INTERNATIONAL STANDARD

ISO 8689-2

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Water quality — Biological classification of rivers —

Part 2: Guidance on the presentation of biological quality data from surveys of benthic macroinvertebrates

Qualité de l'eau — Classification biologique des rivières —

Partie 2: Lignes directrices pour la présentation des données relatives à la qualité biologique à partir d'études des macro-invertébrés benthiques

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 8689 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8689-2 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

ISO 8689 consists of the following parts, under the general title *Water quality — Biological classification of rivers*:

— *Part 1: Guidance on the interpretation of biological quality data from surveys of benthic macroinvertebrates*

— *Part 2: Guidance on the presentation of biological quality data from surveys of benthic macroinvertebrates*

Introduction

A wide variety of uses are made of biological quality data for running waters; these include: assessment of pollution, classification of water quality, management of water resources, habitat restoration and conservation evaluation. In many countries, biological survey results are presented in the form of a coloured map, showing the distribution of differing biological qualities [1,2,3,4]. Many methods of measuring biological quality exist, but for running waters many countries have developed systems based on the assessment of benthic macroinvertebrate communities [1,2,4,5,6]. The presentation system outlined in this part of ISO 8689 relates to the assessment of biological quality based on benthic macroinvertebrates and the detection of changes in the quality of running waters using benthic macroinvertebrate communities as indicator groups.

Water quality — Biological classification of rivers —

Part 2:
Guidance on the presentation of biological quality data from surveys of benthic macroinvertebrates

1 Scope

This part of ISO 8689 gives guidance on the presentation of biological quality data relating to running waters from surveys of benthic macroinvertebrates. The guidance is applicable to the results of surveys using standard methods of sampling and using the classification procedures given in ISO 8689-1. It is recognized that for a complete assessment of ecological status other elements of biological quality should be assessed.

NOTE An explanation of the comparison of different indices used in the analysis of surveys of benthic macroinvertebrates is given in ISO 8689-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8689. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8689 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5667-3, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples.*

ISO 7828, *Water quality — Methods of biological sampling — Guidance on handnet sampling of aquatic benthic macro-invertebrates.*

ISO 8265, *Water quality — Methods of biological sampling — Guidance on the design and use of quantitative samplers for benthic macro-invertebrates on stony substrata in shallow waters.*

ISO 8689-1, *Water quality — Biological classification of rivers — Part 1: Guidance on the interpretation of biological quality data from surveys of benthic macroinvertebrates.*

ISO 9391, *Water quality — Sampling in deep waters for macro-invertebrates — Guidance on the use of colonization, qualitative and quantitative samplers*.

3 Terms and definitions

For the purposes of this part of ISO 8689, the terms and definitions given in ISO 5667-3, ISO 7828, ISO 8265, ISO 8689-1 and ISO 9391 and the following apply.

3.1
reach
length of a watercourse forming a major sub-division of a river basin and defined by physical, chemical or hydrological characteristics (or any combination of these) that distinguish it from the watercourse upstream and downstream

NOTE The boundaries between reaches mark the principal points of transition where the overall character of the watercourse changes.

3.2
representative sampling site
site within a reach that is considered to be representative of the reach in terms of its biological quality

4 Principle

Presentation of biological quality data, from surveys of benthic macroinvertebrates in running waters, is based on the production of a colour-coded map indicating the extent of different biological qualities of the watercourses surveyed.

5 Sampling

Sampling for benthic macroinvertebrates shall be in accordance with ISO 5667-3, ISO 7828, ISO 8265 and ISO 9391.

6 Identification

Sorting and identification of animals should follow the defined procedures appropriate to the indices to be used in the classification.

7 Presentation procedure

7.1 Survey design

For the purposes of presentation watercourses should be divided, as far as possible, into reaches such that within each reach the biological quality is consistent.

Within each reach a sampling site should be selected that is representative of the reach as indicated by the benthic macroinvertebrate fauna. At this site the observed data will be collected.

7.2 Classification

A classification should be set up in accordance with the guidance given in ISO 8689-1.

7.3 Presentation

Biological quality data should be presented in the form of a map showing the reaches surveyed, coloured according to the class of the representative sampling site.

The names of watercourses should be clearly marked on the map.

The upstream and downstream limit of each reach should be shown on the map, together with the location of the representative sampling sites and an indication of the direction of flow.

Colours and class descriptions used on the map should be in accordance with Table 1.

Table 1 — Colours and class descriptions

Colour	Benthic macroinvertebrate quality classification
Blue	High
Green	Good
Yellow	Moderate
Orange	Poor
Red	Bad

7.4 Survey sites without indicator organisms

The colour black may be used to indicate the absence of indicator groups of benthic macroinvertebrates, due, for example, to excessive toxicity. The use of this colour is not to be considered part of the classification.

7.5 Reaches without data

To allow information to be presented on all reaches surveyed, and show the whole study area, it is important that reaches that could not be surveyed are shown on the map. These reaches should be shown as a fine black line between upstream and downstream limit markers.

7.6 Map

An example of a map in accordance with this part of ISO 8689 is shown in Figure 1.

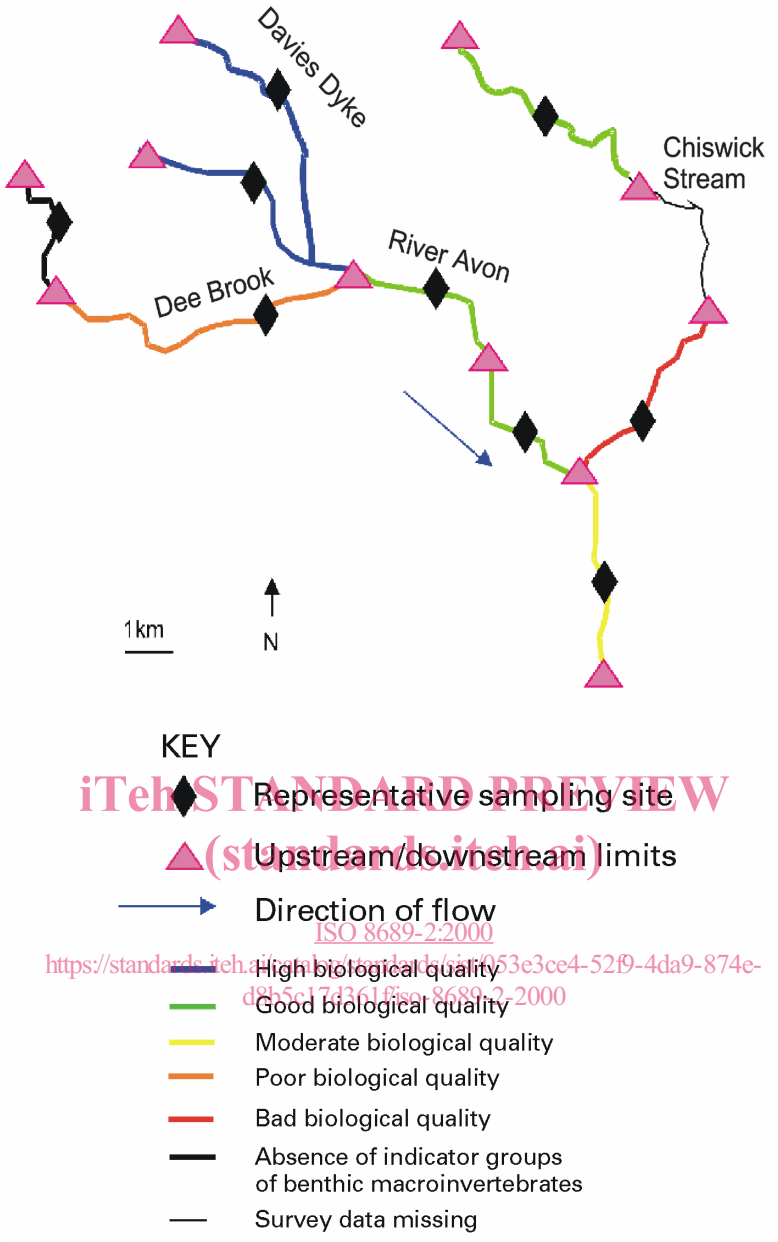

Figure 1 — Colour-coded map showing the biological quality of the River Avon and tributaries based on a survey of benthic macroinvertebrates

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