

# The importance of *Nitzschia seriata* Clev. in the northern Adriatic phytoplankton

by

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## Introduction

The presence of these tiny diatoms in the North Adriatic is known for a long time already and some authors have indicated its local importance in the biomass of the autumn — winter phytoplankton [MÜLLER 1938, MARCHESONI 1954, PUCHER 1964]. It is known all the same that the genus *Nitzschia* has its part at the sea-bloom, called by the natives also «mare sporco». This element has been determined by the authors as different species [*Nitzschia longissima* Ralfs., *N. sigma* W.Sm., *N. insignis* Greg.] which are otherwise known from Adriatic, but we suppose the mass developing only for the species *N. seriata* Clev. as so are showing our continuing observations on our cruises described in my first report to this Assembly.

## Results

### 1. Distribution and quantity

On the added (Fig. 1) it is showed the quantitative distribution of this diatom in the upper layer [10 m] on the selected stations in North Adriatic and that only in two characteristic seasons that is the great winter maximum and the small late summer maximum.

On the whole this species is widespread in the phytoplankton without a rest from september to may, but its part in the months X., II., III., IV., V. is the same as of *Chaetoceras* - group, in the months VI., VII., VIII. it does not grow, in the months XI., XII., I., IX. completely dominates, said generally for the most part of the whole North Adriatic phytoplankton.

We are adding the table with the data of the numbers of the cells of *N. seriata* and the sums of all the other phytoplankton species in 1000 ml sample from 10 m depths for the months september and december at selected stations. The numbers in the table are given the thousands cells/1, the first number is for *N. seriata*, the number in the brackets is for the sum of all the other specimens of present species in the sample.

A great characteristic of the *N. seriata* bloom is also in the fact that it so to say — destroy the other phytoplankton and is also the zooplankton in such areas very poor.

The maximal absolute values [9.700.000 cells/1] of this diatoms far oversteps all the up to now known data about the quantity of North Adriatic phytoplankton which we can attribute to the fact that the phytoplankton has been collected by older authors with a net what could not give the real results, as the net after the first filtrated m<sup>3</sup> of water bloom does not filter any more because it is filled up with the mucose.

On the base of our own weigh, recalculations of the analyses of organic nitrogen and after indirect mathematical way [KETCHUM-REDFIELD 1949] we came to the correspondent results, shows in the time of the winter bloom at the moment of the caught samples the quantity of 140.000 tons dry ash free organic matter of that diatom in North Adriatic.

| Stat.N <sup>o</sup> | December  | September |
|---------------------|-----------|-----------|
| A2                  | 475/92/   | 321/8/    |
| A4                  | 1222/315/ | 856/14/   |
| B1                  | 319/110/  | —         |
| B2                  | 1409/323/ | 750/123/  |
| B3                  | 9700/250/ | 2200/200/ |
| C1                  | 1852/409/ | 195/95/   |
| C2                  | 2512/782/ | 2525/25/  |
| C3                  | 6300/500/ | 3100/17/  |
| D1                  | 540/300/  | 92/700/   |
| D2                  | 2050/270/ | 50/700/   |
| D3                  | 6380/380/ | 2900/100/ |
| E1                  | 710/305/  | 50/200/   |
| E2                  | 2500/500/ | 50/200/   |
| E3                  | 5880/320/ | 717/112/  |

**2. The part at the fertilisation of North Adriatic**

We are considering that diatom to be after its decay the main store for the reactivation of the nutritive salts respectively an important intermediate link.

The inundation waters of Po river bassin are carryng with a great stock of the mineral nutrients salts which are at the mass development of this diatom organically bind by it and at its decay sets them free capable to the sea water.

In the opposite example would the main part of those nutrient salts, which is absorbed on the terri-  
genous particles, sediment and desactivate itself.

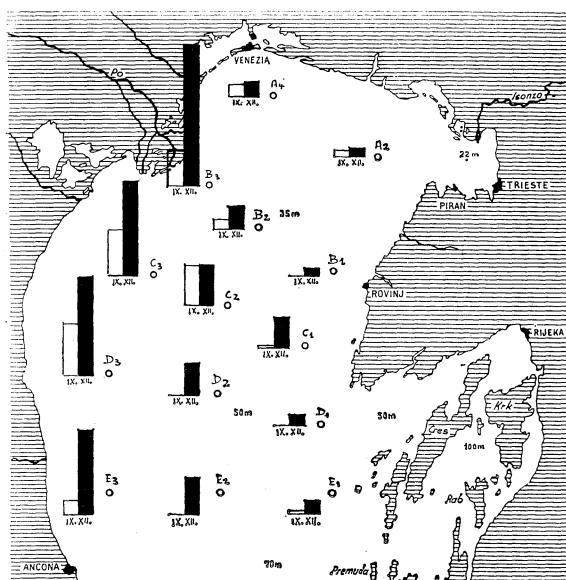


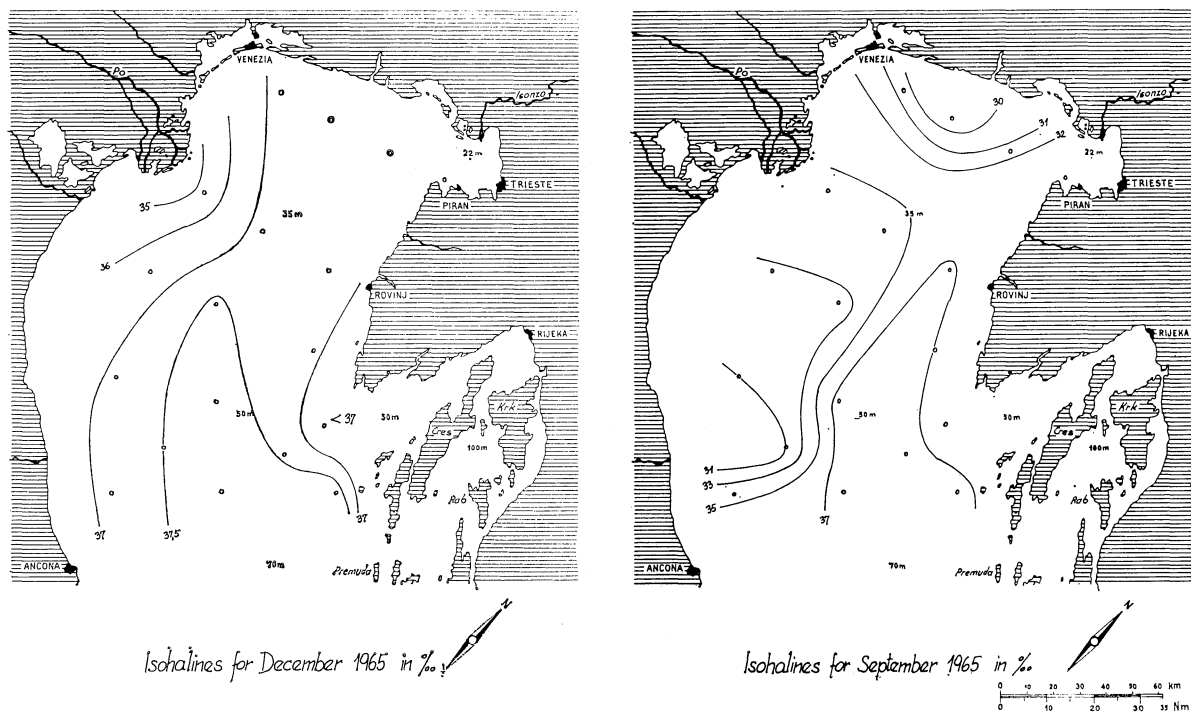
FIG.1.: QUANTITATIVE DISTRIBUTION OF NITZSCHIA SERIATA CLEVE, IN IX. AND XII. 1965

0 1 2 3 4  
x 2x10<sup>6</sup> cells/l

0 10 20 30 40 50 60 km  
0 10 20 30 40 50 km

### 3. The dependence of the fresh water inflow

This dependence is quite evident from the added (Fig. 2 and 3) (which shows the horizontal stratification of the surface salinity for months december and september) put on the Fig. 1. It shows clearly, that the quantity of *N. seriata* grows up with the declined gradient of the salinity. So is in North Adriatic a high abundance of *N. seriata* also a perfect indicator of the fresh water inflow from the Po-lowland.



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