

STATUS OF EURO-MEDITERRANEAN COASTAL MARINE HABITATS: LOSS AND TRENDS

Laura Airoldi ¹ * and Michael Beck ²

¹ Dipartimento di Biologia Evoluzionistica Sperimentale and Centro Interdipartimentale di Ricerca per le Scienze Ambientali in Ravenna, University of Bologna, Via S. Alberto 163, 48100 Ravenna, Italy - laura.airoldi@unibo.it

² The Nature Conservancy & Institute of Marine Sciences, 100 Shaffer Road- LML, University of California, Santa Cruz, CA, 95060, USA

Abstract

We have reviewed estimates of large-scale trends in the distributions and status of Euro-Mediterranean coastal habitats. Conspicuous declines of coastal wetlands, seagrasses, biogenic reefs, and complex macroalgae have been observed in several countries. In some regions, most valuable habitats were already severely degraded or driven to virtual extinction well before 1900. Nowadays less than 15% of the coastline is considered in "good" condition. Those fragments of native habitats that remain are under threat, and their management is not informed by adequate knowledge of their distribution and status

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In terrestrial environments, understanding and abating the effects of habitat loss and fragmentation are a huge focus in science, conservation and management [1]. Habitat loss is also well recognized as an important threat in the marine environment [2] but has not been as much a focus of science and conservation as in terrestrial environments.

We have compiled and reviewed estimates of large-scale trends in the distribution and status of coastal habitats along European coastlines [3], which has included the Mediterranean and Black Sea. Over the centuries, land reclamation, coastal development, overfishing and pollution have nearly eliminated coastal wetlands, seagrass meadows, shellfish beds, biogenic reefs and other productive and diverse coastal habitats. It is estimated that every day between 1960 and 1995, a kilometre of coastline was developed, with the greatest urban developments occurring along the Euro-Mediterranean coasts. More than 50 % of the Mediterranean coasts are dominated by concrete with >1500 km of artificial coasts, of which about 1250 km are developed for harbours and ports [4]. Most countries for which documentation is available have estimated losses of coastal wetlands exceeding 60% of original area, with peaks above 80 % for countries such as Italy and France [3]. Documentation of seagrass loss is more limited, but there are suggestions that there may have been historical losses of *Posidonia oceanica* ranging from 40 to 80%. Conspicuous declines, sometimes to virtual local disappearance of fucoids and other complex macroalgae have been observed along the coasts of the Mediterranean and Black Sea.

A few dominant threats have led to these losses over time [3]. The greatest impacts to wetlands have consistently been land claim and coastal development. The greatest impacts to seagrasses and macroalgae are presently associated with degraded water quality while in the past there have been more effects from destructive fishing and diseases. Coastal development remains an important threat to seagrasses. For biogenic habitats, some of the greatest impacts have been from destructive fishing and over-exploitation with additional impacts of disease, particularly to native oysters. Coastal development and defence have had the greatest known impacts on soft sediment habitats with a high likelihood that trawling has affected vast areas. The concept of 'shifting baselines', which has been applied mostly to the inadequate historical perspective of fishery losses, is extremely relevant for habitat loss more generally. Most habitat loss estimates refer to a relatively short time span primarily within the last century. However, in some regions, most estuarine and nearshore coastal habitats were already severely degraded or driven to virtual extinction well before 1900. Native oyster reefs were ecologically extinct by the 1950s along many coastlines and in many bays well before that. These shellfish reefs are one of the most endangered coastal habitats, but some of the least protection is being directed at them. Nowadays less than 15 % of the European coastline is considered in 'good' condition [5], with the Mediterranean coastlines among the most severely depleted. Those fragments of native habitats that remain are under continued threat, and their management is not generally informed by adequate knowledge of their distribution and status.

There are many policies and directives aimed at reducing and reversing these losses but their overall positive benefits have been low. Further neglecting this long history of habitat loss and transformation may ultimately compromise the successful management and future sustainability of those few fragments of native and semi-native coastal habitats that remain in the Mediterranean and Black Sea.

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