IUCN and Mediterranean Islands: Opportunities for biodiversity conservation and sustainable use

July 8th, 2002

DRAFT

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Table of Contents

1.1 Tables and figures

Executive Summary

The background for the report

IUCN's members, through a series of meetings and discussions, have indicated that they wish to work on the conservation and sustainable use of biodiversity in Mediterranean islands. The IUCN Medium-Term Mediterranean Programme proposed to work on protected areas, policy for biodiversity protection and sustainable use and the development of information on the status of island biodiversity.

There are 135 IUCN governmental and non-governmental members from 22 countries in the Mediterranean basin countries.

Structure of the report

The report reviews the overall geographical, socio-economic and institutional context of Mediterranean islands according to what information is relatively easily accessible, identifying opportunities for IUCN as it does so. A chapter on biodiversity and habitats establishes the characteristics of Mediterranean islands for biodiversity as far as possible, and identifies some of the conservation risks they may face.

The challenge

Little information is in the public domain at regional level on the biodiversity of Mediterranean islands. IUCN itself has done some work on endemic plant species and on protected areas in Cyprus, and in the late 1980s helped to initiate the UNEP island database. Without synthesised information it is difficult to provide a strong rationale for an island initiative still less to identify a point of entry and priorities.

Proposal for strategic direction

In view of the information deficit on island biodiversity and its conservation status, it is suggested that a first phase of a possible programme should focus on providing a strong rationale for work on islands in comparison with all the conservation challenges in the Mditerranean region. Working to formulate the rationale will also yield points of entry for IUCN work.

Having completed the firststage and taking into account IUCN's operational approach (which is mainly as a facilitator, convenor and policy developer and advocate), and the themes identified in its Mediterranean programme, the opportunities and needs discussed in the chapters of the report are collated to arrive at a suggested strategy for IUCN's work on islands. The strategy has been fleshed out to some extent but, assuming that the general direction is agreed, members and Secretariat will need to consider specific elements and take decisions as to where they consider the priorities should be placed.

It is proposed that the IUCN Mediterranean office sets out to become **An information and knowledge platform for Mediterranean Island biodiversity conservation policy and practice.** It is recommended that information collection and analysis on species and habitat status, and knowledge compilation and dissemination on the basis of experience, should have clear policy change targets from the outset. The policy fields which it is suggested that IUCN could consider are: governance for conservation and sustainable use, protected areas, agricultural landscapes, water resources and desertification. Climate change, fisheries and marine and coastal conservation could also be medium-term targets and activities are also underway on these issues as part of the Mediterranean programme.

IUCN support structures

IUCN has the structures, especially its expert Commissions and membership networks, and the commitment to succeed in providing an information and knowledge-based service to wide constituencies as well as to aim for policy change. Some proposals are included for strengthening the membership and expert networks and for carefully designing electronic and other communication methods in light of the ultimate policy objectives.

Criteria for selection of islands

Given the number of islands in the Mediterranean, some kind of selection will need to be made. No final suggestion is put forward but a range of pragmatic options are presented. It is likely that IUCN will apply several different ones according to the specific themes or objectives it adopts.

Risks

The proposal is not without risks. There have been attempts by other organisations to improve information services and they have often failed. The strategy will be expensive in time and will need financial support for a reasonable period (for at least 5 and perhaps 10 years) to be able to prove its usefulness to members and other constituencies and to achieve concrete conservation results.

1. Introduction

1.1 Aims of the report

To assess the opportunities for IUCN to work on islands-related conservation issues in the Mediterranean region, especially linking into previous IUCN work, current programmes and international processes.

1.2 Nature and approach of the report

This report is seen as part of an iterative process which has already begun in that a choice has been made by IUCN members to work on island-related conservation issues in the Mediterranean. The aim then is to stimulate further discussion by suggesting options for IUCN within an overall socio-economic, institutional, policy and ecological context.

1.3 Availability of information

All but two of the islands in the Mediterranean (Cyprus and Malta) are parts of continental countries. This means that information on islands usually has to be prised out of national statistics which may or may not separate them out. On biodiversity there are no comprehensive web sites or publications to be found (or that the author has found) on islands in spite of one or two sites which are advertised but which do not appear to be operative, or to deliver what they promise. The best attempt at a publication and web site which includes some biodiversity information is that of the UNEP islands initiative. In short, data on islands especially ecological but also economic or social is fragmented and sparse: it could be said that in the majority of Mediterranean islands are simply invisible.

1.4 What is an island and does it matter?

Academics have spent many conference hours in trying to define an island (e.g. Gourmelon, Brigand 1989) in the hope of coming up with a global theory under which to house huge diversity of *inter alia* size, relative physical isolation from continents or the home country, physical characteristics or economic status. The search for a definition focuses on the specificities of islands; what makes them different from other land/sea zones.

The EU defines an island largely by what it does not have: i.e. it must not be host to a member state capital and it must not have a permanent connection to the mainland; it must be surrounded by sea. (Parlement Européen, 1998). Eurostat, the European Commission's Statistics service adds further detail: the island must be of at least 1 km^2 , permanently inhabited by at least 50 people and separated from the European continent by an area of water of at least 1km.

While it is necessary for IUCN to be aware of the specificities of islands through all its work, it is probably not worth while spending much time on definitions of what is an island. It is suggested that IUCN approaches island matters on a pragmatic basis following the conservation priorities. As this report reviews the policy, socio-economic, ecological and institutional characteristics of islands, their specificities will emerge and will be taken into account in the options offered. A brief initial overview is presented below in trying to pin-point why islands should be a focus of the Mediterranean programme of IUCN.

1.5 Why islands?

Although IUCN members proposed that islands should be a priority area for the IUCN Mediterranean programme, their reasons for identifying islands are not documented. One stimulus for the suggestion was the IUCN SSC Plants Specialist Group work on the "Conservation of Mediterranean Island Plants" published in 1996. Much earlier, and perhaps influencing IUCN Mediterranean members with long memories, from 1987-89 the UN Island Database system referred to above was first developed by Arthur Dahl under contract to IUCN with the financial support of the United Nations Environment Programme (UNEP) and the assistance of the IUCN Task Force on Conservation of Island Ecosystems and the World Conservation Monitoring Centre.

The aim of this section, therefore, is to provide a brief overview of the general perceptions of the importance of islands in general in the light of IUCN's overall mission.

Many scientists agree that island biodiversity and ecosystems are extremely vulnerable. There are numerous records of extinctions (one striking example: 61% of indigenous avifauna species of the Mascarenes are now extinct[1]) and "ecosystem degradation seems to be the rule rather than the exception". (Adsersen in Vitousek et al 1995). Causes of degradation and extinction include inappropriate agricultural practices, infrastructure, urbanisation, climate change and the introduction of alien organisms ... but even under protection, island ecosystems seem to retain an innate vulnerability.

Isolation from land masses, amongst other factors, produces endemism and there are high rates of plant endemism (about 10% on average) in Mediterranean islands (there is less information on other species but it is probably true of them also).

Another characterisation of especially the small islands is as a laboratory in that their relatively well-defined physical limits offer scientific observation of human and natural phenomena. How far the laboratory aspect is of immediate relevance to the IUCN Mediterranean Programme, which tends to apply research rather than carry it out, is a question. However, it might be felt that IUCN should act to conserve areas of value to science. The laboratory aspect of islands is not confined to scientific interest: islands are often treated as test beds for new technologies (renewable energies; water management and production) and sustainable development policies (e.g. Balearics tourism taxes).

Economic marginalisation is a feature of life on many (but not all) islands. The spatial plan of the European Union views the European space as having a series of urban growth centres linked by transport and non-material links using the rural areas between. It is felt by some economists that islands are not taken into account in this approach (Biggi, 2001). Another perspective is the hub and spoke pattern of wealth distribution which, in Europe at least, has been discussed for many years: Mediterranean islands are on the (poorer) tips of the spokes as are islands in the north and northern continental areas.

1.6 IUCN in the Mediterranean

In the Mediterranean there are 135 IUCN members from 22 countries, including 10 international organisations, and there are six National Committees (Egypt, France, Jordan, Lebanon, Morocco and Spain). Of the countries with large island communities, Spain has 32 members, France 34, Italy 23; Greece 6; Tunisia has 5 members and Croatia 3. There are 2 member organisations in Cyprus and 2 in Malta.

[1] No data for Mediterranean extinctions could be found perhaps because there have been very few:see Chapter 5 on vulnerability and on invasives.

The general themes for the Draft Medium Term Plan 2002-4 of the new Mediterranean office are:

Biodiversity conservation
Desertification
Sustainable resource use
Islands
Water Resources Management

The three results expected with regard to islands are:

Experience on the management of island protected areas is shared
Policies for biodiversity protection and sustainable use in island communities are promoted
Information on the status of island biodiversity is developed

As will be seen, many of the other result areas appearing in the programme document against themes other than islands, for example forest conservation, agriculture and arid lands work, could apply also to islands.

The way in which IUCN proposes to work in the Mediterranean is essentially as a facilitator and convenor on behalf of the IUCN members in the region. There is little accent on field work but more at the policy and guidance level especially in relation to the main regional and global environmental conventions.

1.7 Structure of the report

The geography of Mediterranean islands is set out in Chapter 2 mainly in order to give an idea of the spatial scale that IUCN will need to address if it is to work with islands. Chapters 3, 4, 5 and 6 review the conservation challenges in light of socio-economy, politics and administration, biodiversity and habitats and cross-cutting issues and note what IUCN's response might be. Chapter 7 attempts to bring together the opportunities identified in previous chapters into a strategic approach related but not confined to the IUCN Mid-Term Programme.

2. The geography of Mediterranean islands

2.1 Spatial aspects

The Mediterranean region is 5000km from west to east and over 2000 km wide (Lacoste, 1999). Of the drainage basin, islands cover some 100,000km^2 of a total of 1 900 000km^2

Figure 1: Islands and Archipelagos of the Mediterranean (Spain and France)

Figure 2: Islands and Archipelagos of the Mediterranean (Italy, Malta, Tunisia, Croatia, Tunisia)

Figure 3: Islands and Archipelagos of the Mediterranean (Cyprus, Greece, Turkey)

There are some 4000 islands of less than 10 km^2 in area and 162 islands which are at least 10km^2. The nine Mediterranean islands of over 1000 km^2 account for 83% of the total island area.

Table 1: Area of the largest Mediterranean Islands

Island	Area in km²
Sicily	25 462
Sardinia	23 818
Cyprus	9 251
Corsica	8 680
Crete	8 259
Evia	3 655
Mallorca	3 618
Lesbos	1 630
Rhodes	1 401
Chios	840
Cephalonia	782
Minorca	683
Corfu	592
Ibiza	542
Djerba	530

Source: Brigand, 1991

The coastline of all the islands extends to about 18 000 km, or about 39% of the total Mediterranean coastline although the total area of islands is only about 4% of the total Mediterranean marine area, that is, a surface area of about 103 000 km². (Kolodny cited in Brigand 1991).

The extent of coastline is important for two main reasons. Firstly, the ecological interest of coastal zones and, secondly, the pressures that Mediterranean coastlines face especially with regard to tourism and infrastructure development (see also Chapter 3).

The Draft Mid-Term IUCN Mediterranean Programme (see Chapter 1.6) does not identify coastal zone management or marine issues as priorities and it is true that there are already numbers of initiatives for coastal zones in the Mediterranean (RAC/PAP; MEDCoast; EU Env work). Similarly, judging from the maps of protected areas in Chapter 3 coasts occupy a disproportionately large proportion of the protected area estate compared with inland areas of islands. Finally, IUCN has not had a very active marine and coastal programme for some years, so it is probably a wise decision to defer work on this biome for now at least in relation to islands. However, coastal issues will inevitably enter into work on islands and members' capacity will need to be identified to support such work. A further point to note here is that the EU has worked extensively on coastal zone management and it remains a priority; asked about islands, DG Env tends to point to this coastal work as its contribution. In view of the last two points a marine and coastal component could perhaps be a theme to be gradually introduced over the longer-term into an IUCN islands initiative.

If sustainable use of resources is to be one of the main themes of an islands programme (see Chapter 1.6) then fisheries may need to be taken into account and the planned protected areas work would probably include marine protected areas. To note that the European Sustainable Use Group has a fisheries working group which has worked on Mediterranean fisheries.

An issue which will be of concern to IUCN is the clustering of Mediterranean islands on the northern half of the basin. Only the Kerkennah islands of Tunisia (and Djerba which is linked to the Tunisian mainland by a bridge and the small rocky islets of Zembra and Zembretta) and some small islands off the Moroccan coast are found within the southern half. The Palm islands off the Lebanese coast are the main interest in the eastern Mediterranean. In carrying out a

programme with a strong accent on region-wide actions, the interest of IUCN's North African and Middle Eastern members in an islands programme may be rather weak.

2.2 Topography

Most Mediterranean islands are mountainous; only the Tunisian islands, the Palm islands and Tabarka of Spain (off the coast near Alicante) have low relief. The Sierra de Tramontana in the Balearics reach a height of 1 443 m in the Peak de Torrella. The Ionian islands are hilly rather than mountainous with 38% of their areas classified as lowland, 24% as mountainous and 38% as semi-mountainous; this contrasts with the northern and southern Aegean islands which are mountainous[2]. Crete has three mountain ranges cut through by deep gorges. Corsica "a mountain in the sea" rises to 2 710 m at Monte Cinto with an average altitude of 568 m. It is in fact two mountain systems divided by a depression known as the "sillon de Corte". The altitude of the largest Mediterranean island, Sicily, rises to 3 263 m at Mount Etna and to 1 979 m at the Pizzo Carbonara. The second-largest island, Sardinia is described as 67.9% hilly and 13.6% mountainous, areas which are divided by the Campidano plain stretching from west to south (European Commission, 1994).

The topography of the islands is becoming more closely correlated with modern population movements towards the coastal zones. As agriculture in "marginal" (i.e. *inter alia* mountains) areas becomes uneconomic and tourism develops, there is an increasing tendency to leave inland mountain areas for the coast (see Chapter 3.1).

2.3 Possible geographical criteria for selection of islands/island groups

The large number of islands almost certainly means that IUCN cannot embark on an exhaustive regional programme covering all of them. Selection criteria will emerge during the course of the report and will need to be consonant with the chosen objectives of an island programme.

On the basis of the foregoing geographical and spatial data and maps, there are several crude divisions which can be borne in mind for the moment. These include a western Mediterranean group (Balearics, Corsica, Sardinia, Malta and Gozo, and the small Spanish, Italian and French coastal islands) and an eastern Mediterranean Group (Adriatic/Croatia; Ionian, Aegean, Crete and Cyprus). The Tunisian (and very small Moroccan) islands could either form a third southern group or be part of the eastern Mediterranean.

Alternatively, there are archipelagos (or island clusters) which stand out: the Balearics; Sardinia and Corsica and their attendant small islands; Sicily and its surrounding island clusters; the Croatian islands; the Ionian islands and the two groups of Northern and Southern Aegean islands. The two Tunisian Kerkennah islands form the final group. The archipelago approach, however, omits Malta, Crete and Cyprus of the significant large islands.

Another broad selection criteria could simply be the size of islands.

2.4 IUCN Membership

From this general overview of the geographical distribution of islands, if IUCN sets out to work as a facilitator and support the work of members and others, it would need to recruit more members and partners especially from Croatia, Italy and Greece (12% and 19% respectively of

[2] In the EU publication cited, no definition of the terms "hilly", "mountainous" …. is offered. There is almost certainly an EU definition but it has not been found in time for this report.

Italian and Greek land areas are islands) in order to access expertise and interest on the major island groups (see Chapter 1.6 for membership distribution).

Likewise, within IUCN Commission membership in the Mediterranean, Croatia has 19, Greece has a total of 47 and Italy 121 (compared to, for example, 248 in France and 209 in Spain); Malta and Cyprus have 4 and 3 Commission members respectively. Of the total number of Commission members in states with large island interests, 78% are in SSC. The next most populous Commission is WCPA. The proportion of those with an interest or living and working in islands has not been analysed.

In order to capture expertise on islands and to build a broad membership base in support of work on islands in the Mediterranean, IUCN needs to recruit members and Commission members from Croatia, Greece and Italy in particular. Possible skills requirements in the Commissions will be a function of the main policy areas selected by members (see Chapter 7)

2.5 Summary of implications for IUCN

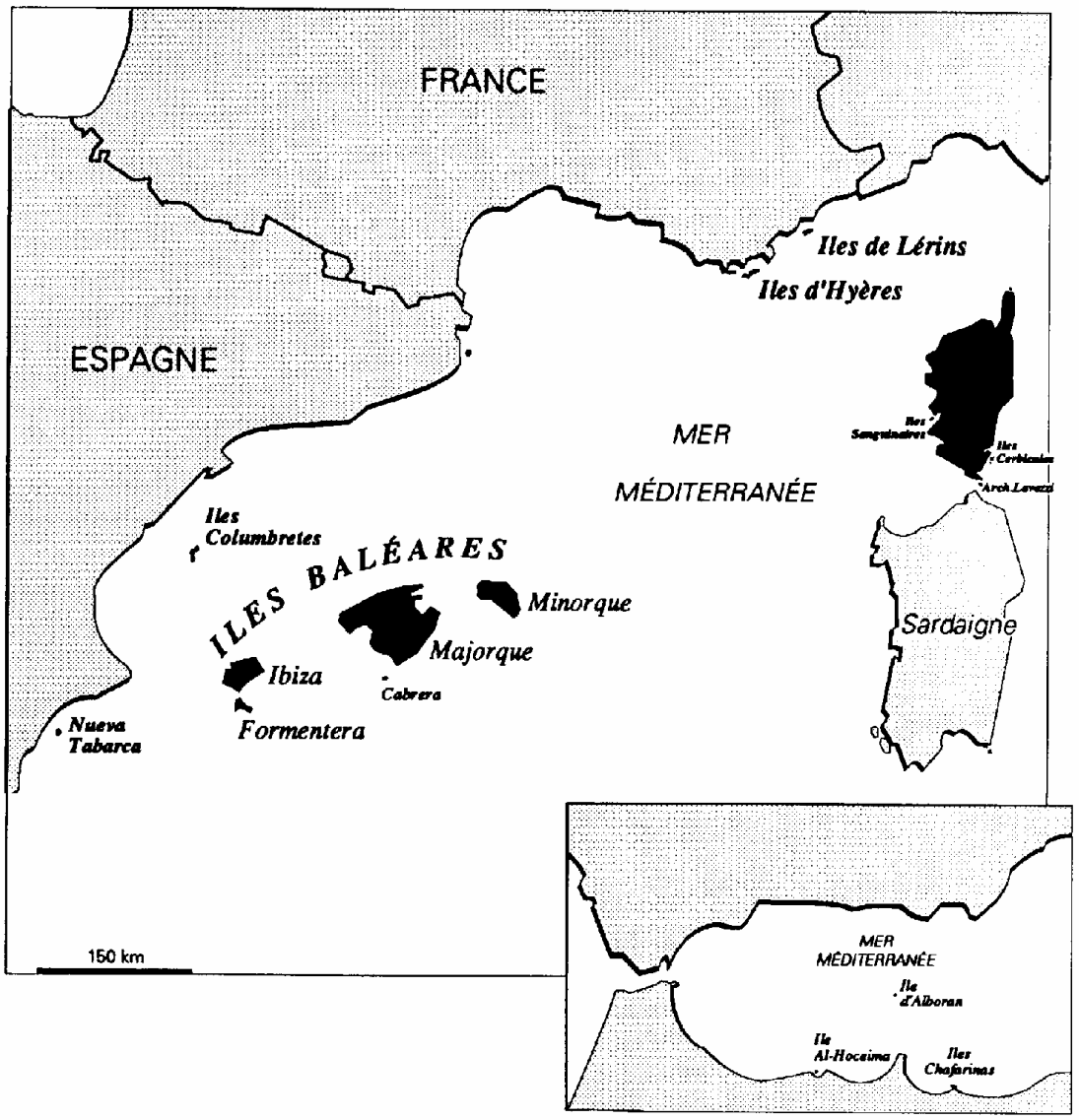
Marine and coastal IUCN will need to decide if it wishes to add a marine and coastal conservation component to an island Mediterranean programme in the longer term: the absence of such a component for now seems justified.

Neither North-South or (Middle) East-West collaboration will be a strong feature of an islands programme; the implications of this for IUCN's regional presence will need to be carefully considered.

Interim possibilities for the selection of islands based on spatial distribution include: broad "compass" divisions of the Mediterranean; archipelagos and island size.

3

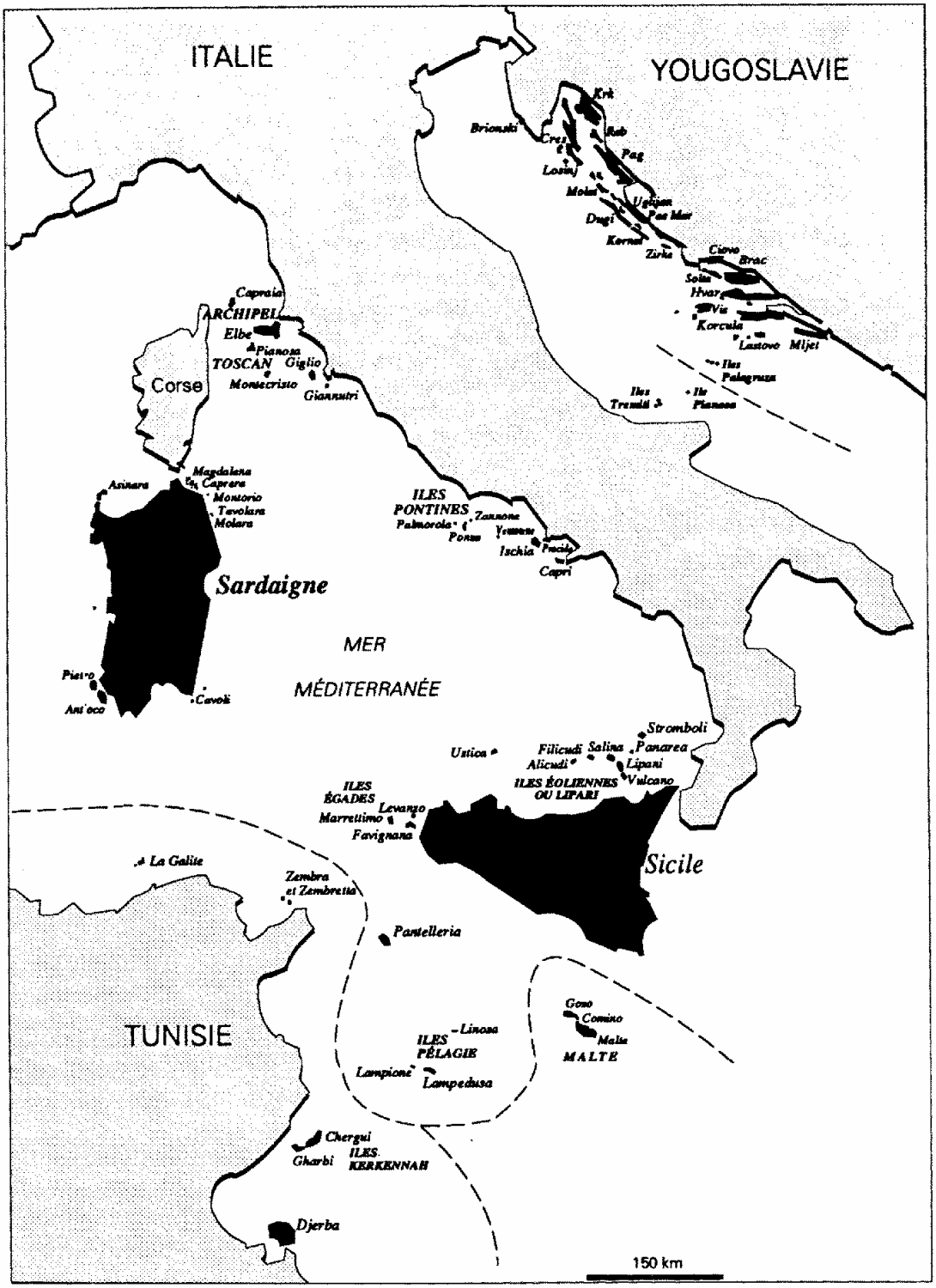
Figure 1
Iles et archipels de la Méditerranée (Espagne et France)



Source:Brigand 1991

Figure 2

Iles et archipels de la Méditerranée (Italie, Malte, Tunisie et Yougoslavie)



Source:Brigand 1991

LA DIVERSITE INSULAIRE EN MEDITERRANEE

Figure 3

Iles et archipels de la Méditerranée (Chypre, Grèce et Turquie)

Source: Brigand 1991

3. Socio-economic overview of Mediterranean islands

Table 2 gives an overview of size, the general population and population density, GDP, employment and sectoral distribution of employment for all island administrative entities in the EU and Gozo for 1994/6. The data given in the tables is complemented by other sources below for the EU and some for Accession and non-EU islands.

3.1 Population

The population of the Mediterranean basin as a whole is some 250 million whereas the permanent population of the islands is some 10 millions (Brigand, 1991). It is expected that the urban population in the region as a whole will rise by about 38% between 2000 and 2025 (PAM 2001). 136 million people are concentrated in the coastal regions, that is, 34% of the total population on 12% of the territory of the riparian countries (Plan Bleu, 1997)

Amongst the islands, the population of the western Mediterranean basin islands of Spain, France and Italy is 7.5 million while the eastern part has some 2.6 million. Sicily and Sardinia alone constitute nearly two thirds of the population of the whole basin (6.5 million inhabitants). Corsica and Mallorca together account for nearly 800,000 inhabitants so the [3]200,000 remaining are distributed amongst the 400 or so other islands in the western Mediterranean (Brigand 1991)

In the eastern basin the largest populations are found on Cyprus, Crete and Malta (650,000, 500,000 and 335,000 respectively). The remaining 1.1.million live therefore on the smaller islands. Greece and Italy have around three quarters of the total Mediterranean island population; 19% of the Greek territory and 14% of its population are in the islands while for Italy, the figures are 12% and 16%.

There are around 60 inhabited islands in Croatia with a population of some 100 000 (Hache 2001) but almost 1200 islands, islets and rocks (Scetaric and Piasevoli, 2002). In the south, the two Kerkennah islands had a population of about 14,500 in 1975 (Brigand, 1991).

Within the overall picture given above, there are large divergences. 47% of Greek islands have fewer than 1000 inhabitants and 13% fewer than 100 inhabitants. Population density also varies widely: for example, Malta with 1 080 inhabitants per square kilometre (1986) while Corsica is one of the least densely populated islands in the Mediterranean with 28 inhabitants/km^2

The general trend between 1981-1991 seems to have been a moderate overall increase in the population of Greek islands (although a 12% increase in the Cyclades), a larger one in the Balearics (plus 17.1%), 5.3% in Corsica, between 2% and 6.5% in the Italian islands (European Commission, 1994). This overall increase conceals de-population in some islands to the extent of complete abandonment in some cases. Vlatka Scetaric & Gvido Piasevoli report that inhabited islands in Croatia are mostly economically undeveloped and their population is decreasing. (Bio-Platform e-conference, April 2002). Where tourism has been successful, population tends to increase.

[3] These figures are taken from Brigand 1991 but he notes that 400,000 are left to distribute amongst the 400 or so other islands in the western Mediterranean; my calculation on the basis of his own figures is 200,000.

Table 2

Source: www.eurisles.com

L'Europe et ses îles - Situation comparée des Régions insulaires d'Europe © Eurisles										
REGIONS	***PAYS***	**Superficie**	**Population**	**Densité**	**PIB/hab SPA**	**Taux**	**Taux**	**% emploi**	**% emploi**	**% emploi**
INSULAIRES		**(Km²)**	**(1000)**	**(hab/km²)**	**EUR15 =100**	**activité**	**chômage**	**Primaire**	**Secondaire**	**Tertiaire**
			96	**96**	**94-96**	**96**	**96**	**96**	**96**	**96**
Bornholm	*DK*	588	46	78	95	Nd	8.9	10	23	67
Baléares	*E*	5 014	768	153	98	50.7	14	5	30	65
Canarias	*E*	7 447	1 610	216	75	49.4	22	7.4	18.4	74.2
Corse	*F*	8 681	256	29	82	39.3	14.7	7	18	75
La Guadeloupe	*F*	1 705	425	249	40**	Nd	29.3	7.1	20.1	72.8
La Martinique	*F*	1 128	389	345	54**	Nd	27.2	7.4	16.3	76.3
La Réunion	*F*	2 507	669	267	46**	Nd	36.6	5.1	15.1	79.8
Åland	*FIN*	1 526	26	17	119	Nd	7.2	8.4	15.6	76
Ionia Nissia	*GR*	1 969	199	101	61	52.9	5.5	28	19	54
Kriti	*GR*	8 261	559	68	72	56.4	3.4	32	18	50
Notio Aigaio	*GR*	5 011	267	53	75	45.3	4.9	13	26	61
Vorio Aigaio	*GR*	3 800	184	48	50	42.7	7.1	25	22	53
Sardegna	*I*	24 090	1 661	69	74	45.5	21.8	13	25.2	61.8
Sicilia	*I*	25 708	5 097	198	66	41.5	24	14	21	65
Açores	*P*	2 333	242	104	50	49.6	7.2	20.4	22.6	57
Madeira	*P*	794	253	319	54	61.9	5.5	12.2	28.7	59.1
Gotland	*S*	3 140	58	18	88	Nd	8.9	8.6	21.2	70.2
Isle of Wight	*UK*	380	125	329	69	Nd	9.9	3	30	67
Orkney	*UK*	956	20	21	80	Nd	4.5	27	20	53
Shetland	*UK*	1 468	23	16	111	Nd	3.4	18	20	62
Western Isles	*UK*	2 808	29	10	74	Nd	9.9	15	19	66
Total ou Moy, UE		**109 314**	**12 906**	**129**	**77**	**48.7**	**13.1**	**13.6**	**21.4**	**65.0**
Feroe *	*DK*	1 399	42	30	nd	Nd	11	20	16	64
Groenland *	*DK*	2 176 000	59	0.03	nd	Nd	11.3	nd	nd	nd
Hiiumaa *	*EST*	989	12	12	nd	Nd	2.4	25	26	49
Saarema *	*EST*	2 922	40	14	nd	Nd	3.3	28	24	48
Gozo *	*MAL*	67	26	388	nd	36.6	5.3	6	24	70
Guernesey *	*UK*	78	65	833	nd	67	1	6.3	9	84.7
Isle of Man *	*UK*	588	75	128	nd	Nd	3.7	2	16	82
Jersey *	*UK*	116	90	776	nd	67	1	5	2	93
Total ou Moy, Non UE		**2 182 159**	**409**	**273**	**nd**	**56.9**	**4.9**	**13.2**	**16.7**	**70.1**
** régions appartenant à des Etats membres ou à des futurs Etats membres mais hors UE*										*** 1994 pour les dom français*
La Grèce ne compte que quatre régions insulaires, les autres îles sont rattachées à des régions continentales										

Another important trend is hiding behind the overall statistics: that is the move within islands from the interior to the coast[4]. In Corsica, for example, around 30% of the coastal zone to a depth of 5 km was urbanised in 1991; between 1972 and 1983 the population of this space rose by 22% mostly from internal migration. 28% of the urbanised areas was at the expense of agricultural land and 62% of natural land (Brigand, 1991).

Population pressure on Mediterranean coasts is well known (see above). Brigand's figure above for the urban colonisation of natural land on coasts in Corsica doesn't specify how it was calculated. A discussion of a possible IUCN input into marine and coastal issues can be found in Chapter 2.1.

3.2 Economy overview

The ratio between the per capita Gross Domestic Product (GDP) between EU and non-EU Mediterranean countries is about 20 to 1 (Bonazzi et al., 2001)

Currently 95% of the islands of EU member states fall within Objective 1 and 2 and 5b areas. This means in essence that they are part of the poorer, or "marginalised" or "periphery" of the EU compared to the EU average. With the Accession of central European countries, the overall GDP per capita of the EU will fall and many of the island regions will no longer be eligible for structural funds. Of the Mediterranean islands perhaps only the Northern Aegean will continue to be eligible (Hache, 2001). Referring to Table 2 above, the Balearic islands were close to the EU average (100) in 1994-96 (98) while the Greek and Italian islands were between a half and two-thirds, with Corsica at 82.

Table 3 Eligibility for EU structural funds

Eligibilité aux Fonds structurels Territorialisés	% de la population communautaire totale	% de la population vivant dans les régions insulaires
Objectif 1	26,6%	92%
Objectifs 2 et 5b	25%	7%
Hors objectif	48,4%	1%

Source: Hache, 2001

Islands have difficulty in reaching a critical mass of markets, raw materials, human resources and capital which would enable them to compete with continental areas and countries. Much of this progressive loss of competitivity in a globalising market, has meant abandonment of former activities accompanied often by a loss of jobs and the flight of younger generations to the mainland. " Poor transport and the sheer distance of Sicily from the heart of Europe … help to explain the island's 20% unemployment, more than twice the national average …… " (Economist, 2002)

As a rough guestimate, over each two or three years, two or three small islands are entirely abandoned by their human population (personal communication: Michel Biggi. Eurisles). There does seem to be a gulf between the opportunities and resources of small and large islands (WTO/UNEP/Blue Plan, 2000). Added to this is the intense competition between islands themselves offering as they do very similar tourism and other products.

[4] Or perhaps movement is, rather, to larger towns as in the Ionian islands (European Commission, 1994) which tend to be located on the coast especially on the small islands.

Partly in response to the lobbying of cohesion countries fearful of losing their access to structural funds after the next Accession, the EU (Regio) is considering a third basis for aid which will address territorial definitions such as mountains, coastal areas and islands which would have variable access thresholds and awards according to the intensity of their problems. The challenge for such regions is to quantify especially the financial aspects of the problems and solutions.

If IUCN wishes to assist in identifying and applying EU structural support for island biodiversity and sustainable development, it will need to make a case which has clear economic/financial arguments. Given that tourists are both passive and active consumers of biodiversity and landscapes and that tourism is the major economic activity in some islands, the arguments for maintaining both are relatively easy to frame and to cost. On the assumption that most tourists appreciate landscapes for their cultural and aesthetic/natural values more readily than the quite complex and often hidden biodiversity within landscapes, IUCN could consider using landscapes as an appropriate spatial unit.

Table 2 shows that, without exception, the tertiary sector dominates in the EU island groups and this is almost certainly the case in the Kerkennah's which are building up their tourism sector. A breakdown of the figures would show exactly what employment in the tertiary sector includes but in the Balearics, Ionia and the southern Aegean islands it is mostly in tourism while in Corsica it is mostly in the public administrative sector (EU 1994). Allied to tourism there is also a generally healthy craft industry of small and medium-sized businesses.

While the overall picture is one of movement to urban areas often on coasts and the decline in rural population and abandonment of agriculture as a result of tourism development, there are still larger, generally elderly, rural populations in some islands than the national average, for example in the Northern Aegean (Macheridis, 2001).

3.2.1 Agricultural economy

The distribution of the main sectors within island economies suggests that islands are following the general mainland trend away from industry and agriculture/fisheries/forestry. Since 1975 52% of jobs in the agriculture sector in Corsica have been shed (European Commission, 1994). It seems to be a general rule that agriculture is declining in importance both with regard to population employed and contribution to GDP. Where tourism is successful, agriculture declines in importance but it is also declining because of poor productivity (probably compared to mainland intensive agriculture: e.g. 30% of Greek agriculture is irrigated while the figure is 7.2% in the Northern Aegean) and high costs (transport to markets). However, the picture is not entirely uniform: Brigand noted (Brigand, 1991) a decline in traditional agricultural activity in smaller islands but its continuation where investments in irrigation were made (Sicily, Sardinia, Crete). In Sicily in 1990, there was still 15% of the working population employed in agriculture and 14% in Sardinia: this figure is perhaps a little lower now.

The islands related to EU member states are subject to the same policies as continental countries. This means that they are passing through the periods of reform ushered in by Agenda 2000 and approved by the Berlin Council in March 1999. The reforms seek to prepare the EU for the next round of trade talks on agriculture as well as the Accession of central European countries by reducing production and export subsidies. Funds are being transferred from the export and production subsidies part of the fund to the new rural development pillar. Under rural development there are provisions for payment for environmental conservation and improvement and these, it is hoped, will fall under the so-called Green Box of agriculture measures under the WTO discussions. However, the new rural development measures benefit from only 10.5% of the total CAP budget.

EU countries have increasingly greater discretion about how they will spend rural development funds and the amounts they will contribute from domestic sources. The best-known of the

measures for environment are the agri-environment funds which provide payments in exchange for environmental services over and above good agricultural practice. It should be the case that biodiversity rich areas or those with endemic or threatened species dependent on agriculture or threatened by it, will be priority areas for receipt of such funds. The extent to which islands can benefit from agri-environment and other measures therefore depends to some extent on the approach taken by their government and to their own priorities and strategies with regard to biodiversity conservation.

3.2.2 Tourism

Tourism is largely responsible for the economic success of the islands on which it is the main economic sector. This is particularly true for the Balearic islands where GDP per capita is comparable to the EU average and higher than in parts of mainland Spain. Tourism is the leading economic activity of Cyprus, Malta, the Balearic Islands and Sicily (WTO/UNEP/Blue Plan, 2000).

The Mediterranean is the main touristic destination in the world. It receives some 200 million visitors per year (WTO/UNEP/Blue Plan, 2000), i.e. 30% of the international arrivals and 1/3 of the worldwide income for this sector. Nowadays, tourism is the main currency source in the Mediterranean region, and it represents an average 7% of the GDP (and up to 24% in Malta and 22% in Cyprus). Nearly 350 million people could visit it in 2025 (EEA 1999). Such a high number of visitors, and their seasonality (80% among the seven drier months of the year) has an impact on water resources in islands and on coastal areas in particular. However, it should be remembered that, even in the Balearic islands which perhaps represent the pinnacle of tourist "success", intensive agriculture is a much greater user of water (57.6% of total demand in 1996) than tourism and this is probably true of other islands as well.

The huge growth in tourism, especially in the north-west Mediterranean islands, over the past two decades (three-fold increase in the number of visitors) has threatened the very amenities and environment that triggered the development in the first place. Lessons have been learned and newer tourism destinations are beginning to formulate their strategies to avoid too great an environmental impact (WTO/UNEP/Blue Plan 2000). However, where economic development lags behind and where new-found economic freedom presses for unfettered rapid development such as in Croatia, tourism pressure on biodiversity and natural resources is likely to result in losses and degradation (Scetaric, Piasevoli 2002). This scenario is also likely to be played out in Cyprus, especially the northern part, as it comes in from the international cold and joins the European Union (Philips, A. Bracewell, F. 2001)

Because of the huge economic stakes, tourism and its relationship to environment and biodiversity has been the subject of many conferences, meetings and publications. This includes work by IUCN in relation in particular to Protected Areas (the latest being "Sustainable Tourism in Protected Areas: Guidelines for Planning and Management", Paul F.J. Eagles, Stephen F. McCool and Christopher D. Haynes with WTO and UNEP, 2002).

A team from the University of the Balearic Islands, (CITTIB Centre d'Investigacions i Tecnologies Turístiques de les Illes Balears) is trying to quantify the sustainability of the tourism sector. They include *inter alia* indicators on the use of natural areas (e.g. number of visitors and urbanisation). The efforts of the team to link indicators with clear policy objectives may be interesting for IUCN if it embarks on an information element of an islands programme (Meaurio A., Murray, I. 2001).

3.3. Summary of implications for IUCN

Policy directions

A new additional basis for allocating EU structural funds may not identify islands *per se* but may arrive at a "remote" or physically disadvantaged category from an economic point of view. Many remote or difficult regions in the Mediterranean basin are also interesting from a biodiversity point of view and it will be seen in Chapter 5 that endemism, for example, is a feature shared by islands and some other continental areas in the Mediterranean basin. One option IUCN could consider is to therefore make linkages between islands and other areas where there is an ecological rationale thereby tapping into an EU policy area.

Themes

Agriculture is in full transformation; the relationship between this sector and biodiversity is explored further in Chapter 5. As with any period of flux and change there are opportunities for influencing policy and practice.

Tourism: As 2002 is the year of Ecotourism, interest is at its height and IUCN has missed this particular policy opportunity as far asMediterranean islands are concerned. In the general field of sustainable tourism, IUCN might ask itself what it could contribute that others are not already doing. With regard to tourism and protected areas, IUCN has built a reputation and solid body of work; this may be a theme with a potential added value for IUCN members.

In connection with tourism, the issue of coastal areas has arisen once again (see comments in Chapter 2).

Vulnerable islands

The islands of Croatia and the island of Cyprus are facing rapid economic, social and institutional change. Both are relatively poor areas with an urgent need for economic development. The risks are high that biodiversity and valuable habitats will be lost in the process. A focus on these two areas, perhaps using the experience of islands which have passed through the process and learned valuable lessons (the Balearics for example), would potentially yield positive results. A report on northern Cyprus protected areas (Phillips and Bracewell, 2001) by IUCN WCPA's Senior Advisor on World Heritage and former chair of WCPA, gives a good start to work in Cyprus. The two cases may provide one of the selection criteria IUCN could apply (i.e. vulnerability).

4. A political and administrative overview

4.1 Global and regional aspects

There are only two independent island states in the Mediterranean: Cyprus and Malta. This has important implications for policy analysis and action. Both Cyprus and Malta are members of the UN Small Island Developing States initiative (see Annex B Contacts). None of the other Mediterranean islands is part of this network of 41 countries. This means that Cyprus and Malta can benefit from exchange of information with other island states (and possibly gain financial help). It also means that within the UN including the CBD, islands that are not members of the SIDS do not have a separate voice unless their states feel it is a priority. "By wrongly assuming that the problems of small island sustainable development are synonymous with the development agenda of SIDS, the global World Summit on Sustainable Development community is virtually abandoning and ignoring the extremely marginalized status and discrimination inflicted on small islands belonging to continental states around the world". (Potter, Island Resources Foundation, in Small Islands Voice, UNESCO, Jan. 2002).

Within the EU, islands can probably work together, especially through the Committee of the Regions in which island regions take part (see Administrations below). There is also an organised lobby group for all the EU islands (not just Mediterranean: see Commission pour Regions Peripheriques Maritime (CRPM):Eurisles under Annex B Contacts, and in other parts of the report). The scope for an "islands" policy across the Mediterranean is uncertain; that is, the policies would likely be national (or European Union in the case of EU member states) policies applied to islands. The Barcelona Convention does not recognise islands as a separate category except for the island states of Malta and Cyprus.

IUCN could certainly work across the Mediterranean multilaterally at a pragmatic and scientific level but would need to test an "islands" policy approach at Barcelona for example (or, as is suggested in the previous Chapter, through island landscapes at the European Landscape Convention). There are a number of university research departments and centres which work over the whole Mediterranean but a policy/political grouping does not seem to exist.

4.2 Islands and the European Union

Mediterranean island efforts to explain their difficulties are hindered by what might be called "northern sunshades". While northern Europeans tend to lead and shape the EU (and even the world) environmental agenda, they are also happy consumers of Mediterranean island summers. They do not experience Mediterranean winters or the day-to-day difficulties experienced by the permanent populations partly as a result of remoteness: they find complaints barely credible and are reluctant to support islands in EU fora. IUCN could perhaps help to address northern European misunderstandings of southern island difficulties through the European membership.

Islands in the EU were recognised in 1992 with the formal establishment of the Committee of the Regions and the Structural Funds. They are mentioned in the Amsterdam Treaty (article 158) and the attached Declaration in Annex No. 30, and the European Parliament has formed an Intergroup for Islands[5].

While all Mediterranean islands were eligible for Objective 1 and 2 funds except for the Balearics from 1994-99, islands were only specifically mentioned in relation to Objective 5b referring to peripheral rural areas and islands. For the 2000-2006 period (Regulation (CE) 1260/99) the 75% of EU average GDP eligibility criterion is more strictly applied thus excluding also Corsica from structural funding and placing it into the phasing out category.

State funding for regions is much larger than EU funding. It is however controlled by various EU regulations and legislation on state aid and competition. Lobby groups for islands consider that the current structural fund programme penalises islands in various ways. In particular, they argue that island problems are permanent problems as a result of their geography and that short-term or temporary measures cannot achieve the cohesion between different regions of Europe that the Amsterdam Treaty promises. This is leading lobbyists for islands to consider alliances with other remote areas (areas of very low population density) and areas of physical difficulty such as mountains.

Island populations currently contribute 3.5% of the Union's population; after enlargement from 15 to around 25 countries, they will constitute 2.6 to 2.8% (Le Monde, 12 June 2001) and islands argue that Europe will become even more continental in character. It should be noted though that, for the first time, two small island states will become members: Cyprus and Malta.

The Committee of the Regions is a platform for island concerns (see Annex A for a recent appeal by a Greek member of the Committee) and the Regio Directorate the locus of the Commission for Structural and Cohesion Funds. As noted above, the European Parliament has created an InterGroup for Islands.

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5 No reference to this Intergroup could be found on the European Parliament's web site …. Contacts have been made to find out more about its objectives and programme but have not yet resulted in further information.

The Conference on Peripheral Maritime Regions (CRPM) created a Commission for Islands (Eurisles) in 1980 which lobbies in Brussels on issues of concern to islands of the European Union (see Annex B: Contacts). Although the tone of Eurisles is gloomy about the future of islands, the European Commission appears to have been listening to their arguments because DG Regio is in the process of producing a detailed report on the islands of the EU which is expected to be finished by the end of August/beginning of September 2002.

The EU report mentioned above will probably be posted on the DG Regio web site. The aim of the work is to constitute a database on island matters for further assessing national and EU policy with regard to islands, and analysing their handicaps. The database may be passed to Eurostat but is more likely to reside in DG Regio. The project to produce the report has had to be extended because of the difficulties consultants have experienced in retrieving data. With regard to biodiversity, it has been decided to stop attempts to provide a picture of this aspect of islands. For the environment chapter as a whole there are major data problems and the report is likely to put its main focus on waste. It is hoped that the database can be fed with new data and up-dated at two- to three-yearly intervals.

4.3 Administrations

The relations of islands with another larger entity is important if IUCN is to direct its recommendations or guidance to the right target audiences and to understand policies and practice in agriculture, water, nature conservation and biodiversity and the extent to which islands can determine their own land management strategies and the degree to which these are centrally controlled. European islands and groups of islands have a variety of political/administrative relations with each other and with states. Not all of this complexity can be described here but an overview will help to orient possible future work.

Several European states have put into place special measures for their islands within the government and central administration. In Greece a minister for the Aegean was introduced in 1985 and is considering enlarging the scope of responsibility to other island areas. Similarly, in Malta there is a Minister for the island of Gozo (26,000 inhabitants, 7% of the total population of the archipelago). In Croatia, the Minister for Development and Reconstruction oversees island matters and the 67 small islands of Kvarner and Dalmatia of 100 000 inhabitants, are administered by 170 local authorities distributed between 6 continental counties. France has no representation for small islands at the central level.

Greece has established three island regions: Notio Aigaio, the southern Aegean with around 50 inhabited islands; Voreio Aigaio, the nothern Aegean of 7 islands and the Ionian isles of 13 islands. The populations of these regions are from 180 000 to 270 000 inhabitants. These are the three smallest regional districts of the country. Crete with 560 000 population is an independent region. Both Sardinia and Sicily have had “special regional status” within the Italian state since 1948.

The island areas which have the possibility to legislate are Sicily, Sardinia and the Balearics. Corsica has no special status and this is a source of continuing fierce current debate. The Balearic Islands, divided into three entities of Mallorca, Minorca and Ibiza-Formentara, are administered by an Island Council which is recognised in the Spanish Constitution and has wide powers.

Annex B Contacts, provides a list of island authorities’ websites.

4.4 Data and information on biodiversity

Some island "regions" have their own statistical services; this is the case of the Balearics. Others have regional offices of the national statistical office: this is the case for French and Italian islands (INSEE and ISTAT respectively). Greece has no localised structures for the collection of statistical information which is all centralised.

The collection of statistics anywhere is costly and time-consuming; where budgets are small it can often be a problem and a choice has to be made about the kinds of information collected. Amongst information gaps observed for islands is environment (Biggi, 2001 and see also discussion under EU above). Not only is the present situation little known, but this means that the ability to predict the future is impaired.

However, it may be that the effort to collect statistics about islands and in particular on biodiversity has been weak, partly because of centralisation and partly because of the lack of a separate identity for many islands from the continental country, within the EU and within other fora such as the Barcelona processes. IUCN may find that there is scattered biodiversity data which, collected together, may provide a reasonable basis on which to proceed to more policy-oriented work. Collecting such data, with clear policy objectives, would strengthen expert networks as well as reinvigorating and reinforcing existing ones (e.g. the SSC Mediterranean plants group).

The methods of collecting data to achieve a reliable regional picture from scattered, individual bodies and scientists will be expensive and time-consuming; they may consist of meetings of experts on selected themes (as the SSC Plant Specialist Group did) or a longer-term research effort. However, given that the EU itself is now fully aware of the gaps and is attempting to measure the island reality, acquiring funding to do this might be relatively easy (see Annex D Funding).

4.5 Summary of implications for IUCN

Identifying "interlocuteurs" and new members

Identification of "interlocuteurs" and opportunities for influence are, at the moment, largely dependent on administrative boundaries and the varying opportunities those confer on islands in a regional, national and EU context. It may be useful for IUCN with the help of its members to draw up a list of those parts of the national and regional administrations with whom it needs to relate before embarking on a programme. While this may be time-consuming, it may also be rewarding in that recruiting new members amongst island administrative authorities may strengthen IUCN's presence at sub-regional and local level and bring new perspectives to its work.

With regard to the EU, IUCN perhaps through its Brussels office will need to build relations with DG Regio, possibly CRPM: Eurisles and the Committee of the Regions, and further investigate the parliamentary Intergroup on islands.

Data and information on biodiversity

The main locus for island matters in the European Commission is DG Regio (see also Annex D on Funding). As awareness of island issues appear to have recently risen up the agenda in DG Regio following the Second Cohesion Report and resulting in the development of a database on islands, this may be a good moment to approach DG Regio (or the 6th Framework Programme for Research – see Annex D Funding) with proposals especially for data collection and application. Information and data collection could be a method of mobilising existing and new IUCN Commission experts and members.

5. Biodiversity and habitats of Mediterranean islands / the importance of islands

5.1 Mediterranean overview

With almost 5000 islands and islets (figures differ a little from one authority to the other), the Mediterranean comprises one of the largest groups of islands in the world. The region is of high value to global biodiversity due to its wealth of species, relatively high rate of endemism, long history, and tolerance of all kinds of disruptions, as well as its role as a natural laboratory for evolutionary studies. However, in a UN list of 115 islands ranked according to conservation interest, the first Mediterranean island is Malta ranked second from last (Dahl, 1991).
"The continuous environmental pressure maintained by humans in the Mediterranean throughout history is now an inescapable component of all Mediterranean ecosystems. However, over the last few decades, major socio-economic changes have increased the negative impact of such human activity, mainly along the coasts. In this respect, the islands are extremely vulnerable, as their small size increases the effects of disruptions" (IUCN, 1996).

Table 4: Diversity of vascular plants in four global hotspots

Region	Area sq km	No. plant species	No. endemic species	% endemic species
Mediterranean	2,300,000	25,000	12,500	*50 %
Zaire	2,345,000	11,000	2,800 (approx)	30 %
India	3,166,000	15,000	5,000	30 %
Australia	7,682,000	22,000	7,600	34 %

Source: IUCN (Jan 2002)
* 60% according to Greuter cited in IUCN (1996)

The biological diversity of the Mediterranean is not limited to plants. Of 62 species of amphibian in the Mediterranean, 35 are endemic (56%), as are 111 of the 179 reptile species (62%). In Morocco, for example, there are 93 reptile species, 20 of which are endemic (21%). Of the 184 mammal species recorded, 25% are endemic and 52 species are threatened (excluding marine mammals).

The Mediterranean is also hugely important for its bird populations, being on the migration route of millions of waterfowl. An estimated 2 billion migratory birds of 150 species use Mediterranean wetlands as stopover or seasonal sites. About 50 per cent of the wintering Western Palaearctic populations of ducks and coot occur in the Mediterranean region.

5.2 Islands and biodiversity

Researchers have focussed on island ecology for a number of reasons. "Island populations, communities, and ecosystems are self-maintaining entities with well-defined geographical limits that contain the fundamental processes, properties and interactions of ecological systems …often .. without the complexity of most continental systems" (Vitousek et al. 1995). A further advantage is that the record of human interaction with biological diversity can be tracked more easily in the relatively closed "laboratory" of islands and can provide lessons for strategies for managing continental biodiversity.

Significant aspects of island ecosystems and biodiversity are described below:

Vulnerability: From a conservation point of view island biodiversity is extremely vulnerable and "ecosystem degradation seems to be the rule rather than the exception". This is usually the result

of human pressure but even in protected areas, an "innate vulnerability" has been seen (Adsersen in Vitousek et al op.cit.). The IUCN Red List demonstrates that the majority of bird extinctions has taken place on islands (IUCN 1996) and there is a disproportionate number of island species in the lists of threatened and endangered species, and of records of recent extinctions mainly due to human pressure. However, the extent to which this generalised picture is true of Mediterranean islands needs to be carefully examined: "the evidence amply rebuts the belief that Mediterranean ecosystems are fragile and cannot recover" (Grove and Rackham, 2001) .

Species diversity: Islands generally have lower species diversity than continental areas (e.g. there are 17 species of Corsican terrestrial mammals as against 45 in a comparable continental zone. Cheylan, 1984 cited in Brigand 1995). Médail and Quézel (1999) in seeking to identify biodiversity hotspots in the Mediterranean Basin on the basis of plant diversity suggest the Tyrrhenian islands (Balearic islands, Corsica, Sardinia and Sicily), Crete and Cyprus of the islands but also seven other zones which are in continental areas.

Invasives: "Islands' experience with the invasions of alien species again makes them a contained experimental space for both research and management. Vertebrate predators are almost always absent from small islands (unless introduced) which makes them all the more vulnerable to introduced species. The introduction of non-native species often leads to hybridisation, competition, predation, disease, parasites, and the alteration of ecological relationships between species, thus threatening entire ecological communities. Although the introduction of exotics is a growing threat in all ecosystems, it is particularly severe in aquatic systems and on oceanic islands, where many species have evolved in relatively small, isolated environments. This is reflected in the high number of island birds and molluscs, and freshwater fishes and molluscs, that have become extinct during the past 400 years, in part, as a result of the introduction of exotics" (WCMC 1992).

However, the impact of plant invasives at least can perhaps be exaggerated especially when the situation in other parts of the world are applied to Mediterranean islands. "Plants from other continents usually remain in or near cultivated areas …. Mediterranean wild vegetation has a mysterious resistance to exotic invasions" unlike in California for example which has been invaded by Mediterranean plants (Grove and Rackham, 2001).

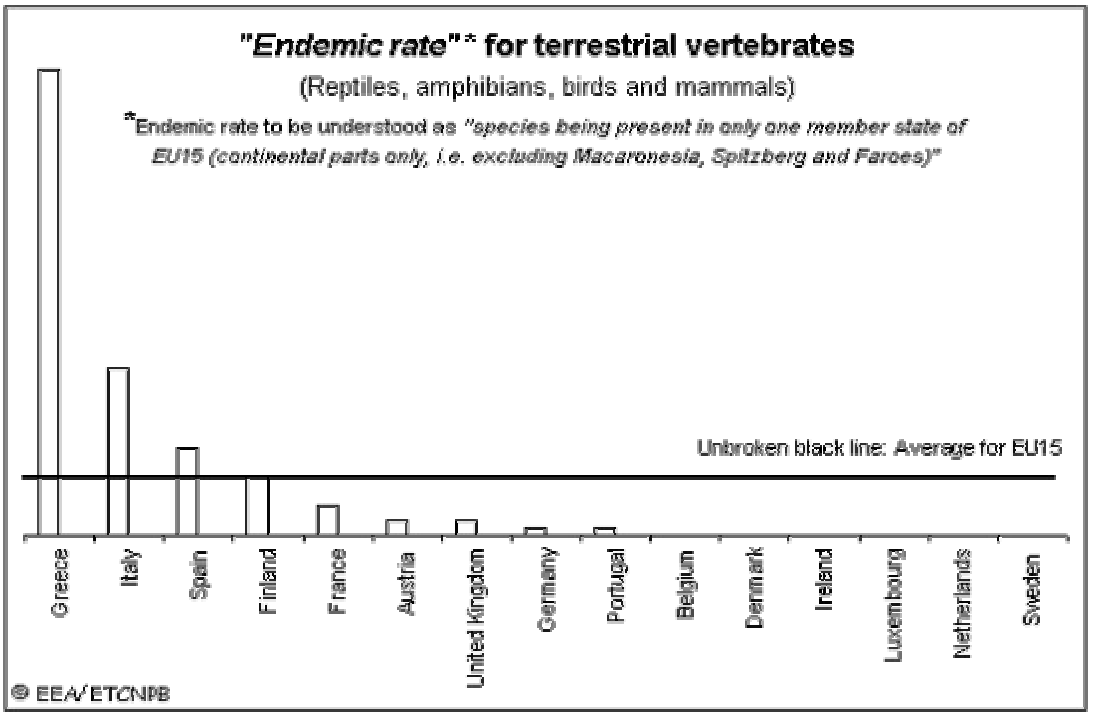
IUCN notes that: "It is important to turn this isolation of islands into an advantage by improving the capacity of governments to prevent the arrival of alien invasive species with better knowledge, improved laws and greater management capacity, backed by quarantine and customs systems that are capable of identifying and intercepting alien invasive species". (IUCN, 2000). However, it has been seen that islands lack human and financial resources and some face centralised administrative systems; the cost of policing Mediterranean islands in the ways suggested by IUCN would be enormous (if it is established that it is indeed required). This kind of recommendation is a perfect illustration of the difficulties islands themselves and their "parent" states face and demonstrates the need for creative, innovative and customised solutions. IUCN/SSC has set out a range of actions for addressing the alien invasive species issue. A review of the specific issues in the Mediterranean islands and then what could be done to manage them could be part of the Mediterranean programme for islands.

Relicts: Some island species represent descendents of species (relicts) that were present over a wide geographical area in past geological eras, their survival generally owing to the absence of large predators and to the extent of glaciations.

Endemism: It is estimated that the proportion of endemic plant species in the large Mediterranean islands as a whole is in the order of 10% which compares with equivalent areas of certain Mediterranean mountain zones (IUCN 1996).

While the table below does not identify islands *per se*, the three highest endemic rates for terrestrial species in the EU occur in the three Mediterranean countries with the largest island territories.

Table 5: Endemic rate for terrestrial vertebrates in the European Union



Endemic species in this case are to be understood as non-introduced species being present in only one Member State of EU15 (continental part only i.e. excluding Macaronesia, Spitzberg and Faeroes). This can be used to point out the "National Responsibility" for each Member State within the EU15.
Sources:
Amphibians and Reptiles: Gasc J.P. and al., 1997, Atlas of Amphibians and Reptiles in Europe,
Birds: Hagemeijer, W.J.M. & Blair, M.J., 1997, The EBCC Atlas of European Breeding Birds,
Mammals: Mitchell-Jones, A.J. & al., 1999, The Atlas of European Mammals.
European Topic Centre on Nature Protection and Biodiversity/EEA

Médail and Quézel (1999) have found that, far from being particularly at risk, endemic plants "are mainly stress-tolerant species that are adapted perfectly to harsh habitats (rock crevices, cliffs, screes) and that are little affected by natural and human disturbances" Similarly, Grove and Rackham note that at Katholiko on the Akrotiri peninsula in Crete "records of endemic plants go back to c. 1640; nearly all are still there" (Grove and Rackham, 2001). IUCN, however, while agreeing that the flora on the Mediterranean islets (often single populations with limited capacity for adaptation) is remarkably stable, fears that it is extremely vulnerable to human influences (IUCN, 1996). The differences in these views appear to hinge on threat – how likely is it that humans will intrude on harsh habitats and, the question for IUCN, does the risk justify a programme component?

On threatened species, it may be interesting and relatively easy for IUCN to publish an extract of the Red Lists for Mediterranean islands alone.

5.3 Habitats

The Mediterranean, including the islands, has been settled by humans for at least 8000 years. In this perspective it is probably risky to describe any habitats as "natural" save perhaps on, for example, inaccessible cliff faces (Grove and Rackham, 2001). Currently un-cultivated (but possibly grazed or used in other ways e.g. for wood) habitats of Mediterranean islands tend to be of extensive maquis, garrigue, savanna and steppe.

Maquis is usually used to describe thick-leaved, evergreen, low-growing shrub. This is often accompanied by "dwarf shrubs" of thyme, sage, broom and species of *Cistus* and *Phlomis*. The shrub underlayer is often referred to as *garrigue* although the term is used in different ways by different authors. *Steppe* habitats are characterised by herbaceous plants including grasses. The *savanna* is a landscape of trees which may be interspersed by maquis, steppe or cultivated land or a mosaic of these.

Woodland appears to be increasing in most of the Mediterranean, much of it springing naturally from abandoned terrace cultivation, decline in pasturing or the end of wood-cutting. For example, the island of Gavdos was known for being almost treeless up to a century ago; juniper and pine now cover about 60% of the island. The new woodland is not necessarily the same, however, as that which it replaces. This spread in the area of woodland at the expense of other habitat is regarded as a conservation problem in some areas, for example, France.

In addition to the above typical Mediterranean habitat types, there is another that occurs on islands and that is desert lands. A cold Alpine desert with less than 1% plant cover is found on west Crete over 1500 to 1800m of altitude. What plant life there is includes several endemics confined to that desert. Karpathos and Majorca also have high cold deserts although neither of these is as high as Crete; it is thought that this is because both lack frost-resistant trees unlike in Crete (Grove and Rackham, 2001).

Crete also has a hot desert in its south-east corner and Santorini (Thera) is also virtually treeless. The hard limestone island of Khalki to the west of Rhodes is desert.

Finally, karst landscapes can be found in the limestone islands of the Cyclades and in Chios, Karpathos, Crete, Sardinia and the Balearics; many of these support maquis, forest or savanna.

But human management of the land is probably much more significant for biodiversity conservation than currently un-used areas.

5.4 Agro-ecosystems

Even though agriculture is declining within the overall economy, extensive Mediterranean arable land is particularly rich in species and regularly mentioned as a priority category of farmland from a biodiversity point of view. Especially in the Alpine, Mediterranean and Atlantic regions of Europe, extensive agricultural habitats occupy a significant proportion of the total area of proposed Sites of Community Interest (pSCIs) under the EU Habitats Directive.

Figure 5: Proportion of extensive agricultural habitats in proposed sites of Community Interest.

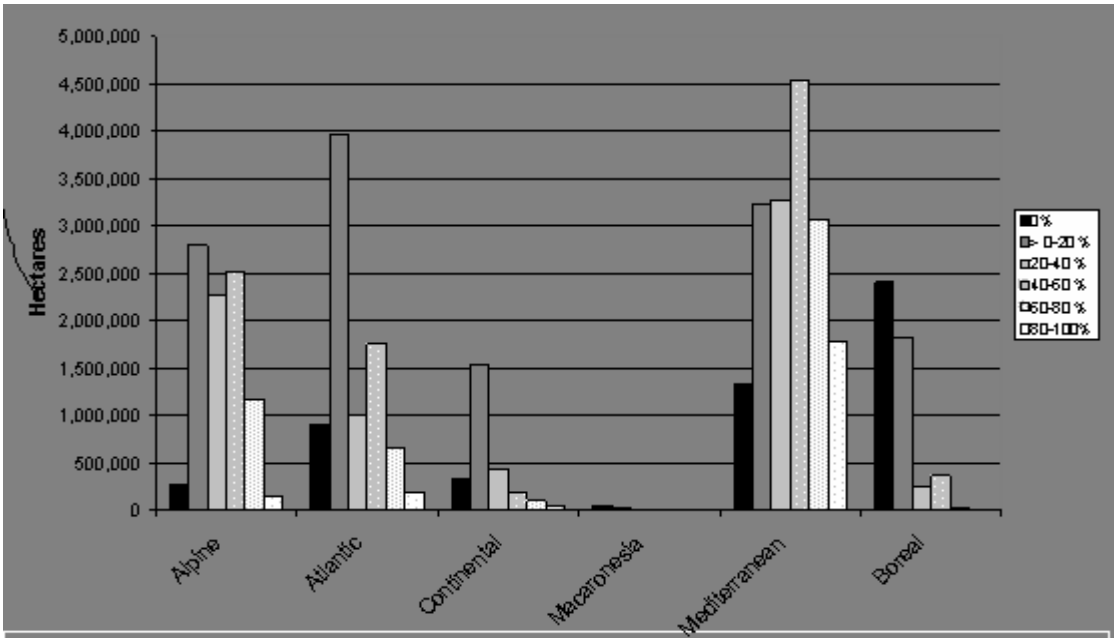


Figure 7: Proportion of extensive agricultural habitats in proposed Sites of Community Interest (pSCI). Surface of pSCIs with extensive agricultural habitat cover by % class (Source: ETC/NPB).

The Mediterranean as a whole is supposed to be characterised by four major crops: olives, vines, barley and wheat. Up until approximately the beginning of the last century, these were cultivated using dryland farming methods with sophisticated and largely sustainable water use. Terracing of various kinds was a feature of island agriculture as in parts of the continent. Methods allowed under-shrubs to survive along with, for example, very old trees and thus provided a mosaic of habitats. Dryland farming is hard work and the vagaries of Mediterranean climate (and historical events) meant that poverty was sometimes acute in island farming communities.

Especially following the introduction of the Common Agriculture Policy in the 1950s, European islands followed the transformation processes seen on the mainland largely as a result of production and export subsidies: intensive irrigation, drainage of wetlands, mechanisation on the lowlands, monocultures, and spates of over-production leading to dumping of produce (e.g. pigs fed on oranges in Crete and the rest tipped into the sea). Early vegetable production is resulting in a sea of plastic greenhouses. Island agriculture is now also having to face up to global competition. One of the results of these changes has been abandonment of terraces and highland cultivation in general.

It should be noted that the 1995 Barcelona Euro-Med partnership and the accompanying MEDA financial instrument, barely mentioned agriculture. However, MEDA allocated 17% of its budget between 1995-1999 to environment and rural development (but only 27% of the total MEDA budget was actually dispersed).

The question for IUCN is to what extent the abandonment of agriculture, or its transformation into more intensive methods including monocultures, threatens the biodiversity and habitats of islands. There are studies of this in the Mediterranean parts of the mainland but none have been found for islands collectively: they probably exist for some islands as there are a number of research bodies working on the issues in relation to islands (see Contacts).

"Agriculture has an enormous influence on biodiversity in the Mediterranean regions of the EU ….. Apart from the obvious lack of political importance given to agriculture and biodiversity, a significant obstacle to addressing these issues is the absence of concrete information on which to base new policy initiatives. …….. Overall, there is an urgent need to develop information systems which indicate which agricultural systems present the greatest threats to biodiversity and which are of greatest benefit, as well as identifying their location and the particular farming practices which determine the environmental effects. Only once this basic information is available will it be possible to evaluate the key drivers (policy, socio-economic and technological factors), and hence the most appropriate means of addressing biodiversity loss" (Beaufoy, 2002) .

If agricultural land use is necessary for the maintenance of biodiversity and landscape in islands, it will be necessary to find ways for it to be economically viable or to receive permanent support. The new MEDOC network which is slowly expanding, has apparently done much work on labels of origin for island products and there is a wide debate in the EU as a whole about how to maintain biodiversity in agricultural landscapes in which many IUCN members are implicated. Agriculture is one of the sectors for attention mentioned by the SSC plants group in their study and action plan on Mediterranean islands (IUCN, 1996). This theme may be one in which IUCN can offer added value for islands.

5.5 Protected areas

A rapid survey of Mediterranean protected areas in the RAC/SPA list shows that of 47 areas some 24 are on islands; these include those on Corsica and Crete. Cyprus and Malta have 3 protected areas each under the Barcelona system.

None of the IUCN/WCMC or RAC/SPA databases consulted, were able to pull islands out of other categories (although the maps provided below, show protected areas on islands). To do this might be a simple consciousness-raising service for IUCN members interested in island biodiversity and an opportunity to collaborate with RAC/SPA and databases such as Eurisles and DG Regio which are looking for such information.

Reviewing the maps of protected areas compiled by UNEP-WCMC, it is immediately clear that protected areas on the larger islands (the scale is too small to comment on the smaller ones) are mainly along the coastal areas. This is to some extent in contrast to the mainland where protected areas tend to cluster in remote or mountainous zones. Even allowing for some marine areas, it is a little strange that the mountainous interiors of the large islands do not have more designated areas. Although Sicily has been identified as a biodiversity hot-spot (Medail and Quezel, 1999) it appears to have very few protected areas, either in the Natura 2000 network or more generally.

"Legal protective measures are few, and poorly enforced. In particular, protected areas are insufficient in number, and are often not, or only poorly, managed. It is therefore essential to implement an action program for the Mediterranean islands to protect their flora, habitats and landscapes within the framework of an overall strategy linking environmental protection, sustainable development, and benefits to local people" (IUCN, 1996).

In connection with the long history of agricultural land use in Mediterranean islands and IUCN's search for holistic approaches to conservation and sustainable use (e.g. ecosystem management; river basin management), exploration of a landscape approach to island conservation may pay dividends, especially as it is likely to make a link with tourism as suggested earlier. The newly signed European Landscape Convention would provide a platform for island landscape policy recommendations. IUCN Commissions may need to acquire expertise on the history of landscapes. In a similar vein, IUCN may consider reviewing the work of MAB and biosphere

reserves on islands. One interesting model may be that of El Hierro in the Canary Islands: the whole island was declared a Biosphere Reserve in 2000 (Insula, 2001).

The protected area coverage of islands could be investigated by IUCN and a system could be proposed to ensure that the major island habitats and biodiversity, especially areas of threatened or endangered species, benefit from some sort of protection.

The Europe region of the IUCN World Commission on Protected Areas has carried out some work in the past on Mediterranean protected areas. It held an International Expert meeting on Mediterranean protected areas in 1999 and another on Marine Protected Areas in ?? both in Italy (Annual Reports: detailed reports in production). It is collaborating with the Italian government in establishing a Centre for Mediterranean Cultural Landscapes. The North Africa/Middle East section of the Commission is focussing on training of protected areas managers, establishing model protected areas and reviewing the role of ecotourism in economic development in protected areas (it is apparently supporting work on the Palm Islands national park in Lebanon). As mentioned in 3.3, the former chair of WCPA has carried out a study of protected area needs in northern Cyprus. Islands have not, however, figured as a separate concern to date in the programmes.

5.6 The EU Habitats Directive/Natura 2000 and Islands

The Topic Centre for Nature and Biodiversity does not hold a separate database for islands although it is apparently possible to extract island proposed sites for the Natura 2000 network.

> ….. it is TECHNICALLY possible to select those sites which are related to Mediterranean islands, provided countries have reported the information on NUTS region, level 2 or 3. Thus, for Greece, there is a possibility to distinguish about 12 islands groups at NUTS level 3.On the other hand, we need to know what will be the use of such information. As a general principle, the Commission agrees for a use of data when they appear in an aggregated way, but not on individual, specific sites. If your intention, for the survey is to identify precisely the list of sites proposed by each individual country in island areas, then you should ask the countries for these data!

Personal communication: ETC/NC: April 2002

Coverage is apparently adequate according to the Topic Centre[6]. Nevertheless, there is a bio-geographic (Mediterranean) meeting scheduled for July 2002 which suggests that some problems remain. While IUCN has not been closely involved in monitoring identification of sites in the Mediterranean (although its membership of the European Habitats Forum gives it the opportunity to mobilise the membership and Commissions to assist if it wishes to put the time and resources into that), what is more interesting for IUCN is that implementation of the Habitats Directive is now moving into the phase which will focus on management of designated areas.

As a complement to EU islands, the Emerald Network managed by the Council of Europe under the auspices of the Bern Convention, is interested and able to work in Tunisia and other north African countries. The Emerald Network is seen as a kind of ante-chamber for Natura 2000. In theory, the Natura 2000/Emerald approach could eventually constitute a gigantic Pan-European/Pan-Mediterranean protected areas network. On a less ambitious scale, IUCN could ensure that Mediterranean islands are part of that vision. Annex D on funding gives more information about the Life instrument which, through its different sections, covers EU and non-EU parts of the Mediterranean and so could perhaps link Emerald with Natura 2000 work.

6 NGO views have been solicited but no response to date.

5.7 Information

No comprehensive data sets on Mediterranean island biodiversity have been found on the internet and, with a less comprehensive search, in hard copy either. The Eurisles site offers protected areas on islands but yields data only for Sardinia and that is only the percentage coverage of the total land area by year (it seems to have declined!). The European Environment Agency and the Topic Centre for Nature and Biodiversity, do not isolate islands within the biogeographic zone. The flagship EU publication on islands "Portrait of the Islands" has paragraphs headed environment which read like a tourism brochure and no data is supplied. This report cannot put forward collected biodiversity data on islands beyond that on flora which is contained in the IUCN publication (IUCN, 1996). Possibly the nearest assessment is to be found in the UNEP Islands database (Dahl, 1991) but this seems to be rather outdated, the data content is uneven and not all Mediterranean islands are included.

"The lack of information on species distribution impedes any objective assessment of the current situation on the islands or islets. It is also difficult to plan conservation actions for species and habitats, as only very limited information on ecology, species biology or habitats exists" (IUCN 1996).

Even for flora of the islands, apparently much more studied than fauna, publications appear to be on individual islands, and usually the larger ones such as Corsica.

A brief review of national reports under the Convention on Biological Diversity (CBD) shows that most of the Mediterranean states with a significant island area have not submitted reports at all. This potential source of information is therefore also a dead end.

However, some papers refer to fairly complete data sets for individual islands or groups of islands (e.g. Giavelli, Rossi, 1990 referring to the Aeolian islands and to the Kerkennah archipelago). This suggests that more information is present but is not shared. IUCN needs to consider why information is not shared and formulate methods for accessing it. In doing this it is important to remember that it is not only conservationists who collect ecological data. For example, in order to get rid of species thought to be harmful to man, the authorities conducted a thorough investigation of insect fauna on the Kerkennah archipelago (Giavelli, Rossi .. op.cit.).

The SAPBIO project to develop a biodiversity strategy and action plan for the Mediterranean is in the phase of receiving national reports from national focal points. Islands have not been singled out for any special attention but the person in charge of the project is interested in assessing whether this would be a useful exercise. For the moment, prompted by IUCN's interest, he may scan national documents for island content and may revert to the focal points to ask them to provide more information or a specific island section. He would welcome initial discussions with IUCN/Med. on island biodiversity issues.

IUCN's Mediterranean office could decide to address the information issue with the following caution in mind: "Since each island is unique in many ways, generalised information and approaches are of little use" (Giavelli, Rossi in UNESCO 1990).

The Commission for the Islands (Eurisle) of the CRPM has enormous difficulty in finding funds to populate its database (www.eurisles.com) and would welcome collaboration with IUCN in improving its data holdings on conservation matters.

5.8 Summary of implications for IUCN

Species issues: on the basis of the work already done on invasive and endemic plants in particular, IUCN might consider a species component of its programme. However, given the Mediterranean office's aim to work regionally and mainly on policy issues, as well as the attempts of islands themselves to find solutions to their development problems, funding and the likelihood of achieving change, are more likely to occur if species work is focussed on clear policy areas and that strategic follow-up to experts' recommendations are factored in from the outset.

Protected areas: IUCN should be able to position itself as the provider of advice and guidance on protected area management issues; this may open opportunities for the next phase of implementation of the Habitats Directive as well as addressing some more generally observed lacunae. In order to ensure complete coverage of EU and non-EU islands, IUCN should make contact with the Council of Europe/Berne Convention for the Emerald Network and with LIFE Third Countries (see Annex D Funding).

Information: What appears at first sight to be relatively easy exercises with high visibility, would be to extract and publish both Red List species information and protected area information for Mediterranean islands from existing databases.

Agriculture: Little appears to be known about island biodiversity and agriculture yet Mediterranean agri-ecosystems are often bio-diversity rich and are a full part of the Natura 2000 network. IUCN may find opportunities to influence policy and practice here.

Selection criteria: Following the suggestions from Medail and Quezel noted above, the island biodiversity hot-spots on the basis of plant diversity according to them are: the Balearic islands, Corsica, Sardinia and Sicily, Crete and Cyprus.

Maps: Protected Areas and Natura 2000 proposed sites

Figure 5: Protected Areas: eastern Mediterranean and western Mediterranean

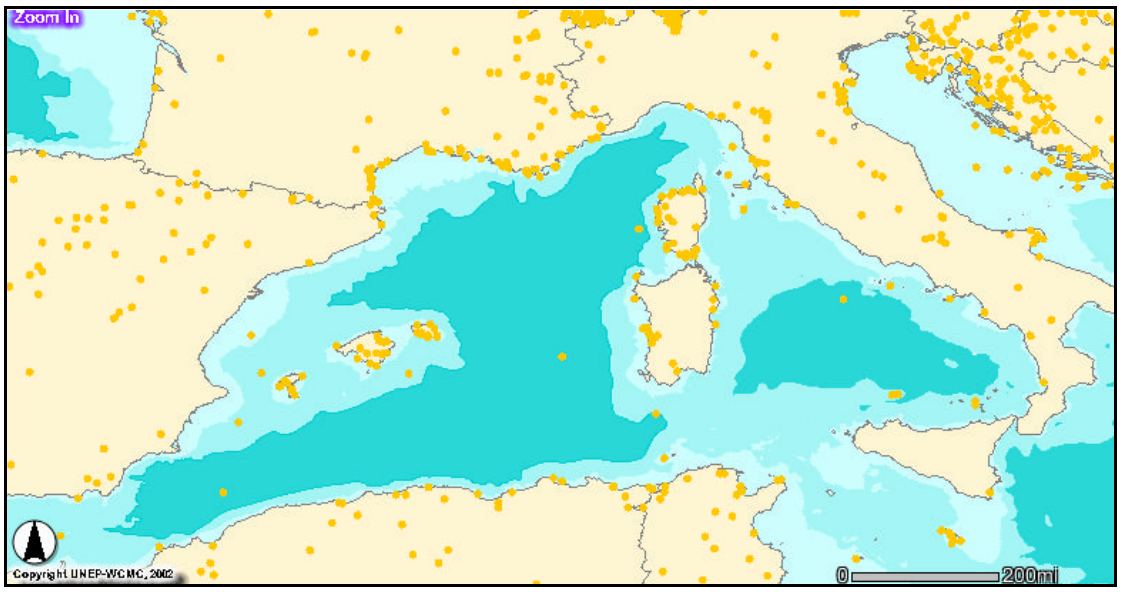
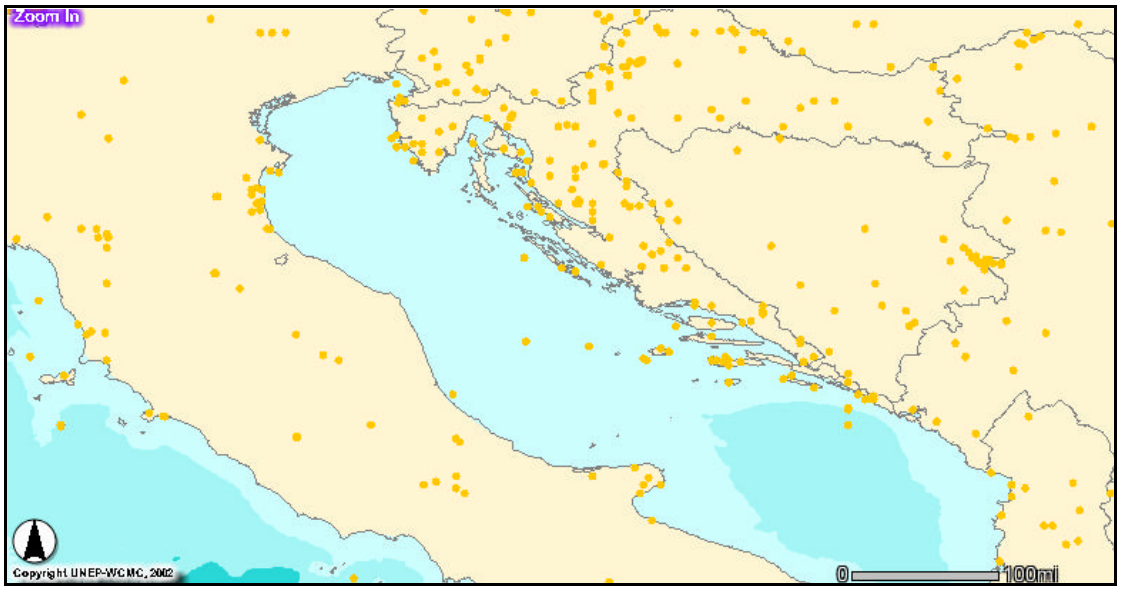
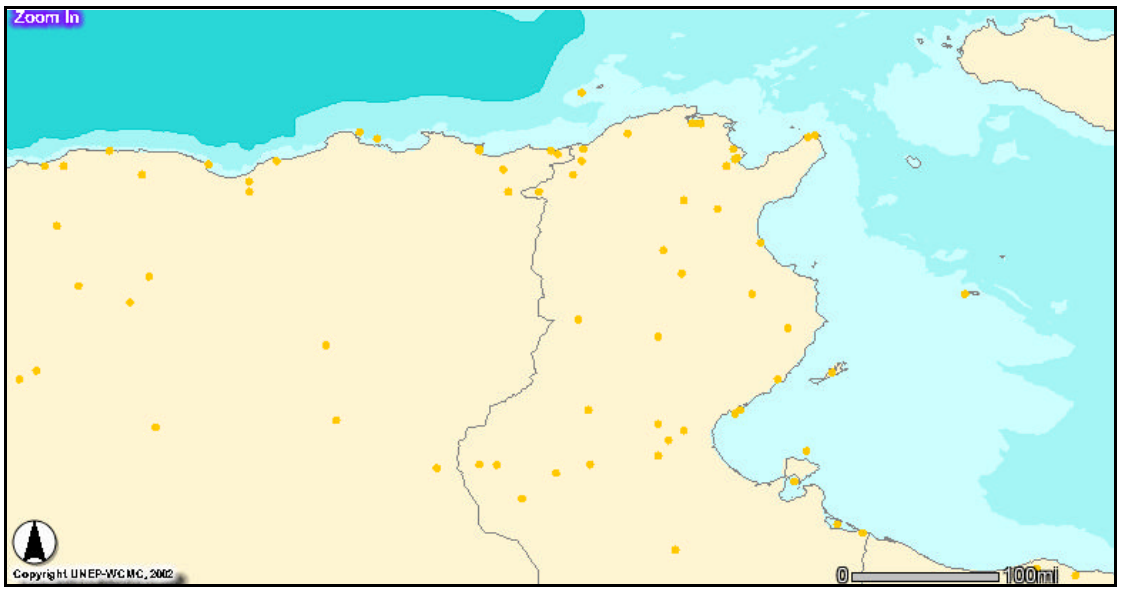


Figure 6: Protected areas: Croatia, southern Mediterranean



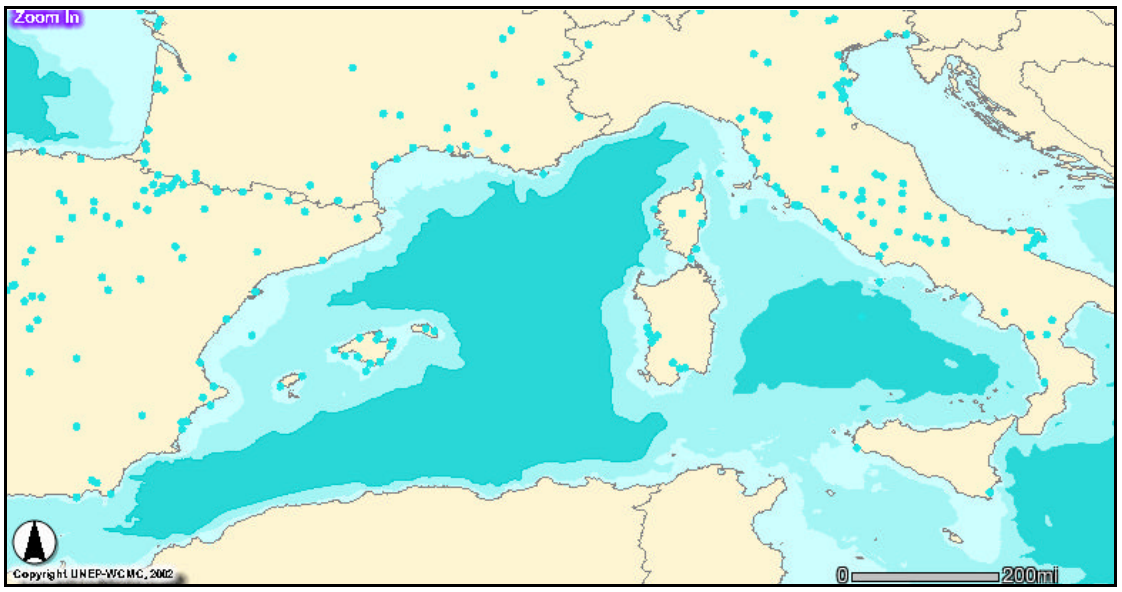
Protected Areas: Croatia



Protected Areas: Southern Mediterranean

Figure 7: Natura 2000 proposed sites: eastern and western Mediterranean

Natura 2000 proposed sites: Eastern Mediterranean



Natura 2000 proposed sites: Western Mediterranean

6. Horizontal issues affecting habitats and biodiversity in islands

6.1 Water

Precipitation is mainly in the winter months in the Mediterranean with a secondary peak in autumn, over 80% of the yearly precipitation occurring between September and March. The driest months are those of the hottest period in the summer which also coincides with the peak tourist season and water demand from that sector. According to WWF the use of water of one tourist is 800 l/day, as opposed to 70 l/day of a resident (WWF, 1995). However, tourist use of water is only a small proportion of the whole (see Chapter 3.2.2). Overall, the average annual increase in water demand has been 60% for the last 25 years.

Supply and optimum use of water is a crucial concern of all Mediterranean islands. Because of this, islands have tended to research and use a range of supplies from ground and surface water, geothermic sources on volcanic islands and collection systems through cisterns as well as desalination (e.g. on Santorini, Cyprus and Crete) and re-use.

The level of exploitation of water resources is generally high in most Mediterranean countries and pressure is increasing. National exploitation ratios of over 50% are usual and are even nearing 100% in many parts of Mediterranean countries (Egypt, Palestinian Authority, Israel, Libya, Malta, Tunisia, most islands and the Eastern regions of Spain). Perhaps not surprisingly, it tends to be the southern Mediterranean countries (with Spain) which are the most innovative when it comes to alternative water solutions such as desalination and re-use of used water for irrigation for example (Blue Plan 1997: Table 19a). Malta and Mallorca use desalination, Sardinia and Cyprus uses both alternative measures.

Mallorca imports water by boat and by pipeline from the mainland. Sardinia and most of its surrounding small islands also receive water by pipeline.

Yearly summer water shortages on the Aegean islands, which necessitate the importation of water from the mainland, are becoming more and more severe and unmanageable.

The agriculture sector, mainly through irrigation systems, accounts for over 70% of water used in the region. It has not been possible to find data which confirms whether or not this is the case in islands beyond the figures for the Balearics given in 3.2.2, but most islands would have some sort

of irrigation system which may be older traditional methods while investments in irrigation in Siciliy and Sardinia in the '60s suggests that it may play a significant role at least in the larger islands. Increasing sophistication in the use of irrigation methods is reducing water demand from the agriculture sector for example in Cyprus

At the moment, IUCN in the Mediterranean is considering a focus on river basin management and, within that, water for nature and food. (UICN draft strategy, March 2002). There are small river basins on the larger islands which could be assessed with regard to their importance for biodiversity and ecosystem functioning and conflicts with agriculture and tourism needs in particular. However, the wide variety of sources of water combined with the overwhelming dominance of agriculture as a water user, in conjunction with the radical changes in the agriculture sector worldwide, suggests that IUCN may wish to take the opportunities offered to propose a more sustainable approach to water management in agriculture and for the benefit of biodiversity.

Table 6 below notes the absence of information on the connection between water and ecosystems on islands.

6.1.1 An overview of work on water

An EEA report (EEA 1996) on water issues in southern Europe provides a useful list of work that needs to be done to gain a better understanding of the issues.

A Euro-Mediterranean Strategy for Sustainable Water Use in Agriculture has been suggested by the MIO-ESCDE NGO coalition (July 2001). MIO-ESCDE have also launched a project to identify "Best" Practices for Alternative Water Resources in Mediterranean Islands. This would certainly be an initiative with which IUCN may find some practical linkages.

The Global Water Partnership (GWP) is setting up regional technical advisory committees and one has been formed in the Mediterranean (see Annex C for contact details). Table 6 summarises the results of early work on islands.

Malta has carried out a project to restore the water system related to the Chadwick lakes (Gentile, F. et al (1999)).

TABLE 6: Summary of some key water-related sustainability issues in different sub regions of the Mediterranean: islands

	LEVEL OF EXPL OITA TION OF W4 TER RESOURCES AND TRENDS	*ROLE OF AGRICULTURE*	*WATER QUA LITY AND ECOSYSTEMS*	*WATER DEMAND MEASURES*	*DESALINATIO N AND WASTEWATER*	*INSTITUTION AND LEGAL SYSTEM*	*REALLOCATION ISSUES*	*OTHER ISSUES*
Islands	Full exploitation and Over abstraction of Groundwater Some islands depend on transported water at high prices and suffer from Shortages.	The importance varies with size of Island. Little reduction of water allocated to irrigation. Technical improvements are being put in place for some years.	Little information. Increasing concern	Implemented in some islands (Cyprus). Problems with the implementation of price schemes. Successful combination of incentives (economic, legal, education	It is becoming a major option for most islands, as Cyprus and Malta.	Fragmentation of the Institutional framework common even in places where IWRM institutions *are* in place Problems of legal In definition User rights not clearly defined in some cases	Resizing the agriculture sector is in the agenda More stringent water prices. More information and advice about risks is necessary	Need for increased co ordination of institutions Need for effective integration of stakeholders and water users.

Source: Framework for action for the Mediterranean, MEDTAC 2000

6.2 Climate Change

Work by the Inter-governmental Panel on Climate Change (IPCC) has considered small island developing states which includes Malta and Cyprus but not the other islands of the Mediterranean. The following are extracts from IPCC reports which have a bearing on the Mediterranean and particularly on islands.

IPCC has noted that "reduced availability of adequate water supply in a changing climate also poses a potential threat to the Mediterranean islands of Cyprus and Malta. Because these two countries already experience water shortages and given a projected decrease in mean summer precipitation over the Mediterranean Sea region the water resources of these states could be placed under considerable pressure in the future" …… "Crete, for example, could experience serious water shortages in five out of six years by 2010" (IPCC, 2001).

Climate change can present additional water management and related challenges. Such challenges may arise from a variety of sources, including increased flood risks and impeded drainage and the presence of elevated water tables—which may pose special engineering problems. Where the water table is high, high evaporation rates and increasing brackishness will eventuate with continued sea-level rise. For many small island states, the prospect of salinity intrusion into the freshwater lens would be a matter of great concern.

The biodiversity of islands could be adversely affected by climate change. A wide range of changes might be expected, including alterations in population size, species distribution, species composition, and the geographical extent of habitats and ecosystems, as well as an increase in the rate of species extinction (McNeely et al., 1993 cited in IPPC 2001).

Climate affects tourism in many ways, directly and indirectly. Loss of beaches to erosion; inundation; degradation of ecosystems and related impacts (e.g., loss of coral reefs to bleaching, saline intrusion); and damage to critical infrastructure are only a few consequences that could undermine the tourism resource base of vulnerable small island states (Alm et al., 1993). Although some of these impacts also can be triggered by non-climate-related factors, there is a growing consensus that climate change is likely to precipitate such changes, and that they would be disruptive. There is evidence that any such dislocation in the tourism sector would have severe repercussions for the economic, political, and socio-cultural life of many small islands (IPCC 2001).

"Projects are under way ……. and networks have been established to assess the response of major continental biomes to global change drivers, while no such activities are presently running for small islands" (Magliulo, 2002).

"A moyen terme, peu d'îles européennes ont engagé la réflexion que mènent les Petits Etats Insulaires en Développement (SIDS) avec la CNUCED sur la vulnérabilité de leurs espaces face aux enjeux du réchauffement de la planète. Pourtant des travaux sur des indicateurs de viabilité et de fragilité environnementale sont stratégiques et vitaux pour de nombreux territoires insulaires. Les politiques de la pêche ou du tourisme par exemple sont directement liées à l'évolution des risques naturels induits par l'effet de serre" (Biggi 2001).

6.3 Fire

2.1 million hectares in five Mediterranean countries (France, Greece, Italy, Portugal, Spain) were destroyed in the five years 1993-1997 and in some regions, 10% of areas destroyed by fire become virtual deserts (European Research News Centre, July 2001). No data specifically on islands has been found. Management of destroyed forest areas could be an issue for IUCN, perhaps as part of protected area management guidelines.

6.4 Desertification

Following the Convention to Combat Desertification(1996), most of the Mediterranean Countries have National Commissions to Combat Desertification. Recently, the presidency of Annex IV of UNCCD has been preparing a Regional Action Plan (RAP) for the member countries (Greece, Italy, Portugal, Spain and Turkey). The RAP shall be aiming towards the harmonisation of national and regional programmes as well as the elaboration of regional or sub-regional joint action programmes. The significant role of NGO's in the implementation of the RAP is also acknowledged (MIO-ESCDE 19 …?).
The European Community has developed a variety of tools and instruments facilitating the efforts of the Mediterranean countries to combat desertification. Unfortunately, the diverse nature of desertification has called for the involvement of seven EC Directorates General: Development, External relations, Agriculture, Environment, Research and development, the Joint Research Centre and Regions). During the last decade, many scientific projects in cooperation with institutions from both sides of the Mediterranean basin, have been implemented with a financial contribution from the MEDA Fund.
Once again, no collected data has been found on islands *per se*, but the basic causes of desertification – erosion especially in central and northern Mediterranean areas and where marly soils are present, but largely due to poor land management stripping the soil cover, exacerbated by climate change (Benaboud, 1995) – are almost certainly to be found on many Mediterranean islands. For example, overgrazing has led to the definitive desertification of Mount Asteroussia in Crete which is …… home to some of the country's most degraded ecosystems. And a large part of the island of Lesvos has turned to desert (Greece Now, 2001).

6.5 Summary of implications for IUCN

Water

The river-basin approach being proposed by the IUCN Mediterranean programme is probably not the most appropriate for an island initiative. Given that agriculture is the greatest consumer of water and that extensive agriculture may be a key support to island biodiversity, a linkage there may be more appropriate.

The links between ecosystems and water on islands in general appears to be little known: this may be an information and policy theme which IUCN could support.

Climate change

This subject is not a proposed part of the IUCN programme in the Mediterranean. However, IUCN does run an international climate change programme and Mediterranean islands do seem to have been left out of work to date. If the difficulties of adaptation on islands pointed out by McNeely is added, IUCN members may wish to consider some work on the possible impacts of climate change on islands, and policies for mitigation. Such work could perhaps be integrated with a protected area element if a separate programme element is not feasible.

Fire and desertification

Work on the linkages between these and island ecology could be explored (there was not time to do that for this report). If they are found to be important and IUCN has the expertise and capacity to address them, then an information and policy component could be initiated. As above, an integrated approach to protected areas management could also include them.

7. Options for IUCN

7.1 A question of priorities

A strategic direction is suggested below on the basis of the foregoing chapters of the report. While the suggestions within it take note of the draft medium-term plan for IUCN in the Mediterranean they are not limited by them. But first one basic question:

- **Given all the biodiversity and sustainable development challenges in the Mediterranean and IUCN's need to select carefully in light of its capacities and resources, should islands be a separate focus?**

  - Island biodiversity has not been demonstrated to be richer than in continental Mediterranean areas
  - Endemism rates are no higher than in some continental Mediterranean areas and endemic plants on islands do not seem to be seriously threatened
  - Invasive species do not seem to have been a major problem for the region's biodiversity (although it is significant on some islands for some species)
  - Some authorities question the apparent vulnerability of island biodiversity and ascribe it to a misreading of the specific ecological and cultural history of the Mediterranean
  - Islands share most of the same pressures as continental Mediterranean areas (water; urbanisation/tourism; agricultural and rural transformation and abandonment; desertification; climate change …..)
  - If IUCN wishes to work on a policy level, it will need to identify or help to establish a platform to do so, especially within the Barcelona Convention
  - Identifying and working with the very varied national and regional environmental governance systems (beyond the European Commission in the case of European islands) will take time and effort as there is no clearly structured administrative, technical or political entry point for this constituency.
  - Working on islands will do little to support IUCN's aim to link the northern shores with the eastern and southern shores of the Mediterranean; nearly all the islands are in the north and nearly all are (or shortly will be) part of the EU
  - IUCN's membership and Commission networks from islands and island countries will need to be strengthened

  On the other hand:

  - The EU appears to be looking more closely at the island "problematique" with a view to formulating more supportive policies; opportunities may be available for funding and for policy influence;
  - The capacity of island people and biodiversity to respond to pressures may be lower than continental areas (smaller skills base; higher costs, restricted physical area ….).
  - Islands have been and continue to be centres of innovation (energy; water; eco-tourism ….) and adaptability, they may have lessons to offer to continental areas

7.1.1 Making the case for an island initiative

In light of the above, IUCN needs to provide a solid justification or rationale for working on Mediterranean islands rather than on other regional priorities. Given IUCN's mission and vision such a justification would initially need to be on the basis of biodiversity importance (both intrinsically and for the well-being of human populations) and specific threats to biodiversity.

However, it has been repeatedly shown in the report that information synthesised and compared on a regional level, which would allow IUCN to justify an initiative on islands, is not available.

On the other hand, the report has suggested that information on the biodiversity of many individual islands and island groups does exist, it has simply not been collated at a regional level and in a policy-relevant manner.

The suggestions for IUCN work contained in the report are nearly all contingent on the provision of further information which would confirm and justify their inclusion in a programme.

It is therefore proposed that a first phase of action focusses on information collation with the aim of providing cogent arguments and a rationale for a specific islands programme in the light of Mediterranean priorities as a whole.

In the process of collecting information and identifying convincing arguments, a spin-off or second objective of such a first-phase action would be **to identify IUCN's point of entry into an island initiative.** Later planning would need to look at the point of entry in light of opportunity, other work, IUCN's expertise and so on.

Some ideas about how to approach the first phase are given in Annex E.

7.2 Possible strategic direction for an island component of the IUCN Mediterranean Programme

An information and knowledge platform for Mediterranean Island biodiversity conservation policy and practice

Almost every chapter in the report has identified lack of information on islands in general and on the biodiversity and habitats of islands in particular as a problem. This probably does not mean that much more data is not available, but that no organisation has had the drive, resources, interest and structure able to collect what there is. It is believed here that IUCN does, in the main, have or is able to attain those attributes. Where the information does not exist, IUCN may be able to stimulate field research in a number of ways.

It is possible that one of the reasons why attempts to collect and supply information on islands has failed, is that there have been no precise policy goals guiding the acquisition and strategic use of the information. It is strongly recommended here that, beyond the first phase described above, information collation and collection is not initiated without first setting out such goals and the related policy platforms (Conventions, EU, national,reegional and local environmental governance bodies).

There appears to be a high mortality rate amongst environmental network start-ups in the Mediterranean: there are probably several reasons for this one of which has been suggested above, but another appears to be because of short-term funding. The problem of funding drying up after a few years may also be linked to the perceived usefulness of the information. Suggestions for ensuring that information serves a clear purpuse have been made above. If IUCN were to move independently into this area for islands, however, it should seek long-term funding ideally for 10 years but at least for 5.

The table below offers an overview of the way in which the proposed Platform could be fleshed out on the basis of the findings in the foregoing chapters, leaving open a range of options for further discussion. As has been mentioned, few of the themes can be defended strongly at the present stage of knowledge about island biodiversity. The first phase suggested above should help to focus on priorities and reduce the scope of the table. More detail on the issues in the table can be found in earlier chapters.

Table 7: Information and knowledge platform for island biodiversity status, conservation and sustainable use policy and practice

Strategy	Possible components	Approach	Results
Information	On: Island administrations/governance for conservation Island research bodies/experts Island literature Red List Species/invasives/endemics Habitats and status incl. agro-ecosystems Protected areas Land use: agriculture systems Water resources and biodiversity *Marine and coastal possibly* *Fisheries possibly* **1.1.1.1.1 Climate change** *Desertification* *Fire*	Identify policy change goals Meetings Stimulate/sponsor research Electronic exchange Extract islands data from existing databases (Red List; protected areas ….)	Firm basis for policy recommendations and guidance for management Cohesive and goal- driven expert networks Stronger conservation constituency in/for Med. islands New members/commission members
Policy areas	Governance of conservation and sustainable use Protected areas: contribution to island economy and society	**1.2 Policy targets** National governments Barcelona process& MCSD; EU Committee of Regions;	Best governance practice applied; more local participation Island rural populations more stable; heightened awareness;

	Adequacy of coverage: priority sites/biodiversity hot-spots; as sources of innovation; and climate change Agricultural landscapes of high biodiversity value; identification; and economy, water use, desertification management systems Water resources: policies in support of restoration; reduced consumption Desertification: mainly in connection with agricultural land use *Climate change: impacts on island biodiversity and habitats* *Fisheries: possibly* *Marine and coastal: possibly*	European Parliament; EuroMed partnership; CBD; Bern Convention; Landscape Convention; Climate Convention As above and .. Desertification Convention; GWP; As above …… and Ramsar As above …..	priority sites protected; innovative policy for island conservation issues High nature value agro-landscapes identified; policy supporting protection and management applied
Knowledge	Protected areas: Promote establishment; management guidelines; exchanges; financing/economics; tourism; innovative solutions to water; desertification …. *Possibly climate change impact mitigation* … Agro-ecosystems:		Increased area under protection; better management of PAs; wider spread of knowledge on best practices; economically viable and financially equitable; application of innovatory techniques Management systems for

	Management guidance;		priority high-nature value agro-ecosystems in place
CROSS-CUTTING	**AND SUPPORT STRATEGIES**		
Membership and commission support	Review geogrpahical gaps in membership; Recruit more members from island countries, islands themselves and amongst institutions working on islands. Review quantitative and skills gaps in light of selected policy and knowledge areas amongst Commission members; Promote recruitment of new Commission members as appropriate (e.g. landscape historians) Identify existing expertise in membership and Commissions in light of chosen strategies.		Strong scientific and technical support for programme actions Heightened credibility of IUCN products Regional coverage Greater efficiency Institutional commitment
Selection of islands	Options: Biodiversity hotspots (Balearics; Corsica; Sardinia; Sicily) Large islands (e.g. over 1000k^2) because of more varied habitats and species and 83% of total island area[7]		

[7] Sicily, Sardinia, Cyprus, Corsica, Crete, Evia, Mallorca, Lesbos, Rhodes

	Relative administrative independence (Balearics; possibly Sardinia/Sicily) Available data: Balearics, ?Corsica ?Malta Most vulnerable (Cyprus; Croatian islands) Affiliation: EU; Association; neither of those Small islands: most isolated Island archipelagos/clusters[8] Call(s) for interest in general/specific topics Funding conditions		
Information and communications policy and technology	Options: Active electronic communications/dialogue/conference capacity Planned series of meetings on priority themes Publications …. policy briefs Mapping service … Island focal point/correspondents network ….	Decide policies on information access and presentation; review communications modes with islands and island expertise;	

[8] Balearics; Sardinia, Corsica and small islands; Sicily and clusters; the Croatian islands; the Ionian islands; Northern and Southern Aegean islands; Tunisian Kerkennah islands.

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Bold: particularly useful

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