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

**on Harmful Algal Blooms**

Paris, 18-20 March 2025

Item 4.4.6 of the Provisional Agenda

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

**The report is structured according to the decisions taken in 2024, reproduced below:**

With reference to following terms of reference:

1. verify the Reference List and modify as required, continuing the inclusion of toxic cyanobacteria,

* The list is continuously being updated, and species recently found to produce toxins (e.g., *Gonyaulax montresoriae, Pseudo-nitzschia punctionis*) have been added. The list presently includes 124 dinoflagellates, 43 marine cyanobacteria, 31 diatoms, 8 haptophytes, 5 raphidophytes, and 3 dictyochophytes. More toxic cyanobacteria has been included and the inclusion of more cyanobacteria is in progress with the addition of another cyanobacterial editor.

1. 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 obtained at or near the type locality,

* Resting stages like cysts have been included for most, if not all, the toxic species. Information on morphology, tehniques for identification and links to verified sequences is ongoing. Several species in the list have been updated regarding morphological details relevant to identification and images, and we aim to update more species. The process of including verified molecular references (Genbank numbers) preferably from type localities or nearby 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 for monitoring and research, and because information in databases like Genbank includes old/wrong information.

1. produce a grey list for species for which documentation for toxicity is lacking or doubtful,

* A **grey list** of species for which documentation of toxicity is doubtful or lacking comprising four species is available on the website.

1. develop lists of a) harmful but non-toxic species causing damages or killing of marine fauna and b) 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),

* A list of harmful but non-toxic species causing damage to or killing marina fauna is now available on the website, including 55 species with examples of events. A list of harmful non-toxic species causing other kinds of problems is in process.

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

* A summary of the work by the task team entitled “New toxic species - and what about their names? – news from the IOC-UNESCO Task Team on Algal Taxonomy“ by the taxonomic editors was published in Harmful Algal News in October 2024 (doi: 10.5281/zenodo.14363544). An input is planned once a year, next time around October 2025.

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

* There is an invitation in the cover page of the list. Also at the ICHA 2023 in Japan, everybody was encouraged to contribute.

1. Work in coordination with the Task Team on Biotoxins Monitoring, Management and Regulations to intercalibrate and interlink the information on toxigenic species,

* This is a task, which will have to be completed in the next period. It is high up on our agenda.

1. 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, and in the information included in the Reference List,

* A presentation of activities by the task team was given at the ICHA conference in Japan in 2023, and a presentation is planned for the ICHA conference in late 2025 in Chile

1. 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,

* The editors of the Reference List are working on validating, completing and updating the list. The team has been expanded by one new member (Cecile Bernard, France) to increase the efforts on toxic cyanobacteria. There is in general a shortage of taxonomists and we foresee problems replacing people in the group. The next generation of taxonomists should be encouraged and trained.

1. 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 species,

* The taxonomy task team had three online meetings for the past year with editors and a representative from WoRMS, where updates, taxonomic problems and the expansion of the list among other relevant matters were discussed.

1. contribute to the development of HAIS,

**The Task Team** has been modified and comprises 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).

**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**.

There is a need for **support** for having an onsite task team meeting with attendance of Worms to discuss how to ensure the list in the future, how best to improve the website, links to the Toxin website, how to deal with the freshwater cyanobacteria, and for sharing the best ways to work on the list with technical input from the Worms team.

**Next generation of taxonomists** should be trained. Taxonomic expertise is disappearing in many parts of the world – can we maintain a reasonable number of experts on the different taxonomic groups of toxigenic microalgal species? We think that a more general focus on taxonomy as a science is needed.