

Biological intercalibration: Invertebrates 2008



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Background

The methods for intercalibration of biological material were outlined in 1991



Objectives

- **The biological intercalibration should promote international harmonisation of monitoring practices**
- **An important tool in this work is an inter-laboratory quality assurance test**
- **The bias between analyses carried out by the individual participants of the ICP Waters Programme should be identified and controlled**



Goal

- **Evaluate of the quality of the taxonomic work on the biological material delivered to the Programme centre**
- **Harmonise the biological database**
- **Improve the taxonomic skill of the participating laboratories**



Methods

- **Two test samples of invertebrates, preferably from the home region is composed and sent to participating laboratories**
- **The results are controlled and evaluated by the Programme centre**
- **Feedback is given in reports**



In cases where we do not get material from a laboratory, we compose a test sample based on material regarded as relevant for the participant



The Quality index (Qi)

The index is based on the skill of the identification of species, genus and % identified:

$$Q_i = \% \text{ correct species}/10 * \% \text{ correct genus}/10 * \% \text{ identified individuals}/100$$

Qi will be a number between 0 and 100. It will decrease exponentially by faults made on genus level and by low % identified

Examples:

100% of the larvae identified

**90 % of the larvae correctly identified to species
The remaining 10% correctly identified to genus**

$Q_i = \% \text{ correct species}/10 * \% \text{ correct genus}/10 * \% \text{ identified individuals}/100$

$$**Q_i = 90/10 * 100/10 * 100/100 = 90**$$

Examples:

100% of the larvae identified

90 % of the larvae correctly identified to species and genus

$Q_i = \% \text{ correct species}/10 * \% \text{ correct genus}/10 * \% \text{ identified individuals}/100$

$$Q_i = 90/10 * 90/10 * 100/100 = 81$$

Examples:

70% of the larvae identified

90 % of the larvae correctly identified to species and genus

$Q_i = \% \text{ correct species}/10 * \% \text{ correct genus}/10 * \% \text{ identified individuals}/100$

$$Q_i = 90/10 * 90/10 * 70/100 = 56.7$$

Biological intercalibration 2008

In 2008, five different laboratories participated in the ICP waters biological intercalibration



Biological intercalibration 2008

The following results are preliminary and will be published in a separate ICP waters report later this year

Results

The results will be presented separately for:

- **Mayflies (Ephemeroptera)**



- **Stoneflies (Plecoptera)**



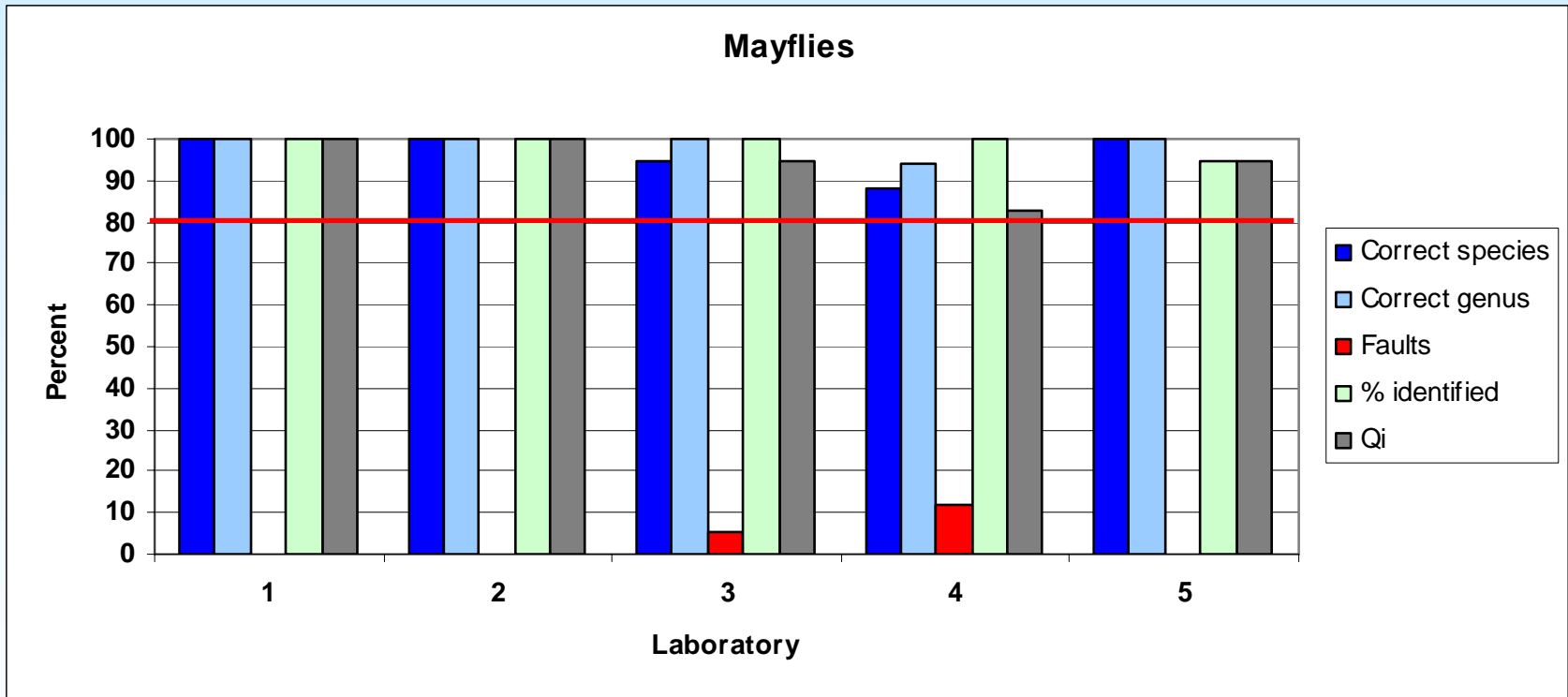
- **Caddisflies (Trichoptera)**



- **Other groups**



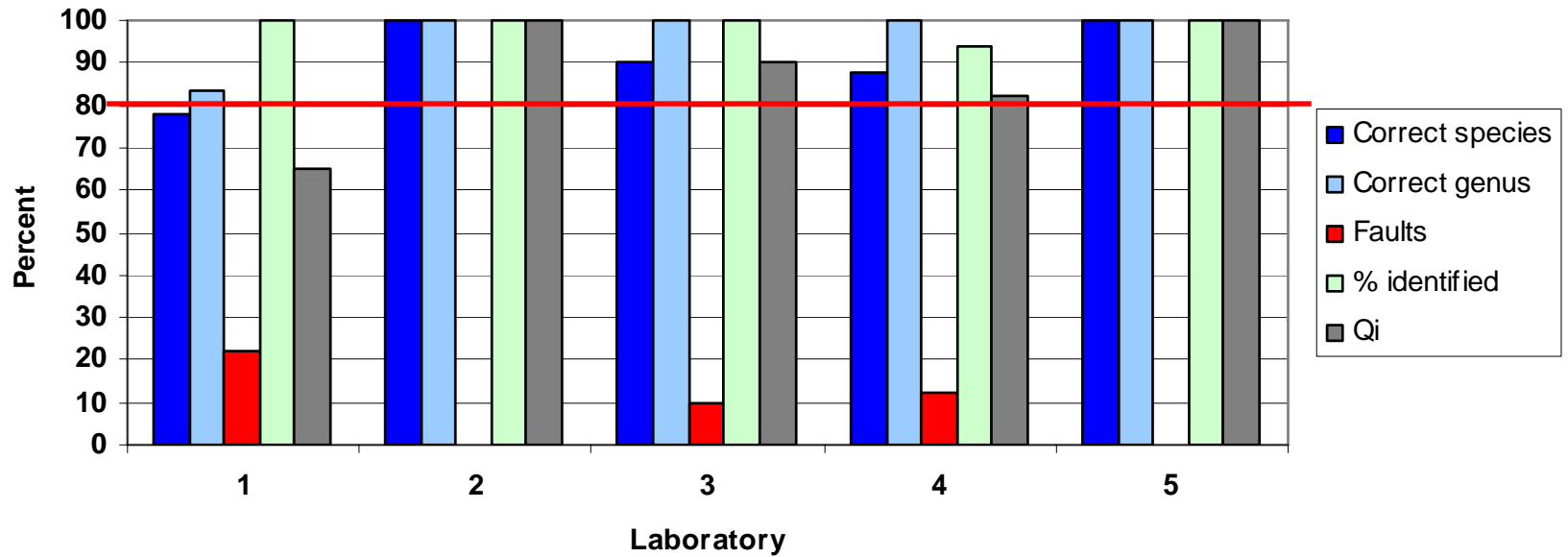
Mayflies



Stoneflies



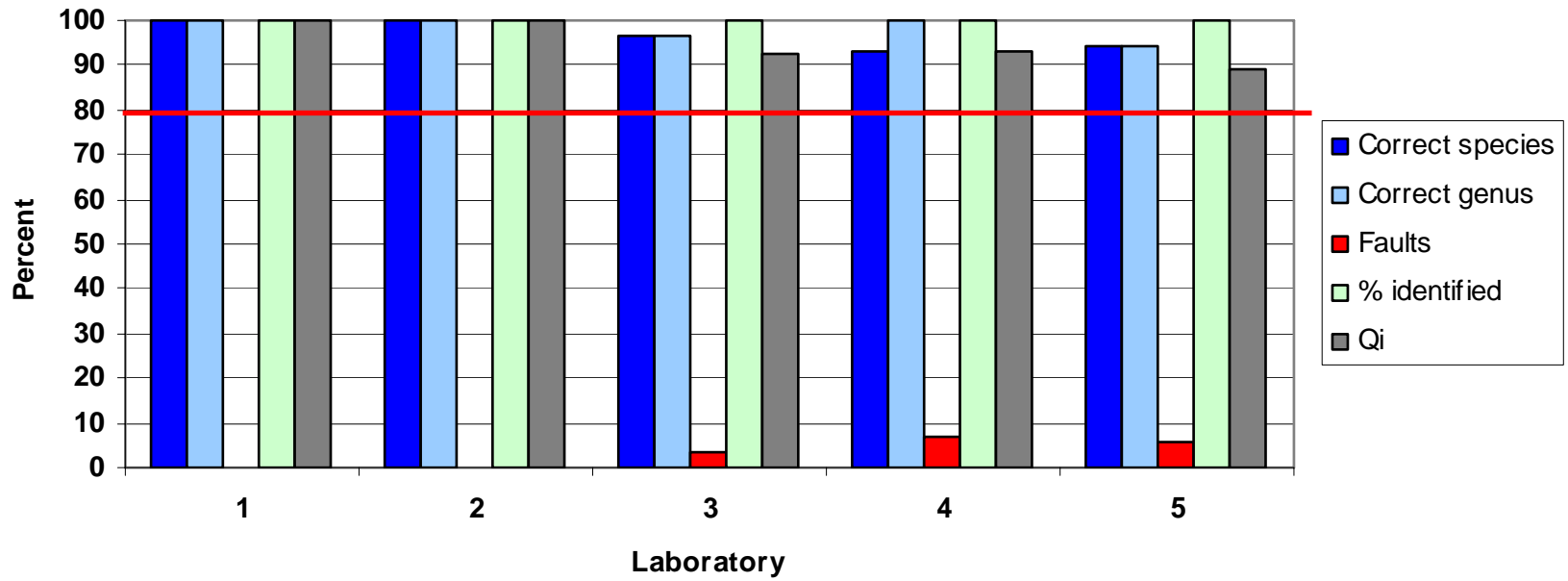
Stoneflies



Caddisflies



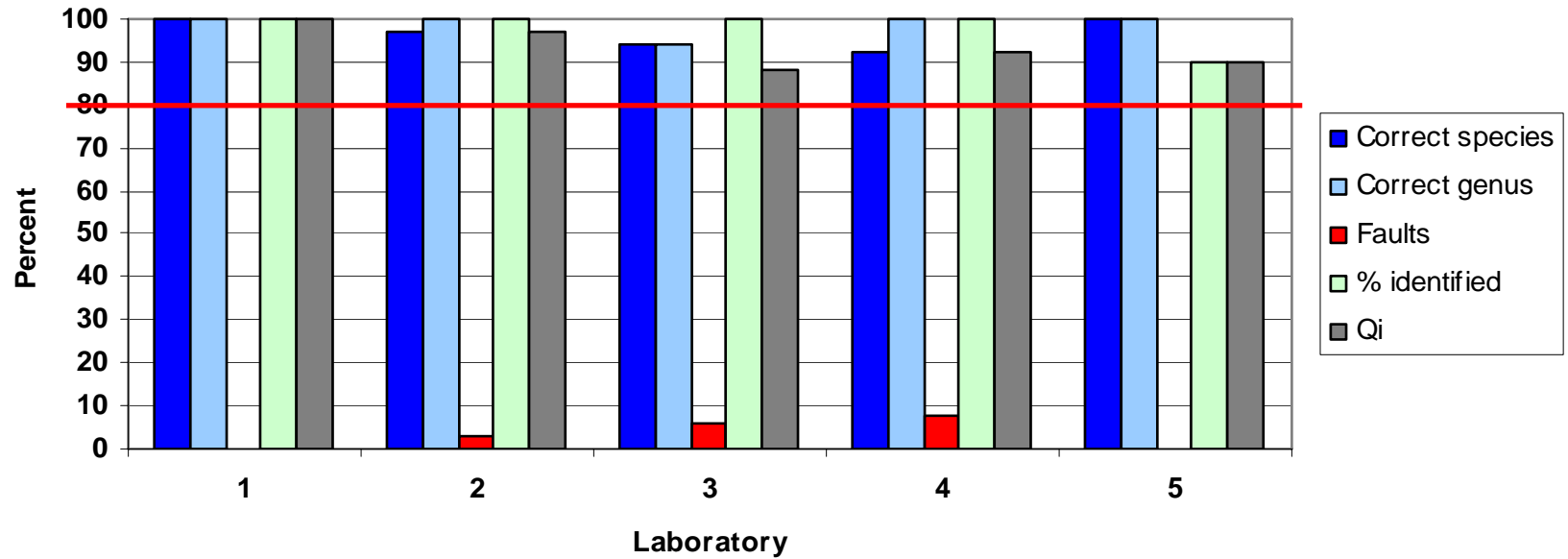
Caddisflies



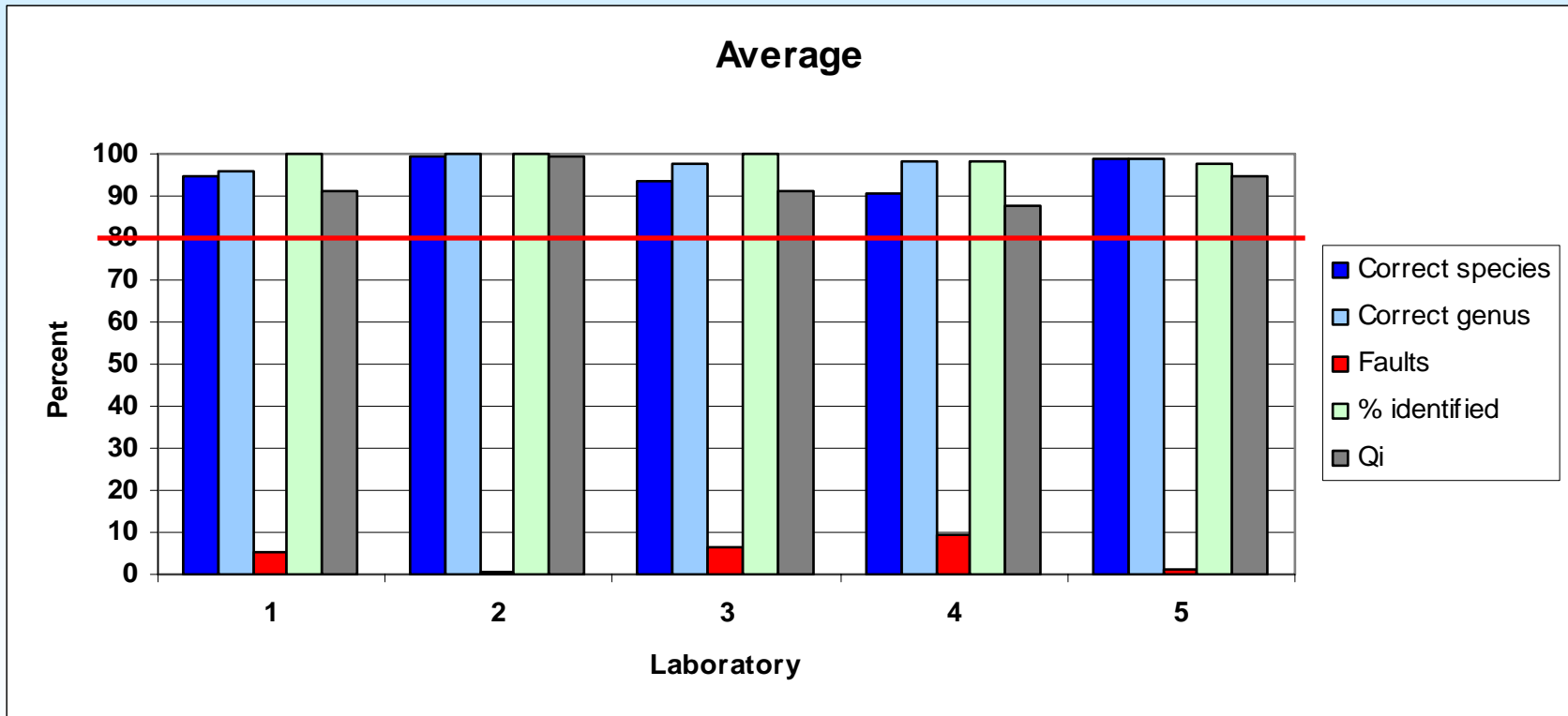
Other groups



Miscellaneous



Average skill



Acidification score in delivered and identified samples

There were no deviations between actual acidification scores in the test samples and scores calculated on the basis of the results from each laboratory

Some lessons to learn of the biological intercalibration 2008

- **It is important to provide the programme subcentre with material from the home region of the laboratory. This will secure a sufficient stock of specimens for the tests. Besides, the test sample will consist of a fauna which is familiar to the laboratory**
- **In case of taxonomical difficulties it is important to explain why. If for example an appendage of vital importance is damaged or lost, identification to genus level may be approved as sufficient.**

Conclusions

- **A total of 5 laboratories participated in the biological intercalibration 2008**
- **The laboratories identified a high portion of the individuals in the test samples, usually > 95% of the total number of species**
- **The quality of the identification of stoneflies was below the level of acceptance for one laboratory**
- **The taxonomic quality was sufficient for stating the acidity index**
- **The average Quality assurance index was > 80 for all the laboratories, indicating good taxonomic work**