**Winter bloom of *Skeletonema costatum* 2009**

**Do we know what is actually blooming?**

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*Skeletonema costatum* (Greville) Cleve is considered to be one of the most abundant diatom species of marine phytoplankton. Species of the genus *Skeletonema* are common in coastal, estuarine and marine environments worldwide, often forming dense blooms. *S. costatum* is characterized by cylindrical cells, with long tubular processes associated with a peripheral ring of fultoportules. The tubular processes run perpendicular to the valve and link to those of sibling valves to form permanent colonies of variable length.

Detailed morphological investigations together with new molecular insights revealed a high taxonomic and genetic diversity within the genus *Skeletonema*, and to this day there are more than 10 different new species described, which formerly were recognized as only one species: *S. costatum*. Those findings have raised the question which *Skeletonema,* are we counting as *costatum* and what are the methods for correct species identification?

The sampling was carried out during the winter bloom, in 2009, at two stations in the northern Adriatic Sea, where *Skeletonema sp*. largely dominated the phytoplankton community. Special attention was given to morphological examination by scanning electron microscopy. Our results get a first insight into the diversity of the genus *Skeletonema*, and show the importance of these details for ecological and taxonomical conclusions. For better understanding of the winter bloom properties both physico-chemical and microscopy data were combined.

Key words: northern Adriatic, diatoms, *Skeletonema costatum,* morphology, SEM, electron microscopy, taxonomy