Morphology and Genetic Studies of *Cymodocea* Seagrass Genus in Tunisian Coasts

Ramzi Bchir\(^1,2,\ast\), Aslam Sami Djellouli\(^1\), Nadia Zitouna\(^3\), Didier Aurelle\(^4\), Gerard Pergent\(^2\), Christine Pergent-Martini\(^2\) and Habib Langar\(^1\)

\(^1\)Sciences Faculty of Tunisia, University El Manar, Tunis, Tunisia.
\(^2\)University of Corsica, BP 52, 20250 Corte, France.
\(^3\)Laboratoire de Recherche LR99ES12, Sciences Faculty of Tunisia, University El Manar, Tunis, Tunisia.
\(^4\)Aix Marseille University, Avignon Université, CNRS, IRD, IMBE, Marseille, France/Aix Marseille University, Université de Toulon, CNRS, IRD, MIO, Marseille, France.

\(\ast\)Corresponding Author: Ramzi Bchir. Email: bchir.ramzi@gmail.com.

**Abstract:** Specimens of *Cymodocea* (Viridiplantae, Magnoliophyta) collected on the Tunisian coasts showed a particular morphological and anatomical difference with the classical descriptions of *Cymodocea nodosa* (Ucria) Asch. the only species of this genus reported in the Mediterranean Sea. In order to precise the taxonomic identity of the new specimens we aimed in this work (i) to verify the identity of the new forms, (ii) to evaluate the genetic diversity of the population, (iii) to test the validity of the existing identification keys of the Tunisian *Cymodocea* populations. Four stations located in two regions of the Tunisian coasts were sampled. Leaf morphological and anatomical characters used in taxonomic identification were measured (e.g., number of cross veins, shape of the apex). The genetic study was performed using three most common chloroplast markers for plant characterization (DNA barcodes rbcL, matK and trnH-psbA). The morphological study revealed the presence of three *C. nodosa* morphotypes, described here for the first time, while the molecular characterization did not allow the discrimination of these morphological types. In regard to these results, it would be wise to review the classical identification keys of the *Cymodocea* genus.

**Keywords:** Cymodocea; DNA barcoding; morphology; mediterranean; taxonomy