

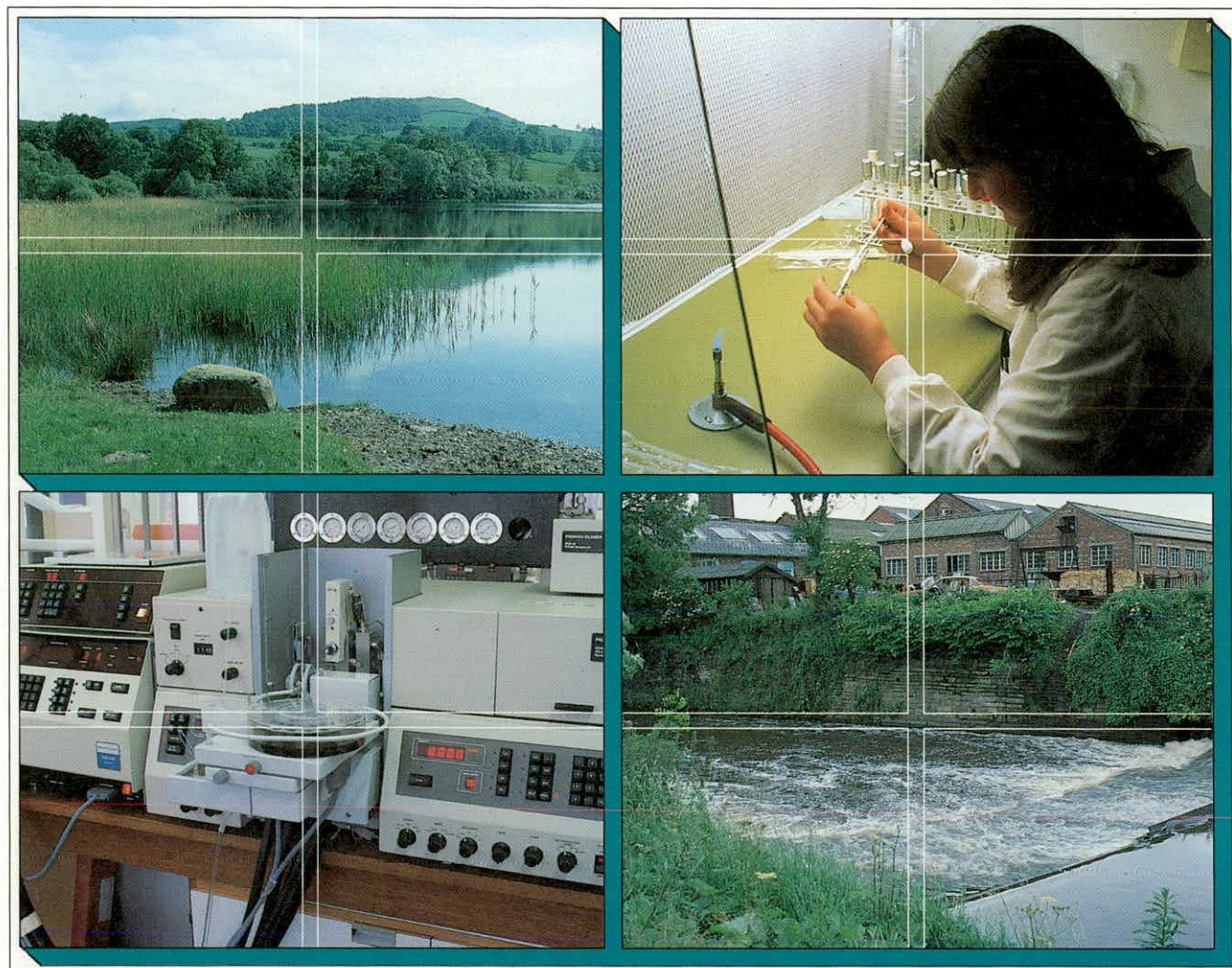


**Institute of
Freshwater
Ecology**

Chlorophyll a - SCA method revision

Progress Report, May 1992

A.F.H. Marker, PhD



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Progress Report up to May 31st 1992

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CONTENTS		Page
1.	TECHNICAL PROGRESS	3
1.1	Extractive Methods	3
1.2	HPLC	3
1.3	Remote Sensing	3
1.4	Other Methods	4
2.	PROGRESS FOR FINAL REPORTING PERIOD	4
3.	REFERENCES	4

1. TECHNICAL PROGRESS

The work reported here arose from the need to revise the standard method of estimating concentrations of chlorophyll *a* in aquatic environments (HMSO 1980). This is one of a large body of technical methods generated by the Standing Committee of Analysts (DoE) and published by HMSO. Although the basic method of chlorophyll analysis has remained unchanged for many years, technical details have changed over the last 12 years and should now be included. The major part of the work will continue to emphasise methods involving pigment extraction, followed by spectrophotometry.

1.1 Extractive Methods

The initial phase of this work has been concerned primarily with correspondence with experts in the field of pigment analysis, many of them abroad. Some replies are still outstanding. Methanol is the standard solvent used for the extraction of plant pigments but is now classed as a hazardous substance, particularly from long-term chronic affects, including damage to the optic nerve. The need for most users of the method to process rapidly large numbers of samples makes containment of toxic solvents particularly difficult. In many countries, particularly Germany, Scandinavia and the Netherlands, methanol has been abandoned for general use. Methods are therefore being prepared which offer ethanol as the primary choice in line with many of our EC colleagues. The methods listed in the first edition will be grossly simplified but recipes involving acetone and methanol will still be given as alternatives for particular applications.

There are a number of issues which still need to be resolved.

1. Transport of samples.
2. Storage of samples
 - water,
 - frozen filter,
 - solvent extract.
3. Extraction technique
 - cold extraction with or without grinding,
 - hot extraction.

1.2 HPLC

In the last 10 years methods of separating plant pigments by HPLC have become established and an outline of methods will be included in the revision for those requiring the most rigorous quantification of chlorophyll *a*.

1.3 Remote Sensing

It is not proposed to include remote sensing methods in the manual. This rapidly expanding field requires specialist equipment and expertise and a separate volume would be more appropriate. The methods revised here are limited to analytical laboratory methods and readily portable equipment which can be used in the field.

1.4 Other Methods

Improvements are being included to fluorometric methods as well as the estimation of chlorophyll *a* in periphyton and macrophytes.

2. PROGRESS FOR FINAL REPORTING PERIOD

The draft final project report will include an introduction and a brief description of the project. There will also be a large appendix which will, in effect, be the initial draft SCA revision (and submitted to SCA WG7 at the same time for comment and internal refereeing). The precise timing of the edited project report will depend on progress through SCA WG7 and the specific requirements of the NRA.

Correspondence indicates that marine scientists are also collaborating in the revision of pigment methodology. I am not aware that this material has been made available to freshwater colleagues and in any case the edited material will not be available until the end of the year. It may be worth considering a delay in the final report to incorporate their conclusions. Alternatively subsequent amendments could be made within SCA during the extensive editorial work required in the production of the standard method.

3. REFERENCES

HMSO 1980 The determination of chlorophyll *a* in aquatic environments 1980. In: Methods for the estimation of waters and associated materials.
HMSO 1980, ISBN 0 11 751674 0.