Common Intercalibration Metrics

FACT SHEET

CENTRAL-BALTIC LAKE BENTHIC FAUNA ICM

GENERAL INFORMATION

BIOLOGICAL QUALITY ELEMENT

Benthic Fauna

WATER CATEGORY

Lakes

MAIN STRESSOR

Hydromorphology + Eutrophication

GEOGRAPHICAL INTERCALIBRATION GROUP

Central-Baltic

COMMON INTERCALIBRATION TYPES

Lowland lakes (L-CB1)

Calcareous very shallow lowland lakes (L-CB2)

COUNTRIES PARTICIPATING IN INTERCALIBRATION EXERCISE

Belgium/Flanders, Denmark, Estonia, France, Germany, Lithuania, Latvia, Netherlands, Poland, United Kingdom

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SPECIFICATION

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

The common multimetric index has been developed in several variants. The suggested version is given here but the final version still might be changed.

It is applicable to eulittoral macroinvertebrate samples, identified to mostly species level for all taxonomic groups except for Chironomidae and Oligochaeta.

It is calculated as the average of 6 normalised metrics:

Number of EPTCBO taxa, ASPT, % Odonata (percentage of abundance classes), % ETO (percentage of abundance classes), reproduction strategy (r/k) and % habitat preference lithal (percentage of abundance classes).

The common multimetric index is addressing the indicative parameters 'taxonomic diversity', 'ratio of disturbance sensitive to insensitive taxa' as well as 'taxonomic composition and 'abundance'.

COMBINATION RULE FOR MULTI-METRICS

Average

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

Specific software is not available. However, the metrics can be computed on the basis of the output the 'Asterics' software of the EU-projects AQEM and EUROLIMPACS; within the GIG an Access-database with algorithms is used.

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

Not available yet

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

The whole data set contains biological and abiotic data from 742 sampling sites in 196 lakes. It covers the countries Belgium/Flanders, Denmark, Estonia, Germany, Lithuania, Latvia, Netherlands, Poland and United Kingdom. Eulittoral macroinvertebrates were sampled with handnets between 1984 and 2009.
Stressor parameters comprised a variety of parameters for water chemistry, landuse of catchments, landuse of lake surroundings, and shoreline impairment.

TYPE OF DOSE-RESPONSE-RELATIONSHIP[2]

Significant relationships were found for a variety of combinations of metrics and stressor parameters. The strongest correlations of the common multimetric index were found for shoreline alteration and % near natural shoreline vegetation. R2 values depend on the final version of the multimetric index and the final setting of reference conditions as well as stressor parameters, country and lake type (0,2-0,4).

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

BE/FL: Multimetric Macroinvertebrate Index Flanders (MMIF);
DE: German Macroinvertebrate Lake Assessment;
EE: Estimation of Freshwater Quality Using Macroinvertebrates;
NL: WFD-Metrics for Natural Watertypes;
LT: Lithuanian Lake Macroinvertebrate Index
UK: The CPET method was linked to the common multimetric index via parallel samples of eulittoral macroinvertebtrates.

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

Will be given after final determination of the metrics by the countries.

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REMARKS

CONCLUDING REMARKS[1]

The final version of the common multimetric index still has to be agreed on by the Intercalibration experts of the participating countries, because the strength of correlation to the national methods varies much between the countries. The suggested index is a compromise, having a reasonable correlation with all methods, at the cost of not having the strongest possible correlation with all countries together and not having the strongest possible correlation with the stressors.
It is significantly responding to shoreline morphology, but also to eutrophication.

[1] short summary of rationale for common metric selection, major findings, and overall discussion