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**Seventeenth Session of the IOC-FAO Intergovernmental Panel**

**on Harmful Algal Blooms**

Paris, 18-20 March 2025

Item 4.4.3 of the Provisional Agenda

**REPORT OF THE TASK TEAM ON** **A GLOBAL CIGUATERA STRATEGY FOR IMPROVED RESEARCH AND MANAGEMENT**

The report is structured according to the decision taken in 2023, reproduced below:

### Report for the intersession

## Decision (i) Interact with IOC, FAO, IAEA and WHO to pursue and strengthen the concertation of their respective actions in support of the Global Ciguatera Strategy

Every opportunity was taken to interact with UN agencies and encourage the development of activities to support the TT objectives.

* A new **IAEA** Interregional project **INT7022 on Strengthening Ocean Health for Sustainable Development: A Global Approach Using Nuclear and Isotopic Techniques** was launched during the intersessional period, with a strong component on HABs and ciguatera management. The design of the project was finalized during a technical meeting April 3-6 2023, and biotoxin and HABs were identified as one of the 9 stressors to address. A Kickoff meeting was held in Monaco 4-6 June, 2024 during which a detailed workplan was updated with participating countries. A first technical meeting on “Protocol standardization for algal and toxin surveillance Sampling, Toxin Analysis, and Quality Control Standards” was held in Cuba Mar 10-14, 2025.
* Progress made in the frame of the **Pacific CIGUAWATCH initiative** (<https://ciguawatch.ilm.pf/>). Following the completion of the Technical Cooperation Project on the training and improvement of CP risk management capacity and systems in Fiji, Samoa, and Tonga, sponsored by the **FAO** -TCP/SAP/1807) in 2023, an agreement was recently signed between Wallis & Futuna and ILM to conduct similar trainings with local Health and Environment agencies. On-line trainings with stakeholders from the ministries of Environment, Fisheries and Health were completed in 2024. A field training to strenghthen local monitoring capacities is scheduled from April 16th to May 5th, 2025 in Wallis and Futuna. Discussions are also currently underway with the Agence Française de Développement Group (<https://www.afd.fr/en>) to extend these efforts to other PICTs also concerned with CP issues.
* Participation in the French working group for the preparation of the Codex *Alimentarius* food standard for ciguatera. A code of practice for the Prevention or Reduction of Ciguatera Poisoning (CXC 83-2024) was adopted in 2024
* RAMOGE is maintaining its surveillance program of the bHAB species of the genera Ostreopsis ovata along Italia, Monaco, France and Spain coastlines. These data can be consulted on their website. <https://ramoge.org/suivi-ostreopsis-ovata/>

## Decision (ii) Pursue coordination activities to develop and strengthen synergies through the cooperation of currently funded efforts in support of the Ciguatera Strategy (other than international agencies),

 (ANR)

* **PEPR SOLU-BIOD** builds ona national network of 11 living labs implemented both in France and Overseas territories (<https://www.pepr-solubiod.fr/projet-strategique-reseau-living-labs/>) “Alternative integrated Management strategies of Watersheds in tropical islands: solutions to promote the resilience of tropical islands’ socio-ecosystems” - **AMWI** (700 k€, 2024-2028)
One of the primary goals of this program managed by the SOLU-BIOD Living Lab of French Polynesia is the restoration and enhanced productivity of coastal reefs and lagoons, to promote the sustainable use of marine resources and increase socio-ecosystems resilience in tropical islands. The CP-related actions led by the Institut Louis Malardé (ILM) involve the deployment of environmental monitoring tools for CP risk assessment in 3 study sites in Moorea and Tahiti islands (French Polynesia) with an emphasis on community-based participatory science and promoting solutions to better take CP risk into account in marine resource management and restoration initiatives.
* **PPR Ocean and Climate** (<https://anr.fr/fr/detail/call/ppr-ocean-et-climat-un-ocean-de-solutions-vague-2-appel-a-projets-2023/>) “Understanding Marine Heat Waves in French Pacific Overseas Territories, co-designing decision making tools and solutions for adaptation” – MaHeWa (1.4 M€, 2024-2028).
MaHeWa aims to understand and predict the impacts of marine heat waves on Pacific French Overseas Territories (PFOT) socio-ecosystems. Working jointly with stakeholders in New Caledonia, French Polynesia, and Wallis & Futuna, its objective is to co-design effective, reliable decision-making tools and sustainable mitigation strategies. One of the tasks specifically focuses on assessing the impacts of marine heat waves on CP risk, as well as building on the Ciguawatch e-platform to develop risk maps for improved public health and food security in these three PFOTs. The kickoff meeting of the PPR MaHeWA took place in new Caledonia on November 26th, 2024 in the presence of the French National Research Agency representatives.
* Project funded by the **Programme d'Investissements d'Avenir (PIA) UCAJEDI n◦ANR-15-IDEX-01** grant - Académie d'Excellence 3 “Espace, Environnement, Risques et Résilience”, Université Côte d'Azur on « the role of benthic communities in the production and transfer of bHAB toxins » BENTOX (150 k€, 2023-2025).
* An international Symposium on Ciguatera poisoning in the Pacific Islands hosted by the Cawthron Institute will be held from 19-22 may, 2025 in Nelson (Nelson, New Zealand). Topics addressed include the ecology of CP causative agents, CP social impacts and emerging issues, monitoring approaches and future tools. Future collaboration and funding sources opportunities will also be extensively discussed through round tables.
* An e-working group on the SOP harmonization of CBA-N2a for CTX detection was launched in 2024. This initiative is led by Lucia Solino from the EU Reference Laboratory for Monitoring of Marine Biotoxins (EURLMB). A wrap-up meeting is scheduled in October 8th, 2025 in Paris.
* **Reference materials** (CTX standards and biological material naturally contaminated with CTXs) have been available through the Louis Malardé Institute. NRCC in collaboration with Alison Robertson is working on making Caribbean CTXs available, though not yet available
* **CARMINA project:**
	+ **qPCR techniques have been developed and put in place in the Caribbean region, especially in the Ifremer laboratory in Martinique (in collaboration with NOAA and Ifremer Concarneau).**
	+ **Ifremer-Martinique have started a culture collection of local Gambierdiscus strains characterization of which is underway**
	+ **Cuban colleagues have contributed to collection of a large number of strains (90) via a PhD co-funded with Mexico and culturing for characterization of strains is underway.**
	+ **Mexican colleagues have also isolated several bHAB strains of which Gambierdiscus and culture for toxicity characterization is underway.**

## Decision (iii) Evaluate the methods used for isolating and culturing benthic HAB organisms (bHABs). 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. Additionally, provide financial support for conducting inter-laboratory exercises on bHAB collection techniques, standardizing methods, and facilitating trans-regional studies.

## Concern of fish mislabeling in ciguatera was further stressed with a recent case of ciguatera in UK (REF)

* The IAEA through its INT7022 project (referenced above) organized a technical meeting on “Protocol standardization for algal and toxin surveillance Sampling, Toxin Analysis, and Quality Control Standards”, held in Cuba March 10-14, 2025

## Decision (iv) Pursue communication activities (including Harmful Algal News) and update the existing IOC web page on ciguatera displaying the strategy (e.g. relevant links)

* Caribbean CTX-progress was reported in HAN issue 73 (October 2023)
* An article relating to the isolation of C-CTX5 and confirmation of its structure by NMRspecetroscopy was published in Tetrahedron in June 2024
* Joint publication (Clausing et al, 2023) involving the IAEA, academics (Université côte d’Azur), governmental agencies (Malarde Institute, Ifremer) on Tissue distribution and metabolization of ciguatoxins in an herbivorous fish following experimental dietary exposure to *Gambierdiscus polynesiensis.*

## Decision (v) Interact with ICHA organizers to solicit presentations on ciguatera research and stimulate the convening of special ciguatera sessions at relevant medical, seafood safety and security, and other scientific meetings

* + During the 2023 ICHA conference in Hiroshima (Japan), a session was fully devoted on ciguatera

## Decision (vi) Contribute to the HAB Solution (HAB-S) UN Decade of Ocean Science for Sustainable Development proposal to integrate the Ciguatera Strategy into integrated and co-developed mitigation solutions for reducing ciguatera poisoning,

* + In line with the UN Ocean Decade Challenges, two projects with a Ciguatera component were proposed in 2024 at the Louis Malardé Institute in French Polynesia in the Pacific region in the frame of two national research programs operated by the French National Research Agency

### In conclusion, significant progress has been made, from the availability of commercialized standards to advancements in bHAB species identification, as well as the publication of recent guideline values and analytical methods by CODEX Alimentarius. However, substantial work remains to be done. Continued research and development, along with capacity building and training, are essential to further refine management strategies. These efforts will enhance our ability to not only protect against bHAB events but also to predict and provide timely alerts to stakeholders. Priority actions and recommendation are listed below

### Future activities

* Continue the work of the TT on ciguatera, but expand its focus from a bHAB perspective to include other benthic species, such as Ostreopsis. The establishment of a global inter-agency strategy has proven to be challenging. Benthic HAB species face common issues related to species sampling, which are collectively addressed in the development of early warning systems (EWS). Renaming the task force to 'TT on Benthic HABs' could widen its perimeter, improving both research and management efforts.
* Further the work on sampling strategy and early warning system approach
1. Workshop on sampling and validation of qPCR methods for the detection of CTX-producing organisms in the field
2. Validation of N2a and RBA methods for bHAB/CTX toxin detection
3. Validation of LC-MS/MS methods for confirmation of cases and bHAB profiles
4. Epidemiology : establishing guides for risk evaluation and management
* **Invites** scientific organizations, institutions and international bodies to consider supporting the further development of the scientific aspects and research priorities of the strategy; 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, and to provide the support needed for countries to maintain or further entries into the OBIS, HAEDAT and INFOSAN databases on worldwide occurrence reports of *Gambierdiscus/Fukuyoa* spp and ciguatera events,
* **Invite futher members, within other countries e.g.** USA, Macronesia, Japan, South America (Mexico, Chili, Cuba), Indian Ocean (Réunion), as well as from UN agency (e.g. IAEA)
* **Decides** **also** that the Task Team will comprise M. Chinain (France/French Polynesia) as co-chair, P. Hess (France) as co-chair, Lafi S. Al Sulami (Saudi Arabia). The Task Team is supplemented by experts M.Y. Dechraoui Bottein (France) co-chair, E. Núñez Vázquez (Mexico) and will be expanded, as required, to fulfill the terms of reference.