservation initiatives originating from the provincial states. This paper confines itself to a consideration of recent federal government initiatives in the area of sustainable management of coastal zones.

The Natural Heritage Trust and the Coasts and Clean Seas initiative

In 1996, the federal government set up a major initiative in the area of coastal zone management: the Natural Heritage Trust, which seeks to secure financial assistance for regional and local environmental conservation initiatives, including the sustainable management of coastal zones[1]. The Trust has undertaken to fund the Coasts and Clean Seas initiative to the tune of 125 million Australian dollars over the five-year period from 1996 to 2000. The funding is targeted at projects to combat marine pollution and ensure the maintenance of water quality in coastal zones[2]. The Coasts and Clean Seas initiative has thus set up a number of programmes, whose main aims and conditions need to be explained.

Three recent programmes

Three programmes have been set up: clean seas, conservation of marine species and coastal and maritime development.

A sum of 51 million dollars, more than half the total budget of the Coasts and Clean Seas initiative, has been allocated to the Clean Seas Programme, whose main aim is to tackle marine and coastal pollution, particularly from land-based sources. Funding is available for projects which, among other things[3]:
- introduce innovative ways of managing the discharge of waste water into the sea;
- develop new Australian technologies in this area;
- rehabilitate polluted areas.

Eight million dollars have also been earmarked for the Marine Species Conservation Programme and for funding projects which will make it possible, for example:
- identify and attenuate threats to vulnerable marine species, including dugongs and other marine mammals, turtles, birds and fish;
- to minimise the adverse effects of commercial and recreational activities such as fishing on these species.

A sum of 7.6 million dollars has been set aside to encourage integrated coastal and maritime development which takes account of social, economic and environmental factors relevant to coastal planning. The programme aims to minimise the adverse effects of development and land-based pollution on coastal zones. Multi-purpose management plans are to be drawn up to this end, involving local communities, government and the private sector.

The federal government's policy is wholly laudable, but these conservation incentives need to be backed up by a proactive federal legislative policy that sets a minimum standard of protection for coastal zones with which provincial states have to comply. ■

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[1] A total of Australian $1.25 billion has been set aside to address the following environmental problems: conservation of indigenous vegetation, rivers, biodiversity, soil and coasts and oceans.

[2] In particular, the assistance is targeted at the reduction of land-based pollution caused by storm water pollution and assessment of the impact of the discharge of sludge and waste water - treated domestic waste - into the marine and coastal environment.

[3] The recipients of such assistance may be associations, municipalities or provincial government agencies.

The CPMR: interregional solidarity
"The sea - Europe's future"

Xavier Gizard

Set up in 1973 on the Brittany region's initiative, the Conference of Peripheral Maritime Regions of Europe (CPMR) now comprises 122 local and regional authorities - mostly regions - in 16 European states. It is active in all the "European" seas from the Baltic to the Mediterranean, including the Black Sea with the recent accession of the Constanta region (Romania). Together, these regions have a combined population of over 150 million, cover over 40% of European Community territory and include over 70% of Europe's coastline. Its sheer size and the need for mutual support at grass-roots level led the CPMR to divide itself into regional sub-units. Five geographical committees were set up - for the Atlantic seaboard, the Mediterranean, the North Sea, the Baltic Sea and the islands; it is primarily within these committees that interregional solidarity, which is a distinctive feature of CPMR action, comes into play.

Past difficulties

In its first few years, the CPMR found itself facing the problems caused by oil spills and, more generally, the need to focus more on the environment in managing the coastline. It rapidly decided that a high-quality environment was one of the major keys to improved development of the maritime regions, which were even then, with very few exceptions, the "forgotten ones" of growth.

Political action was taken in an effort to put this right. Specifically, the European Coastal Charter, representing a genuine commitment by maritime regions to introduce integrated, geographically balanced development, was adopted in 1981. The charter calls for co-ordination of sectoral policies and insists that coherent, comparable data are needed to deal with issues which must plainly be tackled at interregional level.

For a long time, implementation of these principles was hampered by lack of commitment, confusion concerning the issues, the sluggishness of the authorities' traditional operating methods, a shortage of data and of methods and tools for analysis and action, poor policy co-ordination and, perhaps above all, a development model that favoured Europe's developed central regions to such an extent that the continent was effectively "turning its back on the sea".

Current trends

Several points need making here. Firstly, regions now need reference areas outside, as well as inside, their national contexts, and a better territorial balance must be achieved in Europe by enhancing the development potential of outlying areas. This is confirmed by the number of accessions to the CPMR in recent years (14 new members in 1996 and 22 in 1997): it really looks as if European integration necessarily involves territorial realignment, with old co-operation areas coming into their own again. Secondly, progress has undeniably been made in fostering awareness of the territorial dimension of the conservation problems the maritime regions are now tackling - this is clear from the number of initiatives taken in this field and from the environmental dimension now included in all the European Commission's interregional co-operation programmes. Lastly, democratic decision-making processes are being consolidated: the regions are playing an ever-growing role and subsidiarity is beginning to take full effect.

Developing a "marine culture"

What remains to be done? For one thing, integrated coastal management initiatives should definitely be better co-ordinated, since there are now so many that paralysis has become a real threat. For another, local and regional authorities should be given more human, technical and financial resources, so that they can make the best possible job of discharging the responsibilities they have asked for, and are gradually being granted. Ties of solidarity between maritime regions are equally important, however, and need to be developed, since - over and above the pooling of experience and skills, the CPMR's co-operation programmes, and even the introduction of a development model based on territorial cohesion - they are united by a marine culture, in which space and time speak with one voice. ■

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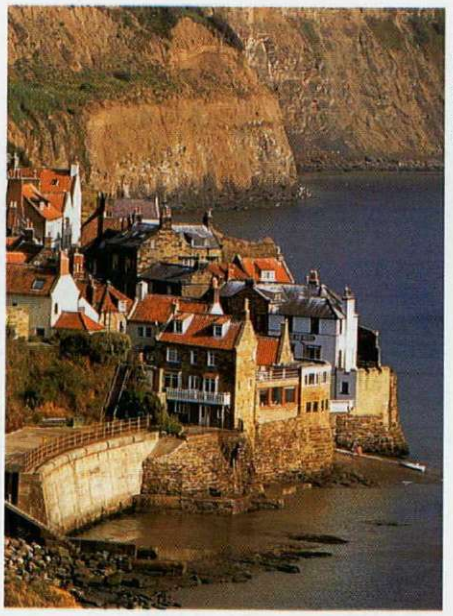
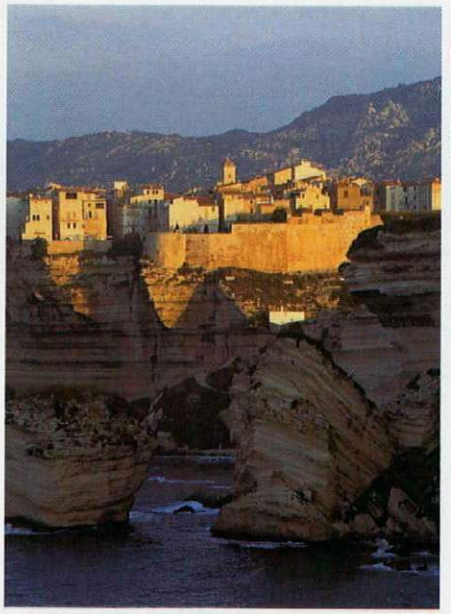


Frilet/Sipa Image

Bonifacio, France



S. Marchand/Phone

Conservation and development at the local level

The experience of Ustica, Italy

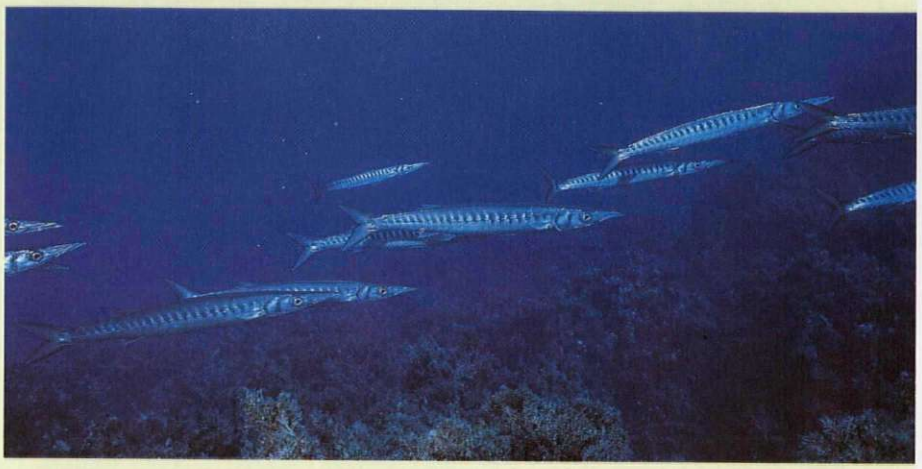
Roberto Sequi

The small island of Ustica, the remains of a group of marine volcanoes, is located 35 miles north of Palermo. It covers an area of 8 km², with a population of about 1 000 inhabitants. Its economy is based primarily on tourism, but remains firmly rooted in traditional farming and small-scale fishing. This little island's close ties with its population have helped to maintain its rural aspect, and its size has prevented the development of large-scale residential and transport facilities such as big hotels, ports and airports.

Set up by the Ministry of the Environment in 1986, with the direct participation of the island authorities, the Ustica Island Marine Nature Reserve now serves as a model for new protected marine areas in Italy. It has helped to transform the concept of environmental conservation into that of enhancement of natural resources; the whole of the island's population has taken part in an education campaign aimed at the rehabilitation and enhancement of its cultural, traditional and historical assets as an essential part of the environment.

In recent years, as well as an increase in educational visits in April and May, conference tourism connected with the scientific research activities of the marine reserve has been successfully developed. By extending the period during which Ustica Island's natural resources are used, travel operators have been able to step up their commercial activities, with a positive impact on employment.

The Ministry of the Environment, through the Central Inspectorate for Marine Conservation, has consistently monitored and supported the activities planned by the Ustica Marine Reserve, assisting the protected marine area in the pursuit of its official aims (raising awareness of the sea, ecological education and scientific research) and contributing to the purchase and rebuilding of the premises currently in use.



R. Sequi

The Reserve has various facilities, including a boat for observation of the seabed, a reception centre, an exhibition centre, an information centre, a Mediterranean aquarium and a marine laboratory.

The Ustica Marine Reserve's spirit of initiative has enabled it to obtain new facilities, which are being built with Community funding. The operational phases of the European GEOSTAR project, the largest underwater geophysical study undertaken by the European Community, are to begin in the Ustica region in 1999.

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Tomorrow's European coastal zones?

Prospects for the European coast

Stjepan Keckes

If the past is any guide for the future, the prospects for the European coast are not too bright. The European Environment Agency's comprehensive report on Europe's environment, completed in 1994, popularly known as *The Dobříš Assessment*, identified the threats to the coastal zone as one of the 12 "most significant" environmental problems of Europe. The Second Assessment, completed by the same Agency in 1998, reported for the European marine and coastal environment "some but insufficient" progress in policy development, but "continuing high pressure" and "poor and unfavourable state" of the environment.

In the lifetime of most people around now we have witnessed - and caused - greater change in European coastline than has occurred during the preceding millennium. According to a reliable estimate, only 30% of the 145 000 km of European coastline could be considered relatively free from man's assault, and the reckless destruction of the coastal environment created by natural processes over the past millennia continues, apparently unchecked. Extremely powerful economic interests, untempered by wider social considerations and blind to long-term social and developmental goals, are the key driving forces shaping today's "policies" towards "coastal development". Lofty decisions and the rhetoric of intergovernmental gatherings, warnings from concerned scientists and desperate outcries of environmentalists have, generally, only a minor impact on this process.

A sad situation

Two main factors contribute most directly to the present sad state of affairs: spreading coastal urbanisation and pressure from tourism. Approximately one-third of Europe's slightly more than 800 million people live within 50 km of the coast. The density of coastal resident population is on constant increase, especially in areas of southern Europe. Pressure from tourism on European coasts is disproportionately high. Europe attracts close to 60% of the global international tourists, most of them heading for the coast. The rate at which coastal land, a finite resource, is being consumed by urban and rural development is of particular concern. Many coastal strips, once famous for their scenic beauty, are irretrievably lost. Coastal wetlands are filled-up or drained in "reclamation" and "land-development" schemes or turned into marinas. Natural coastal habitats and ecosystems are disturbed and lost in many places altogether, giving way for construction of apartment complexes, family dwellings, summer homes and tourist accommodations and facilities, many of them of questionable aesthetic quality. Practically all estuaries of European

rivers have been radically changed by physical alterations and destruction of natural coastlines, resulting in considerable reduction of their original biological richness.

The serious problem of waste

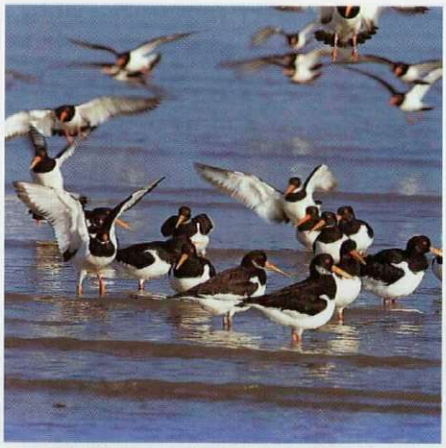
Waste entering the marine environment, although curbed in many parts of Europe by improved technological processes and better waste management practices, is still on the rise. Household waste, waste generated by tourist industry, and residues of intensively used agrochemicals are of particular concern. Nutrients, toxic chemicals, oxygen-demanding wastes, oil and litter are among the most common type of waste reaching European coastal waters. Aside from being the main cause for the degradation of water quality leading to impoverishment of coastal ecosystems, they are also a serious threat to public health through exposure to contaminated water or ingestion of contaminated seafood. Eutrophication, which may promote explosive algal blooms, seems to be on increase in many European coastal waters receiving excess of nutrients. It is probably among the most potentially damaging of all the many harmful human influences on coastal waters, both in terms of scale and consequences.

How far and for how long can such "development" go without endangering the natural systems that are necessary to keep coasts the hospitable, congenial place that we have heretofore been able to take for granted? While no one knows for sure what is the "carrying capacity" of our coastline, there are quality of life issues, ethical considerations and practical matters, such as the uncertainty about how much stress natural systems can take before changes become irreversible. How much congestion can be tolerated? How many natural habitats, how much of the coastal wilderness, are we willing to trade off for more housing, hotels, parking lots and supermarkets?

Solutions exist...

Unfortunately, most of the problems identified decades ago still elude resolution. Worse, some of them have even grown in significance since protective and remedial actions are not keeping pace with the number and ubiquity of threats. The nature and main causes of these problems are fairly well understood. The technical, economic, social and political options for solutions of these problems are also fairly well known and generally available, at a cost. Nevertheless, due to conflicting sectoral interests involved, their effective solution generally eludes the labour of managers and decision-makers.

The reluctance of governments and local authorities to adopt and enforce responsible policies for the rational management of coastal areas is the main impediment for change. This reluctance stems from a combination of various reasons, foremost among them: unwillingness to alienate certain economic interests; lack of understanding how to implement such policies; reluctance to modify existing institutional arrangements; perception that such policies cannot be afforded; and lack of understanding of the enormous economic value of coastal environment.



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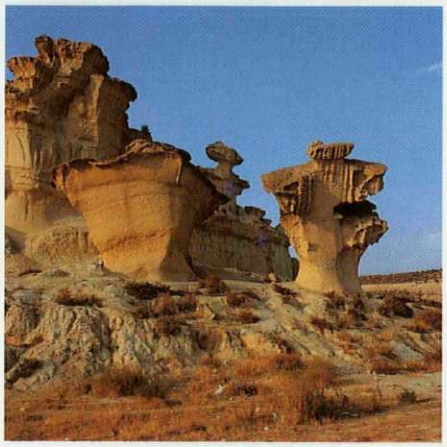

J. Sohnle

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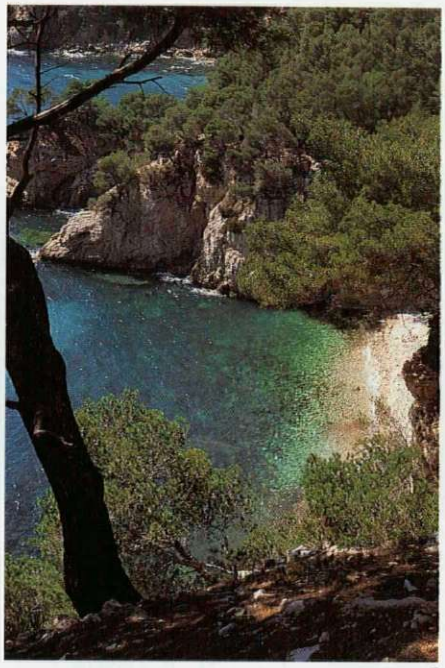

R. Sauvaire

3

1 - Oystercatchers
2 - "Enchanted city of Bolnuevo" at Mazarrón, Spain, formed through the joint action of wind and water on the rocks
3 - Mediterranean, France

Need for public awareness

Overcoming this reluctance will not be easy. Increasing public awareness about the seriousness of the problems is probably the most promising avenue. The capability of a country to deal with its environmental problems depends, to a large degree, on enlightened and well-informed citizens. Only such citizens can critically assess and weigh the short- and long-term benefits of environmental protection measures. They may also be ready to accept solutions which at first glance do not seem to be in their best interest. Although public awareness is gradually increasing, in too many instances the public awareness is not strong enough to elicit sufficient pressure needed to prompt a political action. The shortcomings in educational systems, at all levels, and in the quality of the news offered by the media are largely responsible for such situation.

In conclusion, we should be fully aware that whatever we do, or choose not to do, will have major influence on all that follows. And we should remember that the coast is a non-renewable and finite resource and therefore our generation has no right to deprive, for our short-term interest, the future generations' right to enjoy and use it. ■

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At the Council of Europe

The Centre Naturopa at Expo '98

The World Exposition in Lisbon this year focused on the theme "The Oceans, a Heritage for the Future". The Centre Naturopa was there and took Environment Week at the Council of Europe pavilion (11 to 18 July) as its cue for a children's drawing competition. Contestants, aged 5 to 12, were asked to draw marine animals protected by the Bern Convention - and answer the question of why protecting them was important. Over 1 000 children took part. The first prize* was a weekend guided tour of France's Port-Cros National Park, which holds the Council of Europe's European Diploma, with three nights' accommodation and return travel from a European capital, for the winner and two accompanying adults. Tee-shirts and windcheaters were among the other prizes.

* (see drawings on pages 16-17)

F. Pillot

Sustainable tourism in Latvia

As part of the Council of Europe's efforts to reconcile tourism and nature conservation, a group of consultants visited Latvia on a second appraisal and assistance mission from 20 to 26 July, to draw up a comprehensive plan for sustainable tourism development of the Northern Vidzeme Biosphere Reserve.

This vast region, whose significance is partially recognised by the Helsinki Convention, is bounded by the Gulf of Riga's sandy coast to the west and the Estonian border to the north. The plan will set out proposals for environment-friendly development - respecting the relevant laws - of the reserve's coastal areas, which have considerable biological and landscape significance. The project may later be extended to Estonia, the result being a major transfrontier protected area, for which the same kind of sustainable tourist development would be proposed.

PA's debates on the Oceans

Parliamentary meetings on ocean conservation were held in Lisbon on 31 August and 1 September 1998 in connection with International Year of the Ocean and Expo '98. The organisers were the Parliamentary Assembly's Committee on Science and Technology, Committee on the Environment, Regional Planning and Local Authorities, Committee on Agriculture and Rural Development, and Sub-Committee on Cultural Heritage.

After these meetings a debate took place on 24 September during the Session in Strasbourg. On the one hand, the Parliamentary Assembly called for a European Maritime Agency to be set up to co-ordinate policies to protect the marine environment and resources, develop related industries and carry out the necessary research. On the other hand, the Assembly discussed the following three reports "Future challenges in European maritime science and technology", "Sustainable exploitation of living marine resources" and "The oceans: state of the marine environment and new trends in international law of the sea".

Finally, the Assembly recommended a range of measures, among others:
- formulating a comprehensive European maritime policy compatible with sustainable development principles;
- promoting research and technological development in the marine sector, including climate change and new pollutants that may have an impact on marine molecules and organisms, with research taking an interdisciplinary approach;
- improving public information and organising a campaign to raise awareness of the importance of the oceans;
- inviting all member states which have not yet done so to sign and ratify the United Nations Convention on the Law of the Sea;
- destroying drift-nets and imposing import bans on fish from countries which violate international treaties and regulations prohibiting drift-net fishing;
- protecting Europe's maritime heritage, and especially the sub-aquatic heritage, threatened more and more by the massive effect of scientific progress.

Thirteen Diplomas for coastal areas

The European Diploma has been awarded to 55 protected areas. These include 13 coastal and marine ecosystems: Ekenäs (Finland), Camargue, Scandola and Port-Cros (France), Monte-Cristo and Maremma (Italy), Boschplaat (Netherlands), the Selvagens Islands (Portugal), Doñana (Spain), Bullerö and Långvisskär (Sweden), and Minsmere, Purbeck and Fair Isle (United Kingdom).

The Diploma goes to areas of special European significance for a renewable 5-year period. The conditions laid down when it is awarded and renewed, and when the annual reports are submitted, make it possible to monitor developments, maintain site quality and avert dangers - particularly those arising from the massive growth of tourism and leisure activities.

Sustainable development in the Mediterranean and Black Sea

In many respects, and particularly in environmental terms, the Black Sea and the Mediterranean form a single basin. This means that their problems are best tackled globally. The Council of Europe can help here. Firstly, it has always paid close attention to Mediterranean affairs. Secondly, all the Black Sea countries have now either joined it or been granted special guest status. The Assembly is therefore suggesting that parliamentary co-operation in this area be strengthened by initiating dialogue with the parliaments of non-member Mediterranean countries.

Committee on the Environment, Regional Planning and Local Authorities report - Rapporteur: Mr Lluís Recoder, Spain, Liberal, Democratic and Reformers' Group

Transfrontier co-operation: a new survey

This new Council of Europe survey covers concrete examples of co-operation between frontier local and regional authorities in maritime regions in the fields of economic development and environmental protection. The maritime zones cover the Baltic Sea, the Black Sea, the Mediterranean Sea, the North Sea and the North Atlantic. The survey underpins the importance of co-ordinating economic activities with the requirements of environmental protection. It mentions several transfrontier strategies for the integrated management of maritime coastal zones. These include a programme approach to transfrontier co-operation and the institutionalisation of transfrontier relations. ■

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