

Seasonal variability of phytoplankton composition inside and outside the Marine Protected Areas of Joal-Fadiouth and Bamboung in Senegal (West Africa)

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Abstract

Marine Protected Areas (MPAs) are considered tools for biodiversity and resource restoration and resilience. However, their role in improving the flow of matter through better productivity remains to be demonstrated. The present study aims to analyze the phytoplankton composition inside and outside two contrasted MPAs; Joal-Fadiouth (coastal) and Bamboung (estuary) at dry cold and wet hot seasons. Data were collected with plankton net of 20 µm net mesh in April and September 2016. In the laboratory, by optical microscopy, the phytoplankton species were identified at the lowest possible taxonomic level by comparison of our data with those of taxonomy works. A total of 101 species belonging to 30 families were identified in the Bamboung MPA, compared with 98 species of 28 families in the Joal-Fadiouth MPA. In the latter MPA, the number of species was higher (40 species of 19 families) inside than outside (30 species of 18 families) the MPA in April *i.e.* the cold season. In September, *i.e.* the hot season, the number of species was higher (62 species of 16 families) outside than inside (50 species of 14 families). As for the Bamboung MPA, whatever the season (cold and hot), the number of species was respectively higher inside (58 species of 28 families and 61 species of 20 families) than outside (30 species of 18 families and 58 species of 20 families). However, even if both MPAs present similitude for the taxonomical composition, characteristic species of each environment have been encountered: *Eucampia* sp and *Stephanopyxis pelagica* in estuarine Bamboung MPA and *Plagiogramma* sp, *Podocystis* sp, *Melosira* sp and *Rhabdonemma* sp only encountered in Joal-Fadiouth (marine environment). Three species and / or groups of harmful algae blooms (HABs), *Pseudonitzschia serieta* in Joal-Fadiouth, *Prorocentrum lima* in Bamboung and *Pseudonitzschia* sp in both MPAs, were also encountered.

Keywords: Phytoplankton, Specific composition, HAB, West Africa.



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