Ecosystem engineering potential of the gastropod Terebralia palustris (Linnaeus, 1767) in mangrove wastewater wetlands - A controlled mesocosm experiment

Author Gil Pessanha Penha-Lopes, Fabrizio Bartolini, Samwel Limbu, Stefano Cannicci, Yunus D. Mgaya, Erik Kristensen

Abstract

The effect of different sewage concentrations (0, 20, 60 and 100%), vegetation (Bare, Avicennia marina or Rhizophora mucronata) and immersion periods (immersion/emersion period of 12/12 h or 3/3 days just for 100%) conditions were studied for 6 months on survival and growth rates of Terebralia palustris (Linnaeus, 1767). Gastropods' activity and ecosystem engineering preformed at bare and A. marina planted cells and 3 sewage conditions (0, 20 and 60%) were determined. Survival rates were higher than 70% in all treatments. Growth rate decreased significantly with increasing sewage concentrations (mainly at unplanted conditions) and longer immersion periods. A complete shift (from immersion to emersion periods) and a significant decrease in mobility and consequently its engineer potential, due to sewage contamination, lead to a 3-4 fold decrease in the amount of sediment disturbed. Sewage contamination, primary producers' abundance and environmental conditions may have influenced the gastropods survival, growth and its ecosystem engineering potential.

Key word Terebralia palustris, mangrove, mesocosm experiment