



MACROPHYTE METRIC FOR WATER LEVEL FLUCTUATIONS WIC(CB)

Macrophytes
WATER CATEGORY
Lakes
MAIN STRESSOR

BIOLOGICAL QUALITY ELEMENT

Water level fluctuations

GEOGRAPHICAL INTERCALIBRATION GROUP

Central Baltic GIG

COMMON INTERCALIBRATION TYPES

LCB2

COUNTRIES PARTICIPATING IN INTERCALIBRATION EXERCISE

Not applicable



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COMMON METRIC DESCRIPTION (INCL. WFD'S INDICATIVE PARAMETERS)

The metric elaborated for Central-Baltic countries (WIc_(CB)) is based on the relation of taxa sensitive and tolerant to water level fluctuations. For the development of this metric, only data were available for very shallow (mean depth <2 m) floodplain lakes and main channel of the River Rhine and Meuse in The Netherlands. Based on these data, two separate indices have been developed: one for the impact of stabilization of water-levels (<0.2 meter), and one for the impact of large water-level fluctuations (>1 meter). These metrics have been calculated separately for 'presence' and 'abundance' data of macrophyte species. Both metrics were significantly related to hydrological disturbances. However, there is still a huge scatter around the regression lines.

Because these data are restricted to a small geographic area with only shallow, eutrophic lakes, the applicability to other areas and lake types in the Central-Baltic region is unknown. Additional data are required for further development and testing of the metrics before they are widely applicable.

COMBINATION RULE FOR MULTI-METRICS

Not applicable

SOFTWARE / (EXCEL) SPREADSHEET AVAILABLE FOR CALCULATING THE (INDIVIDUAL) COMMON METRIC(S)

Not applicable

AVAILABLE DOCUMENTS / ONLINE SOURCES REPORTING ON THE DEVELOPMENT OF COMMON METRIC(S)

Deliverable 3.2-3 Report on the most suitable lake macrophyte based assessment methods for impacts of eutrophication and water level fluctuations. www.wiser.eu



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DESCRIPTION OF DATA SET TO ESTABLISH RELATIONSHIP TO PRESSURE / NATIONAL ASSESSMENT SYSTEMS 1

The metric elaborated for Central-Baltic countries was based on macrophyte composition from 100 floodplain lakes along the Lower Rhine in The Netherlands (water level fluctuations were used as pressure proxy). For other countries in the Central-Baltic region, no data were available with regard to water-level fluctuations.

TYPE OF DOSE-RESPONSE-RELATIONSHIP²

Two separate indices have been developed: one for the impact of stabilization of water-levels (<0.2 meter), and one for the impact of large water-level fluctuations (>1 meter). These metrics have been calculated separately for 'presence' and 'abundance' data of macrophyte species.

WIc for water-level stabilization (fluctuations <0.2 meter) correlated significantly with the proportion of summer drawdown in the floodplain lakes (Spearman R=-0.55 (abundance-based metric) and -0.45 (presence-based metric); both with p<0.01). However, there is still a huge scatter around the regression line.

WIc for increased water-level fluctuations (>1 meter) correlated significantly with the amplitude of water-level fluctuations in the lakes (Spearman R=0.31 for both 'presence' and 'abundance'-based metric; both with p<0.01) but also for this metric there is a huge scatter around the regression line.

NATIONAL ASSESSMENT METHODS (OR PARTS THEREOF) RELATED TO THE COMMON METRIC(S)³

Not applicable

FEATURES OF THE RELATIONSHIP TO NATIONAL ASSESSMENT METHODS (OR PARTS THEREOF)⁴

Not applicable



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CONCLUDING REMARKS¹

For lakes in countries from the Central Baltic region, there is a huge gap in the availability of data of the water-level regime. For the development of a metric of water-level fluctuations in this region, only data were available for floodplain lakes and the main channels of the River Rhine and Meuse in The Netherlands. Because these data are restricted to a small geographic area with only shallow, eutrophic lakes, the applicability to other areas and lake types in the Central-Baltic region is unknown. Additional data are required for further development and testing of the metrics before they are widely applicable.

 $^{^{\}rm 1}$ short summary of rationale for common metric selection, major findings, and overall discussion