BInd11: Abundance of submerged, emergent and floating-leafed macrophytic vegetation

Quality element: Benthic flora

Water category and water body types: Rivers, lakes, transitional waters; all types except mountainous headwater streams

Selection rationale: Integrative indicator of hydromorphological and nutrient pressure, with relevance for habitat structuring

Indicator type (DPSIR): State

Description: The categories of submerged, emergent and floating-leafed vegetation represent different growth form types of aquatic vegetation, distinguished on the basis of coarse-level vegetative, whole-plant traits. These growth forms constitute different components of the macrophytic 'set-up' of a water body, featuring distinct reaction to various pressures. The submerged component is part of the benthic community extending into the pelagic zone. Submerged plants are influenced by the physico-chemical conditions of both water and sediment (e.g. availability of light and nutrients), and are prone to hydrodynamic forces in lotic systems. Emergent vegetation demarks the land-water ecotone and thus responds to riparian quality status, including light conditions. The floating-leafed plant component is most competitive at high productivity due to optimal light yield (photosynthetic tissue above water surface), and favours lentic conditions.

The abundance of submerged, emergent and floating-leafed macrophytic vegetation represents an integrative indicator of hydromorphological and nutrient pressure, with relevance for structuring the habitat for other aquatic organisms. Light conditions, current velocity and habitat availability form the main factors influencing the abundance and ratio of these growth forms. Furthermore, the total abundance of macrophytic vegetation (derived as the sum of individual growth form abundances) relates to nutrient enrichment, structural degradation and riparian quality. Excessive macrophyte growth represents a nuisance for boating, swimming and by obstruction of water flow. The latter is relevant for flood control.

Spatio-temporal scale: Sampling site, single survey

Unit: Percent coverage; plant volume invested; abundance sum

Standardisation: To be standardised against type-specific reference conditions

Data requirements: Field data

Other: Generic growth form lists of most freshwater macrophytes relevant in Europe are available upon request

MARS spatial scale:
Experimental*, river-basin and European scale
* NERC lakes

References

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