

Abstract

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GENETIC VARIABILITY AND MOLECULAR PHYLOGENY OF THE GENUS CERATIUM (PLANKTONIC DINOFLAGELLATE) INFERRED FROM SINGLE-CELL ANALYSIS OF ITS RDNA SEQUENCES

Cras, A.-L., Laboratoire d'Océanographie de Villefranche, Villefranche-sur-Mer, France, cras@obs-vlfr.fr

Bailly, X., Station Biologique de Roscoff, Roscoff, France, bailly@sb-roscoff.fr

Simon, N., Station Biologique de Roscoff, Roscoff, France, simon@sb-roscoff.fr

Lemée, R., Laboratoire d'Océanographie de Villefranche, Villefranche-sur-Mer, lemee@obs-vlfr.fr

Traditionnally, identification based on the morphospecies concept has been used for phytoplankton biodiversity assessments and ecological studies. Recent analyses involving molecular tools have revealed an important unsuspected phylogenetic diversity. Cryptic species have been detected in well characterized, cosmopolitan and ecologically important taxa. Yet, the ecological significance of this diversity is still not fully understood. In this context, the present work, supported by the Aquaparadox project, compares ITS rDNA sequences of 33 "species" of the genus *Ceratium*, a cosmopolitan and common dinoflagellate genus which both the morphology and ecology has been studied in details, in particular during the XIXth century. Our phylogenetic analyses do not support the monophyly of the subgenera within *Ceratium* but show that most species form monophyletic groups. Our work also show a clear genetic structure within some *Ceratium* species and suggests the existence of cryptic or pseudo-cryptic species within this genus. Conversely, the wide infra-specific morphological variations observed for some other species is not echoed by the genetic analyses. These data should enable us clarifying the status of doubtful taxa within the genus *Ceratium*. More generally, this work will contribute to the evaluation of the ITS rDNA genes as a tool to circumscribe the ideal phytoplankton species and should contribute to a better understanding of evolutionary processes in phytoplankton.