

# STUDY OF PRESSURES AND IMPACTS IN COASTAL ECOSYSTEMS IN THE MEDITERRANEAN AND THE BLACK SEA

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## Abstract

Pressures and their impacts in coastal ecosystems have been studied in fourteen pilot areas of the Mediterranean and Black Seas. Although some anthropogenic pressures are on a decreasing trend it has been shown that others are increasing and represent a major risk of non-achievement of Good Environmental Status in these seas.

*Keywords: Mediterranean Sea, Black Sea, Coastal systems, NIS, Pollution*

Coordinated studies of pressures and their impact in coastal Mediterranean and Black Seas pilot areas have been carried out within the frame of the EC FP7 project PERSEUS [1]. These studies aimed at a better understanding of the processes involved in the links between main anthropogenic pressures and their effects on marine ecosystems. This work should further foster science-based criteria for defining Good Environmental Status (GES) as well as support the design of efficient management measures, in line with the objectives of the European Marine Strategy Framework Directive (MSFD) [2] and the Ecosystem Approach (EcAp) of UNEP/MAP [3]. New data on pelagic and benthic ecosystems, non-indigenous species and pollution by chemicals, litter and noise have been collected in fourteen areas of the Mediterranean and Black Seas (Figure 1). The analysis of new and historical data sets has provided better understanding of the response of coastal ecosystems to anthropogenic and natural pressures in the Southern European Seas (SES).

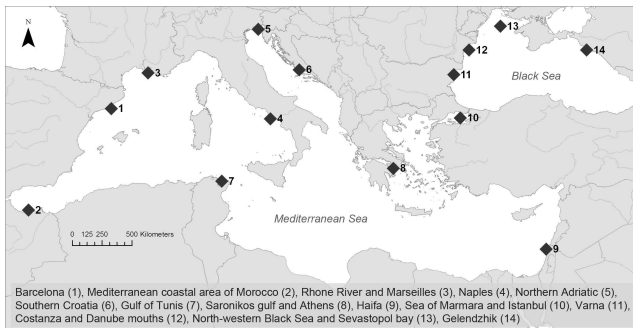


Fig. 1. Coastal study areas in the Mediterranean and the Black Sea

Although the selected study areas differ in their specific natural characteristics, they present the common feature of being under high anthropogenic pressures. Some of them include the mouth of major rivers flowing into the SES. Common methods between all sites were shared for these studies. This approach allows to examine and compare pressures and their impacts in the different areas and where possible, to draw out a basin wide understanding of the coastal ecosystem responses. The trends of change related to anthropogenic and climatic pressures were identified in the coastal marine ecosystems of the SES. The results for six types of pressures in four sub-regions of the SES are summarized in the Table 1.

Tab. 1. Level of impact of six types of pressures in the coastal ecosystems of the SES.

Pressure	Level of impact (+: low; ++ significant; +++ high)				Trend	Comment
	Western Med.	Adriatic Sea	Eastern Med.	Black Sea		
Changes in riverine fluxes	+	++	++	++	=	Climate change could severely affect riverine fluxes
Nutrients and organic enrichment	+	+	+	+	↘	Local problems subsist due to untreated water discharges
Hazardous substances	++	++	++	++	=	Attention should be paid to new contaminants
Physical damages on habitats	++	++	++	++	↗	Urbanization and tourism need to be better controlled
Non indigenous species	++	++	+++	++	↗	Ecosystem and services should deal with the establishment of tropical species
Litter	++	++	++	++	↗	Effort to reduce release at sea required

Generally the nutrient loads, and many of legacy pollutant levels decrease showing thus that effective policy implementation and its improvements lead to positive outcomes. However, it is also evident that policy efforts in these domains must be long-lasting. It has also been shown that some pressures (physical damage/loss of marine habitats, spread of non-indigenous species, emerging pollutants, marine litter and noise) are growing and their impacts may be not well assessed and represent a major risk of non-achievement of GES in the SES. The lack of standardized and accessible observational data as well as knowledge gaps regarding the links between pressures and impacts remain an issue. This key challenge must be met for improving assessments and designing sound ecosystem based management aiming at ecological and economical sustainability in the SES.

## References

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