FLORA AND FAUNA OF THE LITTORAL SYSTEM: DYNAMICS AND PROTECTION

Coastal ecosystems are important for biodiversity conservation of animal and plant species. These environments are highly dynamic, extremely vulnerable, and subjected to several disturbances due to cyclic phenomena, climate change, and human pressure.

Monitoring coastal ecosystems involves collecting a variety of data that are needed to improve our knowledge on coastal processes and understand where the risks, opportunities and consequences are in coastal management.

A total of 22 papers coming from six different countries (France, Israel, Italy, Malta, Spain and Tunisia) have been published in the Proceeding of the Session *Flora and Fauna of the littoral system: dynamics and protection* of the *IX Symposium Monitoring of Mediterranean coastal areas: problems and measurement techniques*.

The thematic areas covered by these papers refer to different issues, such as the assessment of the quality status of waters in coastal ecosystems, invasive alien species, and actions carried out to improve management, conservation, monitoring, and control of coastal habitats. Here follows a short introduction to the contents of the papers.

The structure, composition and dynamics of planktonic communities may be highly impacted by variations of climatic and hydrological conditions or concentrations in contaminants. Drouet et al. studied the mercury contamination of the planktonic compartment in the Bay of Toulon (France).

The effects of petroleum hydrocarbons on *Salicornia perennans* Willd. growth at different saline concentrations were investigated by Lazzeri et al. using data collected at Calambrone on the coastal area of Tuscany (Italy).

Sahbani et al. assessed the trophic level of Ichkeul Lake (Tunisia) and predicted the effect of climate change and anthropogenic pressures on European eels using the Random forest model.

The presence of high concern substances (per- and poly fluoroalkylsubstances) in striped dolphins stranded along the Tuscany coast (Italy) was investigated by Mazzetti et al.

Due to anthropogenic activities the harbour's sediments are affected by pollutants and are subjected to remediation treatments. Florio Furno et al. carried out a preliminary screening on fungi isolated in the sediments of a polluted port area in order to identify fungal strains endowed with oxidative abilities and to

FUP Best Practice in Scholarly Publishing (DOI 10.36253/fup_best_practice)

Laura Bonora, Donatella Carboni, Matteo De Vincenzi, Giorgio Matteucci (edited by), *Ninth International Symposium "Monitoring of Mediterranean Coastal Areas: Problems and Measurement Techniques". Livorno (Italy) 14th-16th June 2022*, © 2022 Author(s), CC BY-NC-SA 4.0, published by Firenze University Press, ISBN 979-12-215-0030-1, DOI 10.36253/979-12-215-0030-1

evaluate the producers of metabolites or enzymes of interest for applications in future environmental bioremediation.

Invasive alien species represent a threat to native plants and animals in coastal ecosystems.

The presence and abundance of invasive alien macroalgae on the rhodolith bed of the Capo Carbonara Marine Protected Area (Italy) was investigated by Caronni er al.

Cecchi G. et al. report new areas of settlement of the species *Callinectes sapidus* (Rathbun, 1896) present both in the Tyrrhenian Sea and in the Ionian Sea along the coast of Calabria (Italy).

Seagrasses colonise coastal areas worldwide and a considerable proportion becomes detritus that can be used as food, physical habitat and occasional or permanent shelter by several benthic macroinvertebrates. Costa et al. tested if colonisation of the seagrass detritus was related to substrate availability rather than food and whether the colonising assemblages were similar according to the structural complexity of the meadow.

The spatial dynamic of *Posidonia oceanica* (L.) Delile transplanted during a large-scale seagrass restoration in a previously disturbed area of the Tyrrhenian Sea (Italy) was investigated over a two-year period by Mancini et al. using high-spatial resolution underwater photomosaics.

Lolli report the complex network of rules that the Italian legal system sets up for the protection of *P. oceanica* in the sea and for the management of the beach-cast leaves ashore.

The National Monitoring Program of Israel's Mediterranean waters was presented by Herut and the team of Scientists of *Israel Oceanographic and Limnological Research*.

The *Medsen* index was used by Turicchia et al. to assess the ecological status of the subtidal coastal rocky habitats, including the coralligenous reefs, in the Tuscan Archipelago National Park (Italy).

Cecchi E. et al. assessed the distribution and extension of the coralligenous cliffs in Tuscany (Italy) and described the structure and the patterns of spatial variability.

Castro-Fernández et al. tested a video-based methodology for monitoring fish assemblages at various temporal and spatial scales and compared it with other non-invasive techniques.

De Gioia et al. used low-impact monitoring methods (standard photographic sampling method and visual census) to study the benthic communities and the fish assemblages and compared the results with data from a Remote Operative Vehicle.

Lapinski et al. report the presence of *Epinephelus caninus* (Valenciennes, 1843) in North-western Mediterranean coastal habitats (France) where an experimental ecological restoration project was carried out to restore altered ecological functions of the rocky coastline.

The first data of stomachs contents of *Tursiops truncatus* (Cetacea: Odontoceti) stranded in Tuscany coasts (north-western Mediterranean) between 1990 and 2021 was reported by Neri et al.

Fungal disease associated with eggs of the endangered sea turtle *Caretta caretta* L. in the Tuscan archipelago (Italy) were studied by Risoli et al.

The species composition of nearshore plant communities represents a continuous biological response to environmental gradients perpendicular to a marine shoreline. Cutajar and Lanfranco evaluated possible changes to nearshore plant communities in response to a change in shoreline in three coastal areas in Malta.

Coastal pine forests offer valued recreational uses and provide habitats for plant and animal species of conservation interest.

Ferraro et al. described silvicultural interventions carried out in coastal pine stands in southern Italy for re-naturalization purposes.

Stand structure and natural regeneration in a coastal stone pine (*Pinus pinea* L.) forest in the Regional Park of San Rossore (Central Italy) was studied by Travaglini et al.

Habitat changes in the Mediterranean wetland system of "Zone Umide della Capitanata e Paludi presso il Golfo di Manfredonia" (Italy) were monitored by Tomaselli et al. using vegetation maps.

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