

TOWARD THE IDENTIFICATION OF EBSAS IN THE ADRIATIC SEA: HOTSPOTS OF MEGAFaUNA

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Introduction

Data used to produce the following maps has been collected in the following projects:

- ~ First aerial survey of the Adriatic Sea (2010): distribution and abundance of cetaceans and sea turtles (funded by Italian Ministry of agriculture, food and forestry, Italian Ministry of Environment, Croatian State Institute of Nature Protection)
- ~ NETCET - Network for the conservation of sea turtles and cetaceans in the Adriatic (EU IPA-ADRIATIC CBC programme), 2013

CBD scientific criteria for ecologically or biologically significant areas (EBSAs) are the following: 1. uniqueness or rarity; 2. special importance for life history stages of species; 3. importance for threatened, endangered or declining species and/or habitats; 4. vulnerability, fragility, sensitivity, or slow recovery; 5. biological productivity; 6. biological diversity; and 7. naturalness.

Data presented here certainly fall under criteria 2, 3 and 6. Maps need to be cautiously considered as relative density was not weighted by the research effort. However, the overall picture should not dramatically change once weighting is applied.

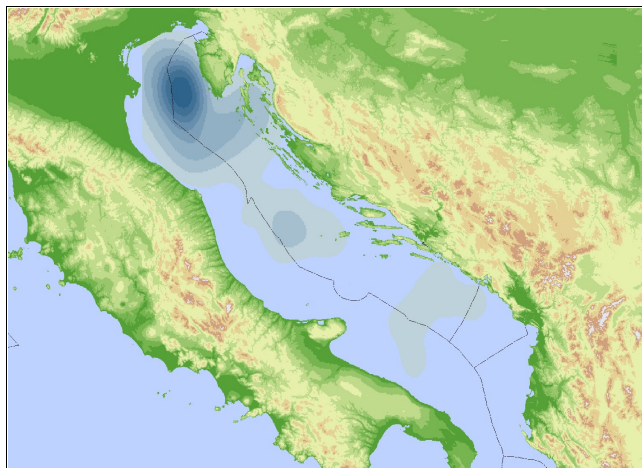
Species considered

To draw single species maps (Fig. 1) we used 'flag' species representative of neritic and oceanic ecosystems: the common bottlenose dolphin (*Tursiops truncatus*), the striped dolphin (*Stenella coeruleoalba*), sea turtles (mostly loggerhead turtle, *Caretta caretta*) and the giant devil ray (*Mobula mobular*). In cumulative maps (Fig. 1) we included data for the above species and Risso's dolphins (*Grampus griseus*), Cuvier's beaked whales (*Ziphius cavirostris*), fin whales (*Balaenoptera physalus*) and myliobatides.

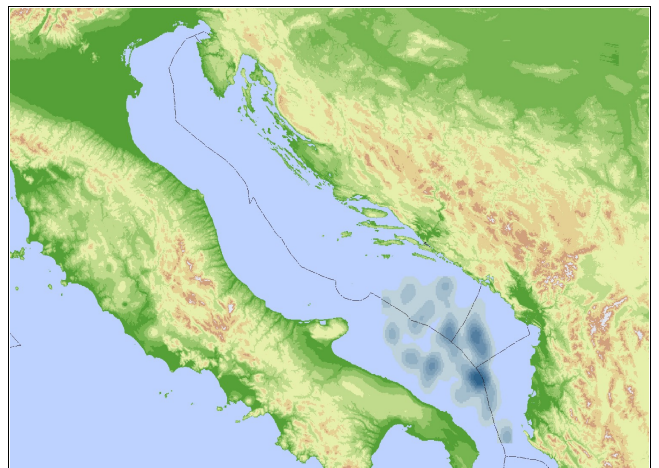
These species are also protected species under a number of international conventions and European legislation (e.g. Washington, Bern, Barcelona and Bonn conventions, EU Habitats Directive).

In terms of sample size for each category, the overall data set (2010 & 2013) was as follow:

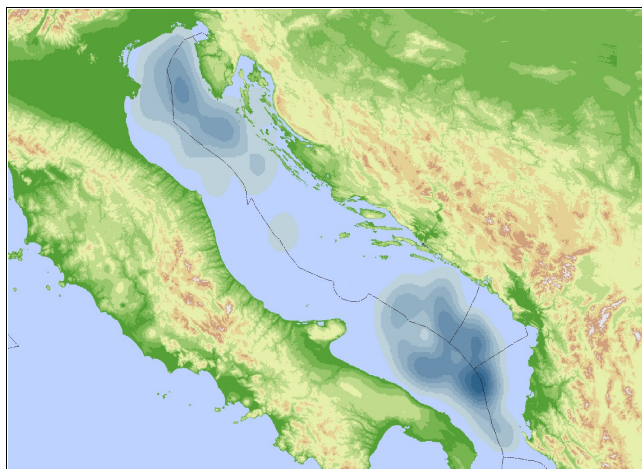
- all megafauna: 2767 sightings;
- sea turtles: 2115 sightings;
- bottlenose dolphin: 245 sightings;
- striped dolphin: 145 sightings;
- giant devil ray: 145 sightings;
- all cetaceans: 426 sightings.



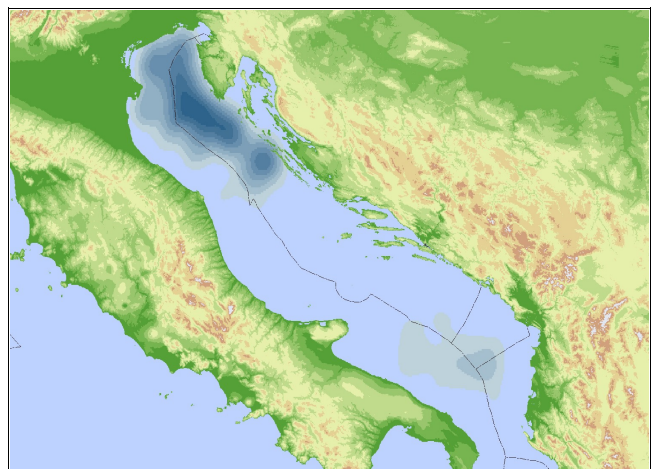
Tursiops truncatus



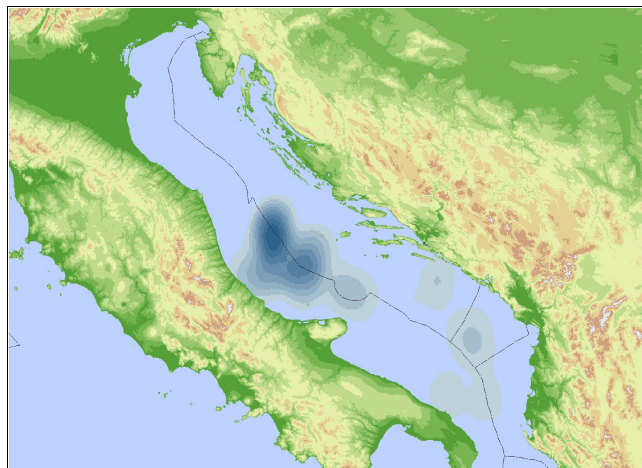
Stenella coeruleoalba



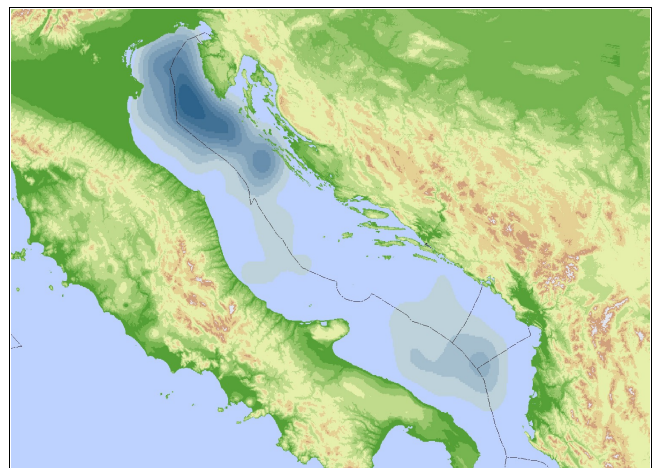
All cetaceans



Caretta caretta



Mobula mobular



All megafauna

Figure 1. Areas of higher density of megafauna in the Adriatic Sea (source: ISPRA & BWI, unpublished data): kernel density analysis, ARCGis algorithm



Figure 2. Areas of importance for megafauna in the Adriatic Sea (source: Holcer et al 2014)

The results of this preliminary analysis indicate areas that are potentially important to the large marine vertebrates in the Adriatic Sea (Fig. 2). These maps are descriptive outputs of the results of the two aerial surveys; as such they do not provide full information on the conservation potential of the region. Coloured areas showed four different ecosystems that are hosting hotspots of biodiversity (about the 80% of all sightings of selected megafauna): “shallow shelf area”, “intermediate pelagic area”, “slope area” and “deep pelagic area”.

Pressures to species in the Adriatic Sea

The EBSA identification process includes the identification of Vulnerable Marine Ecosystems by Regional Fisheries Management Organisations and of Particularly Sensitive Sea Areas by the International Maritime Organisation.

The following figures (Fig. 3-6) show examples of distribution of pressures that are relevant to the species considered in this working document. We believe that a simple overlapping of these maps with those of biodiversity (Fig. 1 and 2) is self-explanatory in terms of highlighting the need to carefully consider the relationship between the distribution of pressures and biodiversity.

Quantitative analyses on distribution and effects of anthropogenic pressures within the region is still lacking. Therefore the identified hotspots (Fig. 1 and 2) should only be regarded as a starting point for the discussion on the identification of EBSAs in the region. The definition of spatial or temporal protective measures should be an iterative and adaptive process involving all of the

authorities and stakeholders of the region.

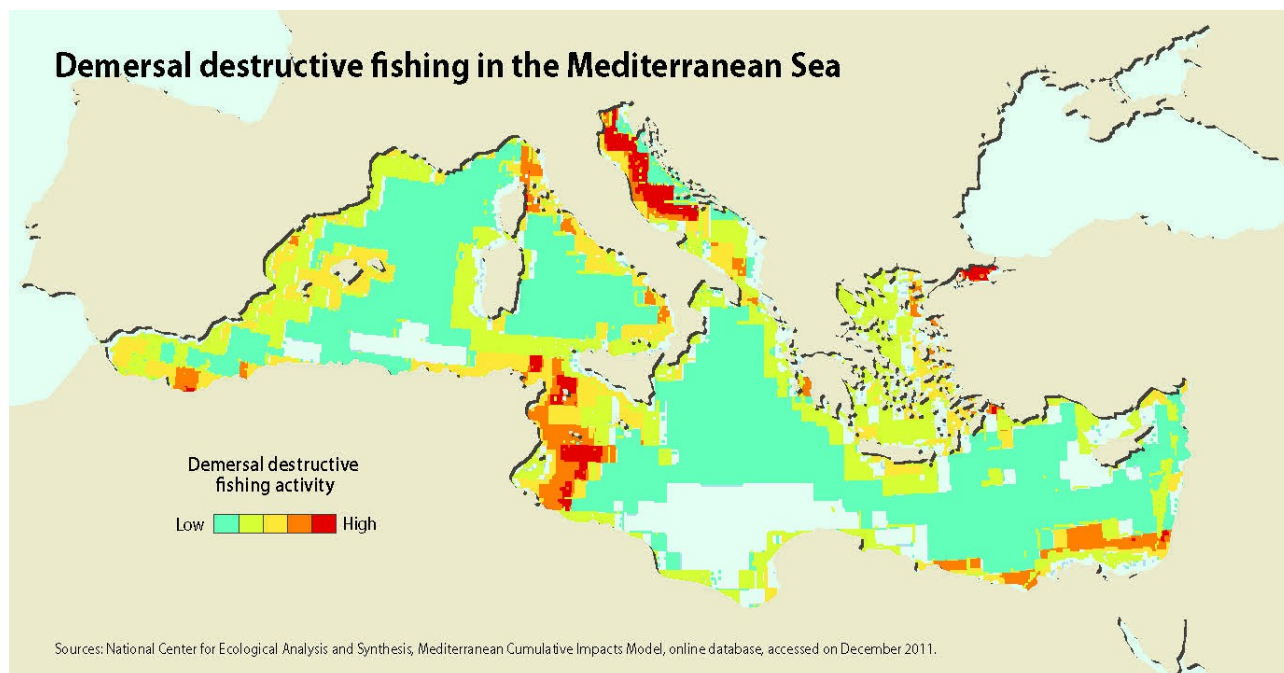


Figure 3. Map of cumulative demersal fishing impact on the Mediterranean Sea (Author: GRID-Arendal, <http://www.grida.no/>)

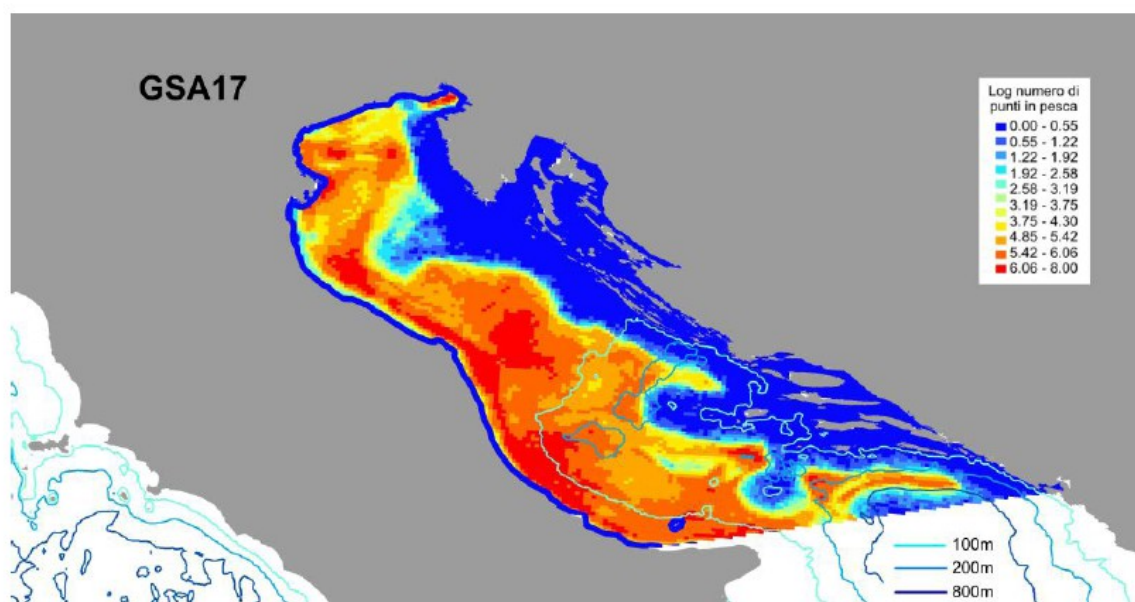


Figura 1 – Esempio di elaborazione dell'intensità media dello sforzo di pesca (GSA 17 - Alto Adriatico) per la categoria degli attrezzi da pesca "Mobile - bentic impacting"

Figure 4. Example of bottom trawlers fishing effort distribution within GSA 17 (Source: ISPRA 2012)



Figure 5. Map of maritime transportation routes in the Mediterranean Sea (Author: GRID-Arendal, <http://www.grida.no/>)

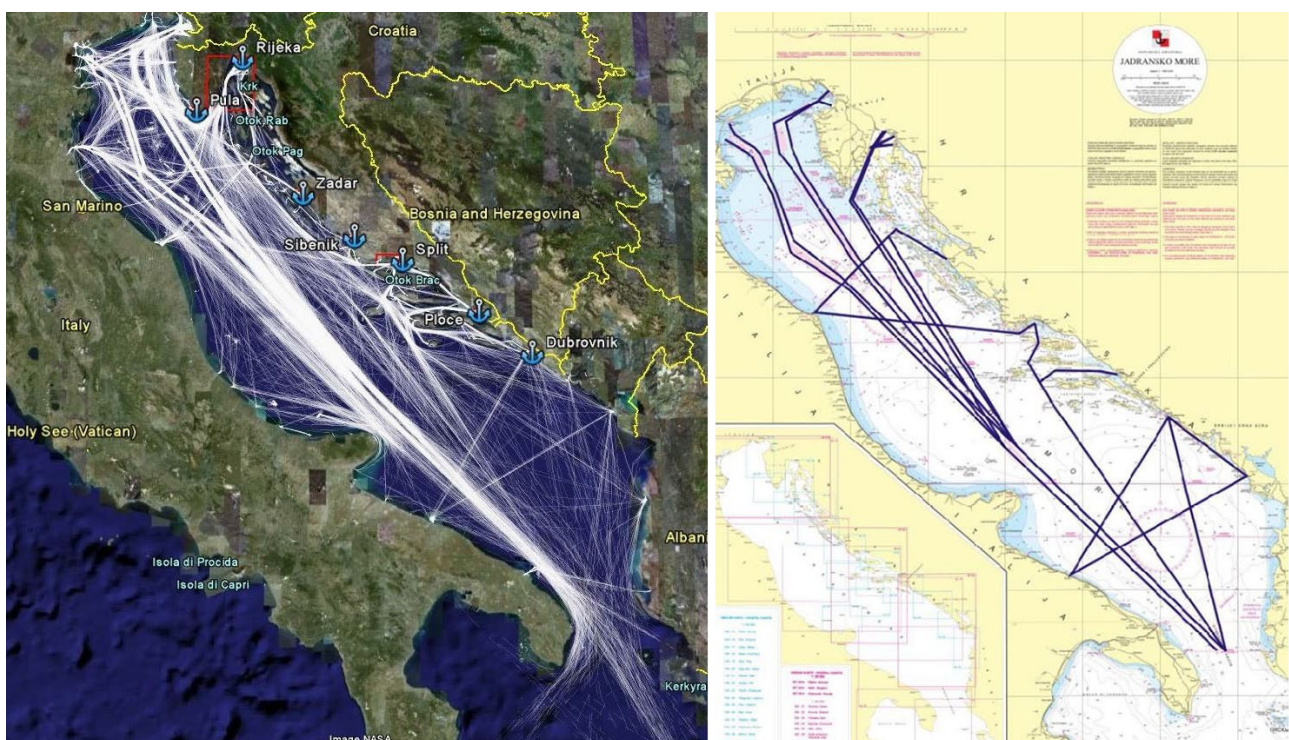


Figure 6. Maritime traffic and traffic separation scheme in the Adriatic sea

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