

Epibenthic communities in the coastal waters of Suriname

Willems Tomas^{1,2}, Annelies De Backer¹, Kris Hostens¹ and Magda Vincx²

¹ Institute for Agricultural and Fisheries Research (ILVO), Biological Environmental Research
Ankerstraat 1, 8400 Oostende, Belgium
Email: tomas.willems@ilvo.vlaanderen.be

² Marine Biology Section, Department of Biology, Ghent University, Krijgslaan 281 S8, 9000 Gent, Belgium

The continental shelf of Suriname stretches some 200km offshore South-America's North coast, sloping gently before plunging into the depths of the Western Atlantic. The area is heavily influenced by sediment-laden freshwater discharge from both the Amazon basin and domestic rivers, creating major environmental shifts. It is currently underinvestigated how bottom-living organisms respond to this variable environment, as biological data from the area are scarce and outdated. The current study therefor aims to characterize the epibenthic communities on the coastal shelf of Suriname, and to assess their spatio-temporal variability.

During 10 survey cruises, five locations of increasing depth, starting at 5m near estuaries and going offshore to 35m, were sampled in each of three transects located from east to west. On these 15 locations, epibenthos was sampled with an ottertrawl on a (bi)monthly basis in 2012-2013. Simultaneously, the environmental parameters turbidity, chlorophyll, water temperature, salinity and sediment composition were measured.

A total of 92 epibenthic species were encountered, living in spatially distinct communities. Beneath a depth of 25m, a coastal community was discerned, dominated by a single species, the Atlantic seabob shrimp *Xiphopenaeus kroyeri* (Crustacea: Penaeoidea), which is present in densities of up to 1300 individuals 1000m². Near the 30m isobaths, the epibenthos community abruptly shifted to a more diverse offshore species assemblage without *X. kroyeri*. As such, the main factor structuring the epibenthos was a gradient in depth, corresponding to a transition in sediment composition from mud and sandy mud inshore, to sand with shell fragments offshore. In the offshore community, a second pattern was apparent. Brittlestars dominated the epibenthos in the west, with densities of *Ophioderma brevispina* and *Ophiolepis elegans* reaching 370 individuals 1000m². They were absent, however, on the same depths in the eastern part, where the soft coral *Renilla muelleri* and the hermite crab *Dardanus focusus* were numerically dominant. This east to west gradient is probably caused by the Amazon outflow because the influence of the Amazon plume on coastal waters and sediments decreases when going westwards.

The environmental variability on the coastal shelf of Suriname is clearly reflected in the epibenthos. Understanding these patterns is important considering the artisanal and semi-industrial exploitation of the seabob shrimp *X. kroyeri*. As such, this study can contribute to an ecosystem approach in the management of these shrimp fisheries in Suriname.