



# Main environmental risks of not achieving 'Good Environmental Status' (GES) in the Southern European Seas

May 2013

Can we achieve GES? What are the risks? How does PERSEUS contribute?

## Main environmental risks

A first key result of the PERSEUS project is the determination of the main environmental risks for not achieving GES in the Mediterranean and Black Seas both in environmental and socio-economic terms. Through a methodological process of gap and impact analyses, PERSEUS has updated and prioritized the main environmental risks in relation to each of the 11 GES descriptors of the Marine Strategy Framework Directive (MSFD).

Moreover, these risks have been further assessed and categorized into risks in coastal areas and open sea areas. PERSEUS has provided a detailed risk analysis of each risk in the four sub-regions: Western Mediterranean, Central Mediterranean, Eastern Mediterranean and the Black Sea.

These environmental risks will be further analysed in terms of their socio-economic impacts through specific case studies in pilot regions shown in the table below. On this basis, PERSEUS will develop the adaptive policies and management schemes, aiming to help policymakers better address these risks.

## Steps from ecosystem pressure to environmental risks

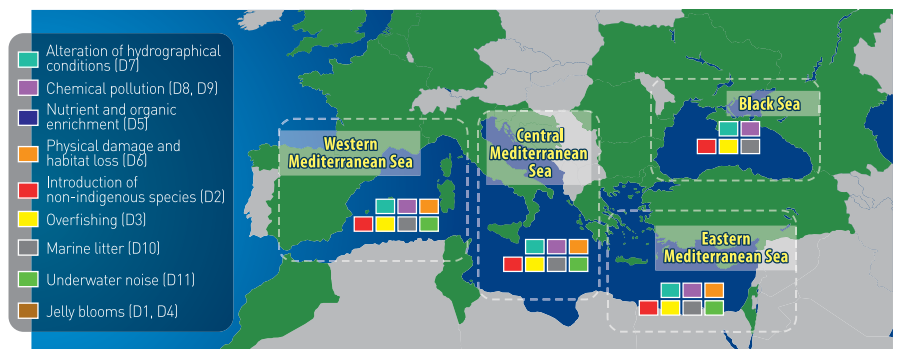
To determine the main environmental risks, the PERSEUS scientists carried out four key steps:

1. Collected and reviewed the information of risks for not achieving the 'Good Environmental Status' in Southern European Seas and refined the list of risks presented in the Black Sea Commission Report 2009 and UNEP MAP Report 2012 considering both environment and socio-economic aspects
2. Analysed the information available for each risk carried out gap analyses in terms of data and knowledge
3. Evaluated all existing information on ecosystem pressures and impact for each risk
4. Defined and evaluated the data needed for scientific as well as socio-economic analyses and reached the final risk list which will be addressed by PERSEUS.

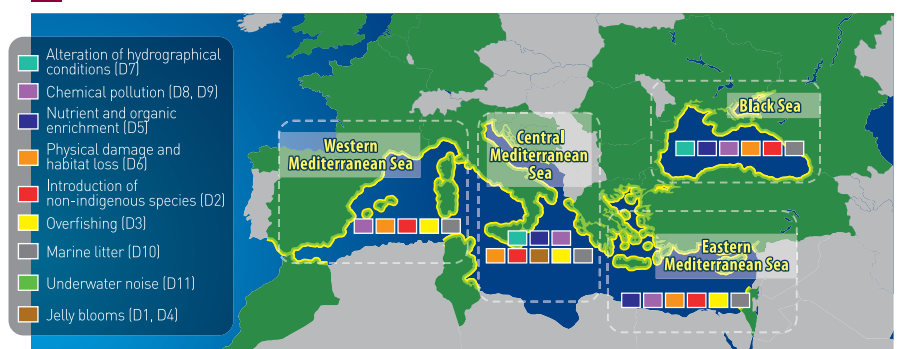
## Seeing the bigger picture

One of the main goals of PERSEUS is to help provide the necessary scientific understanding essential for assessing 'Good Environmental Status' (GES) of the Mediterranean and Black Seas in a coherent and holistic manner. PERSEUS is providing a big picture view of the environmental risks on regional scale. Backed up with targeted experiments, field studies and modeling, PERSEUS will develop an adaptive policy framework giving recommendations to policymakers, helping them to develop the most appropriate management strategies for achieving GES in their particular region.

### Main environmental risks in open seas areas for each sub-region



### Main environmental risks in coastal areas for each sub-region



### Environmental risks selected for adaptive policy framework case studies

Sub-regions	Western Mediterranean		Central Mediterranean		Eastern Mediterranean		Black Sea	
	Coastal	Basin	Coastal	Basin	Coastal	Basin	Coastal	Basin
<b>Main Risk</b>								
Alteration of hydrographical conditions [D7]		✗	✗	✗		✗	✗	✗
Chemical pollution [D8, D9]	✗	✗	✗	✗	✗	✗	✗	✗
Nutrient and organic enrichment [D5]			✗		✗		✗	
Physical damage and loss of habitats [D6]	✗	✗	✗	✗	✗	✗	✗	
Introduction of non-indigenous species [D2]	✗	✗	✗	✗	✗	✗	✗	✗
Overfishing [D3]	✗	✗	✗	✗	✗	✗		✗
Marine litter [D10]	✗	✗	✗	✗	✗	✗	✗	✗
Underwater noise [D11]		✗		✗		✗		
Jelly blooms [D1, D4]			✗					

✗ Risks found

■ Risks selected for APF case studies

**EXAMPLE: EXTRACTS OF THE ANALYSIS FOR MARINE LITTER (COASTAL AREAS) – D10**

**Data gaps identified**

- Implementation of a standardised monitoring network at adequate time and spatial scales covering the different targets: litter in beaches, in the water column, in the seabed and micro-particles.
- Determination of the origin of marine litter and its vectors of dispersion: risk assessment of transporting hazardous substances and/or invasive species.

**Knowledge gaps identified**

- Identification of measures of waste reduction and their potential impacts on habitats and biodiversity.
- Assessment of the direct and indirect impacts of marine litter (including micro-particles) on marine organisms that live in the water column and in the seafloor.
- Identification of suitable sentinel organisms and specific biomarkers to assess the toxicological effects of contaminants derived from marine debris plastics.

**Analysis of impact of marine litter on marine ecosystem**

Marine litter is considered a significant pressure on the ecosystem. It is associated with illegal dumping, tourism, unprotected waste disposal, fishing and harbours.

Pressure: Marine litter	Western Mediterranean				Central Mediterranean			Eastern Mediterranean		Black Sea					
	Barcelona and the Spanish Mediterranean coast	Mediterranean coast of Morocco	The Rhone River and Marseille, the French Western Mediterranean Sea	Naples and the region of Campania	The strait of Sicily	The Gulf of Tunis	The Adriatic and Ionian Sea	The Saronikos Gulf	Haifa, Israel	Sea of Marmara and Istanbul	Varna Bay	Burgas Bay	Danube Delta and Constanta	North Western Black Sea	Gelendzhik Bay and adjacent shelf
Impact on:															
Plankton															
Algae and seagrass															
Zoobenthos															
Fish															
Sea turtles															
Marine mammals															
Sea birds															

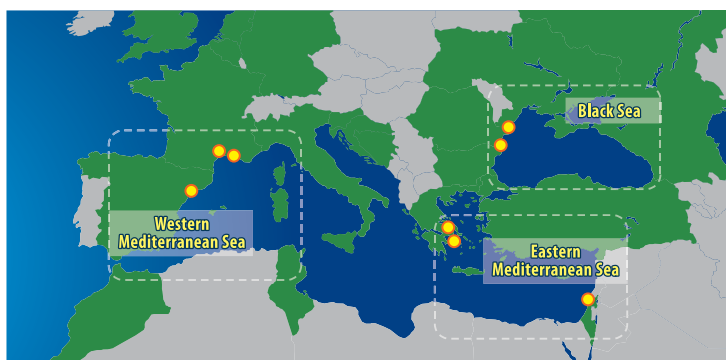
**Intensity of impact on ecosystem**

High impact
Significant impact
Low impact
No impact
Existing interaction, but impact has not been determined
Misread interaction, impact not determined

**An example of how a specific gap will be filled by PERSEUS**

**GAP: Standardized monitoring network**

The PERSEUS team will collect and exchange of data on litter on beaches and seafloor, floating litter and microplastics, with a special focus on the study areas are presented on the map.



*This fact sheet is based on four PERSEUS deliverables: Pressures, processes and impacts on SES open waters ecosystems - Gap Analysis on data and knowledge (D1.1), Pressures and their impacts on coastal ecosystems in the SES, Gap Analysis - Preliminary report (D1.2), Preliminary list of issues at risk of non-achievement of the GES and scenarios to be modeled (D6.2) and the Umbrella Workshop Report (D10.2).*

For more information on the Environmental Risks, please contact:  
**Dr. Xavier DURRIEU DE MADRON** (Basin issues) • e-mail: demadron@univ-perp.fr  
**Mr. Jean-François CADIOU** (Coastal issues) • e-mail: jfcadiou@ifremer.fr  
**Mr. Didier SAUZADE** (Adaptive Policy Framework) • e-mail: dsauzade@planbleu.org