Mangrove crabs distribution in a disturbed area: consequences of wastewater release
Lignot & E. Sucré
UMR9190-MARBEC, Université de Montpellier, France and Centre Universitaire
de Formation et de Recherche de Mayotte (CUFR), Mayotte
Centre Universitaire de Formation et de Recherche de Mayotte (CUFR), Mayotte

UMR9190-MARBEC, Université de Montpellier, France and Centre Universitaire
de Formation et de Recherche de Mayotte (CUFR), Mayotte

dimitri.theuerkauff@umontpellier.fr

Eutrophication is one of the major anthropic threat in coastal ecosystems, and
mangroves are no exception. However, numerous studies have demonstrated
that mangroves can be used for wastewater processing, acting as buffer against
eutrophication of coastal marine waters. Indeed, mangrove trees benefit from
this nutrient load and mangrove soil shows a high denitrification potential.
Nevertheless, the impact of such wastewater releases on mangrove crabs, which
are key engineer species, is unclear. In Mayotte (Comoros archipelago), a pilot
study started in 2007 with daily discharges of domestic effluent following
primary treatment. In December 2015, the setting of the discharge area was
modified in order to study the resilience of the ecosystem. The impact of this
discharge was assessed at a spatial and temporal scale by recording salinity
levels and crab burrow density as a proxy of crab density between 2015 and
2017. Total ammonia NH4-N was assessed in impacted and control areas but
only in 2017. Results shows that burrow density decreased in the disturbed area
and didn’t recover within the resilience time. Salinity mapping gave a description
of the effluent dispersion which is clearly modified after modification of the
discharge area. Salinity arose as a determining factor explaining burrow density
in 2015, but its influence decayed during resilience time (2016 and 2017), likely
due to remaining pollution in the impacted area. NH4-N in the control area didn’t
exceed 0.89 mg/L while for the impacted site values showed high variability
(0.23 to 75.08 mg/L) due to differential effluent dispersion. We demonstrate
here that domestic effluents severely impacts the density of crab burrows, and
that resilience time exceeds 3 years. This study provides a novel insight
highlighting that assessments of the health status of mangroves affected by
sewage pollution should also consider macrofauna with key-engineering roles in
these ecosystems.