

DISTRIBUTION OF CALCAREOUS NANNOPLANKTON SPECIES IN MEDITERRANEAN SEA SURFACE WATER

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This note answers requests for a species list of the Mediterranean Sea calcareous nannoplankton. I studied 15 surface samples from the Mediterranean Sea (Figure 1), which were collected in July 1985, during Cruise Gx of the Indonesian-Dutch Snellius-II Expedition, the homeward voyage of the M.S. "Tyro" from Indonesia to The Netherlands. The samples were examined with a SEM, and 59 taxa could be identified.

The Mediterranean Sea nannoflora is characterized by an increased relative holococcolithophorid frequency. Compared to the other parts of Cruise Gx, they also show an increase in number of species (30 of the 59 taxa are holococcolithophorids) and in absolute abundance. I am preparing a paper on holococcolithophorids, in which the taxonomy of these species is treated, and descriptions of species, new combinations, new species and new genera are given. Also the heterococcolithophorid species will be dealt with in future publications. Since it will take some time to publish all manuscripts, the present note gives a list of the species that occur in the Mediterranean Sea surface samples (Table 1).

Some species were not differentiated from each other in the analysis, like Corisphaera gracilis KAMPTNER / Corisphaera type A, and Helladosphaera cornifera (SCHILLER) KAMPTNER / Corisphaera type B. Some other species show a gradual morphological variation; Gephyrocapsa ericsonii McINTYRE and BE, G. ornata HEIMDAL and G. protohuxleyi McINTYRE have not been differentiated, and therefore are listed together. They will be dealt with in a future publication.

For every species in Table 1 reference is made to published SEM- or TEM micrographs on which the species can easily be identified, and not primarily to the original description, or the description of a new combination.

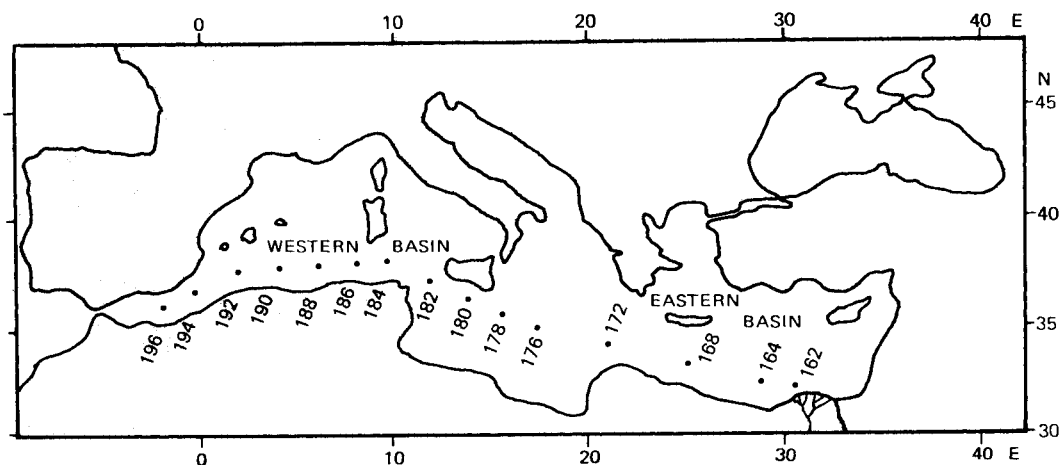


Figure 1. Sampling stations of Cruise Gx in the Mediterranean Sea.

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Table 1. Distribution of calcareous nannoplankton in Mediterranean Sea surface water.

SPECIES	STATIONS														REFERENCES	
	196	194	192	190	188	186	184	182	180	178	176	172	168	164		162
<i>Emiliana huxleyi</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hallegraeff 1984, figs.8-12
<i>Umbellosphaera tenuis</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hallegraeff 1984, fig.30
<i>Rhabdosphaera stylifer</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hallegraeff 1984, fig.33
<i>Syracosphaera pulchra</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Gaarder & Heimdal 1977, pl.1
<i>Caneosphaera halldalii</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Gaarder & Heimdal 1977, pl.6.
<i>Sphaerocalyptra quadridentata</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Borsetti & Cati 1972, pl.41, fig.1
<i>Calciosolenia murrayi</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Manton & Oates 1985, pl.4
<i>Rhabdosphaera longistylis</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Okada & McIntyre 1977, pl.5, fig.6
<i>Corisphaera gracilis</i> / <i>Corisphaera type A</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	H & G 1980, pl.1, fig.6/Borsetti and Cati 1972, pl.49, fig.2b; Kleijne, in prep.
<i>Syracolithus quadriperforatus</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Norris 1985, figs.42,51-52
<i>Gephyrocapsa oceanica</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Okada & McIntyre 1977, pl.3, fig.5
<i>Zygosphaera bannockii</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Norris 1985, fig.56
<i>Gephyrocapsa caribbeanica</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	McIntyre & Bé 1967, pl.9, fig.A
<i>Syracosphaera epigrosa</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Okada & McIntyre 1977, pl.7, figs.5-6
<i>Syracosphaera histrica</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Gaarder & Heimdal 1977, pl.2
<i>Zygosphaera hellenica</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Norris 1985, fig.57
<i>Caneosphaera molischii</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Heimdal & Gaarder 1981, pl.3
<i>Calyptrorpha oblonga</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Reid 1980, pl.6, figs.9-10
<i>Ceratolithus cristatus</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Borsetti & Cati 1976, pl.17, figs. 5-8
<i>Syracosphaera nodosa</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Heimdal & Gaarder 1981, pl.10, fig.51
<i>Poricalyptra isselii</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	B & C 1976, pl.16, figs.1-3; Kleijne, in prep.
<i>Zygosphaera marsilii</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Heimdal & Gaarder 1980, pl.3, figs.22-23
<i>Helladosphaera cornifera</i> / <i>Corisphaera type B</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Norris 1985, fig.46/Gaarder 1962, pl.10; Kleijne, in prep.
<i>Coronosphaera binodata</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Gaarder & Heimdal 1977, pl.5, figs.27-32
<i>Neosphaera coccolithomorpha</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Okada & McIntyre 1977, pl.6, figs.1-2
<i>Discosphaera tubifera</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hallegraeff 1984, figs.34-36
<i>Calyptrorpha sphaeroidea</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Borsetti & Cati 1976, pl.12, figs.6-7
<i>Alisphaera unicornis</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hallegraeff 1984, fig.41
<i>Calciopappus caudatus</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Manton & Oates 1985, pls.7-8

Table 1 continued.

SPECIES	STATIONS													REFERENCES		
	196	194	192	190	188	186	184	182	180	178	176	172	168		164	162
<i>Gephyrocapsa ericsonii</i> / <i>G. ornata</i> / <i>G. protohuxleyi</i>	*	*	*	*	*	*								*		McIntyre & Bé 1967, pl.10/Heimdal 1973, figs.1-5/H & G 1981, pl.4, figs.20-21
<i>Umbellosphaera irregularis</i>	*							*					*			Reid 1980, pl.4, figs.4-5.
<i>Syracolithus catilliferus</i>	*	*	*	*	*							*				Borsetti & Cati 1972, pl.40, fig.2b
<i>Periphyllophora mirabilis</i>	*			*												Borsetti & Cati 1972, pl.51, fig.1
<i>Umbellosphaera corolla</i>	*			*												Heimdal & Gaarder 1981, pl.11, figs. 52-57
<i>Dactylethra pirus</i>	*	*														Norris 1985, figs.38-39
<i>Anthosphaera fragaria</i>	*															Gaarder 1962, pl.11
<i>Calyptrolithophora papillifera</i>	*															Heimdal & Gaarder 1980, pl.1, figs.2-3
<i>Crystallolithus rigidus</i>	*															Heimdal & Gaarder 1980, pl.2, figs.11-12
<i>Syracosphaera pirus</i>	*															Gaarder & Heimdal 1977, pl.3
<i>Syracosphaera</i> type E	*															Heimdal & Gaarder 1981, pl.13, fig.64
<i>Umbilicosphaera sibogae foliosa</i>	*															Okada & McIntyre 1977, pl.4, fig.1
<i>Calyptriosphaera dentata</i>			*		*								*	*		O & M 1977, pl.11, fig.6; Kleijne, in prep.
<i>Calicasphaera blokii</i>			*											*		Kleijne, in prep.
<i>Anthosphaera periperforata</i>			*	*	*				*				*			Kleijne, in prep.
<i>Acanthoica acanthifera</i>			*													Reid 1980, pl.3, figs.8-9
<i>Helladosphaera pienaarii</i>				*									*			Norris 1985, figs.47
<i>Calyptrolithina wettsteinii</i>				*	*											Halldal & Markali 1955, pl.5
<i>Homozygosphaera triarcha</i>				*	*											Borsetti & Cati 1972, pl.50, fig.2
<i>Corisphaera strigilis</i>				*												Heimdal & Gaarder 1980, pl.1, fig.8
<i>Syracolithus</i> type B				*												Norris 1985, fig.29; Kleijne, in prep.
<i>Syracosphaera</i> cf. <i>nana</i>				*												Heimdal & Gaarder 1981, pl.8, fig.42
<i>Syracosphaera confusa</i>					*	*			*	*		*	*	*		Kleijne, in prep.
<i>Calyptrolithophora hasleana</i>					*											Heimdal & Gaarder 1980, pl.1, fig.1
<i>Ophiaster</i> spec.								*	*							Manton & Oates 1983, pls.1-6
<i>Alisphaera capulata</i>								*								Heimdal & Gaarder 1981, pl.1, fig.4
<i>Gliscolithus amitakarenae</i>												*				Norris 1985, figs.40,42
<i>Homozygosphaera arethusae</i>												*	*			Borsetti & Cati 1972, pl.48, fig.3
<i>Syracolithus bistratus</i>												*				Kleijne, in prep.
<i>Calicasphaera diconstricta</i>												*				Kleijne, in prep.