FLORA AND FAUNA OF COASTAL ECOSYSTEMS: Protection, Management, Monitoring

Coasts are ecotones between sea and land. Coastal ecosystems are highly dynamic, they interact with different land use systems and are often in direct contact with urban environments, where the pressure of human activities on the coast is high. All these features make up a complex environment so that its flora and fauna show particular morpho-physiological, ecological and behavioral adaptations.

In 2024, a total of 30 papers have been published in the Proceeding of the Session *Flora and fauna of coastal ecosystems: protection, management, monitoring* of the 10th Symposium "Monitoring of Mediterranean coastal areas: problems and measurement techniques".

The topics covered by the submitted papers refer to different issues, such as biodiversity monitoring and conservation, invasive alien species, water quality status. Here follows a very short introduction to the contents of the papers.

Coastal ecosystems are rich in biodiversity, and the conservation of biological diversity in these environments was the subject for many researchers.

Amphipods diversity was studied by three research groups. Badalucco et al. reported a revised checklist of amphipod crustaceans from the Italian and Mediterranean seas as a contribution to provide a systematic and comprehensive analysis of species occurrence, which is essential for biodiversity assessment and monitoring.

De Simone et al. observed the recruitment of amphipod species on submerged artificial structures that were installed between the Lazio coast and Sardinia, in Italy.

In the North Adriatic Sea, Marusso and Trabucco monitored the influence of the installation of the first offshore liquefied natural gas terminal on the Amphipoda and Cumacea communities.

Galatolo and Schembri studied the epibiotic assemblages in the Maltese islands.

Regarding habitat monitoring in coastal environments, Bahbah et al. reported the results of the first large-scale mapping of supralittoral, mediolittoral and upper infralittoral benthic rocky substrate habitats of the Algerian coast.

Gennaro et al. tested the standardized coralligenous evaluation procedure on subregion scale under different human pressures for the evaluation of the ecological quality of coralligenous cliffs in the Mediterranean Sea.

The Coastal Health Monitoring Scheme as an example of educational approach, engaging students in projects with practical social value was described by Pinya et al.

Resaikos et al. discussed the advantages that research divers can have using electronically-controlled, closed-circuit, mixed-gas rebreathers for conducting ecological survey of marine habitats.

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

Laura Bonora, Marcantonio Catelani, Matteo De Vincenzi, Giorgio Matteucci (edited by), *Tenth International Symposium "Monitoring of Mediterranean Coastal Areas: Problems and Measurement Techniques". Livorno (Italy) 11th-13th June 2024*, © 2024 Author(s), CC BY-NC-SA 4.0, published by Firenze University Press, ISBN 979-12-215-0556-6, DOI 10.36253/979-12-215-0556-6

Marine protected areas play a critical role in conserving marine biodiversity, safeguarding habitats, and ensuring the sustainability of marine resources, and effective monitoring is fundamental to the success of marine protected areas. To this end, Capurso et al. evaluated the current management and monitoring status of Mediterranean of marine protected areas and assessed the application and potential of environmental DNA metabarcoding for biodiversity monitoring.

Other studies were carried out on the marine environment. Sureda et al. studied the effects of salinity and ectoparasite on *Coris julis* (Linnaeus, 1758).

Rahmani and Mokrane examined histological indicators correlated with macroscopic reproductive parameters in male and female of European anchovy (*Engraulis encrasicolus*). Tejada et al. assessed the antioxidant and immune responses in mucus and spleen of *Xyrichthys novacula* specimens, that are infected by *Scaphanocephalus* sp.

Bundone et al. reported the results of the monitoring programmes carried out on the endangered Mediterranean monk seal in the central Mediterranean Sea.

Water quality status plays a critical role for biological life, from primary producers to fish communities.

The ecological and chemical status of transitional waters systems in Sicily was evaluated by Bellissimo et al.

Busuttil et al. recorded abiotic and ecological conditions across the Salini saltern complex in Malta and related them to the external marine conditions.

Pinardi et al. used hyperspectral and multispectral satellite data to map water quality and submerged vegetation in the gulf of Oristano, Italy.

Marine invasive species alter the environment in which they settle, changing food chains, generating structural variations and, sometimes, displacing native species.

Bonin-Font et al. used an autonomous underwater vehicle to monitor the coverage and expansion rate of Halimeda incrassata in the Balearics.

Budiša et al. reported the results of a monitoring programme of gelatinous zooplankton in the northeastern Adriatic coast.

The impact of the blue crab *Callinectes sapidus* on the Mellah Lake was reported by Becir et al.

Curatolo et al. reported a review of genetic and morphological published data as a supporting baseline for the taxonomic issues of the *Brachidontes pharaonis* + *variabilis* group.

The remaining studies focused on land environment.

Camilleri and Lanfranco used UAVs to evaluate a vegetation reinforcement programme in a coastal area in Malta and compared its accuracy and cost-effectiveness with that of ground-based methods.

Cesaraccio et al. described a prototypal monitoring system based on repeated digital images for detecting changes in phenological traits of Mediterranean coastal maquis in North-West Sardinia.

Chiesi et al. applied a model combination strategy to analyse gross and net production in a Mediterranean pine wood ecosystem in Central Italy.

Galletti et al. used UAVs for monitoring *Caretta caretta* turtle nests in Tuscany, Central Italy.

Canzanella et al. did a study to quantify inorganic chemical contaminants in organs, tissues, and eggs of *Caretta caretta*.

Lombardi et al. presented a novel approach for local-scale quantification of stand plant transpiration in a coastal Mediterranean forest under climate change.

Morabito et al. assessed the impact of urbanisation on the conservation status of coastal habitats in Calabria, Southern Italy.

Yahi et al. assessed the conservation status of coastal habitats in Algeria.

As for invasive species, Falanga et al. used PlanetScope images with the objective of evaluating the effectiveness of remote sensing in monitoring *Toumeyella parvicornis* (Cockerell) (Hemiptera: Coccidae) infestation on coastal and urban *Pinus pinea* L. stands.

Cini et al. assessed the time and cost-effectiveness of three monitoring methods (photointerpretation, machine learning classification, and field monitoring) for detecting and mapping alien plants (Yucca gloriosa) in coastal dunes in Central Italy.

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