

Why not eat wild mussels?

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Although forbidden, it can be tempting to pick daily fresh mussels at the Belgian groynes or quaysides. Especially at low tide, mussels are easily reachable. But is it risky to pick mussels from the wild? Within this research, chemical contamination, microbial characteristics and the uptake of microplastics has been measured on mussels from different origin bought at Belgian department stores (consumption mussels) or gathered along the Belgian coastline (picked at groynes and quaysides).

The chemical analysis revealed high concentrations of polychlorobiphenyls (PCBs) in mussels of groynes and quaysides compared to consumption mussels with maximum concentrations for the 6 ICES-PCBs up to 20.30 $\mu\text{g}\cdot\text{kg}^{-1}$ wet weight at the groynes of Knokke. Concentrations of polycyclic aromatic hydrocarbons (PAHs) are highest at quayside Zeebrugge. For all groyne mussel samples, chemical food legislation criteria were not exceeded.

Concentrations of *E. coli* and total counts of heterotrophic bacteria were measured to evaluate the potential health hazard of shellfish and to assess the sanitary quality of shellfish. Higher concentrations of *E. coli* are observed at the groynes and quaysides of Nieuwpoort compared to Zeebrugge. This can be explained by a higher degree of runoff from animal farms and agricultural land near sampling location Nieuwpoort. For *E. coli*, all groyne and quayside samples exceeded the legal limit for human consumption, indicating that the marine environment surrounding the shellfish is polluted by faecal microorganisms.

Microscopic synthetic fibres ranging from 200 μm up to 1500 μm size were detected in the bodies of the examined mussels. No significant difference in total microplastics was observed between consumption, groyne and quayside mussels. The number of total microplastics varied from 2.6 to 5.1 fibres.10g⁻¹ of mussel. A higher prevalence of orange fibres at quaysides can be related to fisheries activities.

Within this study, evaluation of chemical and microbial pollution was combined with microplastic evaluation. The outcome from the different disciplines revealed different conclusions in evaluating “the most polluted” samples. This stresses the importance of balancing monitoring efforts between different disciplines in order to get an overall picture.

References

De Witte B., L. Devriese, K. Bekaert, S. Hoffman, G. Vandermeersch, K. Cooreman, and J. Robbens. 2014. Qualitative assessment of the blue mussel (*Mytilus edulis*): comparison between commercial and wild types. *Maine Pollution Bulletin* 85:146–155.