



**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION**  
(of UNESCO)

**FOOD AND AGRICULTURE ORGANIZATION**

**SEVENTEENTH SESSION OF THE IOC-FAO INTERGOVERNMENTAL PANEL  
ON HARMFUL ALGAL BLOOMS**

IOC UNESCO Headquarters, Paris, 18–20 March 2025

**EXECUTIVE SUMMARY**

In accordance with Rule of Procedure 48.3, IPHAB, as a primary Subsidiary Body of IOC, is required to report to a governing body on its sessions.

The IOC Assembly at its thirty-third session is invited to consider this Executive Summary.

For more detailed information on this session, please refer to <https://oceanexpert.org/event/4603>

1. The Seventeenth Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms (IPHAB-XVI) was held at IOC UNESCO Headquarters, Paris, from 18 to 20 March 2025. With reference to IOC Assembly Resolution XVI-4, this was the second session of IPHAB since IPHAB-III in 1995 with FAO back as co-sponsor of the Panel;

2. The Panel reviewed the actions completed during the intersessional period, noted the progress made and found that the programme is addressing several challenges of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030). The Panel noted further that the Decisions and Recommendations of the Sixteenth session (March 2023) had been implemented highly satisfactorily within the available resources. The major achievements reported during the intersessional period, several of which are still ongoing, include:

- (i) the continued publication of the IOC *Harmful Algae News*;
- (ii) the continued compilation of data at all levels for the IPHAB-IODE Harmful Algae Information System with HAEDAT and OBIS databases as providers of high-quality information on HAB events, status and trends of HAB occurrence and assessment of climate change impacts, and a toxin database linked to the taxonomic reference list via WoRMS;

- (iii) the implementation of 6 international training courses and several regional and in-country courses;
- (iv) the developments under the joint IOC-SCOR GlobalHAB science programme for a new decadal plan for an international HAB research programme focusing on understanding HABs in the context of global sustainability;
- (v) the results from the ICES-IOC Working Group on Harmful Algal Bloom Dynamics and ICES-IOC-IMO Working Group on Ballast and other Ship Vectors;
- (vi) the development of the regional activities in Western Pacific (IOC/WESTPAC/HAB), and the Caribbean (IOC/IOCARIBE/ANCA), and South America (IOC/IPHAB/FANSA) despite a lack of resources;
- (vii) the publication of the GlobalHAB white-paper *Fish-killing marine algal blooms: causative organisms, ichthyotoxic mechanisms, impacts and mitigation* as IOC Manuals and Guides, [93](#);
- (viii) the joint GlobalHAB-GESAMP publication *Sargassum white paper: addressing the influxes of the holopelagic Sargassum spp. in the equatorial and subtropical Atlantic: recent scientific insights in their dynamics*, as IOC Manuals and Guides, [96](#);
- (ix) the advances in testing enhancement of HAB monitoring in Africa into early warning systems; and
- (xii) the development of activities and partnerships carried out by the International Society for the Study of Harmful Algae (ISSHA) to promote and foster research and training on HAB.

3. The Panel adopted 11 decisions and submitted two recommendations for consideration of the IOC Assembly at its thirty-third session and the FAO Committee on Fisheries (COFI). The decisions concern:

- Decision [IPHAB-XVII.1](#): Regional HAB Programme Development taking into account the difference of support for the various groups and networks depending on whether they are affiliated to a regional IOC subsidiary body or not;
- Decision [IPHAB-XVII.2](#): the continuation of the Task Team on the Early Detection, Warning and Forecasting of HAB Events; with revised terms of reference;
- Decision [IPHAB-XVII.3](#): the continuation of the Task Team on the development of the Harmful Algal Information System and a periodic Global Harmful Algal Bloom Status Report with revised terms of reference;
- Decision [IPHAB-XVII.4](#): the redirection of a former Task Team on Ciguatera to a Task Team on Benthic Harmful Algae and their Toxins;
- Decision [IPHAB-XVII.5](#): the continuation of the Task Team on Harmful Algae and Desalination of Seawater with revised terms of reference and identification of new partners;
- Decision [IPHAB-XVII.6](#): the continuation of the Task Team on Biotoxin Monitoring, Management and Regulations with revised terms of reference;
- Decision [IPHAB-XVII.7](#): the continuation of the Task Team on Algal Taxonomy with new updated terms of reference;
- Decision [IPHAB-XVII.8](#): the continuation of the Task Team on Fish Killing Microalgae and Ecosystem Effects with revised terms of reference;
- Decision [IPHAB-XVII.9](#): the continuation of the Task Team on HAB Communication with revised terms of reference;

Decision [IPHAB-XVII.10](#): New decadal plan for IOC-SCOR GlobalHAB beyond 2025; and

Decision [IPHAB-XVII.11](#): on HAB training and capacity development.

4. The Recommendations to the IOC Assembly include: (i) the intersessional activities in a workplan and budget for the IOC HAB Programme for the period 2026–2027 ([Rec. IPHAB-XVII-1](#)); and (ii) the continuation of IPHAB with unchanged terms of reference ([Rec. IPHAB-XVII-2](#)). The recommendations are reflected in the draft decision IOC-33/3.4.5 included in the Action Paper for the Assembly (IOC-33/AP Prov.)

5. Dr Philipp Hess (France) was re-elected as Chair and Dr Begoña Ben Gigirey (Spain) was elected as Vice-Chair by acclamation by the panel members.

## Résumé exécutif

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1. La 17<sup>e</sup> session du Groupe intergouvernemental de la COI-FAO chargé d'étudier les efflorescences algales nuisibles (IPHAB-XVII) s'est tenue au Siège de l'UNESCO/COI, à Paris, du 18 au 20 mars 2025. En référence à la résolution XVI-4 de l'Assemblée de la COI, il s'agissait de la deuxième session de l'IPHAB, depuis IPHAB-III en 1995, à recevoir le soutien de la FAO en tant que co-parrain du Groupe.

2. Le Groupe a passé en revue les activités menées au cours de la période intersessions, pris note des progrès accomplis et conclu que le programme contribuait à relever plusieurs défis de la Décennie des Nations Unies pour les sciences océaniques au service du développement durable (2021-2030). Le Groupe a également noté que les décisions et recommandations de la 16<sup>e</sup> session (mars 2023) avaient été mises en œuvre de manière très satisfaisante dans le cadre des ressources disponibles. Parmi les principales réalisations mentionnées, dont plusieurs sont toujours en cours, figurent notamment :

- (i) la poursuite de la publication du bulletin *Harmful Algae News* de la COI ;
- (ii) la poursuite de la compilation de données à tous les niveaux pour le système d'information IPHAB-IODE sur les algues nuisibles, les bases de données HAEDAT et OBIS fournissant des informations de haute qualité sur les phénomènes d'efflorescences algales nuisibles, la situation et les tendances concernant l'occurrence des HAB et l'évaluation des effets du changement climatique, ainsi qu'une base de données sur les toxines liée à la liste de référence taxonomique par l'intermédiaire du Registre mondial des espèces marines (WoRMS) ;
- (iii) la mise en œuvre de six cours de formation internationaux et de plusieurs cours régionaux et nationaux ;
- (iv) l'élaboration, par l'équipe du Programme scientifique conjoint COI-SCOR sur les efflorescences algales nuisibles (GlobalHAB), d'un nouveau plan décennal pour un programme international de recherche sur les efflorescences algales nuisibles, axé sur la connaissance de ce phénomène dans un contexte de viabilité mondiale ;
- (v) les résultats du Groupe de travail CIEM-COI sur la dynamique des efflorescences algales nuisibles (WGHABD) et du Groupe de travail CIEM-COI-OMI sur les eaux de ballast et autres vecteurs à bord des navires (WGBOSV) ;
- (vi) le développement des activités régionales dans le Pacifique occidental (IOC/WESTPAC/HAB) et les Caraïbes (IOC/IOCARIBE/ANCA), ainsi qu'en Amérique du Sud (IOC/IPHAB/FANSA), malgré un manque de ressources ;
- (vii) la publication du livre blanc du GlobalHAB intitulé « *Fish-killing marine algal blooms: causative organisms, ichthyotoxic mechanisms, impacts and mitigation* » (Mortalité halieutique liée aux efflorescences algales marines : organismes pathogènes, mécanismes ichthyotoxiques, impacts et atténuation), [n° 93](#) de la série Manuels et guides de la COI ;
- (viii) la publication conjointe GlobalHAB-GESAMP intitulée « *Sargassum white paper: addressing the influxes of the holopelagic Sargassum spp. in the equatorial and subtropical Atlantic: recent scientific insights in their dynamics* » (Livre blanc sur les sargasses : remédier aux flux de sargasses holopélagiques spp. dans l'Atlantique équatorial et subtropical : découvertes scientifiques récentes sur leur dynamique), [n° 96](#) de la série Manuels et guides de la COI ;

- (ix) les progrès réalisés dans les essais de renforcement de la surveillance des HAB en Afrique dans le cadre des systèmes d'alerte précoce ; et
- (x) le développement d'activités et de partenariats menés par la Société internationale pour l'étude des algues nuisibles (ISSHA) afin de promouvoir et d'encourager la recherche et la formation sur les HAB.

3. Le Groupe a adopté 11 décisions et soumis deux recommandations pour examen par l'Assemblée de la COI à sa 33<sup>e</sup> session et par le Comité des pêches de la FAO (COFI). Les décisions portent sur :

Décision IPHAB-XVII.1 : le développement du Programme HAB à l'échelle régionale, en tenant compte des écarts de soutien entre les différents groupes et réseaux selon qu'ils relèvent ou non d'un organe subsidiaire régional de la COI ;

Décision IPHAB-XVII.2 : le maintien, avec un mandat révisé, de l'Équipe spéciale pour la détection, l'alerte et la prévision rapides concernant les phénomènes d'efflorescences algales nuisibles ;

Décision IPHAB-XVII.3 : le maintien, avec un mandat révisé, de l'Équipe spéciale sur la mise en place d'un système d'information sur les algues nuisibles et l'élaboration d'un rapport mondial périodique sur la situation des efflorescences algales nuisibles ;

Décision IPHAB-XVII.4 : la réorientation d'une ancienne Équipe spéciale sur la ciguatera vers une Équipe spéciale sur les algues benthiques nuisibles et leurs toxines ;

Décision IPHAB-XVII.5 : le maintien, avec un mandat révisé et l'identification de nouveaux partenaires, de l'Équipe spéciale sur les algues nuisibles et la désalinisation de l'eau de mer ;

Décision IPHAB-XVII.6 : le maintien, avec un mandat révisé, de l'Équipe spéciale sur la surveillance et la gestion des biotoxines et les réglementations applicables ;

Décision IPHAB-XVII.7 : le maintien, avec un nouveau mandat actualisé, de l'Équipe spéciale sur la taxinomie des algues ;

Décision IPHAB-XVII.8 : le maintien, avec un mandat révisé, de l'Équipe spéciale sur les microalgues mortelles pour les poissons et leurs effets sur les écosystèmes ;

Décision IPHAB-XVII.9 : le maintien, avec un mandat révisé, de l'Équipe spéciale sur la communication relative aux efflorescences algales nuisibles ;

Décision IPHAB-XVII.10 : le nouveau plan décennal pour le programme GlobalHAB COI-SCOR au-delà de 2025 ; et

Décision IPHAB-XVII.11 : la formation et le développement des compétences dans le domaine des HAB.

4. Les recommandations de l'Assemblée de la COI portent sur : (i) les activités qu'il est prévu de mener au cours de la période intersessions au titre du plan de travail et du budget du Programme HAB de la COI pour 2026-2027 (rec. IPHAB-VII-1) ; et (ii) le maintien de l'IPHAB, avec un mandat identique (rec. IPHAB-VII-2). Les recommandations sont mentionnées dans le projet de décision IOC-33/3.4.5 qui figure dans le Document relatif aux décisions à adopter soumis à l'Assemblée (IOC-33/AP Prov.).

5. M. Philipp Hess (France) a été réélu Président et Mme Begoña Ben Gigirey (Espagne) a été élue Vice-Présidente par acclamation par les membres du Groupe.

## Resumen ejecutivo

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6. La 17ª reunión del Panel Intergubernamental COI-FAO sobre Floraciones de Algas Nocivas (IPHAB-XVII) se celebró en la Sede de la COI-UNESCO, en París, del 18 al 20 de marzo de 2025. Con referencia a la resolución XVI-4 de la Asamblea de la COI, esta fue la segunda reunión del IPHAB desde IPHAB-III en 1995 en la que la FAO volvió a ser copatrocinadora del Panel.

7. El Panel examinó las actividades llevadas a cabo durante el periodo entre reuniones, tomó nota de los progresos realizados y concluyó que el programa abordaba diversos desafíos del Decenio de las Naciones Unidas de las Ciencias Oceánicas para el Desarrollo Sostenible (2021-2030). El Panel observó también que las decisiones y recomendaciones de su 16ª reunión (marzo de 2023) se habían aplicado de forma muy satisfactoria en el marco de los recursos disponibles. Entre las principales realizaciones mencionadas durante el periodo entre reuniones, algunas de las cuales aún están en curso, figuran las siguientes:

- (x) la continuación de la publicación del boletín de la COI titulado *Harmful Algae News*;
- (xi) la recopilación continua de datos a todos los niveles para el sistema de información IPHAB-IODE sobre algas nocivas, facilitada por las bases de datos HAEDAT y OBIS, que han proporcionado información de alta calidad sobre los fenómenos de floraciones de algas nocivas (HAB), la situación y las tendencias de la aparición de estas floraciones y la evaluación de los efectos del cambio climático, así como una base de datos sobre las toxinas vinculada a la lista de referencia taxonómica por conducto del Registro Mundial de Especies Marinas (WoRMS);
- (xii) la organización de seis cursos internacionales de formación y varios cursos regionales y nacionales;
- (xiii) la elaboración, en el marco del programa científico conjunto COI-SCOR sobre floraciones de algas nocivas (GlobalHAB), de un nuevo plan decenal para un programa internacional de investigación sobre las floraciones de algas nocivas, centrado en el conocimiento de este fenómeno en el contexto de sostenibilidad mundial;
- (xiv) los resultados del Grupo de Trabajo CIEM-COI sobre la Dinámica de las Floraciones de Algas Nocivas y del Grupo de Trabajo CIEM-COI-OMI sobre el Agua de Lastre y otros Vectores del Buque;
- (xv) el desarrollo de las actividades regionales en el Pacífico Occidental (IOC/WESTPAC/HAB) y el Caribe (IOC/IOCARIBE/ANCA), así como en América del Sur (IOC/IPHAB/FANSA), a pesar de la falta de recursos;
- (xvi) la publicación del libro blanco de GlobalHAB titulado *Fish-killing marine algal blooms: causative organisms, ichthyotoxic mechanisms, impacts and mitigation*, Manuales y Guías de la COI, [nº 93](#);
- (xvii) la publicación conjunta GlobalHAB-GESAMP titulada *Sargassum white paper: addressing the influxes of the holopelagic Sargassum spp. in the equatorial and subtropical Atlantic: recent scientific insights in their dynamics*, Manuales y Guías de la COI, [nº 96](#);
- (xviii) los progresos realizados en las pruebas de refuerzo de la vigilancia de las floraciones de algas nocivas en África en el marco de los sistemas de alerta temprana; y

- (xix) el desarrollo de actividades y alianzas puestas en marcha por la Sociedad Internacional para el Estudio de las Algas Nocivas (ISSHA) con el fin de promover y alentar la investigación y la formación sobre esas floraciones.

8. El Panel adoptó 11 decisiones y sometió dos recomendaciones a la consideración de la Asamblea de la COI en su 33ª reunión y del Comité de Pesca de la FAO (COFI). Las decisiones se refieren a las siguientes cuestiones:

Decisión IPHAB-XVII.1: el desarrollo del programa HAB a escala regional, teniendo en cuenta las diferencias de apoyo entre los distintos grupos y redes dependiendo de si son miembros o no de un órgano subsidiario regional de la COI;

Decisión IPHAB-XVII.2: el mantenimiento del Equipo de Trabajo sobre Detección, Alerta y Previsión Tempranas de Fenómenos de Floraciones de Algas Nocivas, con un mandato revisado;

Decisión IPHAB-XVII.3: el mantenimiento del Equipo de Trabajo sobre el establecimiento de un sistema de información sobre las algas nocivas y la elaboración de un informe periódico mundial sobre la situación de las floraciones de algas nocivas, con un mandato revisado;

Decisión IPHAB-XVII.4: la reorientación de un antiguo Equipo de Trabajo sobre la Ciguatera hacia un Equipo de Trabajo sobre las Algas Nocivas Bentónicas y sus Toxinas;

Decisión IPHAB-XVII.5: el mantenimiento del Equipo de Trabajo sobre Algas Nocivas y Desalación del Agua de Mar, con un mandato revisado y la indicación de nuevos asociados;

Decisión IPHAB-XVII.6: el mantenimiento del Equipo de Trabajo sobre Vigilancia, Gestión y Reglamentos relativos a las Biotoxinas, con un mandato revisado;

Decisión IPHAB-XVII.7: el mantenimiento del Equipo de Trabajo sobre Taxonomía de las Algas, con un nuevo mandato actualizado;

Decisión IPHAB-XVII.8: el mantenimiento del Equipo de Trabajo sobre microalgas que afectan letalmente a los peces y sus efectos en los ecosistemas, con un mandato revisado;

Decisión IPHAB-XVII.9: el mantenimiento del Equipo de Trabajo sobre la Comunicación relativa a las HAB, con un mandato revisado;

Decisión IPHAB-XVII.10: el nuevo plan decenal para el programa GlobalHAB COI-SCOR después de 2025; y

Decisión IPHAB-XVII.11: la formación y el desarrollo de capacidades en materia de HAB.

9. Las recomendaciones dirigidas a la Asamblea de la COI tratan sobre: i) las actividades que se prevé realizar en el periodo entre reuniones en el marco del plan de trabajo y el presupuesto del Programa HAB de la COI para 2026-2027 (rec. IPHAB-XVII-1); y ii) el mantenimiento del IPHAB, con el mismo mandato (rec. IPHAB-XVII-2). Las recomendaciones se recogen en el proyecto de decisión IOC-33/3.4.5 que figura en el documento de decisión de la Asamblea (IOC-33/AP Prov.).

El Dr. Philipp Hess (Francia) fue reelegido Presidente y la Dra. Begoña Ben Girey (España) fue elegida Vicepresidenta por aclamación por los miembros del Panel.

## Резюме

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1. Семнадцатая сессия межправительственной группы МОК-ФАО по вредоносному цветению водорослей (МГВЦВ- XVII) состоялась в Штаб-квартире МОК ЮНЕСКО в Париже с 18 по 20 марта 2025 г. В соответствии с резолюцией XVI-4 Ассамблеи МОК это была вторая сессия МГВЦВ после МГВЦВ-III в 1995 г., на которой ФАО вновь выступила в качестве одного из спонсоров группы.

2. Группа рассмотрела мероприятия, завершенные в межсессионный период, приняла к сведению достигнутый прогресс и пришла к выводу, что программа по ВЦВ способствует решению целого ряда задач Десятилетия Организации Объединенных Наций, посвященного науке об океане в интересах устойчивого развития (2021-2030 г.). Группа также приняла к сведению в высшей степени удовлетворительное выполнение решений и рекомендаций 16-й сессии (март 2023 г.) в рамках имеющихся ресурсов. Основные результаты работы в межсессионный период (работа по некоторым направлениям еще идет) включают:

- (i) продолжение публикации информационного бюллетеня МОК о вредоносных водорослях;
- (ii) продолжение компиляции данных на всех уровнях для информационной системы МГВЦВ-МООД по вредоносным водорослям из баз данных ВЦВДАТ и ОБИС в качестве поставщиков высококачественной информации о событиях, связанных с ВЦВ, состоянии и тенденциях возникновения ВЦВ и оценке воздействия изменения климата, а также из базы данных по токсинам, связанной с классификационным справочным списком через Всемирный регистр морских видов (BRMB);
- (iii) организацию шести международных учебных курсов и нескольких курсов на региональном и национальном уровнях;
- (iv) разработку в рамках совместной научной программы МОК-СКОР «ГлобалВЦВ» нового десятилетнего плана международной программы исследований ВЦВ с упором на понимание ВЦВ в контексте глобальной устойчивости;
- (v) результаты деятельности рабочей группы ИКЕС-МОК по динамике вредоносного цветения водорослей и рабочей группы ИКЕС-МОК-ИМО по балластной воде и другим переносчикам морских организмов на судах;
- (vi) осуществление региональных мероприятий в западной части Тихого океана (МОК/ВЕСТПАК/ВЦВ) и Карибском бассейне (МОК/МОКАРИБ/ВВКА), а также в Южной Америке (МОК/МГВЦВ/ФАНСА), несмотря на нехватку ресурсов;
- (vii) публикацию дискуссионного документа ГлобалВЦВ «Цветение морских водорослей, убивающее рыбу: возбудители, ихтиотоксические механизмы, воздействие и смягчение последствий» в серии «Справочники и руководства МОК» под номером 93;
- (viii) совместную публикацию ГлобалВЦВ-ГЕСАМП дискуссионного документа «Саргассум: решение проблемы притока холопелагического саргассума в экваториальной и субтропической Атлантике – последние научные данные об их динамике» в серии «Справочники и руководства МОК» под номером 96;
- (ix) успехи в тестировании учета мониторинга ВЦВ в Африке в системах раннего оповещения;



- (х) мероприятия и партнерские связи Международного общества по изучению вредоносных водорослей (МОИВВ), направленные на популяризацию и содействие исследованиям и обучению в области ВЦВ.

3. Группа приняла 11 решений и представила две рекомендации для рассмотрения Ассамблеей МОК на ее 33-й сессии и комитетом ФАО по рыбному хозяйству (КРХ). Соответствующие решения:

решение IPHAB- XVII.1: разработка региональной программы по ВЦВ с учетом различий в поддержке разных групп и сетей в зависимости от статуса их отношений с региональными вспомогательными органами МОК;

решение IPHAB- XVII.2: продолжение работы целевой группы по раннему обнаружению, оповещению и прогнозированию явлений ВЦВ с пересмотренным кругом ведения;

решение IPHAB- XVII.3: продолжение работы целевой группы по разработке информационной системы по вредоносным водорослям и подготовке периодического глобального доклада о положении дел с вредоносным цветением водорослей с пересмотренным кругом ведения;

решение IPHAB-XVII.4: переподчинение бывшей целевой группы по сигуатере целевой группе по бентическим вредоносным водорослям и их токсинам;

решение IPHAB-XVII.5: продолжение работы целевой группы по вредоносным водорослям и опреснению морской воды с пересмотренным кругом ведения и определением новых партнеров;

решение IPHAB- XVII.6: продолжение работы целевой группы по мониторингу, управлению и регламентации в отношении биотоксинов с пересмотренным кругом ведения;

решение IPHAB- XVII.7: продолжение работы целевой группы по классификации водорослей с обновленным кругом ведения;

решение IPHAB-XVII.8: продолжение работы целевой группы по вызывающим гибель рыбы микроводорослям и последствиям для экосистемы с пересмотренным кругом ведения;

решение IPHAB- XVII.9: продолжение работы целевой группы по коммуникации в области ВЦВ с пересмотренным кругом ведения;

решение IPHAB- XVII.10: новый десятилетний план программы МОК-СКОР «ГлобалВЦВ» после 2025 г.;

решение IPHAB-XVII.11: подготовка кадров и развитие потенциала в области ВЦВ.

4. Рекомендации Ассамблее МОК касаются (i) плана работы с межсессионными мероприятиями и бюджета для программы МОК по ВЦВ на период 2026-2027 гг. (рек. IPHAB-XVII-1) и (ii) продолжения деятельности МГВЦВ с тем же кругом ведения (рек. IPHAB-XVII-2). Данные рекомендации отражены в проекте решения IOC-33/3.4.5, включенном в подготавливаемый для Ассамблеи МОК документ о принятых и предлагаемых мерах (IOC-33/AP Prov.).

5. Члены группы путем аккламации избрали д-ра Филиппа Хесса (Франция) председателем и д-ра Бегоњу Бена Гигирея (Испания) заместителем председателя.

## ADOPTED DECISIONS AND RECOMMENDATIONS

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Code

Title

### Decisions

<a href="#"><u>Decision IPHAB-XVII.1</u></a>	Regional HAB Programme Development
<a href="#"><u>Decision IPHAB-XVII.2</u></a>	Task Team on the Early Detection, Warning and Forecasting of Harmful Algal Events
<a href="#"><u>Decision IPHAB-XVII.3</u></a>	Task Team on the development of the Harmful Algal Information System (HAIS) and the Global HAB Status Report (GHSR).
<a href="#"><u>Decision IPHAB-XVII.4</u></a>	Task Team on Benthic Harmful Algae and their Toxins
<a href="#"><u>Decision IPHAB-XVII.5</u></a>	Task Team on Harmful Algae and Desalination of Seawater
<a href="#"><u>Decision IPHAB-XVII.6</u></a>	Task Team on Biotoxin Monitoring, Management and Regulations
<a href="#"><u>Decision IPHAB-XVII.7</u></a>	Task Team on Algal Taxonomy
<a href="#"><u>Decision IPHAB-XVII.8</u></a>	Task Team on Fish Killing Microalgae and Ecosystem Effects
<a href="#"><u>Decision IPHAB-XVII.9</u></a>	Task Team on HAB Communication
<a href="#"><u>Decision IPHAB-XVII.10</u></a>	HABs in a Changing World: Global Approach to HAB Research to Meet Societal Needs: GlobalHAB
<a href="#"><u>Decision IPHAB-XVII.11</u></a>	HAB Training and Capacity Development

### Recommendations

<a href="#"><u>Recommendation IPHAB-XVII.1</u></a>	HABP Work Plan for 2026-2027
<a href="#"><u>Recommendation IPHAB-XVII.2</u></a>	Operation of the IOC FAO Intergovernmental Panel on Harmful Algal Blooms

Decision IPHAB-XVII.1

**REGIONAL HAB PROGRAMME DEVELOPMENT**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** the priority of implementing and maintaining IOC programmes at the regional level as expressed in Decision IPHAB-XIII.2 on regional HAB programme development,

**Noting with appreciation** the reports of the regional HAB activities within IOC/IOCARIBE-ANCA, IOC/WESTPAC-HAB, IOC/WESTPAC-TMO, IOC/FANSA, and the ICES-IOC WGHABD,

**Acknowledging** that Regional HAB Groups and Networks enhance collaboration on scientific and technical matters in support of Member State management and mitigation of harmful algal blooms and help to represent Member State priorities at IPHAB,

**Also acknowledging** the initiatives that the Fisheries and Aquaculture Division of FAO will be undertaking to build capacities in the different FAO Regions, and efforts made to raise awareness about HABs within the food security and food safety context,

**Notes** that the regional network for North Africa, HANA is inactive and a new initiative entitled HABMedNet is being established to connect HAB work around the Mediterranean;

**Decides** that the terms of reference of IOC/IPHAB regional HAB groups and networks will include, and **urges** the regional HAB groups of IOC Regional Subsidiary Bodies and those of other organizations, to include:

- (i) collating data on regional HAB events for inclusion into HAEDAT and for incorporation into the Global HAB Status Report;
- (ii) organize joint global FAO-IOC information sessions on HAB and toxin issues for FAO Members, containing information about risk management tools, assistance mechanisms and the role of IPHAB;
- (iii) reporting of i)-ii) to IPHAB;

**Decides** to inquire members of the HANA network as to their interest in the future of HANA and to their interest in possibly merging with HABMedNet should HABMedNet affiliate as a regional network under IPHAB;

**Endorses** the proposed activities and priorities of the IPHAB regional groups and projects for 2026–2027 subject to availability of funding.

Decision IPHAB-XVII.2

**TASK TEAM ON THE EARLY DETECTION, WARNING  
AND FORECASTING OF HARMFUL ALGAL EVENTS**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Decision IPHAB-XVI.2 on a Task Team on the Early Detection, Warning and Forecasting of Harmful Algal Events,

**Being aware** of the increasing number of harmful algal events across a wide range of ecosystems, habitats and times of the year; noting that their impacts affect ecosystem services, human health and several areas of society,

**Recognizing** that novel technology for frequent, automated *in situ* observations of HAB species is available commercially, remote sensing of high biomass harmful algal blooms is improving due to the availability of hyperspectral data, and that high-resolution predictive models for HAB advections are being improved—the combination of new knowledge and technology is making HAB forecasting feasible when human expertise is used for evaluating results,

**Acknowledging** that there are existing guidelines for monitoring and management of HAB, and HAB impact observations, for example the FAO, IOC & IAEA. 2023. *Joint FAO-IOC-IAEA technical guidance for the implementation of early warning systems for harmful algal blooms. Fisheries and Aquaculture Technical Paper*, No. 690.

**Also acknowledging** that there are existing programmes and databases on oceanographic parameters, and that there are some existing operational programmes derived from previous research projects,

**Noting** that few countries have an early warning system (EWS) for HABs implemented and that monitoring programmes are primarily designed to meet local/national obligations of seafood safety regulations (protect public health, reduce economic disruptions and minimize ecosystem associated losses on fisheries due to HABs),

**Also noting** also that there is no one-size-fits-all approach to EWS, regional adaptations are needed,

**Further noting** that stakeholders need high quality, near real-time information (from *in situ* observation systems, satellite, models) readily available, to make timely and scientifically based decisions about managing and mitigating HAB impacts on coastal fishery/shellfish resources, aquaculture, recreational fisheries, and tourism,

**Recalling** the requirement for mitigation of harmful events and avoidance of human illness stemming from HABs that may be mitigated by having a predictive service,

**Decides**, with reference to the HAB Programme Plan, objective 6.3.2 (IOC/IPHAB-IX.3, Annex VII), to continue a Task Team on the Early Detection, Warning and Forecasting of HAB Events with the following terms of reference:

- (i) Serve as a strategic and advisory group for the establishment of guidelines, recommendations, and advancement of Early Warning Systems, ensuring the alignment with IOC Functions and UN Ocean Decade challenges, objectives and actions;
- (ii) Interact with HAB working groups and committees (e.g. ICES -IOC/WGHABD, ICES-IOC-IMO-WG BOSV, PICES, IOC/FANSA, IOC/HANA, IOC/CARIBE/ANCA, IOC/WESTPAC-

HAB, Med-HABNet, US NHABON) in the development of regional EWS and in the standardization of data-flows, alerts, harmonization of key messages and initiating sessions on near real time HAB Observing and Early Warning Systems at forthcoming international and national science meetings (e.g. ICHA, U.S HAB Symposium);

- (iii) Invite the scientific community and stakeholders, e.g. from the governments, aquaculture, tourism, and desalination industries, to contribute by identifying early warning research topics, assessment of capabilities, seeking for transformative solutions, promoting strategies for engagement, and communicating scientific information to policy-makers, managers and other end-users. This advice will be sought during the open science meeting and workshops and seminars on the topic;
- (iv) guide pilot testing of the joint FAO-IOC-IAEA Technical guidance (published 2023) for the implementation of early warning systems for harmful algal blooms;
- (v) Collaborate with the Task Team on Fish Killing Microalgae and Ecosystem Effects, the Task Teams on Benthic Harmful Algae and their Toxins, the Task Team on Biotxin Monitoring, Management, and Mitigation, and the Task Team on Harmful Algae and Desalination of Seawater, along with other relevant task teams, to strengthen synergies, enhance the effectiveness of HAB monitoring and forecasting for improved early warning;
- (vi) Promote the presence of HAB observations in the Global Ocean Observing System and its regional components, and the consolidation of integrated multi-hazard Early Warning Systems that employ scalable and affordable HAB technologies and methodologies for the continuous monitoring of coastal and ocean ecosystems;
- (vii) Support and advise on a Workshop on *Automated plankton analysis using imaging-in-flow methods*, 24–26 September 2025 in Oslo, Norway;
- (viii) Arrange and conduct a workshop on the Early Detection, Warning and Forecasting of HAB Events during the International Conference on Harmful Algae in Chile, October 2025;
- (ix) Investigate the possibility to develop risk maps for high biomass harmful algal blooms based on remote sensing and *in situ* data on HAB distribution and environmental parameters. This includes Interactions with the ocean colour scientific community, e.g. the International Ocean Colour Coordinating Group (IOCCG), on observing high biomass harmful algal blooms using remote sensing. The use of data from hyperspectral sensors to discriminate HAB-taxa from plankton in general is of particular interest;
- (x) Contribute to an on-line seminar series aimed at improving citizen science observations of harmful algae using low-cost methods and enhancing data sharing capabilities. The IOC Ocean Teacher Global Academy training platform may be used as the technical platform. Coordination by the IOC HAB office is needed;
- (xi) Contribute to a GlobalHAB open science meeting in cooperation with the UN Ocean Decade programme HAB-Solutions in 2026;
- (xii) Pursue communication activities (including Harmful Algal News);

**Also decides** that the Task Team will comprise B. Karlson (Sweden), Chair; D. Anderson (USA); Sanjiba K. Baliarsingh (India); M. Broadwater (USA); M. Brosnahan (USA); D. Clarke (WGHABD/Ireland); M.Y. Dechraoui Bottein (France); A. Duarte Silva (Portugal); O. Espinoza (Chile); L. Guzmán (Chile); P. Mozetic (Slovenia); C. McKenzie (Canada); L.J. Naustvoll (Norway), E.G. Mendoza (Mexico), and Kirstie Smith (New Zealand). The Task Team is supplemented by international advisors and experts A. T. Yñiguez (Philippines); M. J. Botelho (Portugal) and C. Mikulski (USA) and may be expanded as required to fulfill the Terms of Reference;

**Urges** that the relevant Member States support the implementation of EWS for HABs, through funding the system development and implementation, in order to reduce the risk of economic, social and human health impacts while maintaining sustainable safe fisheries and aquaculture production;

**Invites** IAEA and WHO to support the activities of the Task Team;

**Notes** that the Task Team will work until otherwise decided by the Panel, and that it will work by correspondence and/or meet on an opportunistic basis and provide a progress report to the Chair of IPHAB intersessional prior to IPHAB-XVIII.

#### Decision IPHAB-XVII.3

### **TASK TEAM ON THE HARMFUL ALGAL INFORMATION SYSTEM (HAIS) AND THE GLOBAL HAB STATUS REPORT (GHSR)**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Decision IPHAB-IV.3 on ‘The Development of a Periodic Global HAB Status Report’, Decision IPHAB-XI.2 on the ‘Development of a Global HAB Status Report’, Resolution IPHAB-IX.2 on the ‘Development of the Harmful Algal Information System’ as a joint IPHAB-IODE activity, and Decisions IPHAB-XII.3, IPHAB-XIII.3, IPHAB-XIV.3 IPHAB-XV.3 and IPHAB-XVI.3 on an IPHAB Task Team on the Development of a Global HAB Status Report,

**Recognizing** the continued and long-term benefits to policy administrators, managers of regulatory monitoring programmes and scientists of a series of syntheses of high-quality information and future scenarios on the biogeography of harmful species and occurrence of harmful algal events, including their economic and societal impacts,

**Also recalling** the launch of the first Global HAB Status Report (GHSR) in 2021 and its relevance for current and developing global assessments, such as the United Nations World Ocean Assessment, the UNEP Global Environmental Outlook, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) global assessment on biodiversity and ecosystem services, the International Panel on Climate Change (IPCC) reporting, as well as for the United Nations Decade of Ocean Science for Sustainable Development (2021–2030),

**Further recalling** the establishment of the ‘Harmful Algal Information System’ (HAIS) as an element of the GHSR and as a data portal integrating the data in IOC/IODE’s Ocean Biodiversity Information System (OBIS) and Harmful Algal Event Database (HAEDAT), the cooperation with ICES, PICES, the IAEA, and the IOC regional HAB groups and networks IOCARIBE/ANCA, FANSA, HANA, and WESTPAC/HAB, in this respect,

**Notes with concern** the limited progress in data compilation in the intersessional period and the difficulties experienced by HAEDAT editors to compile and submit data due to challenges in accessing data as well as challenges in the functionalities of HAEDAT;

**Expresses its appreciation** for the support provided by the IODE programme in general, and by the technical OBIS staff in particular, for the development, hosting and technical maintenance of the HAIS and HAEDAT data systems;

**Noting** that OBIS continues to provide the world’s largest open access database on the diversity, distribution and abundance of marine species, including harmful algae, and that OBIS contribute to HAIS through OBIS/HABMAP, and that it provides a main component of future editions of the GHSR,

**Decides** to continue the series of Task Teams on HAIS and GHSR as an editorial advisory group for HAIS/GHSR with the following terms of reference:

- (i) Seek and identify a new chair and reinvigorate the Task Team with participation from across the globe;
- (ii) Work with IOC regional groups and HAB community events to promote data compilation, quality control and submission of HAB data to OBIS/HABMAP and HAEDAT and production of associated metadata documents;
- (iii) Advise the FAO and IOC secretariat/IODE Project Office and HAIS partners, to facilitate a proper upgrade of HAEDAT to ensure its functionality, and work with database developers should funding become available;
- (iv) Standardize recording criteria for HAB events such as 'high biomass blooms', cyanobacteria events', 'ciguatera events' and others raised by IOC regional groups. Identify areas for HAIS adjustments, geographical data gaps and website edits. Ensure standardization between HAIS and initiatives undertaken by Task Teams on Taxonomy, Biotoxins and Benthic HABs and their Toxins;
- (v) Advise on and stimulate the use of HAIS data and data products, encourage the production of summary articles in Harmful Algae News and act proactively if GHSR/HAIS conclusions or data are misinterpreted or incorrectly referred to;
- (vi) Develop a short and concise annual summary of HAEDAT with the view to submitting such summaries annually to the FAO Committee on Fisheries (COFI) and the Subcommittee on Fish Trade (COFI-FT), starting in April 2025;
- (vii) Identify the focus of the second Global HAB Status Report, identify priority drivers and associated relevant global datasets. Engage with working groups, groups of experts within and outside IOC (including IOC IGMETS, IOC TrendsPO, ICES WGPME, the marine sites of the International network on Long Term Ecological Research (I-LTER), EMODNET-Biology, and ICES-IOC WGHABD, GOOS), and individual scientists to identify time series of phytoplankton data including information on HAB species;
- (viii) Investigate with GlobalHAB possibilities of organizing initiatives (such as workshops, interactive data analysis, courses) on HAB time series analysis in the context of environmental variability;
- (ix) Work with IOC-FAO IPHAB task teams to implement the UN Decade Action—HAB Solutions, identify partners for co-design initiatives and funding opportunities;

**Also decides** that the task team is chaired by NN (t.b.i.) and is composed of E. Bresnan (UK), A. Zingone (Italy), D. Clarke (Ireland) B. Karlson (Sweden), the Chair of the IPHAB Task Team on Biotoxins, the Chair of the IPHAB Task Team on Taxonomy, a representative of IODE and may invite representatives of the GlobalHAB SSC, the regional IOC groups ANCA, FANSA, HANA and WESTPAC/HAB, the ICES-IOC WGHABD, the PICES HAB Section, WoRMS, IAEA, and ISSHA. The Task Team is supplemented by international advisors and experts G. Hallegraeff (AU) and may be expanded as required to fulfill the terms of reference;

**Invites** the IODE/OBIS Programme to continue its active role in HAIS incl. HAEDAT through its Ocean Biodiversity Information System (OBIS);

**Notes** that the task team will continue its work until otherwise decided by the Panel, and that it will work by correspondence and/or meet upon request by the joint IOC-FAO IPHAB Secretariat, and

provide progress reports to the Chairs of IPHAB and IODE during the intersessional period of those subsidiary bodies of IOC for reporting to their next sessions.

Decision IPHAB-XVII.4

**TASK TEAM ON BENTHIC HARMFUL ALGAE AND THEIR TOXINS**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Decision IPHAB-XVI.4 on an IPHAB Task Team on a Global Inter-Agency Ciguatera Strategy for Improved Research and Management;

**Noting:**

- (i) the extensive human suffering from toxigenic benthic microalgae, e.g., *Gambierdiscus* / *Fukuyoa* induced ciguatera poisoning (CP) affecting 1 in every 4 persons in the Oceania region and half as many in the Caribbean; and responsible for repeated and severe cases in the Pacific and Indian Ocean regions and significant social and economic impacts, especially in tropical, Small Island Developing States (SIDS),
- (ii) the diversity in other toxin-producing genera in benthic habitats, including *Ostreopsis*, *Prorocentrum*, *Coolia*, *Vulcanodinium*, and *Amphidinium*,
- (iii) the emergence of Ciguatera and other food poisoning events associated with *Gambierdiscus* and related species in tropical and increasingly temperate areas,
- (iv) that other benthic HAB organisms (bHABs) have increasingly been shown to cause harmful effects to bathing people, beachgoers and other users of coastal waters through direct contact exposure or aerosols (e.g. *Ostreopsis* spp. and *Vulcanodinium rugosum*,
- (v) the potential global increase in Ciguatera poisoning due to globalized seafood trade, coastal development and climate change,
- (vi) the significant global social and economic consequences of unrecognized, under-reported and unverified increases of HAB events including those associated with benthic habitats,
- (vii) the lack of toxin standards and reference material, in particular for ciguatoxins from the Caribbean region, as well as the absence of validated detection methods,
- (viii) the engagement of the natural science, coastal management and public health communities in the Member States,

**Acknowledging:**

- (i) the activities in knowledge development, data acquisition and/or capacity building of some Member States, regional groups, e.g. IOC/WESTPAC, PICES and intergovernmental international organizations such as IAEA, WHO, RAMOGE and food safety authorities in the area of benthic harmful algal blooms and associated toxins for research, improved management and enhanced seafood safety,
- (ii) the adoption on 26 November 2024 by the Codex Alimentarius Commission of a Code of Practice for the Prevention and Reduction of Ciguatera Poisoning (CXC 83-2024),
- (iii) the availability of ciguatoxin standards and reference material for Pacific ciguatoxins through the Louis Malardé Institute in French Polynesia,



**Recognizing** that the establishment of a formal global inter-agency strategy has been challenging,

**Also recalling:**

- (i) the Joint FAO-WHO Report of the Expert Meeting on Ciguatera Poisoning,
- (ii) the publication of the joint FAO-IOC-IAEA Technical guidance for the implementation of early warning systems for harmful algal blooms, and its chapter on benthic harmful algae,
- (iii) the production of an FAO e-Learning course on Monitoring and Preventing Ciguatera Poisoning, designated to help learners understand the ecology of the causative organisms, as well as the potential hazard of fish contamination and consequent illnesses,
- (iv) that benthic HAB species share common challenges related to species sampling, which are collectively addressed in the *Joint FAO-IOC-IAEA Technical Guidance for the Implementation of Early Warning Systems (EWS) for harmful algal blooms*,

**Decides** to continue the work of the Task Team on Ciguatera, while expanding its scope to include other benthic species such as those from the genera *Ostreopsis*, *Prorocentrum*, *Coolia*, *Vulcanodinium*, and *Amphidinium*. The Task Team will be designated as the 'Task Team on Benthic Harmful Algae and their Toxins' with the following terms of reference:

- (i) Pursue coordination activities to strengthen and maximize synergies among ongoing initiatives supporting the task team, including those led by International or UN agencies, interact with HAB working groups and committees (e.g. ICES-IOC/WGHABD, PICES, IOC/FANSA, IOC/HANA, IOC/ARIBI/ANCA, IOC/WESTPAC-HAB, Med HAB Net) as well as national and regional programmes and projects;
- (ii) Conduct activities toward improving benthic HAB sampling strategy and early warning systems, including the evaluation of methods used for isolating and culturing bHAB organisms. Convene a meeting of experts to establish protocols and a training course for the isolation and culturing of bHABs, with the aim of enhancing proficiency and representing the natural diversity present in the field. Support inter-laboratory exercises on bHAB collection techniques, standardizing methods, including qPCR for the toxin producing species, and facilitating trans-regional studies;
- (iii) Pursue communication activities (including *Harmful Algal News*);
- (iv) Interact with ICHA organizers to solicit presentations on ciguatera research and stimulate the convening of special ciguatera sessions at relevant medical, seafood safety and ciguatera impact on food security;
- (v) Contribute to the HAB Solution (HAB-S) UN Decade of Ocean Science for Sustainable Development;
- (vi) Invite scientific organizations, institutions and international bodies to support the further development of the scientific aspects and research priorities; in particular to develop research toward establishing a solid link between algal toxins and fish toxicity in the Atlantic and Indian oceans for enhanced early surveillance and early warning of ciguatera; to prepare fish tissue reference material, i.e.:
  - (a) provide the support needed for countries to maintain or provide further entries into the OBIS and HAEDAT databases on worldwide occurrence reports of benthic harmful algae and associated events, respectively;

- (b) conduct method validation exercises as well as inter-laboratory exercises on benthic HAB collection methods;
- (c) conduct validation of N2a and RBA methods for ciguatera detection as well as validation of LC-MS/MS methods for confirmation of cases and bHAB toxin profiles; and
- (d) Establish guides for epidemiological studies on ciguatera and other bHAB-related illnesses.

**Invites** the IAEA to participate in and contribute to the activities of the task team;

**Also decides** that the Task Team will be composed of M. Chinain (France/French Polynesia) as chair, M.Y. Dechraoui Bottein (France) and P. Hess (France) both as co-chair, B. Ben-Gigirey (team member), E. García Mendoza (team member), Wang Pengbin (Team member). The Task Team is supplemented by experts E. Núñez Vázquez (Mexico), G. Alvarez (Chile), P. Diaz (Chile), and will be expanded, as required, to fulfill the terms of reference;

**Notes** that the Task Team will continue its work until otherwise decided by the Panel and that it will work by correspondence and/or meet on an opportunistic basis, and provide a progress report to the Chair of IPHAB during the intersessional period and prior to IPHAB-XVIII.

#### Decision IPHAB-XVII.5

### **TASK TEAM ON HARMFUL ALGAE AND DESALINATION OF SEAWATER**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Decision IPHAB-XVI.5 on 'Harmful Algae and Desalination of Seawater,

**Noting** that more than 150 countries worldwide operate more than 20,000 desalination plants to produce drinking water from seawater, providing treated water for 300 million people, and that many of these countries are IOC Member States,

**Recognizing** that desalination capacity is forecast to continue to grow rapidly in the coming years as demand for freshwater grows,

**Also noting**

- (i) that the global urban population facing water scarcity is projected to potentially double from 930 million in 2016 to between 1.7 and 2.4 billion people, in 2050,
- (ii) that in recent years, HABs have caused serious impacts at desalination plants [e.g. the cessation of operations due to clogging of filters, fouling of surfaces and membranes, taste and odour problems] and the concern that HAB-derived toxins could be present in the freshwater produced,
- (iii) that the problems caused by HABs at desalination plants are expected to increase in the future as desalination capacity continues to grow worldwide, as will the extent and diversity of HAB problems,

**Also recognizing** that there is a risk to public health, plant operations, interruptions in drinking water supplies, and negative impacts on water for agriculture or other such uses, there is considerable value in assembling information on gaps in scientific understanding and engineering challenges and in seeking a consensus on methodologies to reduce risks,

**Further noting:**

- (i) that standard desalination methods decrease all known algal toxins to insignificant levels during normal operations, however on some conditions, there can be algal toxins in the treated water, e.g. through failure of membranes or/and high-density HABs,
- (ii) that research on this topic is limited and that the detailed guidance being requested by stakeholders in Member States is difficult to provide,

**Further recalling** that [IOC Manuals and Guides, 78: Harmful Algal Blooms \(HABs\) and Desalination: A Guide to Impacts, Monitoring and Management](#) was published in 2017, with more than 3,000 copies provided to the international community;

**Decides** to continue the IPHAB Task Team on Harmful Algae and Desalination of Seawater to:

- (i) Assess and stimulate interest within the HAB and desalination communities for special HAB sessions or satellite workshops during regular international desalination conferences. The objectives might be to:
  - a) Review the current state of knowledge on the impact of HABs on desalination plants and other facilities that utilize large volumes of seawater in commercial, agricultural, or industrial applications;
  - b) Highlight new ocean observing technologies as well as the engineering and operational strategies that are used, or could be used to detect, forecast, and mitigate the impact of HABs and other planktonic threats to desalination facilities; and
  - c) Review current thinking of the trends in HAB occurrences as impacted by climate change and major anthropogenic factors;
- (ii) In coordination with the IPHAB Task Team on Early Warning Systems for HABs, explore opportunities for a HAB EWS pilot study for a desalination plant to demonstrate capabilities for HAB detection and mitigation;
- (iii) Seek opportunities to organize, with regional groups like ROPME and PERSGA, or participate in workshops or other activities related to HABs and other threats to desalination and power plants;
- (iv) When appropriate, provide newsworthy articles on HABs and desalination for publication in *Harmful Algae News*.
- (v) Invites ROPME and PERSGA to nominate a representative to participate in the Task Team.

**Also decides** that the Task Team will be composed of D. Anderson (USA) chair, M-Y Dechraoui Bottein (France) co-chair and Y. Abualnaja (Saudi Arabia) co-chair; M. Wells (PICES), P. Hess (France), B. Karlson (Sweden), A. Bennouna (Morocco), E. Jamali, and H. Ali Saeed Bin Subaih Al Ali (United Arab Emirates), and N. Mohammed Al-Abri (Oman). The Task Team may be expanded as required to fulfill the terms of reference;

**Notes** that the task team will continue its work until otherwise decided by the Panel and that it will work by correspondence and/or meet on an opportunistic basis and provide a progress report to the Chair of IPHAB during the intersessional period and prior to IPHAB-XVIII.

Decision IPHAB-XVII.6

**TASK TEAM ON BIOTOXIN MONITORING, MANAGEMENT AND REGULATIONS**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Resolution IPHAB-XVI.6 on the IPHAB Task Team on Biotoxin Monitoring, Management and Regulations,

**Acknowledging** that biotoxins from harmful algae pose a serious threat to human health, food security, the seafood industry and the socio-economic wellbeing of coastal communities,

**Acknowledging** also the work of groups that address the scientific aspects of methodologies and set standards regarding contamination of fisheries and aquaculture food commodities with HAB-derived toxins, and that these groups generate valuable scientific information that is used to recommend regional or national policies; some working groups have operated on an *ad hoc* basis [FAO/IOC/WHO expert consultation 2004/5; ECVAM/DG Sanco workshop 2005; EFSA risk evaluations 2006–2010], while others are standing working groups, in particular those for methodological development or policies [e.g., Asia Pacific Economic Cooperation (APEC), US-ISSC, EU National & European Union Reference Laboratories, CEN, AOAC Task Force on Marine & Freshwater Toxins, Codex Alimentarius Committee on Contaminants in Foods, Codex Alimentarius Committee on Fish and Fishery Products, and Joint FAO-WHO Expert Committee on Food Additives and Contaminants], as well as the projects implemented by the IAEA on biotoxin detection and management;

**Noting:**

- (i) that there is a continued potential to improve the coordination and exchange of information among these groups,
- (ii) that new discoveries of algal biotoxins and routes of exposure continue, bringing to light heretofore unknown risks,
- (iii) that new and improved methodologies, standards and reference materials for detecting and monitoring the occurrence of HAB toxins in seawater and tissue of aquatic food animals have recently been validated for some groups (STX, OA, AZA, YTX and PTX) and are being developed for a number of other toxin groups (TTX, CTX, Palytoxins, cyclic imines, marine and freshwater cyanobacterial toxins, etc.),
- (iv) that freshwater HABs have been increasing globally, and that there is increasing evidence that freshwater HABs may transfer to estuarine and brackish water bodies as well as to coastal areas; the transfer of freshwater cyanobacterial toxins to estuarine and coastal environments potentially poses problems to public health and problems to marine organisms; the public health problems require risk evaluation before management and monitoring can be implemented,
- (v) that emerging toxins (including tetrodotoxins) have recently been reported to accumulate in shellfish bivalve mollusk and gastropods, and that these toxins have a mode of action very similar to that of saxitoxins and may thus contribute to the overall paralytic toxin load of aquatic food animals, that toxins affecting humans through direct exposure are emerging (e.g. ovatoxins and portimines),
- (vi) the relevant economic impacts of HABs and an increasing need to mitigate these impacts, and notwithstanding early warning guidance developed by a separate task team, there is no concerted effort on remediation that encompasses also safeguarding, bloom destruction and detoxification of shellfish as ways of mitigating the impacts of HABs,

**Recalling** that IPHAB contributes to minimize HAB effects on sustainable safe supply of fisheries and aquaculture products, human health, international trade and economic wellbeing,

**Decides** to continue with the Task Team on Biotoxin Monitoring Management and Regulation with the following terms of reference:

- (i) Establish and maintain regular contact with IAEA, WHO, and other regulatory or advisory bodies; follow-up on finalization of methodological annex of Codex standard 292-2008, in particular with reference to TEFs to clarify status of the standard setting process of individual toxin analogs;
- (ii) Contribute to the development of a Technical Guidance for the development and implementation of biotoxins monitoring and management to complement other relevant documents such as the “Joint FAO-WHO Technical guidance for the development of the growing area aspects of bivalve mollusk sanitation programmes”, the “Joint FAO-WHO Report on ciguatera poisoning”, and the “Joint FAO/IOC/IAEA Technical guidance for the implementation of early warning systems for harmful algal blooms”, as identified by different stakeholders;
- (iii) Establish and maintain regular contact with relevant scientists and scientific organizations to ensure that the latest and most robust science is available to the Task Team in discharging its responsibilities;
- (iv) Establish contact with national, regional and global risk evaluation agencies to evaluate the risk of freshwater cyanobacterial toxins in aquatic food commodities;
- (v) Advise other Task Teams on aspects of toxinology, including emerging toxins, as requested;
- (vi) Progress the development of the toxin database as a web-based tool for crosslinking knowledge on HAB organisms and toxins, e.g. through a physical workshop;
- (vii) Communicate and disseminate information on training workshops (e.g. through the website or *Harmful Algal News*) and participate, as requested, in the organization of training workshops for toxin detection, monitoring and management;
- (viii) Recommend to IPHAB-XVIII on revised priorities for research, capacity development and engagement with regulatory bodies to address the most pressing issues and threats posed by HAB toxins in the marine environment; and
- (ix) Contribute to the HAB-S UN Ocean Decade programme to integrate toxin detection, management and regulations into integrated and co-developed mitigation solutions for reducing HAB impacts.

**Encourages** relevant organizations to invite the IPHAB Task Team to participate as observer at the principal meetings of their respective groups to facilitate international compatibility of applied methodology and legislation with respect to HAB toxins;

**Decides** that the Task Team will be composed of P. Hess (France) chair, C. O. Miles (Norway) co-chair, M. Broadwater (USA), B. Ben Gigirey (Spain), N. Besbes (Tunisia). The Task Team is supplemented by external experts J. Ramsdell (USA), E. Hamelin (USA), W. Huang (USA), R. Kudela (USA); Z. Wang (USA); A. Gago Martinez (ES); M. João Botelho (Portugal); H. Mazur-Marzec (Poland), B. Mudge (Canada), F. Hervé (France), M. Sibat (France), T. Suzuki, (Japan), N. Oshiro (Japan), G. Álvarez Vergara (Chile), Aifeng Li (China), M. Klijnstra (Netherlands), T. Harwood (New Zealand), B. Krock (Germany), A. Zuberovic Muratovic (Sweden), the Task Team will invite scientists to contribute on specific toxin groups; the Task Team may be expanded as required to fulfil its Terms of Reference;

**Invites** IAEA and WHO to be members of the Task Team;

**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, and provide a progress report to the Chair of IPHAB intersessional and prior to IPHAB-XVIII.

Decision IPHAB-XVII.7

**TASK TEAM ON ALGAL TAXONOMY**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** Decision IPHAB-XVI.7 on the IPHAB Task Team on Algal Taxonomy,

**Recognizing** the pivotal role of taxonomy in scientific research, monitoring and management activities in the HAB programme,

**Acknowledging** that there are publications available on the taxonomy and identification of harmful algae, including those published by UNESCO-IOC,

**Also Acknowledging** the progress made by the Task Team in publishing and updating the IOC Taxonomic Reference List of Harmful Marine Microalgae as an integrated element of the World Register of Marine Organisms (WoRMS) and the IOC/IODE Harmful Algal Information System (HAIS),

**Recalling** that the frequent change of taxonomic status of many harmful algae and the identification of new harmful species require continuous updating of the Reference List,

**Noting** that frequent taxonomic changes must be considered and incorporated into the work of ecologists, toxicologists, and those undertaking regulatory monitoring and those studying ecology and biodiversity by biomolecular approaches,

**Also noting** the worldwide decline in the number of experts in the field of phytoplankton taxonomy, and **recognizing** the need to develop taxonomy science to fill the gaps in the knowledge of marine biodiversity;

**Recalling** also the decisions of the previous sessions of the Panel regarding the Task Team on Algal Taxonomy,

**Decides**, with reference to the HAB Programme Plan, objective 6.2.2 (ii) ([IOC/IPHAB-IX.3](#), Annex VII), to continue the Task Team on Algal Taxonomy with up-dated terms of reference as follows:

- (i) verify the Reference List and modify it as required, continuing the inclusion of toxic cyanobacteria;
- (ii) include morphological information of each species and the level of technique required to identify them, information on resting stages, and links to selected verified DNA sequences, existing in GenBank and other relevant databases, obtained at or near the type locality;
- (iii) develop list of harmful but non-toxic species producing high biomass blooms, mucilages, foams and discolorations with impacts on human activities in the coastal zone (e.g. tourism, fisheries, recreation, and desalination plants);
- (iv) each year issue a summary in *Harmful Algae News* detailing the taxonomic changes to the Reference List;
- (v) invite the scientific community to contribute to keeping the Reference List updated;

- (vi) work in coordination with the Task Team on Biotoxins Monitoring, Management and Regulations to inter-calibrate and interlink the information on toxigenic species;
- (vii) suggest themes for round-table discussions and other activities at the International Conference on Harmful Algae (ICHA); give presentation(s) at the next ICHA conference detailing recent changes in the taxonomy of harmful algal species and in the information included in the Reference List;
- (viii) identify editors within or external to the Task Team who will be responsible for validating, completing and updating the Reference List, including descriptions and illustrations showing diagnostic features of each species;
- (ix) convene online meetings with Reference List Editors, TT members and a representative from WoRMS approximately every third month have to discuss issues related to the List, and have an onsite meeting for in-depth discussions on how to improve and ensure the future of the List;
- (x) contribute to the development of HAIS;
- (xi) investigate, with the assistance of the IPHAB Secretariat, how the challenge of continuous dwindling taxonomic competencies could be addressed, highlighted and communicated to the right fora including within the framework of the Kunming-Montreal Global Biodiversity Framework (GBF);

**Decides** that the Task Team will be composed of N. Lundholm (Denmark) Chair, M. Iwataki (Japan), A. Zingone (Italy), C. Bernard (France), C. Churro (Portugal), K. Mertens (France), J. Larsen (Denmark), M. Hoppenrath (Germany), L. Escalera (Spain), Ø. Moestrup (Denmark), R. Salas (Ireland), U. Tillmann (Germany), S. Murray (Australia), M. Abdennadher (Tunisia), W. Pengbin (China), A. Bennouna (Morocco). The Task Team may be supplemented by representatives of Member of the IPHAB, international advisors and experts and expanded as required to fulfill the terms of reference;

**Notes** that the Task Team will continue its work until otherwise decided by the Panel and that it will work by correspondence and/or meet on an opportunistic basis and provide a progress report to the Chair of IPHAB intersessional and prior to IPHAB-XVIII.

#### Decision IPHAB-XVII.8

### **TASK TEAM ON FISH KILLING MICROALGAE AND ECOSYSTEM EFFECTS**

The IOC-FAO Intergovernmental Panel on Algal Blooms,

**Recalling** Resolution IPHAB-XVI.8 on the IPHAB Task Team on Fish Killing Microalgae and Ecosystem Effects;

**Recalling** the related Term of Reference of the ICES-IOC Working Group on Harmful Algal Bloom Dynamics;

#### **Noting that:**

- (i) there is increasing concern about the impact of fish-killing algal blooms on socioeconomic interests, local coastal ecosystem disruption, and sustainability and food security, production and living resources,

- (ii) global expansion of fisheries and fish-aquaculture within coastal resource management strategies are particularly susceptible to the threat of fish-killing blooms and their consequences,
- (iii) fish-killing microalgal events are typically caused by high-biomass blooms of flagellates, but ,less frequently by diatoms or cyanobacteria, of diverse phylogenetic and functional ecological groups,
- (iv) proximal causative taxa of fish-killing events are usually identifiable to phylogenetic group, but many are subject to taxonomic and toxigenic uncertainties and difficulties in assignment at the species level,
- (v) fish-killing microalgal blooms may cause mortalities due to well-characterized ichthyotoxins, but most events occur by less well-defined complex mechanisms affecting gill membrane integrity (e.g, mucus production, harmful and lytic allelochemicals, hydromechanical damage, etc.),
- (vi) fish-killing events coinciding with HABs are influenced by multi-factorial environmental and anthropogenic stressors, e.g., disease and pathologies, and other biotic factors, which may synergistically contribute to sub-lethal fish morbidity and mortalities,
- (vii) there is lack of standardization of current fish-tissue or cell-based bioassay methods for assessing ichthyotoxicity, and only limited application of high-resolution analytical methods for defined ichthyotoxins,
- (viii) operational oceanographic systems for early warning and monitoring of fish-killing microalgal blooms are in development and undergo testing at local fish-aquaculture sites, but have not been widely deployed or incorporated into monitoring strategies,
- (ix) whereas these HAB events are categorized as “fish-killing”, there are collateral impacts on other components of coastal marine ecosystems, including benthic invertebrates, macrophytes, plankton communities, and in certain cases higher trophic levels of food chains (e.g., seabirds, marine mammals),

**Recognizing** that there has been inadequate strategic consideration of fish-killing blooms and the associated socio-economic impacts outside the aquaculture and fisheries industry sector, and that the topic has not been systematically addressed within the scientific community on a global basis;

**Decides** to continue the Task Team on Fish Killing Microalgae and Ecosystem Effects, with the following modified terms of reference with a focus on: 1) the ecology, oceanography and bloom dynamics of fish-killing microalgae as they relate to wild fish and aquaculture operations, causing enhanced mortality and morbidity events; 2) causes and mechanisms of fish morbidity and mortality directly linked to HABs; 3) early warning systems, mitigation, and control as management strategies of fish-killing algal events: The modified terms of reference are as follows:

- (i) prepare a global synthesis of the status of fish-killing blooms and their environmental impacts, leading to conceptual models and scenarios of expected shifts in biogeographical distribution, frequency, diversity and magnitude in response to climate change and anthropogenic stressors in coastal zones;
- (ii) prepare a global state-of-knowledge peer-reviewed publication based on the scientific elements and future research perspectives published in the IOC-IPHAB White Paper *Fish-Killing Marine Algal Blooms: causative organisms, ichthyotoxic mechanisms, impacts and mitigation*. This synthesis will integrate climate change and anthropogenic factors affecting bloom dynamics and toxigenicity of fish-killing microalgae;
- (iii) support and assist in the coordination of relevant advanced technical workshops with ICES-IOC-PICES, WESTPAC and GlobalHAB to better define global understanding of the causes of fish kill events and operational approaches to development of early



warning systems, and monitoring, forecasting and mitigation strategies, with focus on fish aquaculture in coastal zones;

- (iv) complete an ICES-regional manuscript on fish-killing algal blooms and mechanisms of harmful consequences in northern European and Arctic gateway waters for inclusion in a Special Issue of a peer-reviewed journal;
- (v) coordinate and co-convene (with TT EWS; TT Marine Biotoxins; GlobalHAB) a Scientific Technical Workshop on advanced techniques for ichthyotoxic-effects bioassays and analytical methods for detection and confirmation of defined ichthyotoxins and Early Warning Systems specifically for fish-killing microalgal blooms;
- (vi) convene an Experts Symposium for strategic discussions on state-of-knowledge and future perspectives on fish-killing microalgae and ecosystem effects;
- (vii) pending endorsement and funding of the ToR vi, as deliverable of this activity, prepare a comprehensive global synthesis publication (i.e., IOC Styles and Guides), following the IOC\_IPHAB White Paper (ref. ToR iii), with chapters focusing on phylogeography, processes and mechanisms, and including future perspectives on climate change effects, advanced technologies for EWS, monitoring and mitigation of fish-killing algal blooms and their effects;
- (viii) provide assistance in coordination and reviews of Special Sessions on ichthyotoxins and fish-killing algal blooms for the ICHA 2025 Conference and other relevant international meetings;
- (ix) submit periodic Task Team contributions on special fish-killing blooms and events highlights to *Harmful Algae News* and other scientific and public interest newsletters and networking forums;
- (x) coordinate with and upon request support the IOC/WESTPAC-HAB activities on causative mechanisms of fish kills, including those related to harmful substances in the environment, multiple stressors and cyanobacterial toxin effects on fish health;
- (xi) promote comparative studies of HABs causing fish mortalities in coordination with GlobalHAB, e.g., by comparing bloom dynamics and forcing functions of fish-killing blooms, linkage to acute ichthyotoxic effects, and ecosystem consequences of blooms in different geographical regions;
- (xii) develop a long-term broad-scale strategy for implementation by resource managers and the aquaculture and fisheries industries in affected countries with focus on development and application of mitigation strategies;
- (xiii) coordinate with the IPHAB Task Team on Biotoxin Monitoring, Management and Regulations on defining ichthyotoxins for the IOC Toxins List, GlobalHAB endorsed activities on HABs and Fish Farms, and the ICES-IOC WGHABD by reporting on environmental multi-stressor and fish health issues within the relevant ToR on fish-killing algal blooms;
- (xiv) assist in the development of objectives and address challenges for fish-killing algal issues with focus on implementation of early warning and forecasting systems, and mitigation and control strategies for the HAB-Solutions initiative endorsed for the UN Decade of Ocean Science for Sustainable Development;

**Also decides** that the Task Team is composed of A. Cembella (Germany) (co-Chair), K. Wakita (IOC/WESTPAC-HAB) (Co-chair), and members M. Iwataki (Japan), L. Guzmán (Chile), P. Hess (France), B. Karlson (Sweden), P.T. Lim (Malaysia, GlobalHAB-SSC), C. McKenzie (Canada), L.-J. Naustvoll (Norway), M. Wells (PICES), P. Wang (China; PICES), E. García-Mendoza (Mexico). The Task Team is supplemented by international advisors and experts A. Yñiguez (Philippines), A.

Fathalli (Tunisia), G. Hallegraeff (Australia), H. Hégaret (France), O. Espinosa (Chile), and J. Mardones (Chile), and may be further expanded as required to fulfil the Terms of Reference;

**Notes** that the Task Team will continue its work until otherwise decided by the Panel and that it will work by correspondence, strategic sessions at international conferences, symposia and workshops, video-networking, and provide a progress report to the Chair of IPHAB intersessional and prior to IPHAB-XVIII.

#### Decision IPHAB-XVII.9

### **TASK TEAM ON HAB COMMUNICATION**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recalling** that the IOC newsletter *Harmful Algae News* (HAN) has been published regularly since 1992 and that it is currently distributed/announced to about 5.500 recipients,

**Recognizing** the role of HAN as a medium for sharing HAB event news, information on events in the HAB science and management community, and its role as newsletter for the International Society for Study of Harmful Algae (ISSHA) and the IOC-SCOR GlobalHAB Programme,

**Acknowledging** that HAN captures and communicates news and HAB events that are not being recorded in the peer-reviewed literature,

**Recalling** that an editorial board with regional editors for HAN exists: Central America and the Caribbean: E. Mancera; Atlantic Europe: M. Lemoine; Mediterranean Sea: A. Zingone; India: K.B. Padmakumar; Western Pacific: C. Pin Leaw and K. Wakita; North Africa: A. Ismael; North America: C. McKenzie; South America: P. Díaz and L. Mafra; South Pacific: M. Chinain and L. Rhodes,

**Decides**, with reference to the HAB Programme Plan, objective 6.1.1 ([IOC/IPHAB-IX.3](#), Annex VII), to continue the Task Team on HAB Communication with the following terms of reference:

- (i) Act as the editorial board for HAN;
- (ii) Be alert to HAB events around the world that could become news items for HAN;
- (iii) Contact relevant experts in their field and invite them to prepare feature articles;
- (iv) Solicit FAO and IOC secretariats for programme news for each issue;
- (v) Organize periodic online meetings of the Editorial Board members four to six weeks before the recently established submission deadlines according to the annual calendar (available in the HAN registration area of the IOC-HAB website);
- (vi) Regional editors are expected to actively follow up on HAB events (e.g., those appearing in the media) in their respective regions and find the appropriate person to write an article for HAN or, alternatively write it themselves based on collated information and references;
- (vii) Coordinate with the ISSHA Executive reporting on ICHA Conferences (ICHA Highlights) and other societal news to appear in the newsletter "ISSHA's Corner";
- (viii) Identify new ways (communities, list-servers, social media) to announce and disseminate HAN at global, regional and national level and provide such information to the IOC and FAO secretariats;
- (ix) Advise the IOC and FAO secretariats on the scientific contents of their HAB website;

- (x) In their capacity as HAN Editors-in-chief the Task Team Co-chairs will:
- a) Receive articles, announcements, and meeting reports and acknowledge receipt as soon as they are received;
  - b) Decide if submissions are suitable either for HAN communications with an individual doi (in which case an abstract and keywords should be added upon submission) or if they are acceptable as submitted, or if there is a need for improved quality of images, reduced number of figures, and guide the author to HAN format requirements;
  - c) Prepare the table of abbreviated titles for the front page "Content" and the full "Table of contents" to be sent for assigning a DOI;
  - d) Organize the compiled material by topic and provide the layout service provider a numbered list of files;
  - e) Check the mounted draft, annotating redistribution of figures, including filling empty spaces;
  - f) Proofread the final draft;

**Decides** that the Task Team will be composed of Beatriz Reguera (Spain) co-Chair, Kenneth Mertens (France) co-Chair, the Chair of the GlobalHAB Scientific Steering Committee, the Chair and Vice-Chair of IPHAB, the Chairs of each IPHAB Task Team, the Chairs of the IOC Regional HAB groups (IOCARIBE/ANCA, FANSA, HANA, IOC/WESTPAC-HAB, ICES-IOC WGHABD, and ICES-IOC-IMO WGBOSV), the Regional Editorial Board, a representative of the ISSHA Council, and the IOC and FAO secretariats as well as representatives of other UN (e.g., IAEA) and Regional (PICES) organizations working in cooperation with the IOC on HAB issues; The Task Team composition may be expanded/modified as required to fulfill the terms of reference;

**Notes** that the Task Team will work until otherwise decided by the Panel and that it will work by correspondence and/or meet on an opportunistic basis and provide a progress report to the Chair of IPHAB intersessional and prior to IPHAB-XVIII.

#### Decision IPHAB-XVII.10

### **HABS IN A CHANGING WORLD: GLOBAL APPROACH TO HAB RESEARCH TO MEET SOCIETAL NEEDS: GlobalHAB**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Referring** to the joint IOC-SCOR international science programme on Harmful Algal Blooms (GlobalHAB) as established through IOC Decision IOC-XXVII/Dec.5.4.2, and the associated GlobalHAB Science Plan and Implementation Plan,

**Recalling** Decision IPHAB-XVI.10 and the requests therein for the IOC-SCOR GlobalHAB Scientific Steering Committee to review the GlobalHAB Science and Implementation Plan with a view to present to IPHAB-XVII what it recommends as the main elements of an international HAB research programme after 2025 focusing on understanding HABs in the context of global sustainability,

**Noting** that GlobalHAB provides a unique ability to address underlying scientific questions and concerns related to harmful algae and their science-based management,

**Also noting** the achievements and ongoing activities of GlobalHAB detailed in the GlobalHAB report series and the contributions made to the scientific literature,

**Further noting** that GlobalHAB provides an interface between IOC, SCOR and other international coordinating organizations for research and science such as IOCCG, ICES, PICES,

**Noting** that within the current joint framework of IOC and SCOR, GlobalHAB is expected to synthesize its current activities by the end of 2025,

**Recognizing** that to fully realize the benefits of the accumulated investments in GlobalHAB and to continue to have an international programme focusing the HAB research agenda, it is desirable to revisit and revise the HAB research priorities for the time beyond 2025,

**Endorses** the proposal by the IOC-SCOR GlobalHAB Scientific Steering Committee to continue a next decade of international cooperation on harmful algal bloom research focusing on understanding HABs in the context of global sustainability;

**Notes** the recommendation of the GlobalHAB SSC to continue under the name GlobalHAB;

**Decides** to continue with SCOR (pending SCOR agreement) an IOC-SCOR GlobalHAB Scientific Steering Committee in accordance with the draft Terms of Reference, as attached to this Decision as Annex, in particular to;

- (i) Finalise the draft GlobalHAB Science Plan 2026-2035 by end 2025 in consultation with the scientific community including IPHAB Task Teams and UN Decade Programme HAB-S with a view to optimize efforts and eliminate duplication;
- (ii) Identify the targeted research and framework activities of GlobalHAB in an *Implementation Plan* that describe a decadal program focused on HABs in the context of global sustainability and submit it along with the *Science Plan* to the GlobalHAB sponsors by end 2026.

**Invites** other international scientific coordinating bodies to support GlobalHAB activities;

**Urges** Member States and their institutions to provide advice and resources to help implement GlobalHAB objectives.

Annex of Decision IPHAB-XVII.10

**The Scientific Steering Committee of the GlobalHAB Programme will:**

1. Finalize the GlobalHAB *Science Plan* 2026-2035 by end 2025 in consultation with the scientific community through an open science meeting in conjunction with ICHA 2025 as well as through an on-line consultation;
2. Develop a Global HAB *Implementation Plan* and submit it, along with the *Science Plan*, to the GlobalHAB sponsors by the end of 2026;
3. Continually determine the most critical gaps in knowledge, technology, and capabilities required to improve understanding, detection, prevention, and mitigation of HABs (based on the outcomes of the GlobalHAB programme and discussion with GlobalHAB sponsors); encourage targeted activities to fill identified gaps;
4. Coordinate and manage GlobalHAB activities and projects in accordance with the GlobalHAB *Science* and *Implementation Plan*;
5. Foster framework activities to facilitate implementation of GlobalHAB priorities, including dissemination and information tools;
6. Review progress on GlobalHAB activities over time and initiate new GlobalHAB activities in priority areas in accordance with its *Science* and *Implementation Plan*;

7. Promote and facilitate interdisciplinary research on HABs by providing coordination and communication services to national and regional research groups, while encouraging explicit affiliation with GlobalHAB;
8. Serve as the coordinating organization for implementation of HAB activities in observational/modeling systems such as GOOS and GEO BON;
9. Collaborate, as appropriate, with intergovernmental organizations and their subgroups (e.g., IAEA, ICES, PICES, and regional HAB expert groups and networks), and within related research programmes (e.g., IOCCG, IMBER, SOLAS);
10. Report annually to SCOR, the IOC-FAO IPHAB, and the international HAB research community on the state of planning and accomplishments of GlobalHAB, through annual reports and, as appropriate, the GlobalHAB website, a GlobalHAB Newsletter as part of Harmful Algal News, special sessions at scientific meetings, and other venues;
11. Interact with GlobalHAB sponsors and other agency sponsors to stimulate the support of GlobalHAB implementation.

#### Decision IPHAB-XVII.11

### **HAB TRAINING AND CAPACITY DEVELOPMENT**

The IOC-FAO Intergovernmental Panel on Harmful Algal Blooms,

**Recognizing** the short and long-term needs for training and capacity development to understand, monitor and mitigate harmful algal blooms,

**Noting** the worldwide decline in the number of experts in the field of phytoplankton taxonomy, and **also recognizing** the need to develop taxonomy science to fill the gaps in the knowledge of marine biodiversity,

**Acknowledging** the training and capacity development opportunities having been, and being, provided by FAO, IOC UNESCO, IAEA and others,

**Also acknowledging** the 'Advanced Phytoplankton Course' (APC) offered since 1976 and sponsored by IOC UNESCO, as well as the 'International Phytoplankton Inter-calibration' (IPI) exercise operated since 1998 in partnership with IOC UNESCO as critical to national, regional and global capacity to understand, monitor and mitigate harmful algal blooms,

**Further acknowledging** the significant role and leadership provided by the host institutions for the APC (Stazione Zoologica Anton Dohrn) and the IPI (Marine Institute Ireland) and the challenge in identifying a new host arrangement for the IPI,

#### **Decides:**

- (i) to continue with ongoing CD activities at global and regional levels in collaboration with partners where possible;
- (ii) to continue the sponsorship of the 'Advanced Phytoplankton Course' (APC);
- (iii) to establish a partnership with a new host institution for the operation of the 'International Phytoplankton Inter-calibration' exercise, and to continue to expand it to systematic global coverage;

- (iv) to further develop the use of the OceanTeacher Global Academy (OTGA) platform and the provision of training reference material through OTGA e-Learning platform and IOC HAB website and invite other organizations delivering training opportunities to use and share training reference material.

Recommendation IPHAB-XVII.1

**HARMFUL ALGAL BLOOM PROGRAMME WORK PLAN FOR 2026–2027**

The IOC FAO Intergovernmental Panel on Harmful Algal Blooms,

**Referring** to the deliberations of its Seventeenth Session and the priorities identified prior to the session by regional HAB groups IOC/IOCARIBE/ANCA, IOC/FANSA IOC/WESTPAC/HAB, ICES-IOC WGHABD and ICES-IOC-IMO WGBOSV,

**Endorses** the implementation of the Work Plan for the IOC Harmful Algal Bloom Programme as presented in Annex to this Recommendation within the resources available;

**Urges** Members of the Panel and the IOC and FAO Secretariat to help identify the required financial as well as human resources.

Recommendation IPHAB-XVII.2

**OPERATION OF THE IOC-FAO INTERGOVERNMENTAL PANEL  
ON HARMFUL ALGAL BLOOMS**

The IOC FAO Intergovernmental Panel on Harmful Algal Blooms,

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

**Annex to Recommendation IPHAB-XVII.1**DRAFT IOC HAB PROGRAMME WORKPLAN 2026–2027 *(Main activities and funding identified as of 20 March 2025 only)*

SCCHA = IOC Science and Communication Centre on Harmful Algae; HQ = IOC-UNESCO Headquarters Paris ACTIVITY:	ORGANIZER/ RESPONSIBLE	TARGET GROUP/ Region:	WHERE:	WHEN:	FUNDING IDENTIFIED <i>in USD</i> <i>x 1000</i>		FUNDING REQUIRED TOTAL (cash and in-kind): <i>In USD x 1000</i>	AUTHORITY & REMARKS
					IOC HAB Budget	Ex Bud & in-kind		
OPERATION & SERVICES								
IOC SCCHA & HAB Programme Office  <i>Incl. the activities and services in this work plan implemented by the Centre and required to justify a decentralised PO.</i>	IOC/H.Enevoldsen	Global	Copenhagen	2025–2027	0	100 Denmark in kind and individual projects	100	IPHAB-XVII
Technical Secretariat IPHAB /HAB Programme Staff	IOC UNESCO and FAO	Global	-	2026–2027	Staff cost	Not identified. Can be cash or in-kind (JPO)	110	IPHAB-XVII
PUBLICATIONS								
<i>Harmful Algae News</i>	B. Reguera (Spain), K. Mertens (F) Editors	Global	HQ / SCCHA	2026–2027	10	5 in kind via Univ Cph. T.b.c.	15	IPHAB-XVII
<i>Global HAB Status Report II</i>	Editorial Team	Global	-	2027	10		10	IPHAB-XVII

TRAVEL								
IOC Staff	H. Enevoldsen/ Yun Sun	-		2026– 2027	5	0	12	IPHAB-XVII
Chair/vice-chair IPHAB	NN / Begoña Ben- Gigirey	-		2026– 2027	4	4 (Member State)	8	IPHAB-XVII
SCIENTIFIC/TECHNICAL ELEMENTS								
IPHAB Task Teams support, meetings etc.	IOC and FAO	Global	-	2026– 2027	40	To be identified by TT members	80	IPHAB-XVII
GlobalHAB Scientific Steering Committee	IOC and SCOR t.b.c.	Global	-	2026– 2027	20	To be identified	50	IPHAB-XVII and SCOR t.b.c.
HAB-Solutions		Global	-	2026– 2027	15	To be identified	50	IPHAB-XVII
ICES-IOC WGHABD	D. Clarke (Ireland)	North Atlantic	T.b.c.	Yearly	0	Self funded	0	IPHAB-XVII
ICES-IOC-IMO WGBOSV	O. Outinen (Finland)	Global	t.b.d.	Yearly	0	Self funded	0	IPHAB-XVII
Project on Early Warning Systems for HAB in Africa	IPHAB Task Team Chair B. Karlson (Sweden)	Africa	Namibia, Morocco and t.b.d.	2026– 2027	0	180	180	IPHAB-XVII
Harmful Algal Information System development incl. Global HAB Status Report	HABP-IODE	Global	-	2026– 2027, GHSR 2027	25	To be identified	50	IPHAB-XVII IODE-XXVIII
REGIONAL GROUPS								
Regional Working Group on Harmful Algal Blooms in South America (IOC FANSA)	A. Martinez (Uruguay)	S-America	t.b.d.	2026– 2027	5	0	15	IPHAB-XVII



Regional Working Group on Harmful Algal Blooms in the Caribbean (IOC ANCA)	E. Mancera (Colombia)	Caribbean	t.b.d.	2026–2027	IOCARIBE Budget			IOCARIBE and IPHAB-XVII
Regional HAB Project in the Western Pacific: WESTPAC-HAB & WESTPAC-TMO	K. Wakita(Japan)/ Po Teen Lim (Malaysia); D.V. Ha (Vietnam)	Western Pacific	t.b.d.	2026–2027	IOC/WE STPAC Budget			IOC/WESTPAC
Regional Working Group on Harmful Algal Blooms in North Africa (IOC HANA)	A. Ismael (Egypt), A. Bennoua (Morocco)	North Africa	on-line pending survey	2026–2027	IOCAFRICA Budget	0	15	IPHAB-XVII

Regional Working Group on Harmful Algal Blooms in Africa (IOCAFRICA/HAB)	t.b.d.	t.b.d.	t.b.d.	2026-2027	IOCAFRICA Budget			IOCAFRICA-V
CAPACITY ENHANCEMENT								
IOC Training Course on Identification and Qualification in Harmful Marine Microalgae	SCCHA, OTGA	Global	University of Copenhagen, Denmark	2026 and 2027	5	Danish partners and cost recovery	5	IPHAB-XVII
International Phytoplankton Intercalibration (IPI)	New host to be confirmed – IOC SCCHA. OTGA	Global	New host and Univ. of Copenhagen	2026 and 2027	0	partners and cost recovery	10	IPHAB-XVII
14 <sup>th</sup> Advanced Phytoplankton Course	APC Steering Group, OTGA	Global	Roscoff, France.	2027	5 for teachers travel + in-kind from IOC SCCHA B	Grants to be sought	40	IPHAB-XVII
Regional Training Courses on HAB	To be decided	ANCA, FANSA, HANA, IOCAFRICA/HAB	t.b.d.	2026 and 2027	0	0	100	IPHAB-XVI
Totals					144	284	850	

**Expected IOC funding (2026–2027 (draft 43 C/5)):** US\$ 138.000-144.000 (subject to revision pending changes in UNESCO Membership)

**Identified cash funding (2026–2027):** US\$ 180.000 from extra-budgetary resources

**US\$ ~420,000 to be identified cash from extra-budgetary resources and/or in-kind for full implementation.**