

THE SUMMER PROLIFERATIONS OF RHIZOSOLENIA ALATA f. GRACILLIMA
IN THE COASTAL WATERS OF NORTH ADRIATIC

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Summary - The regular blooms of R. alata f. gracillima in the Gulf of Triest were examined.

Résumé - On a examiné les proliférations régulières de R. alata f. gracillima dans le Golfe de Triest.

In the last six years, with the exception of the year 1981, regular summer blooms of the diatom R.alata f. gracillima have been observed in the eastern part of the Gulf of Triest. The species has its maxima in July with densities of 300,000 to 500,000 cells/l, which make 50 to 80 % of the total phytoplankton density. However, chlorophylls values are below 1 µg/l, thus can be considered as low, regarding the values for other seasons.

Species diversity increases in July and a great number of the centricae flourish, some of them as Cerataulina pelagica and Leptocylindrus danicus being codominants. It is interesting that the most important phytoplankton group of this area: microflagellates are reduced in this period and represent only up to 30 % of the summer phytoplankton.

In 1982 the development of rhizosolenia started on the very beginning of July and after only 5 days its abundance became tenfold, with the growth constant of 0.66, what means that the whole population doubled within a day and a half. The cell volume of the species reduced progressively due to the quick cell divisions. On the starting of the bloom the mean cell volume (n = 20) was 11,295 µm³, whereas twenty days after, when the density reached its maximum, the mean cell volume came to less than a half of the initial one i.e. 5,298 µm³.

The appearance of rhizosolenia blooms was preceded by the elevation of the phosphates and nitrates concentrations in the seawater, due to increased discharge of alpine rivers. In the same time the salinity decreased and remained low until the end of the bloom. Low surface salinities (the four

years' mean 35.40 ± 1.04 ‰) and high water temperatures (the five years' mean 23.66 ± 0.14 °C), registered in July coincide with the proliferations of this species.

The phenomenon of Rhizosolenia alata f. gracillima is not new for the North Adriatic at all. As early as in 1921 Issel wrote about the exceptional "gracillima" blooms along the istrian coast that caused the discoloration of the water. He found it, however, in winter, when salinity decreased due to the heavy precipitation and the water temperature was the lowest, registered in that year. Our results show that the species comes only occasionally in the other parts of the year, while in summer it is the most prominent representative of the phytoplankton community.

We found besides, that the Lorenzen's grazing index, as a measure of zooplankton grazing on phytoplankton was pretty high in July (the month mean 0.8 ± 0.6) and in our net samples from July we found quite a number of zooplankters that could graze on R. alata f. gracillima: copepods, cladocers and protozoans from the genus Tintinnus.

References

- Issel, R., 1921. Le variazioni del plancton nelle acque di Rovigno e i problemi relativi al plancton adriatico.
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