

ABSTRACT

Marine phytomyxids (Cercozoa: Phytomyxea) represent a group of obligate biotrophic eukaryotes known for infecting several algae and oomycetes and counted among three taxa generally reported to behave as seagrass-pathogens. Due to their low-key nature, they are observed only sporadically and very limited information about their diversity, life cycles or distribution is available. In order to extend the knowledge of this enigmatic group of marine protists, an extensive research on a phytomyxid found in the invasive seagrass *Halophila stipulacea* was carried out. *In situ* observations, light and scanning electron microscopy and molecular methods were used to approach the species' ecology, geographical range and phylogenetic placement within the class Phytomyxea. The organism was confirmed to be present in the Red, the Mediterranean and the Caribbean Sea, suggesting a potential case of a host-parasite comigration on a global scale. Phylogenetically it represents the first and so far the only described member of the "TAGIRI-5 environmental clade" – possibly a whole new order within the Phytomyxea, outside the already established Plasmodiophorida and Phagomyxida. The infection rates and times of occurrence are specified for all the finding-sites, indicating an interesting seasonal pattern in the Mediterranean Sea. Furthermore, new insights into the phytomyxid's life cycle and dispersal mechanisms are discussed.

Key words

Phytomyxea, invasive seagrass, seagrass parasite, comigration, Tetramyxa, *Plasmodiophora*