XENOPHYOPHORES FROM THE FRENCH EXPEDITIONS "INCAL" AND "BIOVEMA" IN THE ATLANTIC OCEAN

by

Ole Secher Tendal

Zoological Laboratory, Universitetsparken 15, 2100 Copenhagen ø.

Résumé

Deux espèces de Xénophyophores (Rhizopodea, Protozoa) : *Cerelasma massa* Tendal 1972, et *Stannophyllum globigerinum* Haeckel 1889, ont été récoltées lors des expéditions françaises INCAL et BIOVEMA dans l'Atlantique. Ces découvertes apportent un important complément d'information à la connaissance, jusqu'à présent limitée, des Xénophyophores de l'Atlantique, en étendant de façon significative la distribution géographique au niveau d'un ordre.

Introduction

Xenophyophores are giant marine protozoans, placed in their own subclass within the class Rhizopodea and apparently forming a well-defined group, presumably related to the foraminifera. Mainly abyssal in distribution, they have been recorded in many geographically widely scattered areas (Tendal, 1972, 1975; Tendal and Lewis, 1978).

Xenophyophores have been very poorly represented in expedition material from the Atlantic Ocean although deep-sea collecting in that area has been no less intensive than in the other two large oceans. The common characteristics of accessible samples are that the specimens are few, small, fragile and often do not give any impression whatsoever of being an entire animal or part of one. Thus, two probable reasons for the scarcity of Atlantic records are that the specimens were usually severely damaged during the sampling or they were rejected because of their resemblance to inorganic concretions of foraminifer tests or mineral grains.

The material collected during the French expeditions "INCAL" in the North-East Atlantic in 1976 and "BIOVEMA" in the Central Atlantic in 1977 comprises two previously described species the new records of which imply an essential revision of the zoogeography of the whole subclass Xenophyophoria.

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The material

Order PSAMMINIDA
Family CERELASMIDAE
Genus *CERELASMA* Haeckel, 1889

CERELASMA MASSA Tendal, 1972

INCAL II. Stat. 2. July 81, 1976. Biscay abyssal plain. 48°25'5 N, 15°10'7W. 4823m. Trawl. Numerous fragments.

INCAL II. Stat. 2. August 2, 1976. Biscay abyssal plain. 48°18'9N, 15°14'4W. 4829m. Epibenthic dredge. Fragments.

INCAL II. Stat. 3. August 10, 1976. Biscay abyssal plain. 47°30'9 N, 9»36'9W. 4262-4240m. Trawl. Several fragments.

Description

Because of extreme fragmentation, the coarser details of the morphology cannot be discerned. However, a single, freshly caught specimen reached the sieve almost intact. It is described as having been a blackish, spongy ball, about 25mm in diameter (Dr. P. Bouchet, personal communication).

The body seems to have been composed of anastomosing branches which reached a diameter of at least 2.5mm with meshes in between them reaching at least 0.8mm. The colour is dark brown. The consistency is doughy and rather soft.

The granellare branches are up to about 75µm in diameter. Granellae are numerous and up to 5µm in length. Nuclei are spherical and measure :3-5µm in diameter.

Stercomare is rather irregular in form and up to 550µm in diameter. Xanthosomes were not found.

There are no xenophyae.

Remarks

A direct comparison of the material with fragments and specimens of *Cerelasma massa* confirms the identification. Some discrepancies should, however, be pointed out, because they may prove to be of taxonomic importance when more samples are collected. Most conspicuous is the fragility of the INCAL material which seems to be caused by a relatively weak development of cement and by the large diameter of the stercomare masses. Other points of difference between this material and previously known specimens are the larger diameter of granellare and the closer contact between some strings of plasma and some stercomare masses.

Because no intact material is preserved and only one short observation was made of a single complete specimen before it fragmented, photographs which may show *Cerelasma massa* on the bottom are of particular interest. One published (Thiel 1973, p. 42; 1975, p. 584) and several unpublished photographs taken by the "Meteor" expedition at 5255m on the Iberian abyssal plain (St. 56. 1968. 40°05'N, 12"20'W) show objects 5-7cm in diameter. These are rather similar to the structures shown on photographs from hadal depths in the

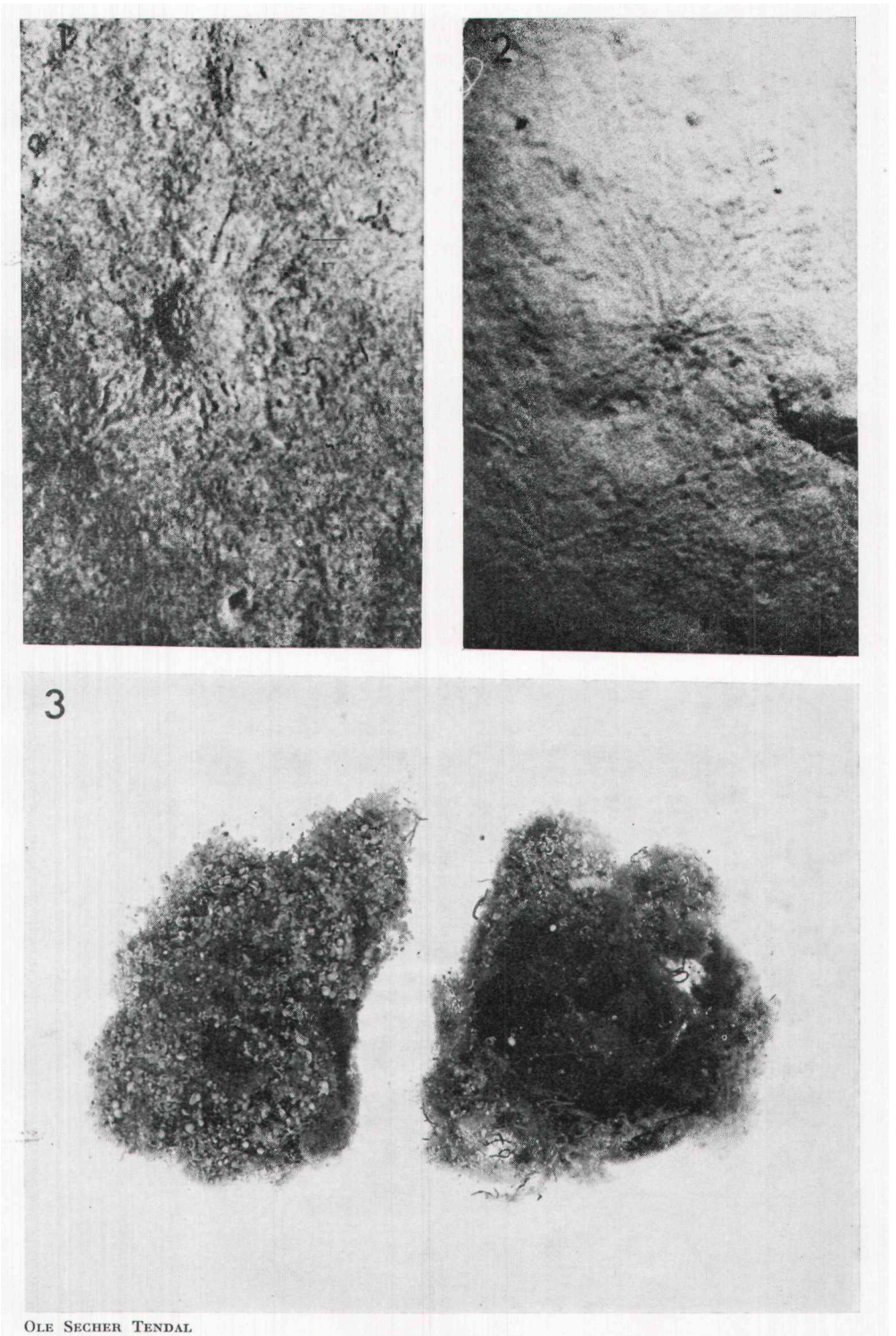

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PLATE I

1 and 2: supposed specimens of a *Cerelasma* sp. at 5255m on the Iberian abyssal plain. The central body seems to measure 5-7cm in diameter. "Meteor", st. 56. 1968.

3: *Stannophyllum globigerinum* Haeckel, 1889. BIOVEMA, stat. A. 1977. Central Atlantic at 5100m. Slightly enlarged.

Southwest Pacific and regarded as *Psammetta* (2-5cm in diameter) and *Cerelasma* (4-5cm in diameter) (Lemche *et al.* 1976, p. 269). There is even greater similarity to objects seen on photographs of a similar bottom type at abyssal depths in the Central East Pacific (Ewing and Davis 1967, p. 280, 281), although these are stated to have a diameter of 15cm.

The supposed specimens of *Cerelasma* on the photographs from the Iberian abyssal plain (Plate I, 1,2) are lumpy, more or less oblong, and rounded, with a smooth or somewhat rough surface. They are surrounded by a starlike figure that comprises what look like numerous narrow furrows, up to 10cm long, in the sediment surface. In fact, all known specimens of *Cerelasma massa* have a rough, meandrous surface pattern (Tendal 1972, pl. 8). However, the reason why some of the specimens on the photographs look smooth may be that they are covered by a thin sediment layer. Both this sediment layer and the starshaped pattern around the organism can be related to the feeding mechanism and especially to pseudopod activity (Tendal l.c., p. 78; 1979, p. 15).

Order STANNOMIDA

Family STANNOMIDAE

Genus *STANNOPHYLLUM HAECKEL,* 1889

STANNOPHYLLUM GLOBIGERINUM Haeckel, 1889

BIOVEMA. Stat. A. November 13, 1977. Central Atlantic. 10°58' N, 45°14'W. 5100m. Trawl. 8 specimens.

BIOVEMA. Stat. A. November 14, 1977. Central Atlantic. 11°00' N, 45°15' W. 5073m. Trawl. 1 specimen.

BIOVEMA. Stat. B. November 18, 1977. Central Atlantic. 10°46' N, 42°40' W. 5100m. Trawl. 1 specimen.

Description

The ten specimens are equal size (Plate I, 3) about 30 x 20mm, the largest measuring 38 x 42mm. Except for this rather moderate size, they conform closely in all respects to the diagnosis of the species as given by Tendal (1972).

Zoogeography

The present material demonstrates the cosmopolitan distribution of the genera *Cerelasma* and *Stannophyllum* both of which were already known to be widely distributed in the Indo-Pacific.

There were only a few records of C. *massa* from off East Africa, while S. *globigerinum* was known from a dozen localities scattered around the equator from West America to East Africa. The new finds lie at approximately the same depth as the previous ones, only a few hundred meters shallower and deeper for *C. massa* and S. *globigerinum,* respectively.

At a higher taxonomic level the new records are of importance because they establish the presence in the Atlantic of the two families Cerelasmidae and Stannomidae and of the order Stannomida.

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Summary

Two species of xenophyophores (Rhizopodea, Protozoa), viz. *Cerelasma massa* Tendal, 1972, and *Stannophyllum globigerinum* Haeckel, 1889, have been collected by the French expeditions INCAL and BIOVEMA in the Atlantic. These records represent an important addition to the very limited knowledge of the Atlantic xenophyophore fauna and they significantly extend the previously known distribution of the subclass Xenophyophoria at levels from species to order.

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