

The toxin profile is similar to that observed for *A. minutum* isolated from New Zealand [7], in which Neo-STX also dominated, and distinct from European isolates in which GTX 4 was the major toxin [8].

This is the first report of vegetative cells of *A. minutum* from the Western South Atlantic. Among species of *Alexandrium*, *A. minutum* apparently occupies a broad niche, and has a large geographical distribution [9-11]. Its present regional and global distribution has been hypothesized to result from bio-invasion, as a result of ballast water translocation [11]. In fact, during a cyst survey for the Globallast project in Sepetiba bight, cysts of *A. cf. minutum*, among other, were reported in the region. Sepetiba is an important port subjected to large ballast water discharges, located about 80 km south of the bloom region. Considering a bloom as a manifestation of species opportunism, the fact that *A. minutum* vegetative cells were never before recorded in the region, and the fact that it was first reported as a cyst in a nearby

port area, the idea of ballast water introduction appears to be quite attractive to explain its presence in Rio de Janeiro waters.

Together with *Gymnodium catenatum* [12] and *Alexandrium tamarense* [13], this is third marine PSP producing species found in Brazilian coast. Although during the bloom no other harmful effect other than the aesthetic was observed, this species can affect the flourishing mussel aquaculture in the country.

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PLANKTON*NET: A new and improving tool for studying and monitoring Harmful Algal Blooms

Introduction

PLANKTON*NET is an online family of websites with information about all types of plankton. It is a source of authoritative information about plankton taxa, featuring images, schematics, taxonomic descriptions and glossaries, and soon also online taxonomic keys for different taxon groups. It is also a repository for historic and current distribution data of plankton organisms. Most of the PLANKTON*NET records deal with marine phytoplankton, including harmful algae, but we are also increasingly archiving information on additional taxa, particularly zooplankton and also on freshwater organisms e.g. cyanobacteria.

PLANKTON*NET currently consists of three sites (at the Alfred Wegener Institute for Polar and Marine

Research (planktonnet.awi.de), Station Biologique de Roscoff (planktonnet.sb-roscoff.fr/index.php) and University of Lisbon (plankton-net.fc.ul.pt), with two more sites being planned for autumn 2007).

In each of these sites data are entered by the core PLANKTON*NET group, also including the Natural History Museum in London and IPIMAR in Lisbon as important data contributing members, but also by a growing number of external contributors from locations all over Europe and beyond. After a very simple registration process, these external partners can enter their own images as individual images or, more commonly, as part of an image set. They can add and modify records and customize the web interface according to their own needs and requirements.

New features

In all areas of plankton taxonomy and ecology but particularly in the field of HAB research, access is required to a very large number of different online resources. The great diversity of information sources available to an online user can make it very difficult to extract the most up to date or the most relevant information for one's needs. PLANKTON*NET remedies this situation by offering both the opportunity to learn about the taxonomy and ecology of harmful algae as well as a facility for entering observational data from historic data sets as well as current research projects such as cruises etc. As PLANKTON*NET is not only populated by the PLANKTON*NET partners but also by a number of external contributors, this gives us the unique opportunity to produce an easily and openly accessible online inventory

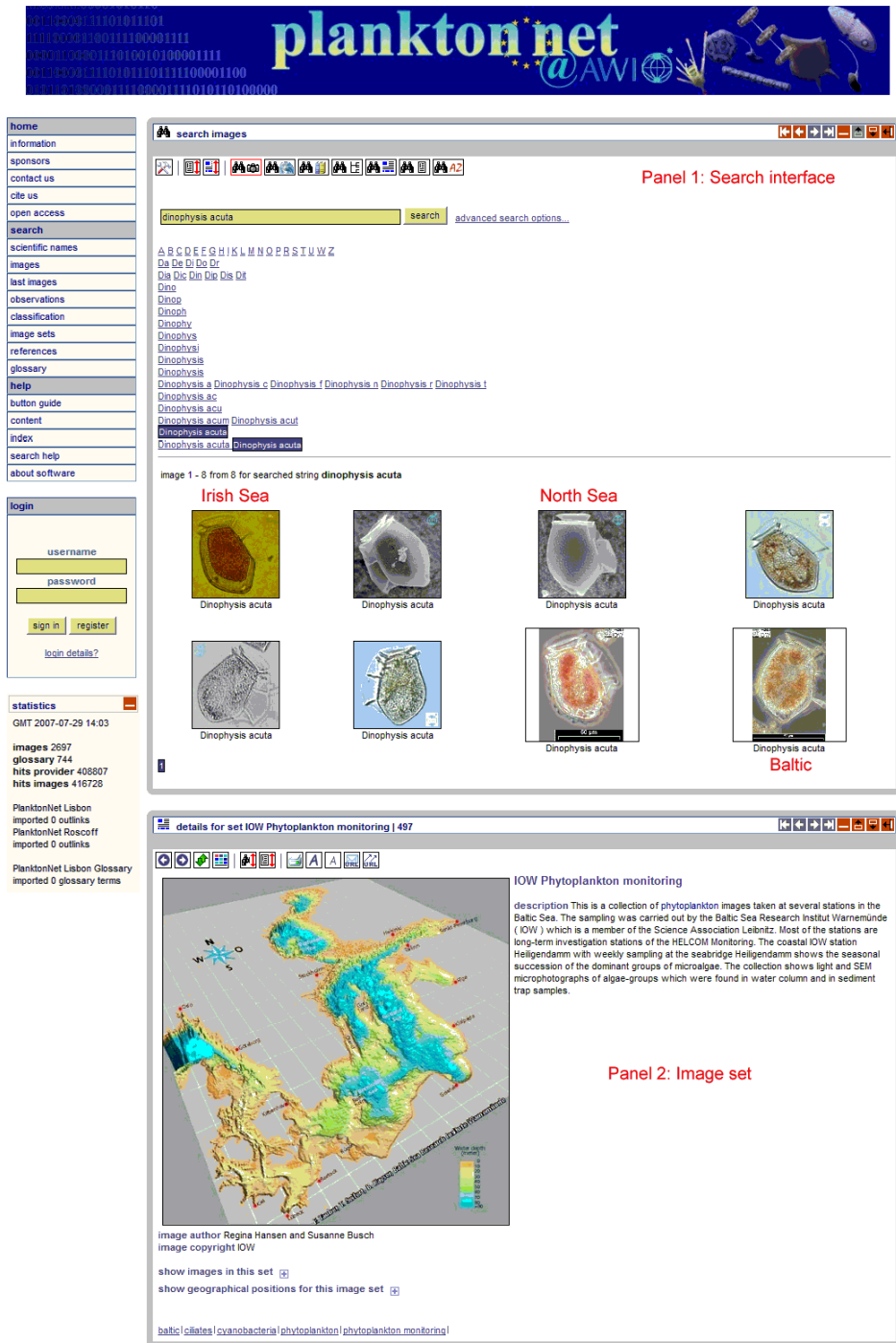


Fig. 1. Example of PLANKTON*NET layout showing two panels: one for searching images (showing a search result with images from three different locations), and one to browse through and open image sets. This layout is customizable. Panels can be closed and minimized/maximized. They can be moved up and down the screen e.g. to place data input forms and observation search forms adjacent to each other.

of harmful algae with comprehensive, accurate and up to date information, not only about the taxonomy of organisms but also about their distributions, which are of particular importance in HAB research. An exciting new development in this context is also the design of a central portal through which searches of information can be made in all PLANKTON*NET sites simultaneously. To further enrich the portal, links to a number of additional

online databases including library resources and databases containing environmental information are also being created, so that a search e.g. on a given species will retrieve all relevant records from PLANKTON*NET sites, literature references and available environmental information.

To organize the diverse and complex content now at the core of PLANKTON*NET, individual PLANKTON*NET sites have also been

redesigned to enable the user to draw the greatest benefit from the PLANKTON*NET resource:

1. A new interface: A panel structure has been established with all panels in one page (e.g. search and data input panels). This system is extremely flexible (each panel can be minimized, closed or be moved up and down the page to customize it). In this way one can for instance enter new terms in the glossary while also carrying out searches on glossary terms (Fig. 1).

2. Tagging: Users can now add their own tags (diatoms, open ocean, cultures, etc.) to facilitate custom-made searches.

3. Custom image sets: One image can now be part of several image sets. In this way a user can produce custom made sets of images, e.g. restricted to harmful algae, particular taxon groups or records from a particular geographic area that can be used in teaching or for other presentations.

4. New search engines The site includes powerful browse and search functions allowing the user e.g. to search for distribution records of a given species, or look for all records in a given geographic location. These search facilities can be used to quickly find information on, for example, scientific names, images or image sets and to browse through the classification tree. Images and distribution data can also be browsed alphabetically.

5. New taxon detail pages: These now include, in addition to images, links to classification trees and short taxa descriptions a graphical representation of all locations for which PLANKTON*NET records of the taxon in question exist (Fig. 2).

Future Plans

At present, while we already have the means for collating detailed distribution records for any given harmful species, this is restricted in terms of its graphical representation, to a display of locations at which a species occurred at some point in time. What we would like in the future is a facility that also allows us to follow the time course of development of a given species, and therefore potentially to track the direction in which a developing bloom is moving. To accomplish this PLANKTON*NET will essentially

Fig. 2. Example of a taxon details page showing the different components: 1. Enlargeable images, 2. Links to external resources, 3. Link to the environmental database Pangaea, 4. Brief taxon description, 5. Map showing the locations for which records of the species appear in PLANKTON*NET.

follow a two pronged approach: 1. The development of the necessary IT tools for mapping species data, and to further increase the data input facilities (e.g. to include toxin data) and 2. Collation of the data to populate the resource so as

to form a high resolution observatory that can then also give warnings about the occurrence of a given species. This obviously requires a large joint effort and we therefore seek and encourage collaboration with additional external

partners.

If you have any questions regarding PLANKTON*NET, would like to contribute data, or have any suggestions for improvements, please contact the PLANKTON*NET co-ordinator: Alex Kraberg (Alexandra.Kraberg@awi.de) or the local site co-ordinators.

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Updates on the User-Friendly Guide to Harmful phytoplankton (in EU waters)

The Identification of harmful algal species (HABs) is often impeded by the large number of sources of information, on the disparate taxonomic groups. Although books and guides exist that aid in their identification, resources still need to be developed to provide relevant, easily accessible, and current information on HABs; electronic resources are a logical direction. Over the last four years, we have been developing an online guide to harmful

plankton at *The University of Liverpool* that is globally accessed by 1000's of users (www.liv.ac.uk/hab/intro.htm). For a detailed description of the HAB site and its sister site on planktonic ciliates, see Kraberg *et al.* [1], Kraberg & Montagnes [2], and Strueder-Kypke & Montagnes [3]. In general, these sites have as their centre, a series of "data-sheets" (one for each taxon), but they also includes sampling and fixation methods, references, and a

glossary. Furthermore, the entire sites can be downloaded or saved and printed as pdf files. Thus they provide an easily updated, "user-friendly" repository of information for scientific, non-scientific, technicians, and students.

After a brief hiatus, where we lacked funds, the *Liverpool* HAB site is now being developed, thanks to 10 months of support by the Esmée Fairbairn Foundation. One of the main goals of our present work involves