

The influence of POP and metal contamination in Flemish water bodies (Belgium) on ecological water quality and biota populations

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Worldwide industrial development, intensive agriculture and high population densities have led to the presence of numerous pollutants in the aquatic environment. These pollutants such as polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs) and metals, threaten the ecological quality of rivers, canals and lakes, and can cause adverse effects on local invertebrate and fish communities.

However, it is hard to determine what pollution level will lead to detrimental effects on population level, because low level effects are not always translated into higher level effects and often they will manifest on a long term base.

Indices, such as the Belgian Biotic Index (BBI) and Ecological Quality Ratio (EQR), try to describe the ecological quality of a water body by studying its macroinvertebrate or fish communities respectively. The indices are based on several parameters, including species composition and their tolerance for disturbance. Since a well-balanced and adaptive community of organisms can only be maintained by a healthy ecosystem, the indices reflect the ability of the ecosystem to do so.

In this study, pollution concentration levels of PCBs, pesticides and metals in sediment and European eel (*Anguilla anguilla*) of Flemish fresh waters, are linked with the Belgian Biotic Index (BBI) and Ecological Quality Ratio (EQR), as indicators of the ecological water quality.

The main objectives of this study were 1) to investigate if ecological water quality, as indicated by BBI and EQR, was correlated with the pollution levels, 2) to determine which parameters (PCBs, metals, O₂, water depth,...) influence the ecological status of Flemish water bodies the most 3) to formulate concentration thresholds from which a community effect occurs.