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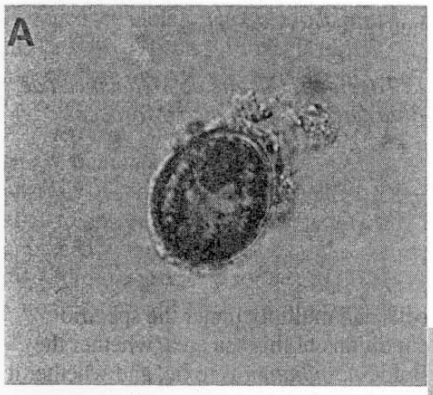
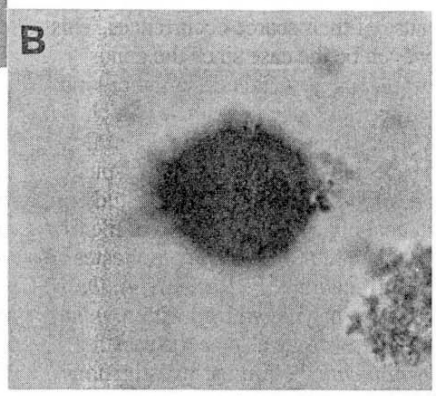
HARMFUL ALGAE NEWS

An IOC Newsletter on toxic algae and algal blooms No. 9

First living *Alexandrium minutum* resting cysts in Western Baltic

On a global scale, the frequency and intensity of toxic phytoplankton blooms seem to be on the rise, and there is also some evidence of geographical spreading of nuisance species[1]. In Europe, this has been suggested for the toxic dinoflagellate *Gymnodinium catenatum (p. 1,* HAN *No. 7)*. The PSP-producing *Alexandrium minutum*, first described from Alexandria Harbour, Egypt[2], has since been reported from South Australia[3], the Atlantic coast of North America[4], Spain and Portugal[5], Italy[6,7], Turkey[8], Ireland[9], France[10], and the Netherlands[11].





Living resting cysts of (A) Alexandrium minutum and (B) Gymnodinium catenatum, both isolated from Western Baltic sediments.

In France, since 1985, toxic blooms of *A. minutum* have occurred along the Brittany coast within small embayments or shallow estuaries, especially in the northwestern area. Each time, shellfish harvesting had to be prohibited as a consequence of excess toxicity levels in bivalves[12]. At present, the region represents the main site for toxic blooms of this species in Europe.

Resting cysts of *A. minutum* were first described in 1991 from surface sediments of Port River near Adelaide, South Australia[13] and has also been recorded since then along the Brittany coast of France[12]. It was suggested that blooms of *A. minutum* are primarily initiated from their benthic seed beds[14]. During a cyst survey in the Baltic Sea (Kiel Bight, Germany) in April 1993, several living cysts of *A. minutum* were found in the topmost centimeter of sediments. The cyst is circular in apical view (21-25 mm in diameter) and reniform in lateral view. The clear cyst wall is lightly covered with mucilage and a prominent orange-red accumulation body is present. This resting cyst is similar to the descriptions and figures of specimens from Australia[13] and France[12].

As specified for *G. catenatum (p. 1,* HAN *No. 7)*, the recent occurrence of *A. minutum* in coastal waters of the Netherlands may be related to increased water influx through the English Channel, transporting *A. minutum* cells from the French coast into the North Sea. Residual currents in the region and a massive salt water influx into the Baltic Sea in 1993 may have infected the Kiel Bight with *A. minutum* cysts. However, it is not yet sure whether this scenario is true, because resting cysts of *A. minutum* were not detected in sediments of the German Bight[15] nor the Kattegat area[16]. In contrast, it is quite possible that vegetative cells of *A. minutum* have been

(Cont'd on p. 2)

(Cont'd from p. 1, 'Western Baltic')

overlooked in the plankton of the region because of their scarce occurrences. This may even be the case since the genus *Alexandrium* now includes a rather long list of species, easy to confuse, which may lead to misclassification. Identification especially of the small, inconspicuous *A. minutum* requires careful study of the thecal plates. The variation of the first apical plate in *A. minutum* complicates the identification[3,6,12]. Recently, *A. ibericum* has been synonymized with *A. minutum*[4] and this may also be the case for *A. lusitanicum*[11]. Further investigations will be needed to ascertain whether its cysts can germinate and if vegetative cells can multiply under the specific conditions of this sea area, whether the Baltic *A. minutum* is toxic, and whether it is genetically distinct from other *A. minutum* populations.

In the study of harmful algae, there is an increasingly urgent need for correct identification of species. Cyst studies offer a valuable tool for an early warning on the presence and potential of toxic species in a given area and should be considered also in monitoring systems.

Stefan Nehring, Institut für Meereskunde an der Universität Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany.

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