

## **Lessons learned from in situ plankton imaging in shallow and turbid coastal waters in the Belgian part of the North Sea: a Video Plankton Recorder study**

Anouk Ollevier\*, Flanders Marine Institute (VLIZ), Wandelaarkaai 7, 8400 Ostend, Belgium  
Jonas Mortelmans, Flanders Marine Institute (VLIZ), Wandelaarkaai 7, 8400 Ostend, Belgium  
Michiel B. Vandegehuchte, Flanders Marine Institute (VLIZ), Wandelaarkaai 7, 8400 Ostend, Belgium  
Roeland Develter, Flanders Marine Institute (VLIZ), Wandelaarkaai 7, 8400 Ostend, Belgium  
Marleen De Troch, Biology Department, Marine Biology Research group, Ghent University, Krijgslaan 281-S8, 9000 Gent, Belgium  
Klaas Deneudt, Flanders Marine Institute (VLIZ), Wandelaarkaai 7, 8400 Ostend, Belgium

Optical imaging devices such as the Video Plankton Recorder (VPR) harness unique capabilities to perform in situ observations and observe planktonic organisms in their natural environmental context. However, applying this technology in shallow and turbid coastal waters comes with a number of challenges. Depending on the research goal, methodological choices need to be made regarding the appropriate towing procedure and instrument settings. In addition, limitations can be expected related to the physical characteristics of the water column, more specifically regarding suspended matter concentration and turbidity.

A number of specific deployment procedures in the Belgian part of the North Sea were evaluated to research the possibilities and limitations of the device in shallow and turbid coastal waters. The study shows that depending on the towing procedure, the information to be extracted from the collected data and the ability to distinguish (a)biotic patterns differs. The size of the plankton taxa under study should be the main determinant when choosing the magnification setting, with high magnifications being more suitable for smaller organisms (0.3 - 0.7 mm) and vice versa (1.0 - 3.8 mm). Additionally, the boundary conditions for the deployment of the VPR related to the turbidity of the water column were defined and the implications for deployment within the study area were investigated. Results show that high turbidity values over 6.2 NTU inhibit the collection of useable data, complicating the VPR's application, and with extension other optical methods, in many coastal and transitional waters.