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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**EXECUTIVE SUMMARY OF THE FOURTH SESSION OF THE IOC INTERGOVERNMENTAL
PANEL ON HARMFUL ALGAL BLOOMS (IPHAB-IV) AND RELATED DRAFT RESOLUTION**

Vigo, Spain, 30 June - 2 July, 1997

The IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB) was formed at the Sixteenth Session of the IOC Assembly, March 1991, in order to identify adequate resources for a broad programme to try to solve some of the problems caused by harmful algae. The Harmful Algal Bloom Programme Plan and proposals (Document IOC-FAO/IPHAB-I/3) were adopted by the Seventeenth Session of the IOC Assembly in February-March 1993, and were also to be seen as IOC follow-ups to UNCED.

During its Fourth Session the IOC Intergovernmental Panel on Harmful Algal Blooms reviewed the actions completed during the intersessional period. The objectives in the HAB Programme Plan (Document IOC-FAO/IPHAB-I/3) were revised and affirmed, priorities were set, actions to be taken were discussed and decided upon, and resources were sought, identified and committed. **The Panel endorsed** a number of intersessional activities to be implemented by Member States and the IOC Secretariat. The intersessional developments and the activities to be implemented are summarized below. These activities and recommendations, and their relationship to specific objectives in the Programme Plan, are contained in Annex XI of the Summary Report.

PROGRAMME SUPPORT AND DEVELOPMENT

(i) **The Panel welcomed** the joint secondment by the United States and United Kingdom for a Senior Assistant Secretary for OSLR (ii) The Harmful Algal Bloom Programme Office at the IOC Secretariat presently has one staff-member, seconded specifically to the HAB Programme. The present secondment, by Denmark, will end in May 1998. In addition to a replacement, the secondment of one additional staff member to the Programme Office is sought. These appointments will be essential to sustain and strengthen the development and implementation of the HAB Programme. An appropriate level of staffing is considered to be one senior and one junior staff member (Document IOC-FAO/IPHAB-I/3, Annex VII). **The Panel welcomed** the secondment by Denmark. **The Panel strongly encouraged** Member States to second staff members to the HAB Programme Office, and **urged** the Secretary of IOC to pursue the secondment of a staff member specifically for the HAB Programme. **The Panel adopted Recommendation IPHAB-IV.1.** (ii) **The Panel welcomed** the developments and initiatives by the IOC Science and Communication Centres on Harmful Algae established in Copenhagen (Denmark) and Vigo (Spain). Reference was made to the Seventeenth Session of the IOC Assembly held in March 1993, where Denmark and Spain offered to establish Science and Communication Centres on Harmful Algae, to provide assistance to member States, and to developing countries in particular (Document SC/MD/101, para.80). (iii) **The Panel recognized** the strong need for better coordination of programmes and projects on harmful algae in the Pacific **and recommended** that the IOC take initiative to coordinate activities. **The Panel adopted Recommendation IPHAB-IV.3.** (iv) **The Panel took note** of the results and recommendations of IOCARIBE-V, Christ-Church, Barbados, 11-15 December 1995 (IOC/SC-IOCARIBE-V/3). **The Panel recommended** that a working group on harmful algal blooms in the Caribbean and adjacent regions (IOCARIBE-ANCA) be established, **and further recommended** the Terms of Reference for the group. **The Panel adopted Recommendation IPHAB-IV.4.** (v) **The Panel noted** the need within the European Union for initiatives ranging from large-scale harmful-algal-related environmental research to better understanding of toxin pathways in sea food in order to facilitate trade and to protect public health. **The Panel recommended** that the IOC take initiative to stress the urgent need for support for harmful algal research to the European Commission. **The Panel adopted Recommendation IPHAB-IV.5.**

EDUCATIONAL PROGRAMME ELEMENTS

INFORMATION NETWORK

(i) The quarterly IOC newsletter 'Harmful Algae News' (HAN) on toxic algae and algal blooms has been published since January 1992 and has more than of 2000 subscribers. HAN is now available via the IOC Home-page. **The Panel appointed** a new Editorial Board for HAN. (ii) **The Panel noted** that an updated version of the International Directory of Experts in Toxic and Harmful Algae and their Effects on Fisheries and Public Health has been published at the IOC Home-page. (iii) **The Panel noted** with satisfaction the publication of the IOC Manual on Harmful Marine Microalgae and commended on its wide free-of-charge distribution to scientists in developing countries.

TRAINING

(iv) **The Panel noted** with satisfaction the development and implementation of the HAB Training and Capacity Building programme as adopted by the Eigtheenth Session of the IOC Assembly. **The Panel noted** the 18 training courses and workshops on harmful algae successfully implemented regionally and globally in 1996-97 (Summary Report, Annex X). **The Panel reiterated** the importance of appropriate follow-up action in relation to trained individuals. The ‘Training and Capacity Building programme’, including commitments and potential commitments, is available as an annex to the Summary Report of the Fourth Session. Denmark, Japan, and Spain will continue to support training activities, and several other member States offered to support or to investigate the possibilities of supporting specific training courses or workshops. **The Panel noted** with satisfaction the cooperation on training activities with APEC, ASEAN, and NorFa.

SCIENTIFIC PROGRAMME ELEMENTS

ECOLOGY AND OCEANOGRAPHY

(i) **The Panel recognized** the need for a focussed and strong research effort on harmful algae in order to make major advances in the capability to mitigate their effects, and further recognized that some Member States have taken significant steps forward in this respect by benefiting from the IOC Harmful Algal Bloom Programme Plan in the formulation of national research and management programmes. Recognizing that the IOC HAB Programme Plan is not compelling or easily read by the broad scientific community, science administrators, and politicians, **the Panel recommended** the preparation of a HAB science agenda on ecology and oceanography. It is intended to help Member States in setting national priorities and in particular to promote the establishment of national, regional and international research programmes. **The Panel adopted Recommendation IPHAB-IV.2.** (ii) the ICES-IOC Working Group on Harmful Algal Bloom Dynamics reported on the achieved results, and new terms of reference were discussed. **The Panel adopted Recommendation IPHAB-IV.7.** (iii) The SCOR-IOC Working Group No. 97 has fulfilled its terms of reference through the successful organization of a NATO-SCOR-IOC Advanced Study Institute on the Physiological Ecology of Harmful Algal Blooms. (iv) The ICES-IOC-IMO Study Group on Ballast Water and Sediments reported on the first meeting of the group. **The Panel recommended** the continuation of the Study Group. (v) **The Panel recognized** that the provision of information on the timing and magnitude of blooms of harmful algae represents an essential ocean service for protection of living resources and public health that should be articulated as part of the IOC-GOOS Programme’s societal justification, it **noted** the report from the HOTO Panel of GOOS, and **recalled** Recommendation IPHAB-III.6 on the linkage between the HAB Programme and GOOS. **The Panel noted** that long-term monitoring of water quality and phytoplankton composition is an extremely effective tool in tracing long-term responses to climatic variation as well as anthropogenic-induced shifts in species composition, including proliferation of harmful algal species. **The Panel recommended** the continuation of on-going long term studies, and the inclusion of long-term monitoring programs for phytoplankton species composition as a routine part of monitoring programs throughout the world, including GOOS and LOICZ. **The Panel adopted Recommendation IPHAB-IV.8.**

TAXONOMY

(v) The Third Second Session of the Panel established an Advisory Group on Phytoplankton Taxonomy through Resolution IPHAB-II.1. The Fourth Session reviewed the progress report from the Group, revised the Terms of Reference and **decided** to transform it into an active Task Team to make taxonomic recommendations. **The Panel adopted Resolution IPHAB-IV.1.**

TOXICOLOGY AND TOXIN CHEMISTRY

(vi) **The Panel noted** the report of the IPHAB Task Team on Aquatic Biotoxins, and recalled the recommendation of the Third Session to establish a working group on the topic jointly with other relevant organizations. Noting that there had not been significant progress in this respect. **The Panel adopted Resolution IPHAB-IV.2**. **The Panel reiterated** its Recommendation IPHAB-II.4 on the provision of toxin standards and reference materials to developing countries.

OPERATIONAL PROGRAMME ELEMENTS

MONITORING AND RESOURCE PROTECTION

(i) The Second Session of the Panel established a Task Team on Design and Implementation of HAB Monitoring Programmes (Resolution IPHAB-II.3). **The Panel noted** the co-publication with ICES of IOC Technical Series No. 44 on Design and Implementation of Some Harmful Algal Monitoring Systems. **The Panel revised** the Terms of Reference of the Task Team to focus on the organization of an international workshop on management of harmful algae and their effects. **The Panel noted** that the workshop is directed to national, regional and international individuals working on monitoring and management including the prevention and control of the impacts of harmful algae and algal blooms, such as managers and decision makers, monitoring workers, public health authorities, the seafood industry, environmental economists, and scientists. **The Panel acknowledged** a similar initiative by APEC to address the management and monitoring of harmful algae and algal toxins, and **welcomed** the willingness of APEC to join efforts with the IOC in this respect. **The Panel recommended** that IOC in cooperation with APEC organizes an international workshop, directed towards dialogue and improved design of management and monitoring of harmful algae/harmful algal blooms and algal toxins in order to protect human health and other resources. **The Panel adopted Recommendation IPHAB-IV.6**.

OPERATION OF THE IOC INTERGOVERNMENTAL PANEL ON HAB

The Panel decided to continue its activities intersessionally under the co-ordination of the Chair. Dr. A. Zingone, Italy, was re-elected Chair, and Dr. R. Azanza, the Philippines, was re-elected Vice-Chair. **The Panel adopted Recommendation IPHAB-IV.9**. **The Panel requested** the Chair to present an Executive Summary, and Resolutions and Recommendations to the Nineteenth Session of the IOC Assembly.

ANNEX II

RESOLUTIONS AND RECOMMENDATIONS

Code

Title

Resolutions

Resolution IPHAB-IV.1	Task Team on Algal Taxonomy
Resolution IPHAB-IV.2	Task Team on Aquatic Biotoxins

Recommendations

Recommendation IPHAB-IV.1	Staffing of the HAB Programme Office
Recommendation IPHAB-IV.2	Development of a Global HAB Science Agenda
Recommendation IPHAB-IV.3	Coordination in the Pacific
Recommendation IPHAB-IV.4	Working group on harmful algae in the Caribbean and adjacent regions
Recommendation IPHAB-IV.5	Enhancement of research on harmful algae in Europe
Recommendation IPHAB-IV.6	Workshop on management and mitigation of the impacts of harmful algae
Recommendation IPHAB-IV.7	ICES-IOC Working Group on Harmful Algal Bloom Dynamics
Recommendation IPHAB-IV.8	Long-term observations of harmful algae
Recommendation IPHAB-IV.9	Operation of the IOC Intergovernmental Panel on Harmful Algal Blooms

Resolution IPHAB-IV.1

TASK TEAM ON ALGAL TAXONOMY

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recognizing the growing need to help co-ordinate the various efforts of organizations and institutions in relation to harmful algal taxonomy,

Acknowledging the valuable sources for identification of harmful algae provided by the IOC Manual on Harmful Marine Microalgae (Hallegraeff, G., et al (eds)) UNESCO 1995, Marine Phytoplankton, A Guide to naked Flagellates (Tomas, C. R. (ed)) 1994, and Identifying Marine Diatoms and Dinoflagellates, (Tomas, C. R. (ed)) 1995,

Recalling the recent change of names of many harmful algae,

Noting with concern the instability of names as a source of confusion for ecologists, toxicologists, and monitoring workers,

Recalling the decision of the Second and Third Session of the Panel to establish a Task Team on Algal Taxonomy and an Advisory Group on Algal Taxonomy respectively, with Terms of Reference as set out in Resolution IPHAB-II.1 and IPHAB-III.1,

Recognizing that the Terms of Reference in Resolution IPHAB-III.1 have not sufficiently addressed the objectives of the Programme Plan and the above mentioned problems,

Decides, with reference to the HAB Programme Plan, objective 6.2.2, ii (Annex V), to re-establish the Task Team on Algal Taxonomy with the following terms of reference:

- (i) provide an agreed list of harmful algal species, including correct citation of the author(s) and date of valid publication, and a list of synonyms;
- (ii) provide guidelines to reduce nomenclature instability of harmful algal species;
- (iii) organize round-table discussions on nomenclature and taxonomy of harmful algal species;
- (iv) organize intercalibration exercises to standardize the identification of harmful algal species,

Decides also that the Task Team will be composed of: Prof. Ø. Moestrup (Denmark) Chair, Dr. Y. Halim (Egypt), Dr. M. Elbrachter (Germany), Dr. A. Zingone (Italy), Dr. Y. Fukuyo (Japan), Dr. S. Fraga (Spain), Dr. Maria Faust (USA), Dr. F.R.J. Taylor (Canada) and a cyanobacteria expert;

Notes that the Task Team is established until otherwise decided by the Panel, and that it will work by correspondence and/or meet on an opportunistic basis.

Resolution IPHAB-IV.2

TASK TEAM ON AQUATIC BIOTOXINS

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recalling Recommendation IPHAB-III.5 concerning the establishment of a working group on aquatic biotoxins related to harmful algae,

Recognizing that the working group has not been established as planned,

Reiterates that the Task Team on Aquatic Biotoxins established at IPHAB-II (Resolution-II.2) will continue to pursue the establishment of the working group as well as:

- (i) continue the preparation of the fact sheets on phycotoxins (IOC-HAB Publication Series, Manuals and Guides No. 31))
- (ii) review the terms of reference proposed for the working group,
- (iii) expand the participation in the Task Team in consultation with members of the Panel,
- (iv) endeavour to convene a meeting of the Task Team within one year without financial costs to IOC,

The IOC-IEO Science and Communication Centre on Harmful Algae, Vigo, Spain, will assist the Chair of the Task Team T. Yasumoto (Japan).

Recommendation IPHAB-IV.1

STAFFING OF THE HAB PROGRAMME OFFICE

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Reiterates Recommendation IPHAB-III.1:

Recalling the Terms of Reference for the HAB Programme Office (IOC/IPHAB-I/3, Annex VIII), the level of staffing recommended,

Recognizing the importance of the present secondment by Denmark of one staff member with respect to the development and implementation of the HAB Programme,

Noting that the present level of staffing of one person of the Programme Office is not adequate,

Reiterating that it is essential to have one additional staff to co-ordinate and help implement the Programme, if the present pace of development and implementation is to be maintained,

Noting that three types of staff can be seconded to the HAB Programme office by Member States:

- (i) direct secondment of junior and senior professionals
- (ii) secondment of Associate Experts through the UNESCO Associate Experts Scheme (usually young people)

- (iii) support for M.Sc., Ph.D., or Ph.D. students to work as Interns at the Programme Office at the IOC secretariat for a 3-6 month period (Interns are provided with a contract but only a symbolic salary),

Encourages strongly Member States to second staff to the HAB Programme Office, either through full secondments or through pooling of resources.

Recommendation IPHAB-IV.2

DEVELOPMENT OF A GLOBAL HAB SCIENCE AGENDA

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recognizing the need for a focussed and strong research effort on harmful algae in order to make major advances in the capability to mitigate their effects,

Noting that some Member States have taken significant steps forward in this respect by benefiting from the IOC Harmful Algal Bloom Programme Plan in the formulation of national research and management programmes,

Recognizing that the IOC HAB Programme Plan is not compelling or easily read by the broad scientific community, science administrators, and politicians,

Recommends the preparation of a HAB science agenda on ecology and oceanography, based on the goals of the IOC HAB Programme Plan, to help Member States in setting national priorities and in particular to promote the establishment of national, regional and international research programmes,

Noting that the ECOHAB Science Agenda of the United States can serve as a valuable source of inspiration for an international HAB science agenda,

Recommends that the IOC Secretariat investigate and establish an appropriate mechanism within the IOC, or together with another appropriate organization, to prepare and publish such a HAB science agenda by a group of leading scientists,

Recommends also that the group is composed by the Chair IPHAB in consultation with co-sponsoring organizations if relevant.

Recommendation IPHAB-IV.3

COORDINATION IN THE PACIFIC

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recalling the recommendations made by the First and Second Session of IPHAB on the coordination between organizations working on harmful algae in the Pacific,

Recommends that representatives of IOC/WESTPAC, ASEAN, APEC, and PICES meet in order to exchange information on their activities and to coordinate and collaborate on relevant harmful algal activities. These include, the ASEAN-Canada Marine Science Projects II (ACPMs II) Red Tide Projects, the APEC Projects on Management of Red Tides and Harmful Algal Blooms, and the IOC/WESTPAC Harmful Algal Bloom projects.

Encourages the IOC to act as the liaison between the various regional organizations in the Pacific as well as other relevant organizations regarding activities on harmful algae.

Recommendation IPHAB-IV.4

WORKING GROUP ON HARMFUL ALGAE IN THE CARIBBEAN AND ADJACENT REGIONS

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recognizing the necessity of co-ordinated activities within the framework of the Harmful Algal Bloom Programme in the Caribbean at a regional level,

Recalling the recommendations of the Fifth Meeting of the Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE) Christ-Church, Barbados, 11-15 December 1995 (IOC/SC-IOCARIBE-V/3),

Recommends the establishment of an IOCARIBE Working Group on Harmful Algae in the Caribbean and Adjacent Regions (IOCARIBE-HACA)-Grupo de Trabajo Regional sobre Algas Nocivas en el Caribe y Regiones Adyacentes (IOCARIBE-ANCA) - to:

- (i) improve the scientific basis for monitoring and management activities in the region, including the planning and development of workshops and educational activities;
- (ii) collate and discuss annual national reports on harmful algae impacts;
- (iii) plan and promote the development of regional projects, based on the priorities identified during the Regional Scientific Planning Workshops and identify possible funding sources;
- (iv) strengthen the communication network which has already been created between the national focal points, including IOCARIBE Office (Cartagena , Colombia), IOC-FANSA Working Group, IAI HAB-Network and, the IOC Science and Communication Centres on Harmful Algae;
- (v) identify regional expertise and promote the communication between Member States concerning to the different elements of the HAB programme;
- (vi) invite interested IOCARIBE Member States to participate in the Working Group.

Recommendation IPHAB-IV.5

ENHANCEMENT OF HAB RESEARCH IN EUROPE

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Noting that harmful algal occurrence are having important socio-economic impact in the European Union hindering aquaculture activities and fisheries, endangering human health, and affecting recreational tourism,

Realizing that the application of the Europe directive 492/91 and 493/91 on the control of water quality where shellfish are cultivated or harvested, and on the control of seafood quality has led to

the compulsory implementation of monitoring programmes that require an important investment of resources.

Recognizing that there is a need for research to answer fundamental questions which may lead to improved protection of resources and public health

Recognizing that a number of national and EU initiatives have made important research efforts to advance HAB-related issues, a need still exists for initiatives ranging from large scale HAB related environmental research to a better understanding of toxin pathways in seafood in order to facilitate trade and to protect public health within the community

Recommends that IOC approaches the appropriate representatives of the European Commission , stressing the urgent need for support of research issues in this context.

Recommendation IPHAB-IV.6

WORKSHOP ON THE MANAGEMENT AND MITIGATION OF IMPACTS OF HARMFUL ALGAE

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recalling the decisions of the Second and the Third Sessions of the Panel for the Task Team on Design and Implementation of HAB Monitoring Programmes to organize an international workshop directed towards improved design of monitoring programs in order to protect resources (IPHAB-III.3),

Recognizing the initiative by APEC to address the management and monitoring of harmful algae and algal toxins,

Welcomes the willingness of APEC to join efforts with the IOC in this respect,

Recommends that IOC in cooperation with APEC organizes an international workshop, directed towards dialogue and improved design of management and monitoring of harmful algae/harmful algal blooms and algal toxins in order to protect human health and other resources,

Noting that the conference workshop is directed to national, regional and international participants working on monitoring and management including the prevention and control of the impacts of harmful algae and algal blooms. This include managers and decision makers, monitoring workers, public health authorities, the seafood industry, environmental economists, and scientists.

Recommendation IPHAB-IV.7

ICES-IOC Working Group on the Dynamics of Harmful Algal Blooms(WGHABD)

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Noting that progress in the ICES-IOC WGHABD is largely restricted to issues related to the ICES area of interest,

Realizing that Hab issues must be addressed on a global basis,

Recommends that the IOC encourages participation in the ICES-IOC WGHABD of experts in HAB dynamics from IOC Members States outside of the ICES area.

Recommendation IPHAB-IV.8

LONG TERM OBSERVATIONS OF HARMFUL ALGAE

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recognizing that the provision of information on the timing and magnitude of blooms of harmful algae represents an essential ocean service for protection of living resources and public health that should be articulated as part of the IOC-GOOS Programme's societal justification,

Noting the report from the HOTO Panel of GOOS,

Recalling Recommendation IPHAB-III.6 on the linkage between the HAB Programme and GOOS,

Noting that long-term monitoring of water quality and phytoplankton composition as an extremely effective tool in determining long-term responses to climatic variation as well as anthropogenic-induced shifts in species composition, including proliferation of HAB species,

Noting also that in some regions, long term taxonomic studies have produced decade to several decade-long plankton collections that provide excellent resources for detection of long-term shifts in community structure, invaluable in detection of HAB proliferation,

Noting also that there are techniques which permit both detection of long-term shifts in composition arising from decadal climatic variations as well as compositional changes directly attributable to anthropogenic activities,

Recommends the continuation of on-going long term studies,

Recommends also the inclusion of long-term monitoring programs for phytoplankton species composition as a routine part of monitoring programs throughout the world, including GOOS and LOICZ.

Recommendation IPHAB-IV.9

OPERATION OF THE IOC INTERGOVERNMENTAL PANEL ON HARMFUL ALGAL BLOOMS

The IOC Intergovernmental Panel on Harmful Algal Blooms,

Recommends that the IOC Intergovernmental Panel on Harmful Algal Blooms continue until otherwise decided by the IOC. The Terms of Reference should remain unchanged.

Draft Resolution XIX-

Fourth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB)

The Intergovernmental Oceanographic Commission,

Recalling that the IOC, at the Eighteenth Session of its Assembly, through Resolution IOC XVIII-8 approved the continuation of the Joint IOC-FAO Intergovernmental Panel on Harmful Algal Blooms as the IOC Intergovernmental Panel on Harmful Algal Blooms, with Terms of Reference unchanged,

Considering the Executive Summary of the Fourth Session of the Panel together with the 2 Resolutions and 9 Recommendations adopted at the Session;

Takes note of the “Action Plan and Implementation Schedule” and the “Summary of Financial and Staff Requirements for the Biennium 1998-1999” attached to the Executive Summary;

Decides to take the following action on the Recommendations:

Recommendation IPHAB-IV.1 - Staffing of the HAB Programme Office

- (i) **Approves** the Recommendation;
- (ii) **Urges** Denmark, UK, and the USA to maintain their staff support to OSLR and HAB and other Member States to obtain a possibility of pooling resources for additionally posts specifically for HAB;

Recommendation IPHAB-IV.2 - Development of a Global HAB Science Agenda

- (i) **Approves** the Recommendation subject to availability of resources;

Recommendation IPHAB-IV.3 - Coordination in the Pacific

- (i) **Approves** the Recommendation subject to availability of resources;

Recommendation IPHAB-IV.4 - Working group on harmful algae in the Caribbean and adjacent regions

- (i) **Approves** the Recommendation subject to availability of resources;

Recommendation IPHAB-IV.5 - Enhancement of research on harmful algae in Europe

- (i) **Approves** the Recommendation ;

Recommendation IPHAB-IV.6 - Workshop on management and mitigation of the impacts of harmful algae

- (i) **Approves** the Recommendation subject to availability of resources;

Recommendation IPHAB-IV.7 - ICES-IOC Working Group on Harmful Algal Bloom Dynamics

- (i) **Approves** the Recommendation;

Recommendation IPHAB-IV.8 - Long-term observations of harmful algae

- (i) **Approves** the Recommendation;

Recommendation IPHAB-IV.9 - Operation of the IOC Intergovernmental Panel on Harmful Algal Blooms

- (i) **Approves** the Recommendation;
- (ii) **Instructs** the Executive Secretary I.O.C. to convene the Fifth Session of the IOC IPHAB prior to the Twentieth Session of the I.O.C. Assembly;
- (iii) **Instructs** the Panel to provide an executive summary of its Report, with a proposed Resolution for possible adoption, including estimate of financial implications, to IOC-XX

ACTION PLAN AND IMPLEMENTATION SCHEDULE

Main Activities	1998	1999
PROGRAMME SUPPORT		
Fifth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB-V)		X
EDUCATIONAL ELEMENTS		
Information Network:		
IOC Newsletter: Harmful Algal News	4 issues	4 issues
Bibliographic database	X	
IOC-ICES Database on Harmful Algal Occurrences	X	
Manuals and Guides on Algal Toxins	X	X
ICES-IOC Plankton Identification Sheets	X	X
Trainng:		
Courses on Biology, Taxonomy, Culturing, Toxin Chemistry and Monitoring & Management	Vigo, Spain Copenhagen, Denmark Tokyo, Japan Naples, Italy La Pas, Mexico	Vigo, Spain Copenhagen, Denmark Tokyo, Japan
SCIENTIFIC ELEMENTS		
Regional HAB Science Planning Workshop	Cuba	
Fourth IOC-FANSA regional Workshop		Brazil?
ICES-IOC Working Group on Harmful Algal Blooms Dynamics	Lisbon, Portugal	
ICES-IOC-IMO Study Group on Ballast Water and Sediments	The Hague, The Netherlands	
Global HAB Science Agenda		X ?
OPERATIONAL ELEMENTS		
IOC-APEC International Workshop on Management and Mitigation of the impacts of Harmful Algae	X	

**SUMMARY OF FINANCIAL AND STAFF REQUIREMENTS
FOR THE BIENNIUM 1998 - 1999 (in US\$)**

Activity (see Action Plan)	A. Total financial implication of IPHAB-IV decisions and Recommendation s	B. Estimated available funds (Regular Programme and Trust Funds)	C. Additional potential extra- budgetary contributions	D. Required extra- budgetary contributions for full programme implementation (A-(B+C))
PROGRAMME SUPPORT				
General (excl. Centres)	20.000	10.000		10.000
Staff	2 seconded		1 seconded	1 seconded
EDUCATIONAL ELEMENTS				
Network (excl. Publications)	12.000	5.000		7.000
Training (incl. Centres)	350.000	210.000		140.000
SCIENTIFIC ELEMENTS	45.000	15.000		30.000
OPERATIONAL ELEMENTS	70.000	10.000	30.000	30.000
TOTAL	497.000	250.000	30.000	217.000

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