

PROGRAMMA e BOOK OF ABSTRACTS



Meeting Scientifico Annuale
Università di Ferrara, 15-16 Novembre 2024

BOOK OF ABSTRACTS: ORAL CONTRIBUTIONS

Biodiversity of Fucales in the Ustica Island Marine Protected Areas (Tyrrhenian Sea, Italy)

A.M. Mannino, A. Falace, G. Marletta, D. Serio

Fucales (Phaeophyceae) are ecosystem engineers and forest-forming macroalgae that are among the most productive and valuable carbon-rich marine benthic communities, extending from the surface to the upper circalittoral zone on photophilic rocky substrates along temperate coasts. In the Mediterranean, the predominant species belong to the complex *Cystoseira sensu lato* (s.l.) (i.e., genera *Cystoseira* C. Agardh, *Ericaria* Stackhouse and *Gongolaria* Boehmer) and *Sargassum* C. Agardh, which provide a number of important ecosystem functions and services. In particular, species belonging to the complex *Cystoseira* s.l. are sensitive to a variety of anthropogenic stressors such as urbanization, pollution, and climate change. Increasing human threats and warming are affecting *Cystoseira* s.l. distribution, genetic diversity, functional responses and interactions of these valuable and vulnerable communities. In recent decades, populations of *Cystoseira* s.l. have significantly reduced their range, with dominance shifting towards macroalgal species with lower intrinsic complexity. Therefore, there is an urgent need to assess the current species distribution, especially in Marine Protected Areas (MPAs), which play a fundamental role in valorization and conservation of these communities. However, protection must be integrated by regular monitoring programs to promptly detect potential threats and early signs of decline.

We present here an assessment of the occurrence and distribution of Fucales in the Ustica Island MPA (Tyrrhenian Sea, Italy), inferred from literature data dating back to 70'. In particular, papers published from 1967 to 2018 were analysed (e.g., Giaccone 1967, 1971; Drago et al. 2004; Catra et al. 2005; Giaccone et al. 2018). Moreover, data from the Catania Herbarium were also considered. Despite their high value and vulnerability, data on the distribution and conservation status of Fucales in the Ustica Island MPA are very limited. From the literature analysis resulted a high diversity, with 21 taxa of the complex *Cystoseira* s.l. (7 belonging to the genus *Cystoseira*, 8 to the genus *Ericaria* and 6 to the genus *Gongolaria*) and 4 taxa of the genus *Sargassum*. The most abundant Fucales were *Ericaria amentacea*, *E. brachycarpa*, *E. balearica*, *Gongolaria sauvageauana*, *G. montagnei* and *E. zosteroides*. The obtained data are not enough to have a complete overview of the occurrence and health status of these communities, to highlight changes over time, or correlate effects of protection on their occurrence. However, the data presented here provide a necessary basis for the MPA to plan future monitoring activities, which are mandatory to plan effective conservation strategies within the MPA. Regular monitoring activities will allow to record changes (expansion, regression and/or loss) in these valuable communities. Therefore, we are planning surveys, with the support of the Ustica Island MPA, to assess the current occurrence and distribution of *Cystoseira* s.l. and *Sargassum* taxa in the three zones of protection of the Island, and the methodology adopted in Marletta et al. (2023) will be followed. This work will allow to bridge the existing gaps in the knowledge of their occurrence and status health within the MPA.

Cited references

- Catra M., Drago D., Giaccone T., Giardina S., Nicastro A. (2005). Biodiversità vegetale marina dell'Isola di Ustica (Palermo). Bollettino Accademia Gioenia Scienze Naturali Catania, 38(365): 193-211.
- Drago D., Catra M., Giaccone G., Giardina S., Grimaldi S., Mannino A.M. (2004). La flora e la vegetazione sommersa del porto di Cala Santa Maria nell'isola di Ustica (Pa): contributo allo Studio di Impatto Ambientale (SIA). Bollettino Accademia Gioenia Scienze Naturali Catania, 37: 265-291.
- Giaccone G. (1967). Popolamenti a *Laminaria rodriguezii* Bornet sul Banco Apollo dell'isola di Ustica (mar Tirreno). Nova Thalassia, 3(6): 1-9.
- Giaccone G. (1971). Contributo allo studio dei popolamenti algali del basso Tirreno. Annali dell'Università di Ferrara, 4: 17-43.
- Giaccone T., Giaccone G., Mannino A.M. (2018). Deep rhodolith beds in the Ustica Island (Sicily, Southern Tyrrhenian Sea): a sedimentary and paleoecological approach. Geogr. Fis. Din. Quat, 41: 47-63.

AUTHORS

Anna Maria Mannino (reference author; annamaria.mannino@unipa.it), Department of Biological, Chemical and Pharmaceutical Sciences and Technologies, University of Palermo, Via Archirafi 28, 90123 Palermo, Italy. NBFC, National Biodiversity Future Center, Palermo, Italy

Annalisa Falace, Department of Life Sciences, University of Trieste, Via Giorgieri 10, 34127 Trieste, Italy

Giuliana Marletta, Donatella Serio, Department of Biological, Geological and Environmental Sciences, University of Catania, Via Empedocle 58, 95128 Catania, Italy