

PRELIMINARY DATA ON *CYMODOCEA NODOSA* MEADOWS IN A SOUTHERN MEDITERRANEAN LAGOON

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Abstract

The present work is a contribution to the characterization of *Cymodocea nodosa* (Magnoliophyta, Cymodoceaceae) in the South lagoon of Tunis, a Mediterranean coastal lagoon located in the North of Tunisia. The study deals with biomass analysis (total, above-ground and below-ground parts) of *Cymodocea nodosa*. For this aim we adopted a sampling plan composed of 6 parallel transects all along the lagoon. The results show that the mean total biomass in the south lake of Tunis is about 94.7 g/m² of DW (SD= 67.5) in June 2015. Most of the total biomass comes from dense beds with recovery > 80%.

Keywords: *Biomass, Gulf of Tunis*

The Seagrass *Cymodocea nodosa* (Ucria) Ascherson is widely distributed throughout the Mediterranean. It plays key ecological roles in lagoon, estuarine and marine ecosystems. In the coast of Tunisia, *Cymodocea nodosa* is abundant at shallow depths, it is usually found on sandy and muddy bottoms [1]. This study was conducted in the South lagoon of Tunis, located in the Southwest of the Gulf of Tunis. Its area is 710 hectares and its depth varied from 2 to 4.5 m. This lagoon used to be one of the most eutrophic lagoons of Tunisia where the phytobenthic communities were dominated by nitrophilous species of the genus *Ulva* and *Cladophora* [2]. However, after the restoration project the lagoon has evolved into a completely new ecosystem. The nitrophilous was totally replaced by other communities and *Cymodocea nodosa* is one of these species [3]. In the present work, the observation was realized during June 2015 at 19 stations distributed along 6 parallel transects covering the entire surface of the Southern lagoon (Fig. 1) and the sampling was carried out within a quadrat (0.25 m²).

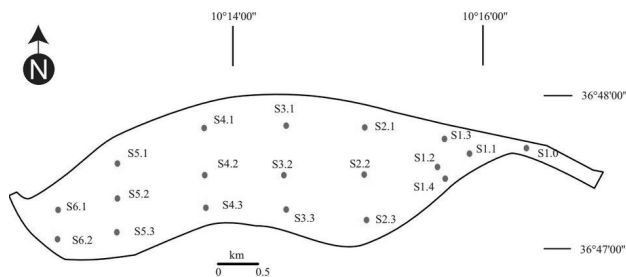


Fig. 1. The sampling stations in the southern lagoon of Tunis.

In the South lagoon of Tunis, *Cymodocea nodosa* is present in depths < 3m where it can develop either monospecific or mixed stands. It forms an extended dense meadow with coverage nearly 100% at the eastern part and they spread gradually to the west part where they are able to survive and to grow. Above-ground biomass shows fluctuations between stations ranging from a minimum of 4.3 g DW / m² for S6.2 station to a maximum of 125.4 g DW / m² for S1.1 station (Fig. 2), the average biomass is about 68.5 g DM / m² (SD = 52.3). Furthermore, the below-ground biomass varies between 10.2 and 52.7 g DW / m² with an average of about 26.2 g DM / m² (SD = 16.1). A total biomass of *Cymodocea nodosa* (above-ground and below-ground) ranged from 14.5 g DW / m² to 178.1 g DM / m².

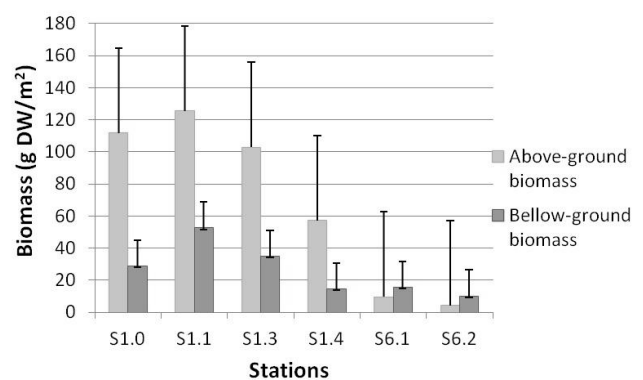


Fig. 2. Spatial variation of above and below-ground biomass (g DW/m²) of *Cymodocea nodosa* in the Southern lagoon of Tunis (Summer 2015).

The average total biomass is lower than in other Mediterranean localities [4]. The difference between the results of this study and data from other sites are probably due to different local environmental factors. Below-ground biomass/above-ground biomass ratio varied from 0.26 (dense meadows) to 2.38 (sparse meadows), showing the highest values in the western of the lagoon. The below-ground and above-ground biomass depend on the conditions of hydrodynamics and the sediment granulometry. For each type of seagrass recovery, the biomass of *Cymodocea nodosa* was estimated. The total biomass of *Cymodocea nodosa* is in the order to 68 tons of DW. Most of the total biomass comes from dense beds with recovery > 80%.

After the restoration work, the study of one of the most dominant macrophyte species, *Cymodocea nodosa*, may elucidate the importance of this Seagrass as key species in the Southern lagoon of Tunis and its role in improving the ecological conditions in coastal ecosystems.

References

- 1 - Shili A., 2008. Les peuplements à *Ruppia* (Monocotyledone, Ruppiales) des milieux lagunaires de Tunisie. Thèse. Doctorat. Univ. Aix-Marseille II, p.1-305 + annexes.
- 2 - Shili A., Trabelsi E.B., Ben Maiz N., 2002. Seasonal dynamics of macroalgae in the South Lake of Tunis. J. Coast. Conserv. 8: 127-134.
- 3 - Shili A., Baccar L., Ben Maiz N., Boudouresque C.F., 2014. Dynamics of benthic Macrophytes in the southern Tunis Lagoon (Tunisia, Mediterranean Sea). Proceedings of the 5th Mediterranean Symposium on Marine Vegetation (Portorož, Slovenia, 27-28 October 2014). Langar H., Bouafif C., Ouerghi A. (éds.), RAC/SPA publ., Tunis: 172-177.
- 4 - Sghaier Y.R., Zakhama-Sraieb R., Charfi-Cheikhrouha F., 2011. Primary production and biomass in a *Cymodocea nodosa* meadow in the Ghar El Melh lagoon, Tunisia. Botanica Marina, 54: 411- 418.