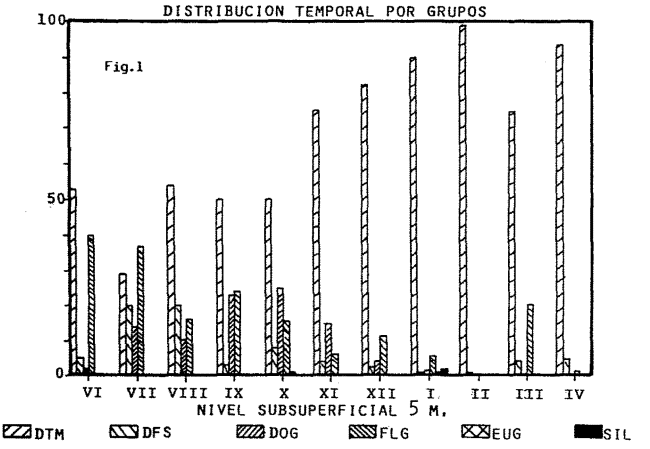
Phytoplankton of El Campello Coast (Alicante, Spain) : seasonal distribution

C. GOMIS , J.-A. ALCOBER and M.-J. SANZ

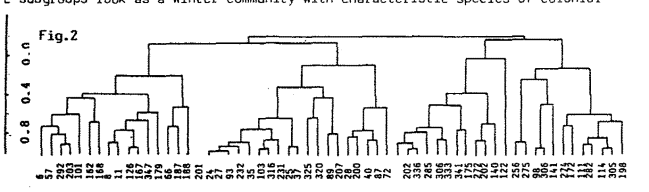
Departament de Biologia Vegetal, U.D. Botanica, Facultat Biologicas, Universitat de Valencia. C/Dr Moliner 50, Burjassot, 46100 Valencia (Spain)

There are few studies on Alicante coast phytoplankton distribution, so we achieved the seasonal phytoplankton study of El Campello coast where we sampled during one year (monthly) between April 1987 and March 1988 at 0, 5 and 15 m of depth. We also collected samples of El Campello sport harbour during the same period of time, but every 15 days (at only one depth). Sea water samples, collected with bottles, were analysed with counting method (SOURNIA, 1978).

The diatoms were dominant all the year, their amount being always greater than 50%, except in July (Figure 1), while they arose until 90% in winter months. Dinoflagellates and Coccolitophorids were the next representative groups with maximum values during summer and autumn respectively. Rarely they arose the 15% of the total amount. Furthermore there were a few groups less numerous i.e. : Silicoflagellates (Dictyocha, representative genus) especially in winter, a few Euglenidae species (mainly Eutreptiella sp.) and some Cyanophyceae species (with a higher biomass and diversity in harbour station).



With the data from counting samples we made a correlation matrix and UPGMA clusters (in SNEATH, 1973). This statistical analysis showed similar association groups for every point (both points) and every depth (Figure 2). So, we can see 4 main groups that should be correlated with a seasonal factor, and 9 subgroups at 0.4 association level. The A and B subgroups look as a spring community, with very characteristic species : Amphora coffaeiformis (8), A. augustata (6), A. laevis (11), Nitzschia longissima f. genuina and reversa (167, 168), N. fraudulenta (162), Leptocylindricus danicus (101) and Rhizosolenia imbricata (203). The C, D and E subgroups look as a winter community with characteristic species of colonial



Diatoms of winter bloom, i.e. : Asterionella japonica (24), A. mediterranea (25), Chaetoceros brevis (37), Ch. curvisetum (40), Bacteriastrum hyalinum (27), B. mediterraneum (28), Thalassionema nitzschioides (232), Ceratulina bergonii (35). The F group is composed of summer and autumn species, mainly Coccolitophorids (Syracosphaera pulchra and Rabdosphaera clavigera f. stylifer (336, 333), Dinoflagellates (i.e. : Oxitum varibile (285) and Euglenophyta Euptreptiella marina (341). Finally, the groups G, H and I look as a summer community with Diatoms (i.e. : Hemialus hauckii (98) and Rhizosolenia alata (198), and small Dinoflagellates (i.e. : Oxytoxum gladiolus (282), Prorocentrum lima (256), Gyrodinium fusiformis (275) and Scrippsiella trochoidea (305).

All these data show El Campello coast as a oligotrophic environment (cellular concentrations often up to 50 cells/ml) with characteristic seasonal communities and Shannon-Weaver diversity generally above 4 bits.

Our results are very similar to Mediterranean seasonal cycle proposed by different authors (ESTRADA, 1979, 1982; MARGALEFF, 1969, 1982; RODRIGUEZ, 1982).

REFERENCES

ESTRADA, M. (1979).- Observaciones sobre la hetereogeneidad del fitoplancton en una zona costera de el mar Catalan. Inv. Pesq., 43 (3): 663-666.
ESTRADA, M. (1982).- Ciclo anual del fitoplancton en la zona costera frente a Punta Endata (Golfo de Vizaya). Inv. Pesq., 33 : 345-380.
MARGALEF, R. (1969).- Composicion especifica del fitoplancton de la costa catalano-levantina (Mediterraneo occidental) en 1962-1967.
MARGALEF, R. (1982).- Ecologia. Ed. Omega.
MARGALEF, R. (1989).- El Mediterraneo Occidental. Barna.Ed.Omega.
RODRIGUEZ, J. (1982).- Oceanografia de el mar Mediterraneo. Madrid. Ed. Piramide.
SNEATH, P. (1973).- Numerical Taxonomy. W.H. Freeman . San Francisco.
SOURNIA, A. (1978).- Phytoplankton Manual. UNESCO. Monogr. Oceanogr. Methodol.