

NANNOPHYTOPLANKTON CONTRIBUTION TO THE PRIMARY PRODUCTION  
AND CHLOROPHYLL A BIOMASS OF THE WEST ISTRIAN COASTAL WATERS

N. Smodlaka

"Rudjer Bošković" Institute, Center for Marine Research,  
52210 Rovinj, Yugoslavia

Summary

During 1977-1979 along the West Istrian Coast (Yugoslavia) investigations of phytoplankton primary production ( $C^{14}$ ) and biomass (chlorophyll a), as well as other hydrographic parameters, were performed. Contribution of the nannophytoplankton is presented and discussed.

Résumé

Dans la période de 1977-1979 nous avons étudié la production primaire ( $C^{14}$ ) et la biomasse (chlorophylle a) du phytoplancton et quelques paramètres hydrographiques le long de la côte occidentale de l'Istrie. La contribution du nanophytoplancton est présentée et discutée.

Introduction

The importance of the nannophytoplankton in the primary production of the Northern Adriatic was recognized earlier

(Kveder et al., 1971; Revelante and Gilmartin, 1976), but there were no data available on primary production or chlorophyll a biomass for the coastal waters on the east side of the Northern Adriatic, except for the Rovinj area. Investigations were done from Umag, in the north, to Pula in the south, of the Istrian Peninsula.

#### Material and methods

Primary production was measured by the  $C^{14}$  method, chlorophyll a fluorimetrically, while the nanrophytoplankton fraction was obtained by differentially filtrating seawater through No 25 T II (20  $\mu$ m) net disks and GF/C Whatman glass filters.

#### Results and discussions

Data collected during the three year period were statistically analysed. Total surface potential primary production (constant light), which is similar to "in situ", was between 0.5-31  $\mu$ g C h<sup>-1</sup> l<sup>-1</sup> while the mean nanrophytoplankton (< 20  $\mu$ m) contribution was 82  $\pm$  12%. It was similar to the chlorophyll a biomass. The range was 0.2-22.1  $\mu$ g chlorophyll a l<sup>-1</sup> with the mean nanrophytoplankton contribution of 76  $\pm$  13%.

Statistical correlation of the nanrophytoplankton contribution to the chlorophyll a biomass (percentage) vs. its contribution to the primary production (percentage) gave the equation of the straight line  $Y = 0.70 X + 18.5$  with correlation coefficient  $r = 0.66$  ( $n = 171$ ), and confidence limit  $S_{xy} = 10.05$ .

Percentage of the nanrophytoplankton contribution was independent of both the total chlorophyll a biomass and the total primary production.

It could be said that nanrophytoplankton dominate the primary production as well as chlorophyll a biomass along the West Istrian coast. In general, its contribution to the primary production is somewhat higher. Nutrient loads (from North Italian rivers, or from local sources like wastes) could alter the micro : nanno relationship, as was occasionally observed in Pula harbour, and at some stations in 1977.

#### References

- Kveder, S., Revelante, N., Smodlaka, N., and Škrivanić, A.,  
1971 - Some Characteristics of Phytoplankton and Phytoplankton Productivity in the Northern Adriatic, *Thalassia Jugosl.*, 7 : 151-158.
- Revelante, N., and Gilmartin, M., 1976 - The Effect of Po River Discharge on Phytoplankton Dynamics in the Northern Adriatic Sea, *Mar. Biol.*, 34 : 259-271.

Smoplaka, N.

"Nannophytoplankton contribution to the primary production and chlorophyll a biomass of the West Istrian coastal waters"

Paper presented by N. Smoplaka (Yugoslavia)

Discussion

Lj. Musani: Have you measured the concentration of dissolved organic matter in this area?

N. Smoplaka: No, we have not.