

THE DIEL VARIATION OF THE SURF ZONE HYPERBENTHOS AT AN ECUADORIAN SANDY BEACH: AN EXPLORATORY STUDY

Dominguez-Granda Luis¹ and Nancy Fockede²

¹ Escuela Superior Politécnica del Litoral (ESPOL), Facultad de Ingeniería Marítima y Ciencias del Mar (FIMCM), Campus Gustavo Galindo, Km. 30.5 Vía Perimetral, PO Box 09-01-5863, Guayaquil, Ecuador
E-mail: ldomingu@espol.edu.ec

²Ghent University (RUG), Biology Department, Marine Biology Section
Campus De Sterre, Krijgslaan 281/S8, B-9000 Gent, Belgium

The diel patterns of the hyperbenthic species composition in the surf zone of an Ecuadorian sandy beach were investigated over a 24-hour cycle in February 2000. The total density of the hyperbenthos varied between 130 and 3000 ind.100 m⁻². 169 functional morphospecies were found, of which only 26 could be identified to species level because of the poor availability of species descriptions for the region.

Crustacea (mainly Brachyura, Anomura, Penaeid larvae) and Pisces (larvae and eggs) were the most dominant phyla. A higher density and diversity was encountered during the night and this was caused by migration of species into the surf zone. Among them there were shrimp larvae, fish eggs, fish larvae and megalopa of Brachyura.

Three communities could be established using classification and ordination techniques: a day - high water, a day - low water and a night group. The diurnal effects showed to be stronger than the tidal effects. The chlorophyll a content was the most important factor explaining the diel variation in the Canonical Correspondence Analysis.

Usually, at spring tide high water, the surf zone of the selected beach is intensively used by artisan fishermen for the collection of larval penaeid shrimp (used as a source for the local aquaculture industry). The sampling campaign coincided with exceptionally cold and dry climate conditions (La Niña phenomenon - February 2000). This study might therefore not be completely representative. However, it was possible to state that the artisan postlarval shrimp fisheries in the surf zone of the sampling area probably have a greater negative impact on the local and off-shore ecosystem when performed at night time high water instead of during daytime high water.