



GEOREFERENCED COMPILATION ON BIRD IMPORTANT AREAS IN OPEN SEAS

MEDITERRANEAN REGION

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RAC / SPA Consultant
November 2015**

The Barcelona Convention (SPA/BD Protocol)

First phase

[...] in order to achieve the objectives of the project entitled “***Identification of possible SPAMIs in the Mediterranean areas beyond national jurisdiction***”.

[...] will support RAC/SPA by compiling and analysing contents for the preparation datasets and layouts; a report on ‘**Georeferenced compilation on bird important areas in open seas**’; [...]

Contract N° 33/2009_RAC/SPA High Seas



The Barcelona Convention (SPA/BD Protocol)

Annex II: Seabird species

Calonectris diomedea – Scopoli's Shearwater
Puffinus yelkouan – Yelkouan Shearwater (endemic)
Puffinus mauretanicus – Balearic Shearwater (endemic)
Hydrobates pelagicus melitensis – European Storm-Petrel (Mediterranean subspecies)
Phalacrocorax aristotelis desmarestii – Mediterranean Shag (Mediterranean subspecies)
Larus audouinii – Audouin's Gull (endemic)
Larus melanocephalus – Mediterranean Gull
Larus genei – Slender-billed Gull
Sterna albifrons – Little Tern
Sterna bengalensis – Lesser Crested Tern
Sterna caspia – Caspian Tern
Sterna nilotica – Gull-billed Tern
Sterna sandvicensis – Sandwich Tern

occur further offshore and therefore are
more representative of pelagic habitats

have higher levels of endemism, and
therefore represent taxa that evolved
in isolation in the Mediterranean

have higher levels of threat, according
to international standards (IUCN,
BirdLife International)

The Barcelona Convention (SPA/BD Protocol)

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Scientific name	Protected (1)	In decline (2)	Endemic or near-endemic	EC Birds Directive (3)	AEWA (4)
<i>Calonectris diomedea diomedea</i>	•	•	•	•	
<i>Puffinus yelkouan</i>	•	•	•	•	
<i>Puffinus mauretanicus</i>	•	•	•	•	
<i>Hydrobates pelagicus melitensis</i>	•		•	•	
<i>Phalacrocorax aristotelis desmarestii</i>	•	•	•	•	
<i>Larus melanocephalus</i>	•		•		
<i>Larus audouinii</i>	•		•	•	•

(1). Barcelona Convention. Protocol concerning specially protected areas and biological diversity in the Mediterranean. Annex II: List of Endangered or Threatened Species.

IUCN. IUCN Red List of Threatened Species. IUCN. 2008.

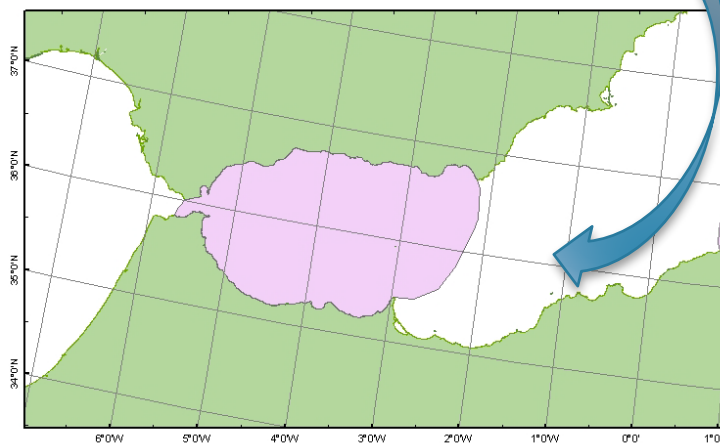
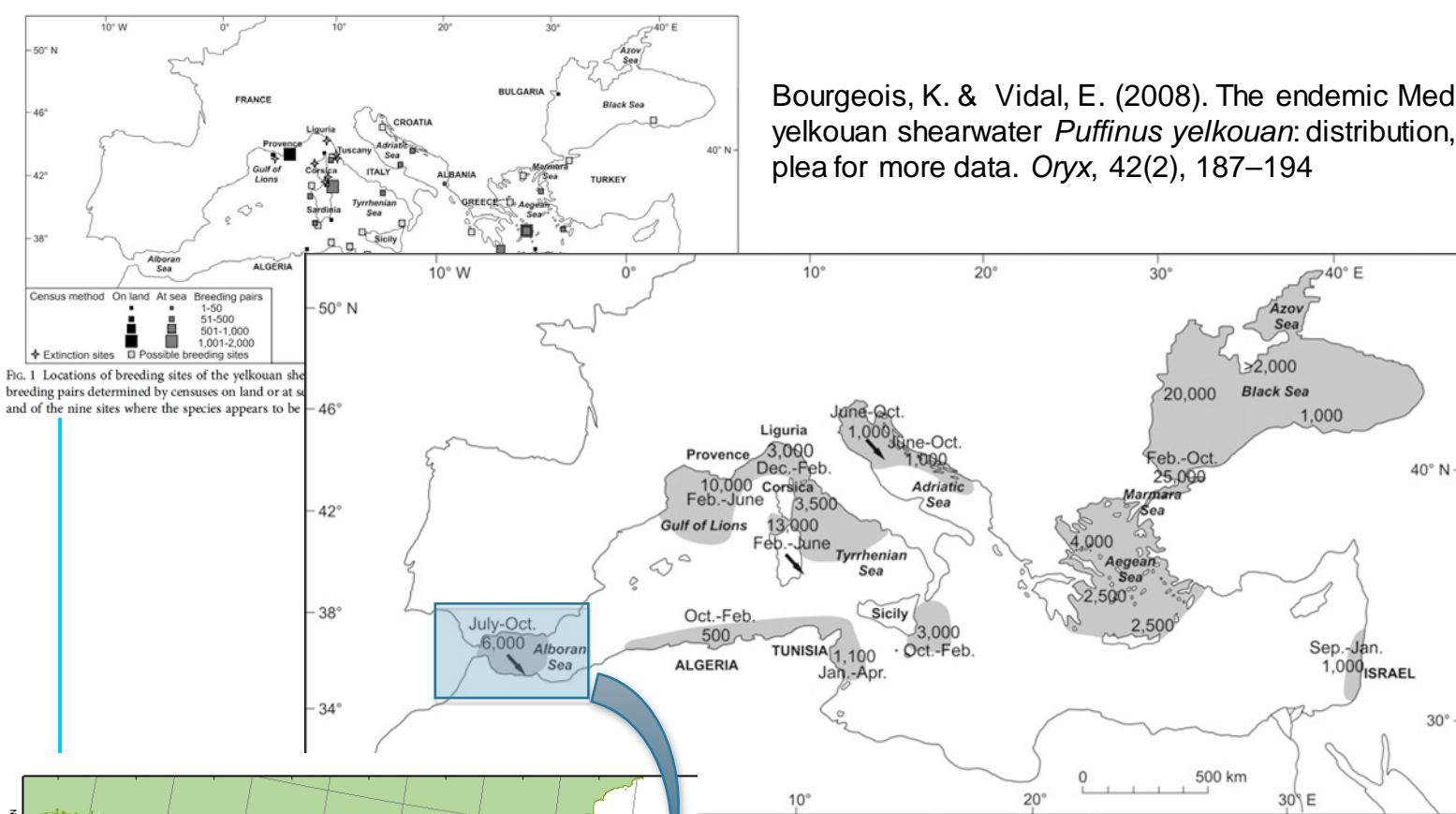
(2). BirdLife International. (2009). Species factsheets. <http://www.birdlife.org>

UNEP-MAP-RAC/SPA. (2006). Proceedings of the first symposium on the Mediterranean Action Plan for the conservation of marine and coastal birds. Vilanova i la Geltrú, Spain.

(3). EC Birds Directive. Council Directive 79/409/EEC on the conservation of wild birds. Annex I. Species subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

(4). AEWA. Agreement on the Conservation of African-Eurasian Migratory Waterbirds. Annex 2: Waterbird species to which the Agreement applies.

Bourgeois, K. & Vidal, E. (2008). The endemic Mediterranean yelkouan shearwater *Puffinus yelkouan*: distribution, threats and a plea for more data. *Oryx*, 42(2), 187–194



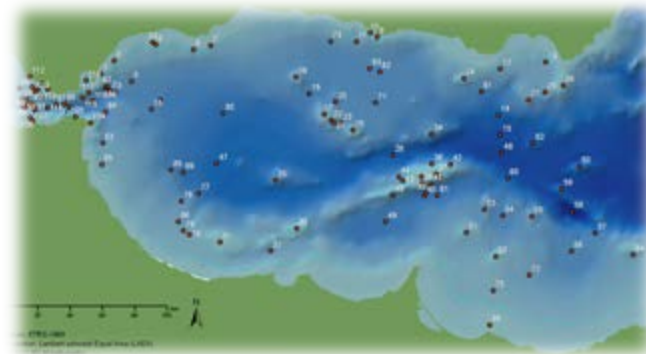
Quantum GIS - 1.1.0-Pan (Unstable)

Table Manager: Puffinus_yelkouan_area

Fields management Table preview

CATEGORY_G	SCINAME	SPECIECODE	ENG_NAME	FEATUREID	FEATURECODE	CELLCODE10	AREA_NAME	REPRODUCE	PRESSPEC	ENDTAXON	INDECLINE	CONS_VALUE	SPEC_FISH
1	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	3	PUFYEL3	Israel	NO	0	1	1	2	YES
2	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	2	PUFYEL2	Algeria-Tunisia	YES	0	1	1	2	YES
3	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	4	PUFYEL4	Aegean Sea-Marmara Sea	YES	0	1	1	2	YES
4	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	5	PUFYEL5	Bosporus Strait-Black Sea	NO	0	1	1	2	YES
5	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	8	PUFYEL8	Gulf of Lions-Liguria-Tyrrhenian Sea	YES	0	1	1	2	YES
6	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	6	PUFYEL6	Adriatic Sea	YES	0	1	1	2	YES
7	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	1	PUFYEL1	Alboran Sea	NO	0	1	1	2	YES
8	Seabird	Puffinus yelkouan	PUFYEL	Yelkouan Shearwater	7	PUFYEL7	Sicily-Malta waters	YES	0	1	1	2	YES

Save Save as... Cerrar



**+ other
relevant information
for a more realistic
adjustment of
the limits**



Translation into the EEA reference grid
ETRS-LAEA52N10E, 10 km cell.

Quantum GIS - 1.1.0-Pan (Unstable)

Capas

- SEABIRDS_distribution_grid
- SEABIRDS_distribution_grid_w

Table Manager: SEABIRDS_distribution_grid

Fields management Table preview

	CELLCODE	CATEGORY	ENDTAXON_S	INDECLINE	CONSVL_S	AREA	PRESSPEC_S
813	10kmE337N148	Seabird	1	1	2	6.4985527429	0
814	10kmE337N149	Seabird	1	1	2	96.8628111453	0
815	10kmE337N150	Seabird	1	1	2	100	0
816	10kmE337N166	Seabird	2	1	3	100	0
817	10kmE337N167	Seabird	3	2	5	100	0
818	10kmE337N168	Seabird	3	2	5	87.9553932763	0
819	10kmE337N169	Seabird	3	2	5	95.1878027783	0
820	10kmE337N170	Seabird	3	2	5	95.5839905045	0
821	10kmE337N171	Seabird	3	2	5	58.5610400396	0
822	10kmE337N172	Seabird	3	2	5	1.87636224556	0
823	10kmE338N166	Seabird	2	1	3	100	0

Value Tool

☒ Active ☐ Value/Graph

Layer Value

UNEP MAP RAC/SPA

3030314,1064322 Escala 1:1172421 Representar

3 YEARS

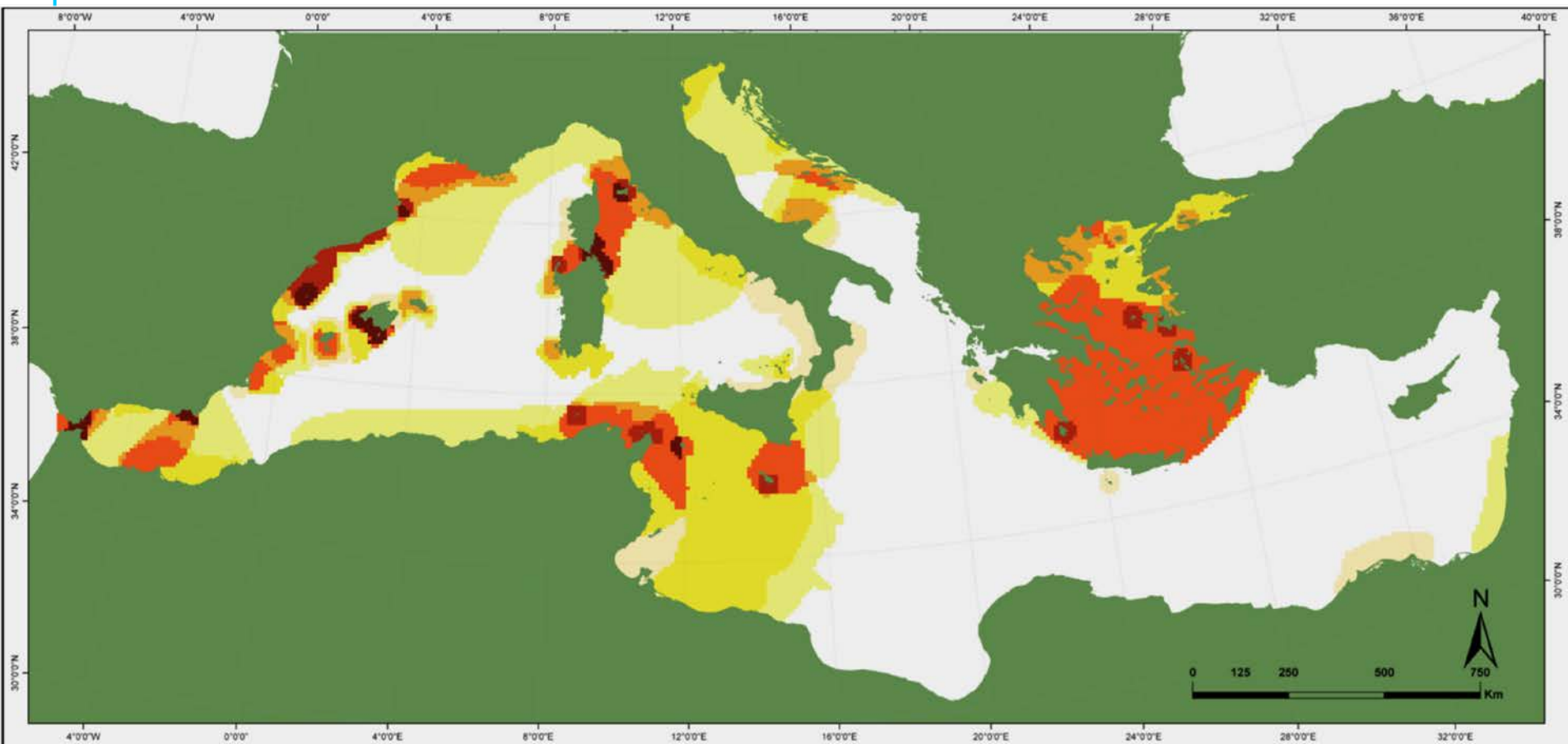
The final conservation value for each of the cells of the grid

Field		Possible values
PRESENCE	If a specie is present in the area	yes / no
SPEC-FISH	If a specie is threatened by by-catch	yes / no
ENDTAXON	If a specie is an endemic or near-endemic taxon in the area	0 / 1
INDECLINE	If the specie is in decline in the area	0 / 1
CONSVAL	The sum of all the above factors	0, 1, 2

- The final conservation value of each 100 km² is the result of an **additive process**.
- When the spatial join of all these layers is performed over the Mediterranean grid, each of the cells received a new value that corresponds to the sum of all the species that counts for any given cell.
- In this way, **CONSVAL** of a given a cell **could be ranked between**



0 if there isn't presence for none of the species
to
11 if this cell counts for all the seven species.



Pelagic distribution of Mediterranean seabirds of conservation concern. Potential sites in open seas.

Legend

Potential seabird sites grid (conservation value global rank)



UNEP MAP, RAC/SPA - EC

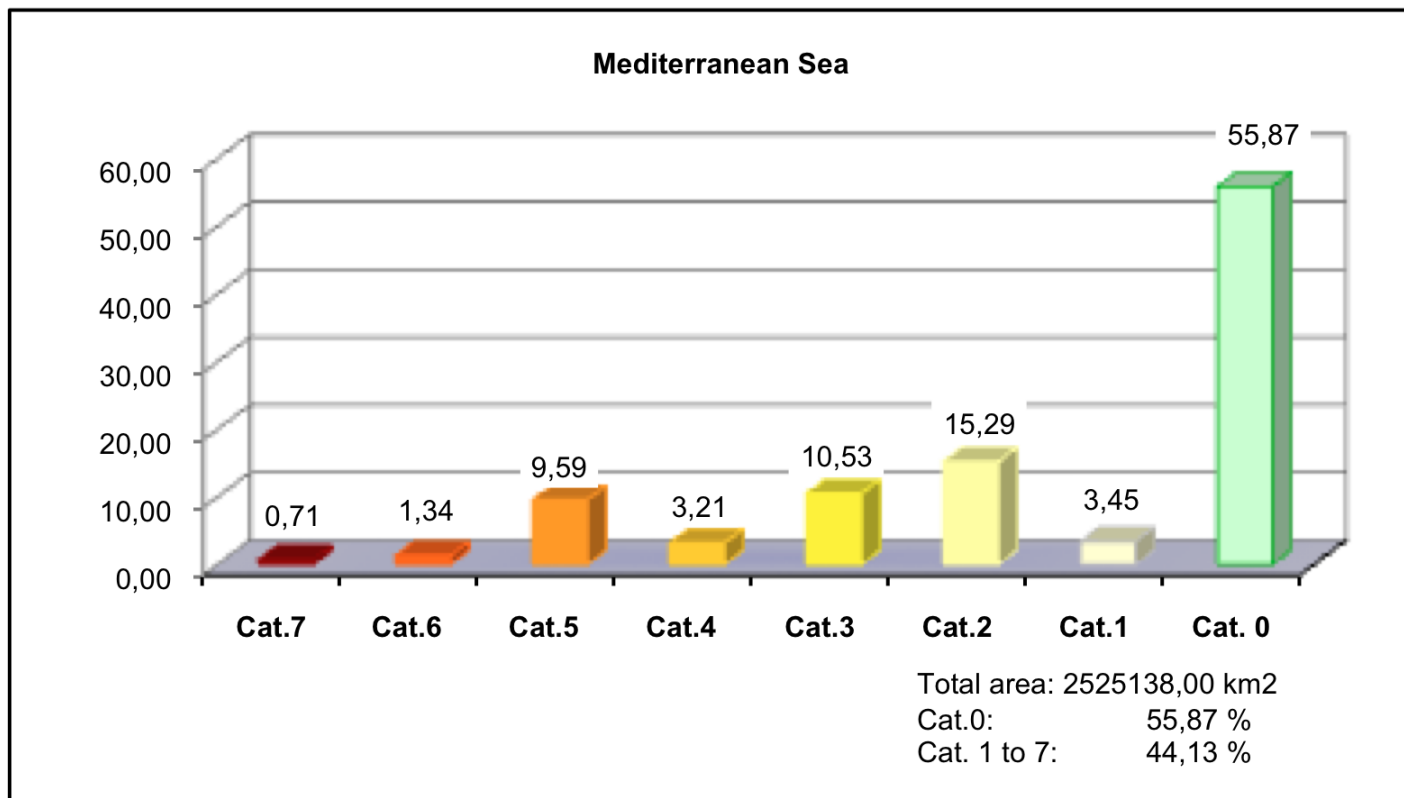
*Identification of possible SPAMIs in the
Mediterranean areas beyond national jurisdiction*

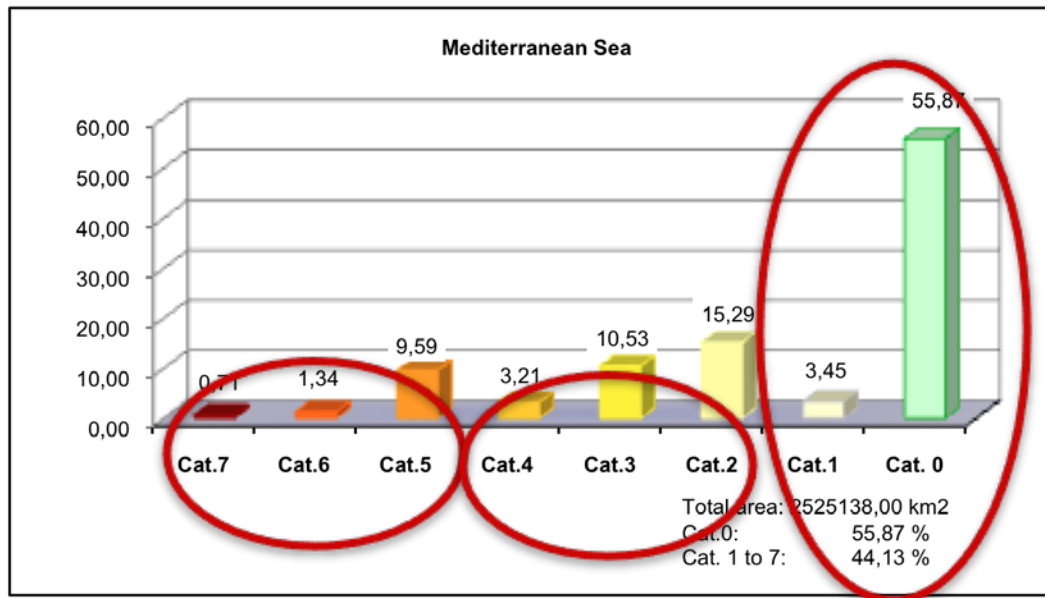
Author: Requena, S.

Date: May 2009

Projection: ETRS89 Lambert Azimuthal Equal Area 52N 10E

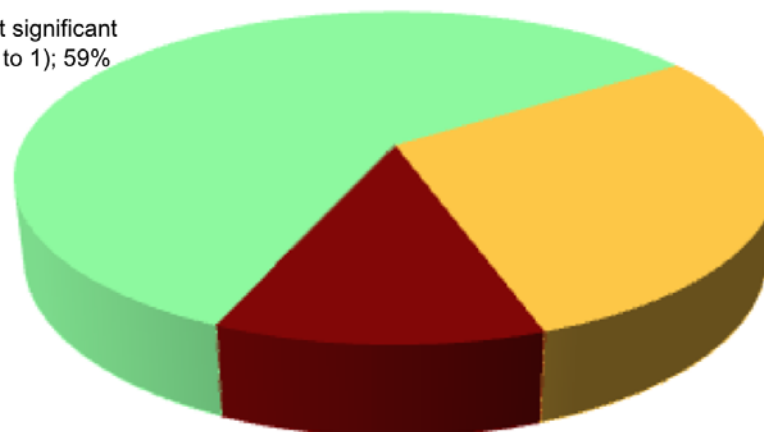
	Area (km2)	%	% total
Cat. 0	1410724,93	55,87	55,87
Cathegories 1 to 7	1114413,08	44,13	
Total area			
Mediterranean Sea	2525138,00	100,00	
Category			
Cat.7	17938,47	1,61	0,71
Cat.6	33950,34	3,05	1,34
Cat.5	242093,78	21,72	9,59
Cat.4	81134,15	7,28	3,21
Cat.3	265984,47	23,87	10,53
Cat.2	386069,57	34,64	15,29
Cat.1	87242,30	7,83	3,45
Sub-total value	1114413,08	100,00	44,13





Mediterranean Sea

Not significant
(0 to 1); 59%



Priority "B"
(2 to 4); 29%

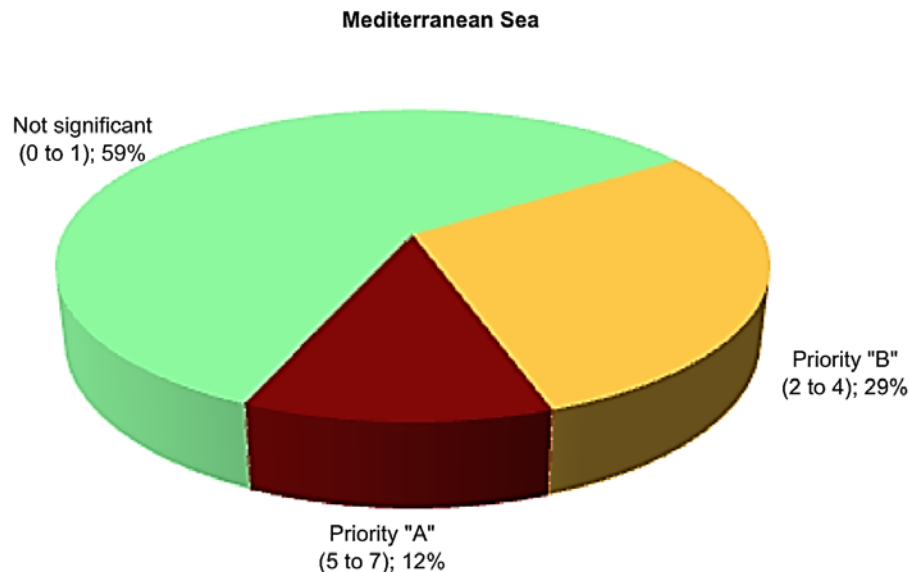
Priority "A"
(5 to 7); 12%

Total area: 2525138,00 km²
 Cats.0 to 1: 59,32 %
 Cats. 2 to 7: 40,68 %

MEDITERRANEAN OVERVIEW

Some basic calculations revealed some trends that are worth mentioning:

- ✓ Nearly two-thirds (59,32%) of cells had an insignificant presence of priority species (cat. 0-1)
- ✓ Inversely, priority bird species were **present in only about one-third** (40,68%) of the total cells
- ✓ Priority bird species were **somewhat dispersed over the areas** where they were present; no single cells had a value >7, when the highest possible value was 11
- ✓ **Less than one-third (29%) of cells corresponded to cat. 2-4**; these were assigned 'priority B'
- ✓ **About a 10% (11,6%) of the total sum of cells had the highest importance** (cat. 5-7) in terms of priority bird species present; these were assigned 'priority A'



Total area: 2525138,00 km²

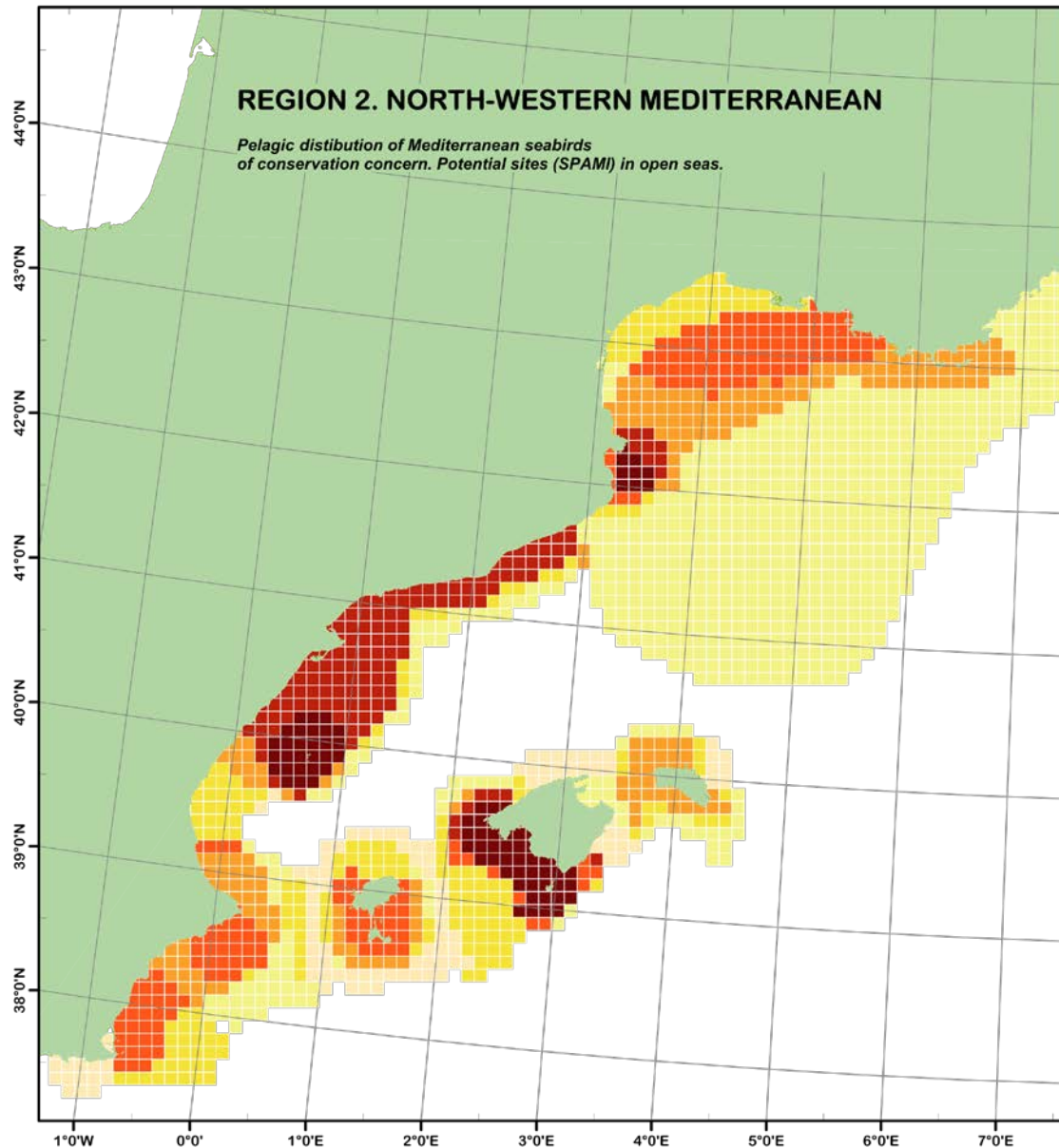
Cats. 0 to 1: 59,32 %

Cats. 2 to 7: 40,68 %

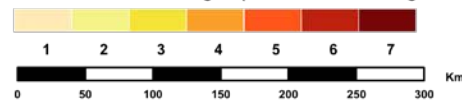
2nd phase: Gulf of Lions

REGION 2. NORTH-WESTERN MEDITERRANEAN

Pelagic distribution of Mediterranean seabirds of conservation concern. Potential sites (SPAMI) in open seas.

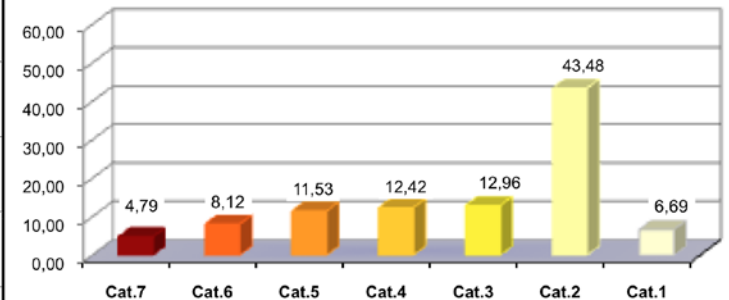


Potential seabird sites grid (conservation value global rank)



Projection: ETRS89 Lambert Azimuthal Equal Area 52N 10E

	Area (km ²)	%
Cathegory 0	185516,05	54,06
Cathegories 1 to 7	157626,71	45,94
Total area REGION 2	343142,76	100,00
Cathegory		
Cat.7	7552,03	4,79
Cat.6	12799,73	8,12
Cat.5	18176,47	11,53
Cat.4	19584,20	12,42
Cat.3	20433,07	12,96
Cat.2	68543,83	43,48
Cat.1	10537,38	6,69
Sub-total value	157626,71	100,00



Total area: 343142,76 km²
 Cat.0: 54,06 %
 Cat. 1 to 7: 45,94 %

OUTSTANDING AREAS

- Gulf of Lions
- Hyères Islands
- Cap de Creus
- Ebro delta & river system
- Columbretes Islands
- De la Nau Cap





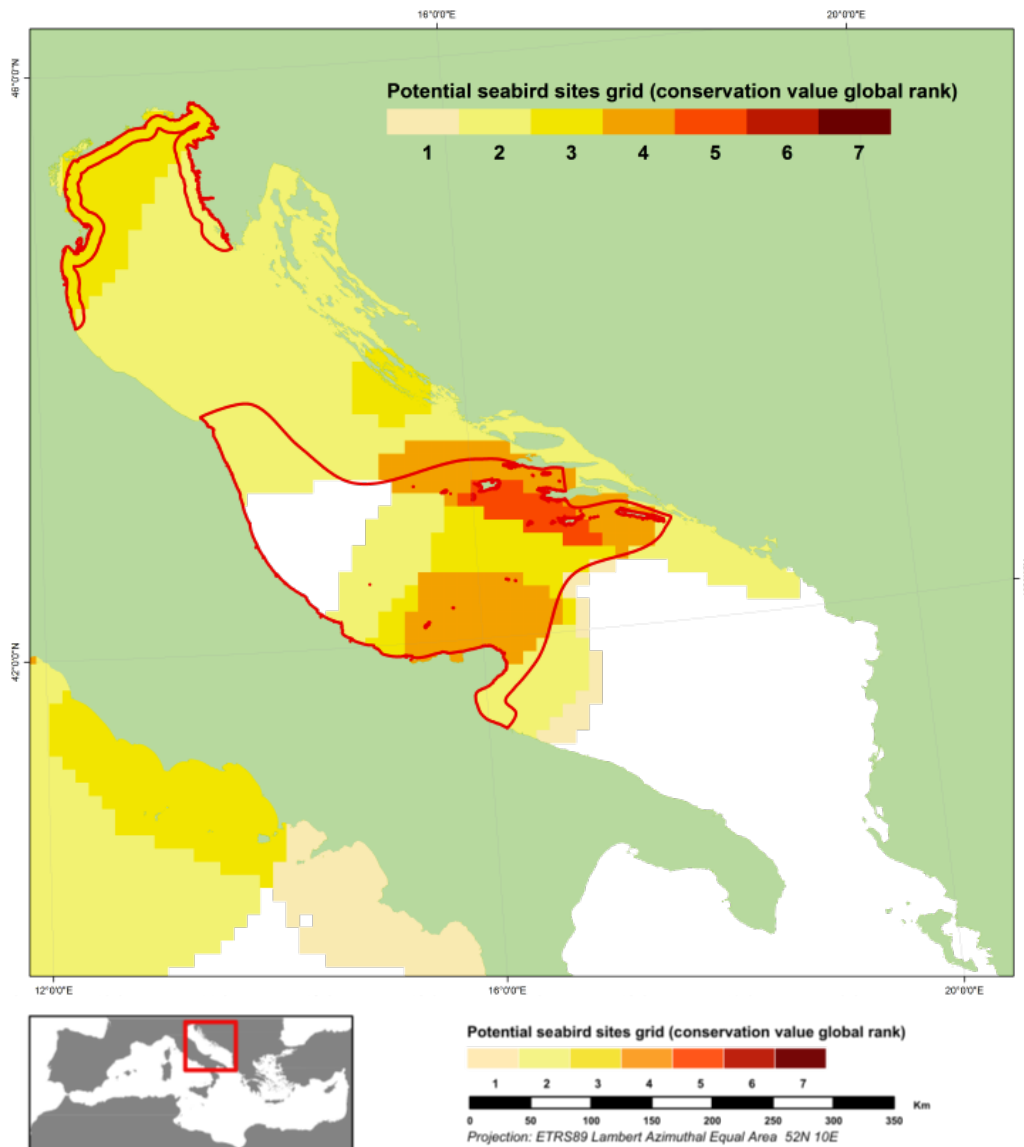
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2nd phase: Gulf of Lions

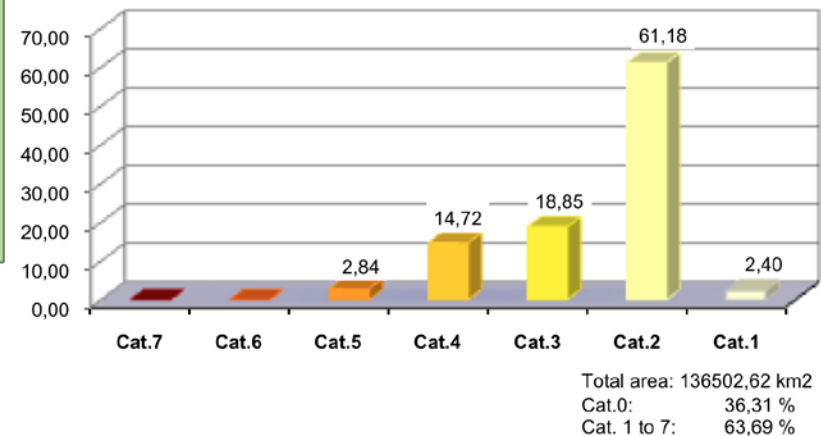
OUTSTANDING AREAS

- Gulf of Lion
- Hyères Islands
- Cap de Creus
- Ebro delta & river system
- Columbretes Islands
- De la Nau Cap

3rd phase: Adriatic Sea



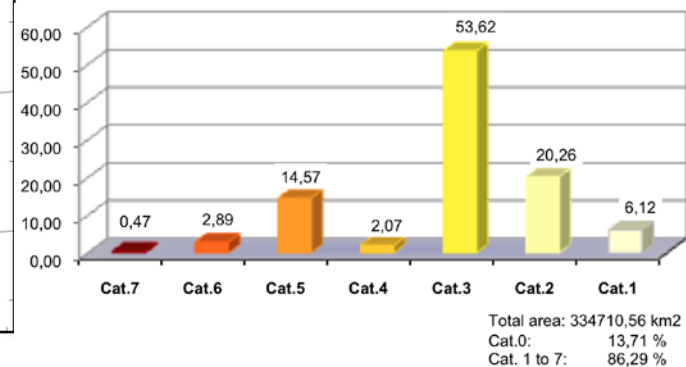
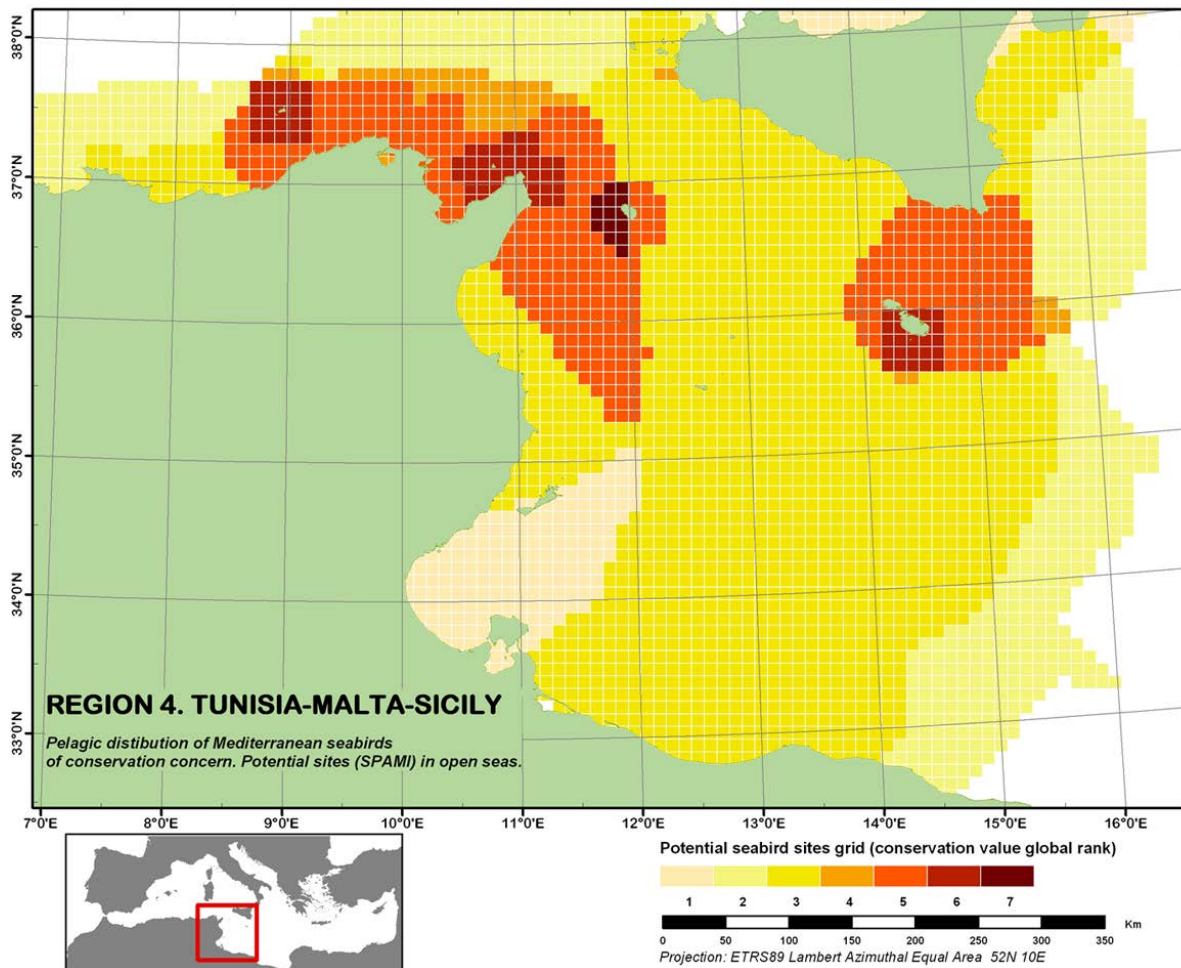
	Area (km2)	%
Cathegory 0	49563,31	36,31
Cathegories 1 to 7	86939,31	63,69
Total area REGION 7	136502,62	100,00
Cathegory		
Cat.7	n.d	n.d
Cat.6	n.d	n.d
Cat.5	2471,68	2,84
Cat.4	12801,27	14,72
Cat.3	16384,73	18,85
Cat.2	53191,85	61,18
Cat.1	2089,79	2,40
Sub-total value	86939,31	100,00



OUTSTANDING AREAS

- Gulf of Venice
- Central Adriatic Sea

3rd phase: Sicily Channel / Tunisian Plateau



	Area (km2)	%
Category 0	45892,27	13,71
Categories 1 to 7	288818,28	86,29
Total area REGION 4	334710,56	100,00
Category		
Cat.7	1364,01	0,47
Cat.6	8345,85	2,89
Cat.5	42066,81	14,57
Cat.4	5989,08	2,07
Cat.3	154866,58	53,62
Cat.2	58515,02	20,26
Cat.1	17670,93	6,12
Sub-total value	288818,28	100,00

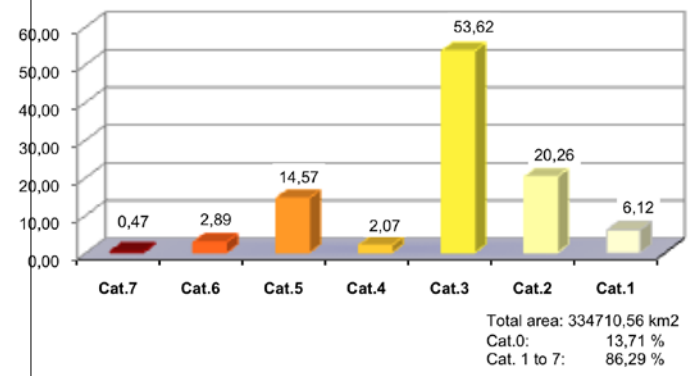
OUTSTANDING AREAS

- Strait of Sicily – Tunisia
- Egadi, Pentelleria & Pelagie Is.
- Malta & S. Sicilian waters
- Tunisian – Libyan waters



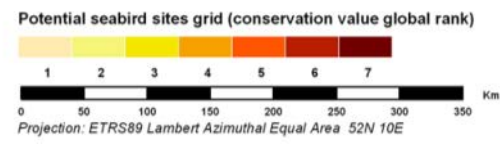
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3rd phase: Sicily Channel / Tunisian Plateau



OUTSTANDING AREAS

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- Egadi, Pentelleria & Pelagie Is.
- Malta & S. Sicilian waters
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Acknowledgments

➤ All those make their information freely available on the Internet

- ✓ Quantum GIS Project
- ✓ Open Source Geospatial Foundation Project
- ✓ SeaWiFS and the MODIS Projects
- ✓ NASA Goddard Earth Sciences (GES)
- ✓ Data and Information Services Center (DISC)
- ✓ **BirdLife International.**
- ✓ GEBCO
- ✓ British Oceanographic Data Centre (BODC)
- ✓ the European Environment Agency (EEA)
- ✓ European Environment Information and Observation Network (EIONET)
- ✓ Communication and Information Resource Centre Administrator (CIRCA)

All who are contributing to improve our knowledge and the protection of the marine environment in the Mediterranean.

➤ The experts who made the revision of the results and advised me at every stage: C. Carboneras (IMEDEA-CSIC / UB) and Prof. J.M. Gili (Marine Sciences Institute, CSIC).

➤ Publication available: http://medabnj.rac-spa.org/images/stories/Publications/bird_important_areas.pdf