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

**on Harmful Algal Blooms**

Rome, 27-29 March 2023

Item 4.7.6 of the Provisional Agenda

**REPORT OF THE IPHAB TASK TEAM ON ALGAL TAXONOMY**

**The report is structured according to the decision taken in 2021, reproduced below:**

With reference to following terms of reference:

1. verify the Reference List and suggest modifications,

* The list has been updated continuously, adding some species recently found to produce toxins (e.g., *A. sanguinea* and *Centrodinium* *punctatum*) and removing others not convincingly producing toxins (e.g., *Aureococcus anophagefferens* and *Aureoumbra lagunensis*).

1. each year issue a summary in *Harmful Algae News* detailing the taxonomic changes to the Reference List,

* This activity has been planned and editors will be contacted

1. invite the scientific community to contribute to keeping the Reference List updated

* There is already an invitation in the cover page of the list

1. continue the work to include toxic cyanobacteria, including freshwater cyanobacteria

* The work on including toxic cyanobacteria continued and the coverage of toxic species is increasing

1. include information on cysts,

* Resting stages like cysts have been included for many of the toxic species

1. include (where possible) references to selected validated sequences in GenBank obtained at or near the type locality,

* The process of including verified molecular references (Genbank numbers) preferably from type localities or nearby has been begun and will continue. Updating with verified molecular datais increasingly needed, not only for identification of cryptic and pseudocryptic species, but also for the growing number of environmental molecular analyses

1. include a note on the level of technique required to identify each species,

* The addition of a description identification of each species and how to identify it will be in the following period be expanded for all species

1. work in coordination with the Task Team on Biotoxins Monitoring, Management and Regulations to prepare a summary of data [e.g. number of species known to produce each toxin, current taxonomic problems],
2. interact in the development of the Harmful Algal Information System,
3. suggest themes for round-table discussions and other activities at the International Conference on Harmful Algae (ICHA); give presentation(s) at each ICHA conference, detailing recent changes in the taxonomy of harmful algal species,

* The plan is to present an update of TTAT activities at the next ICHA in Japan Nov. 2023

1. identify editors within or external to the Task Team who will be responsible for validating, completing and updating the Reference List, including illustrations showing diagnostic features of each species, and reference or links to such illustrations,

* Laura Escalera has joined the TTAT

1. organize a meeting of Reference List editors to discuss issues related to the List and working on the List with guidance from WoRMS;

* The editors of the Task Team and a representative from WORMS met in person for three days in Hillerød Denmark in November 2021, where several of the actions mentioned below were discussed and decided upon.

1. In 6 months develop a succinct list of challenges, objectives and actions with respect to the Task Team topic that will address the UN Decade of Ocean Science for Sustainable Development objectives and challenges and to present these at an IPHAB intersessional on-line consultation September 2021 with a view to formulate an IPHAB strategic framework for UN Decade initiatives;

* We developed a list of objectives, challenges and actions for the IPHAB intersessional meeting and a short summary was prepared to contribute do develop an IPHAB strategic framework for UN Decade initiatives.

**Actions taken during the inter-sessional period:**

* Approximately every third month, the Task Team has had online meeting with all Reference List editors and a representative from WoRMS to discuss issues related to the List. This has resulted in more regular updating of the IOC-UNESCO Taxonomic Reference List of Harmful Algae with implementation of new activities.
* A Greylist of species for which documentation for toxicity is lacking has been implemented and is available on the webpage
* Information on TTAT activity and decisions made at the Copenhagen meeting have been the object of a note to HAN
* The work on lists of harmful but non-toxic species has been initiated. One list will contain species causing marine fauna death or impairments not linked to toxin production; a second list will comprise species causing discolorations or other problems impairing human activities (tourism, recreational activities, fisheries, seaweed industries). Both lists are relevant to a broader audience. The lists are in progress and not yet available on the webpage.

**The Task Team** has been modified and comprises N. Lundholm (Denmark) Chair, M. Iwataki (Japan), A. Zingone (Italy), C. Churro (Portugal), S. Fraga (Spain), K. Mertens (France), J. Larsen (Denmark), M. Hoppenrath (Germany), L. Escalera (Spain), Ø. Moestrup (Denmark).

**Identified challenges for the Task Team in the future**

Maintaining and updating the list relies on **voluntary work only.** An update with morphological and molecular input has been initiated but requires a major effort and would benefit tremendously from **additional** **resources**.

**Next generation of taxonomists** should be trained. Taxonomic expertise is disappearing in some parts of the world – can we maintain a reasonable number of experts on the different taxonomic groups of toxigenic microalgal species?