

The Mediterranean region: a showcase of biodiversity

Statistics in focus

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The Mediterranean region is regarded as one of planet Earth's 25 "hotspots"¹, embracing some of the world's most unique biogeographical areas and harbouring outstanding biological diversity. Hotspots are characterised both by exceptional levels of plant endemism and by serious levels of habitat loss (at least 70 percent) and, therefore, are the focus of conservation efforts.

The Mediterranean basin is the largest of the world's five Mediterranean-climate regions. It stretches west to east from Portugal to Israel and north to south from Italy to Morocco and includes around five thousand islands.

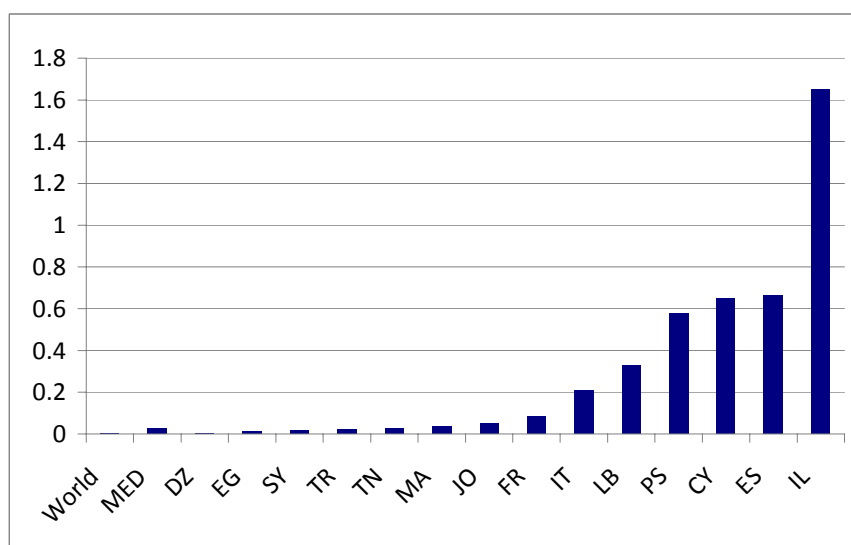
Mediterranean biodiversity is unique and under threat

The Mediterranean basin's location between Eurasia and Africa, its geographical characteristics (e.g. the Mediterranean climate, dominated by cool, fairly wet winters and hot, dry summers; the fragmented relief; and temporary shifts of the tropical/temperate zone) and its role as shelter for high mountain species during glacial periods have contributed to its great diversity and the high level of endemism.

For the latter the Mediterranean flora is a showcase. Of the 25 000 known species of Mediterranean plants (corresponding to 9.2% of the identified species worldwide and found on only 1.5% of the terrestrial surface), half are particularly well adapted, for example to dry periods, and are to be found nowhere else in the world (endemic).

The biodiversity of the Mediterranean region is, however, particularly threatened by human activities. As the number-one tourism destination, this densely populated and intensively developed region is exposed to a wide spectrum of anthropogenic impacts.

Figure 1: Number of known species per square metre in the MED countries and in selected biodiversity-rich Mediterranean neighbouring countries (Cyprus, Italy, France, Spain and Turkey). Malta exceeds the present scale (value of 19.5).



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¹ <http://www.biodiversityhotspots.org/xp/Hotspots>.

Wealth and vulnerability of Mediterranean biodiversity

The great number of islands as well as Mediterranean-bordering countries such as Spain, France, Italy and Morocco contribute considerably to making this region a biodiversity hotspot. Excluding the “biodiversity islands” Cyprus (CY) and Malta (MT), the data provided here by the 9 Mediterranean partner (MED) countries illustrate the wealth and vulnerability of biodiversity in the Mediterranean.

In particular, when the number of known species is related to the surface area of the countries, the huge capital of biodiversity in rather small MED countries such as Israel and the Occupied Palestinian territory stands out (Fig. 1).

The 9 MED countries reported on flora (vascular plants, mosses, lichens, macrofungi and algae) and fauna (mammals, birds, reptiles, amphibians, marine and freshwater fish as well as invertebrates, including insects). The data is based on either inventories or continuous scientific monitoring. However, the data currently available might be biased, and discrepancies within the numbers of known species, e.g. the number of identified insects, may be explainable by differences in research foci and efforts between countries.

Regarding the diversity of plants, the richness of Morocco, Algeria and Egypt is particularly impressive (Table 1). The number of known plant species differs widely among the 9 MED countries: from 641 in Syria to 6 990 in Morocco. The largest Mediterranean populations are ferns as well as marine species such as *Posidonia* seagrass forming underwater meadows (*Posidonia oceanica*, which creates specific conditions and is considered a key ecosystem for Mediterranean coasts).

As shown in Table 1, animal diversity is also significant within the Mediterranean basin, with large populations of invertebrates including its particularly species-rich class of insects. The latter is highlighted by Israel, with about 30 000 known species of insects, and by Morocco, with over 13 400.

At present, around 500 bird species are known as being permanent and breeding within the Mediterranean-neighbouring countries. The largest bird species diversity of the 9 MED countries can be found in Egypt (Table 1). In addition, many migratory species (more than 150) travel twice a year through the straits and natural passageways of the region (e.g. Gibraltar, Cape Bon, Strait of Messina, Bekaa Valley and Isthmus of Suez).

Within this biodiversity-rich group, for example, the imperial eagle (*Aquila heliaca*) is found among the most threatened bird species and listed as “vulnerable” (VU) in the IUCN Red List, primarily as a result of the loss of mature native forest and persecution. Another species, the white-headed duck (*Oxyura leucocephala*), has undergone a very rapid decline (over 50% in the last 10 years) and is now classified as “endangered” (EN; 2006).

Marine and freshwater fish are the third most numerous group in terms of species diversity. Situated on the Atlantic and Mediterranean coast, Morocco displays great diversity. For Israel and Jordan the fish species diversity is also high because of the fact that they border the Mediterranean and/or the Red Sea. The fish species present in the 9 MED countries include a number of species that are commercially exploited (see SIF Agriculture “*The Mediterranean is the third most important region for EU-25 fisheries*”, Eurostat 2007).

Reptile and amphibian species diversity is also significant, particularly in the arid zones. In Table 1, the relatively large numbers for Syria, Israel and Morocco evidence the importance of reptile biodiversity, as do the relatively high numbers for amphibians again documented for Syria and Morocco as well as for Algeria.

Because their vulnerable habitats (wetlands, inland and coastal waters) are threatened, reptiles and amphibians are also endangered, such as for example the sea turtle (*Caretta caretta*, VU), a species of particular concern within the Mediterranean.

Table 1 : Number of known species (flora and fauna) per country

Country	Flora	Mammals	Birds	Reptiles	Amphibians	Fish	Invertebrates	of which insects	Sum
Algeria	4 287	107	336	70	12	300	2 716	1 900	7 828
Egypt	4 284	132	514	90	8	766	7 899	7 324	13 693
Israel	2 238	105	210	105	7	1 154	30 300	30 000	34 119
Jordan	2 834	77	418	89	5	1 026	n.a.	n.a.	4 449
Lebanon	1 063	65	338	48	5	382	1 540	n.a.	3 441
Morocco	6 990	113	317	98	11	1 189	17 893	13 461	26 611
Occupied Palestinian territory	2 493	95	470	93	7	284*	127	n.a.	3 569
Syria	641	125	360	127	16	452	1 500	1 500	3 221
Tunisia	2 924	78	362	63	8	336**	334	n.a.	4 105

Note: * marine species only; **: freshwater species only

In the small group of mammals, representing the uppermost level in the food chain, 77 species were counted in Jordan and 132 in Egypt (Table 1). In the 9 MED countries, the worst losses in biodiversity have, however, occurred amongst the mammal populations

(Table 2). One of the most well-known in the region, the monk seal (*Monachus monachus*, EN), is among the 10 most threatened species worldwide.

Threats and conservation action in the Mediterranean region

Biodiversity is exposed to human-induced threats and is, therefore, diminishing over time. Anthropogenic disturbances are causing deterioration and degradation of the diverse ecosystems and exert a tremendous pressure on biodiversity. Consequently, the functioning of a previously intact natural system is disordered and, for example, water and air quality are reduced and (forest) fires occur more often.

Fragmentation of natural areas also strongly affects biodiversity. As a result of urban development, industrialisation, etc, what remains of the original habitat is scattered in small patches. In the Mediterranean region, tourism is having massive (direct and indirect) impacts on ecosystems, some of which are very sensitive, and is considered to be one of the most significant pressures on biodiversity within the basin.

Furthermore, the introduction of invasive species and the over-exploitation of natural resources are among the most serious problems. Overuse, as can be observed, for example, in some aquaculture farming, adds crucial factors that impact on the environment.

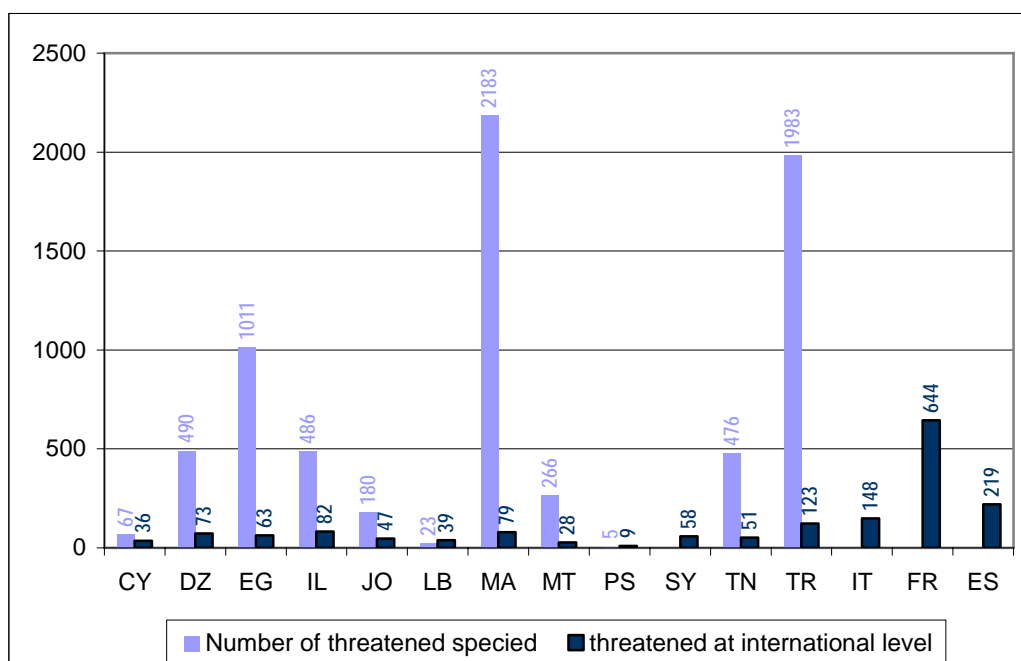
According to the 2006 edition of the IUCN Red List of threatened species, 16 119 species worldwide are

endangered. This is equivalent to 1% of known species, but 12% of birds, 23% of mammals and 32% of amphibians are identified as threatened. In the 9 MED countries, the percentages are even higher, with averages of 14% for birds, 39% for mammals and 49% for amphibians (Table 2).

This gives an idea of the present level of threat within the Mediterranean region. Regarding the 9 MED countries, the absolute numbers vary from 5 to 2 183 species endangered per country (Fig. 2), i.e. from 1% to 12% of the identified MED species. As shown in Figure 2, in Morocco over 2 000 species of animals and plants are threatened with extinction (critically endangered, endangered or vulnerable). In Egypt over 1 000 species are considered threatened and in Algeria, Israel and Tunisia the expected loss in species reaches 500.

Additionally, the numbers in Figure 2 show that few of the species of the 9 MED countries are regarded as threatened at international level. Being threatened at international level means that the species in question are threatened on a large scale. In the 9 MED countries most of the species are endemic and might therefore not be classified at international level.

Figure 2: State of biodiversity in MED countries and selected biodiversity-rich Mediterranean neighbouring countries (Cyprus, Malta, Italy, France, Spain and Turkey).



Note: Syria n.a.

Table 2 : Number (and percentage) of threatened species (according to IUCN categories CR, EN, VU) within the MED countries

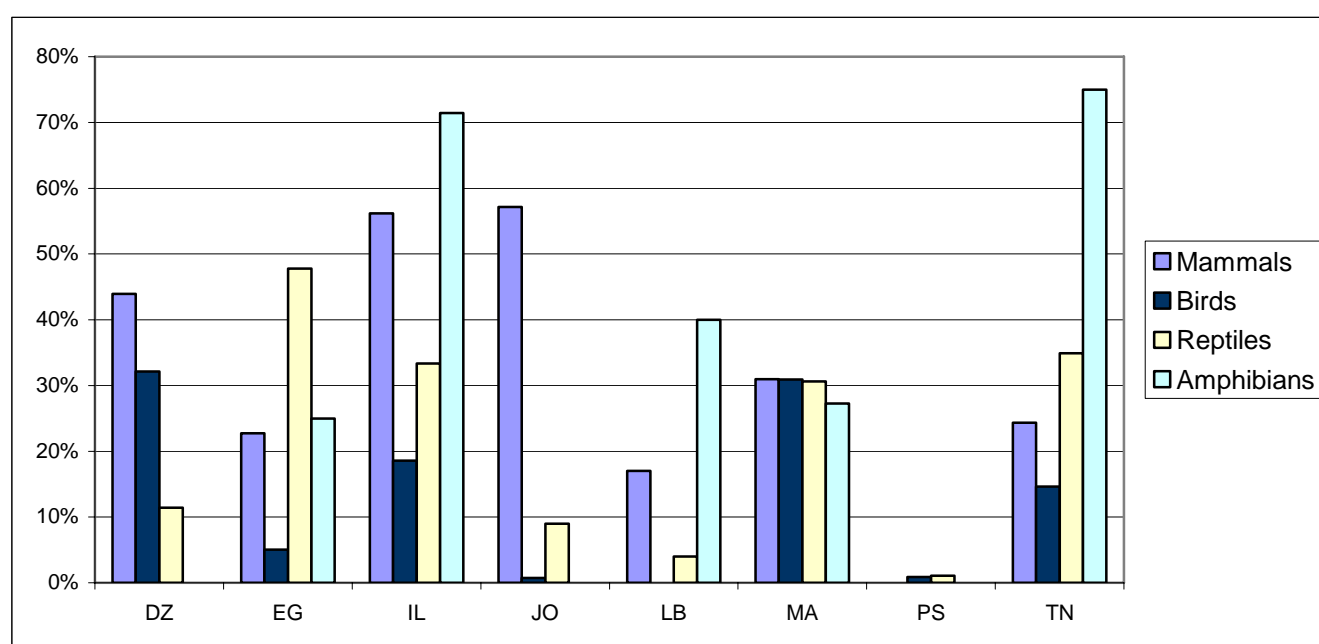
Country	Flora	Mammals	Birds	Reptiles	Amphibiens	Fish	Invertebrates
Algeria	327 (8%)	47 (44%)	108 (32%)	8 (11%)	n.a.	n.a.	n.a.
Egypt	n.a.	30 (23%)	26 (5%)	43 (48%)	2 (25%)	n.a.	910 (12%)
Israel	338 (15%)	59 (56%)	39 (19%)	35 (33%)	5 (71%)	8 (0,6%)	2 (0%)
Jordan	125 (4%)	44 (57%)	3 (1%)	8 (9%)	n.a.	n.a.	n.a.
Lebanon	n.a.	11 (17%)	n.a.	2 (4%)	2 (40%)	8 (2%)	n.a.
Morocco	1649 (24%)	35 (31%)	98 (31%)	30 (31%)	3 (27%)	96 (8%)	272 (1,5%)
Occupied Palestinian territory	n.a.	n.a.	4 (1%)	1 (1%)	n.a.	n.a.	n.a.
Syria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tunisia	364 (12%)	19 (24%)	52 (15%)	22 (35%)	6 (75%)	11 (3%)*	1 (0%)

*Note: freshwater species only

For example, in Morocco the flora is comparatively rich, with nearly 7 000 identified species (Table 1) of which around 1 000 are endemic. However, one in four is endangered (Table 2 and Fig. 3). Also a high percentage of mammals, birds and reptiles are considered threatened species. For other MED countries, the situation is even more striking (Fig. 3), in particular for amphibians (more than 70% in Israel and Tunisia) and for mammals (more than 55% in Israel and Jordan).

The conservation of biodiversity has thus become a priority worldwide. Correspondingly, an increasing number of protected areas have been created in the Mediterranean basin, such initiatives being regarded as the main biodiversity conservation measure. Today, we count more than 4 400 protected areas in the Mediterranean, covering about 96 million hectares (7% of the world's total according to WDPA, 2006). The nationally designated areas in the 9 MED countries currently cover 115 194 km², i.e. 2.52% (2005) of their total surface area is dedicated to the protection of biodiversity.

Figure 3: Percentage of selected threatened species within MED countries (see also Table 2)



Mediterranean protected areas more numerous

The evolution of the cumulated surface area under protection in the 9 MED countries reveals a significantly positive trend in the implementation of protected areas (Fig. 4). However, the score of 2.52% remains low compared to the target of 10% advocated by the World Park Congress (1992) as well as in comparison to the 12% of the total surface area in the Mediterranean part of Europe (IUCN, 2007).

The information in Table 3 reflects the latest national situation in the 9 MED countries. In these countries, the creation of protected areas is a relatively recent achievement and has accelerated since the year 2000, constituting the first steps towards protecting their rich biodiversity. For example, Israel protected 427 areas in 2002, representing 20% of its total surface area (Table 3). Also in Egypt the total surface of its protected areas

has increased significantly and, now (2004), 9.8% is covered by joint marine, coastal and terrestrial areas.

The census of protected areas remains complex owing to the large number of classification systems (national classifications, IUCN, European Directive on Birds and Habitat, etc.) and conventions (CBD, Ramsar, CITES, etc.) for the protection of natural areas. In some cases, an area selected for protection may be protected for various different reasons and may be fully or partly classified under one or more specific protection category or class.

Moreover, management objectives are not clearly identified or assigned in most of the countries. Only in certain countries are efforts being made towards implementing the IUCN categories.

Figure 4: Cumulated surface area (km²) of protected areas in the 9 MED countries between 1980 and 2005

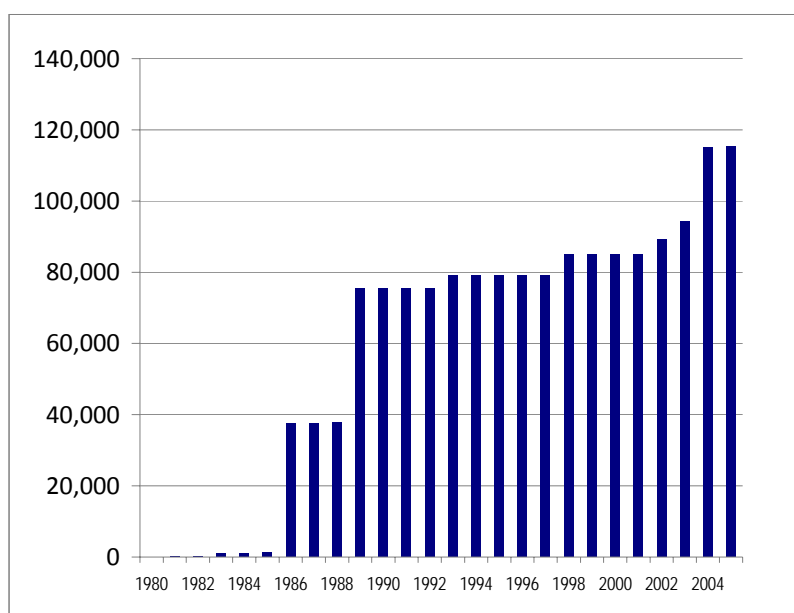


Table 3: Total number and surface (in hectares and as percentage of country covered) of protected areas in some of the MED countries. The year of creation is indicated as well as the last year of data available.

Country	Year	Total number	Surface	
			ha	%
EG*	1983	1	85000	0,08
	2004	24	9848350	9,83
IL	2002	427	409966	19,81
JO	1975	1	2200	0,02
	2006	7	129800	1,45
LB	2005	n.a.	21808	2
MA	1993	10	362120	0,51
	2003	14	672788	0,95
PS	2000	n.a.	5440	0,92
	2005	n.a.	5440	0,92
SY	2003	19	213393	1,15
TN	1964	1	100	0
	2005	24	217888	1,33
8 MED	LYA	515	11519433	2,52

Note: *joint protected areas (marine, coastal and terrestrial)

In order to help find solutions for the sustainable management of natural resources, reliable statistical data is needed. The availability of such data also needs to be improved given the importance of diversity within the various ecosystems as well as the changes and pressures biodiversity is facing.

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

Biological diversity, or biodiversity, covers the variety and variability of all living organisms. This includes the genetic variability within species and their populations, the variability of species and their life forms, the complex diversity of associated species and their interaction, and that of the ecological processes they impact on or belong to, known as “ecosystemic diversity”, with Mankind considered as an integral part of these ecosystems (18th General Assembly of the IUCN, Costa Rica, 1988).

Threatened species. This formulation applies to all species exposed to the risk of imminent disappearance or extinction. Five quantitative criteria are used to classify species in the threatened category: decline rate, total population, presence and habitat areas, number of specimens and spread fragmentation. The three subgroups of the threatened category are:

CR (critically endangered): species showing an extremely high risk of extinction in the wild

EN (endangered): species showing a high risk of extinction in the wild

VU (vulnerable): species showing a high risk of extinction in the wild, as well as a high risk of being added to the preceding categories (CR and EN) if threats persist.

Acronyms

CBD: Convention on Biological Diversity. The Convention sets three main objectives: conservation of biological diversity, sustainable use of its components, and the fair and equitable sharing of the advantages stemming from the use of genetic resources.

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention

IUCN: World Conservation Union.

LYA: Last year available

NSOs: National Statistics Offices.

Ramsar: The Ramsar Convention on Wetlands is an intergovernmental treaty establishing the framework for national initiatives and international cooperation for the conservation and rational use of wetlands and their resources.

WDPA: World Database on Protected Areas, <http://sea.unep-wcmc.org/wdpa/>.

e.: estimation.

n.a.: not available (either no data or no indication)

IUCN categories

Category Ia:	Strict nature reserve
Category Ib:	Wilderness area
Category II:	National Park
Category III:	Natural Monument
Category IV:	Habitat/Species Management area
Category V:	Protected Landscape/Seascape
Category VI:	Managed Resource Protected area.

Abbreviations

CY:	Cyprus
ES:	Spain
FR:	France
IT:	Italy
MT:	Malta
TR:	Turkey

Sources of illustrations and latest available year of data transmitted by the 9 Mediterranean partner (MED) countries

<i>Algeria (DZ):</i>	Office National des Statistiques (2000)
<i>Egypt (EG):</i>	Central Administration for Public Mobilisation and Statistics (2004)
<i>Israel (IL):</i>	Central Bureau of Statistics (2002)
<i>Jordan (JO):</i>	Department of Statistics (2006)
<i>Lebanon (LB):</i>	Administration Centrale de la Statistique (2005)
<i>Morocco (MA):</i>	Direction de la Statistique (1997, 2003)
<i>Occupied Palestinian Territory (PS):</i>	Palestinian Central Bureau of Statistics (2005)
<i>Syria (SY):</i>	Central Bureau of Statistics (2003)
<i>Tunisia (TN):</i>	Institut National de la Statistique (1998, 2005).

This document has been prepared with the co-operation of Ms Roddier-Quefelec and Ms Carolyn Scheurle, Environment expert in MEDSTAT II, the EU-funded regional Euro-Mediterranean Statistical Co-operation programme and Ms Sandrine Beaujean, Eurostat.

The *MEDSTAT II* started in January 2006 and seeks to:

- Harmonise statistical methods in Mediterranean partner countries in line with European and international conventions and standards.
- Improve the comparability of data between the partner countries and with those from EU Member States and EFTA countries.
- Enhance the quality of services offered to users by the National Statistical Institutes and their partner organizations involved in the production of statistics.

Special attention is paid to **9 sectors**: Trade of goods and services, National accounts, Social statistics, Energy, Agriculture, Environment, Tourism, Transport and Migration.

The programme currently includes ten partner countries: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Occupied Palestinian territory, Syria, Tunisia and Turkey.

MEDSTAT website: <http://ec.europa.eu/eurostat/medstat>

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Further information:

Data:

- Medstat website: <http://ec.europa.eu/eurostat/medstat>;

- Environment SIF "*The Mediterranean in 2020*":

http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-NQ-06-015/EN/KS-NQ-06-015-EN.PDF

- Euro-MED Bulletin:

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1073,46587259&_dad=portal&_schema=PORTAL&p_product_code=KS-DI-06-001

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