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FIRST RECORD OF THE SCYPHOMEDUSA *DEEPSTARIA ENIGMATICA*

RUSSELL, 1967, FROM THE MID NORTH ATLANTIC OCEAN¹⁾

(COELENTERATA, SCYPHOZOA)

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ABSTRACT

A description is given of a specimen of *Deepstaria enigmatica* Russell, 1967, caught in a haul made with the Rectangular midwater trawl RMT 1+8 at 24°52.0' N 29°59.5' W during the Amsterdam Mid North Atlantic Plankton Expedition 1980. The specimen, which was damaged during capture, is the third recorded. It is compared with the descriptions of two previously recorded specimens from the Pacific Ocean and the Gulf of Mexico.

INTRODUCTION

In the course of the sampling programme of the Amsterdam Mid North Atlantic Expedition on May 1st, 1980, a remarkable scyphozoan, *Deepstaria enigmatica* Russell, 1967, was collected with the Rectangular midwater trawl RMT 1+8, at station 26, depth 510-1090 m, 10.04-12.04 hrs zo-

nal time, 24°52.0' N 29°59.5' W (further details cf. Van der Spoel, 1981).

This unique scyphozoan has originally been described from the California area: during Dive 159 of the U.S. Research Submersible "Deepstar 4000" a specimen was taken at a depth of 723 m over the San Diego Trough. It was incomplete, being without the central stomach parts, but quite distinct from any known Scyphozoan in its unique gastrovascular canal system in the shape of a uniform network, and the unusual form of the gonads.

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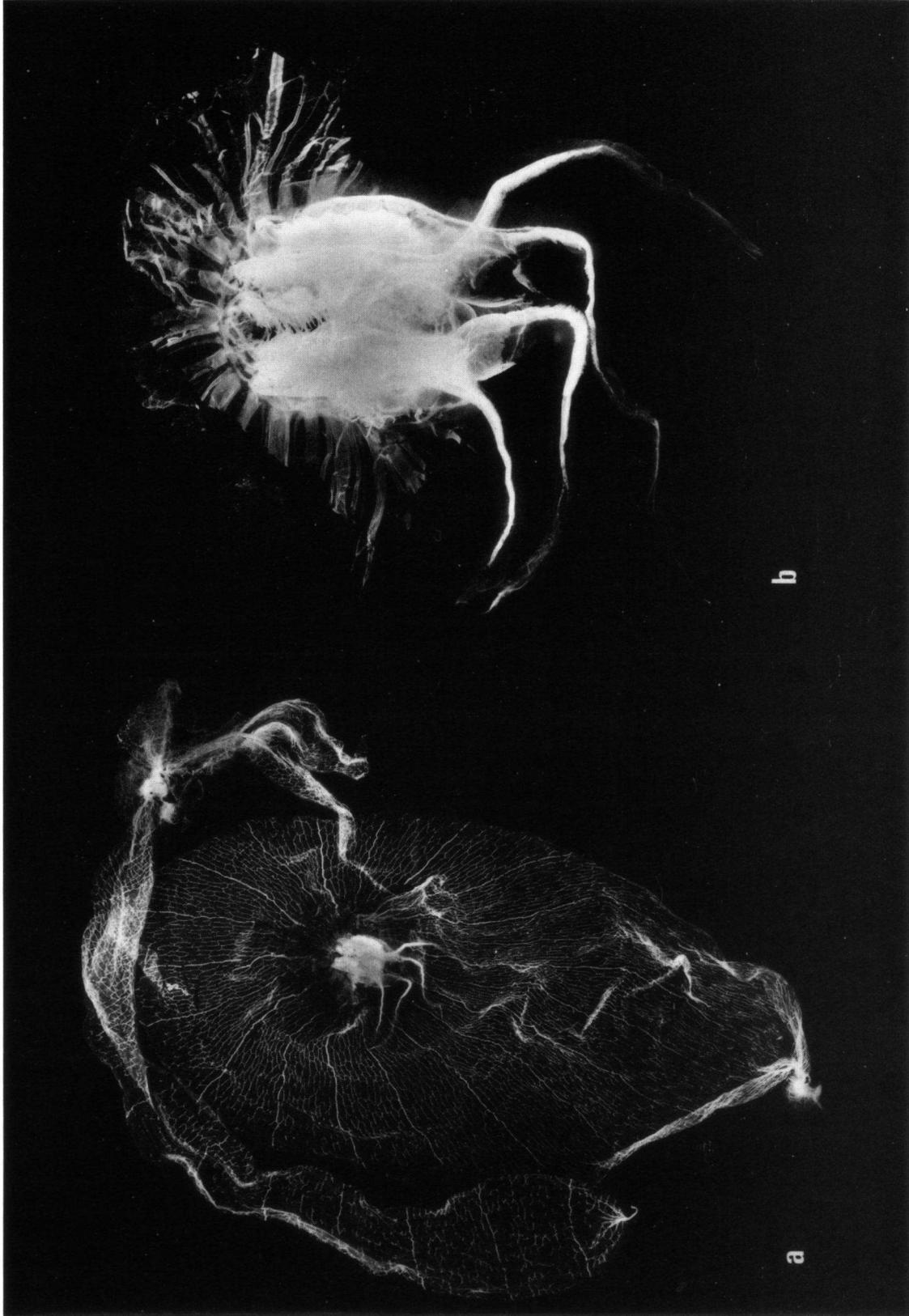


Fig. 1a. *Deepstaria enigmatica* Russell, 1967 from the Mid North Atlantic; b. manubrium.

Some years later *Deepstaria* was reported by Phillips (1973) from the Gulf of Mexico; during a sampling programme conducted by the Department of Oceanography, Texas A & M University, a specimen was taken in a 10 ft Isaac-Kidd mid-water trawl in the Yucatan Basin, at 19°58' N 85°14' W. Because no closing device was used, the depth of the capture could not be determined. The specimen, although badly torn, was identified as a female *Deepstaria enigmata*.

DESCRIPTION

The present specimen is in a fairly bad condition: part of the umbrella margin has been torn and portions of the umbrella are distorted. The central stomach region with the oral arms broke away from the subumbrella during preservation, but was still attached at the time of capture. The whole medusa had a purple tinge when freshly caught. After preservation in formalin 2% + seawater the canal system has a white-yellowish tinge and the umbrella is colourless.

When spread-out, exumbrellar surface upwards, it measures 43 cm in diameter (Fig. 1a). The mesogloea is solid, but uniformly thin, about 0.5 cm in thickness.

The gastrovascular canal system has the characteristic pattern described by Russell (1967). The meshes of the network are elongated radially and their size is irregular. The whole network is distributed evenly over the umbrella. About 20 major, straight canals, radiating from the base of the stomach and leading to the periphery can be recognized (Fig. 1a). At their base these canals are broad (Fig. 1b), giving off branches of varying thickness and narrowing towards the periphery.

Although part of the umbrella margin was stained with H.E. it was not obvious, whether there was a coronal muscle in the umbrella margin. The canal system at the margin leads into what resembles a ring canal, although there are dead-ending radial canals at some places (Fig. 2). No marginal tentacles or rhopalia could be found.

The morphology of the manubrium up till now was not well known, since only a photograph

made by the U.S. Research Submersible "Deepstar 4000" was available (cf. Russell, 1967: pl. I 4) (this part of the specimen was apparently lost shortly afterwards). In the present specimen the manubrium was still attached in situ (cf. Fig. 1b). It consists of a central stomach portion and extends distally into four elongated oral arms. The stomach is about 3 cm in diameter, the height is about 3.5 cm. The proximal part of the wall is covered with a fragile tissue with many gastric cirri; the distal part bears no cirri (Fig. 3). The cirri are about 2-6 mm in length and they contain many nematocysts of one kind only: microbasic euryteles 20-22 μ m long, and 9-11 μ m wide; these data conform closely with those given by Russell (1967). The oral arms gradually taper towards their ends; they are about 6 cm long and at their base they have a diameter of 0.6-0.8 cm. In cross-section the arms show a deep longitudinal groove, running along the whole length of the arm.

The colour in preservation of the gastrodermis and the longitudinal-groove tissue is lemon; the gastric cirri are white-yellowish.

DISCUSSION

No complete specimen has been collected so far. In all three specimens the bell margin is damaged, so it is difficult to assess, whether the medusa has any marginal tentacles and rhopalia. The present specimen, except for its lack of gonads, is identical to, although slightly smaller than, the medusa described by Russell (1967). Maybe our specimen represents a juvenile stage. There are slight discrepancies with Russell's (l.c.) description, such as the clear occurrence of major canals and the indistinct coronal muscle.

The remarkable network of the gastrovascular canal system and the probable absence of marginal tentacles bear some resemblance to descriptions of the viviparous *Stygiomedusa fabulosa* Russell, 1959, especially to the abnormal young medusae it produces (cf. Russell & Rees, 1960: 313 & Pl. IV). Both species may be related, but this remains obscure.

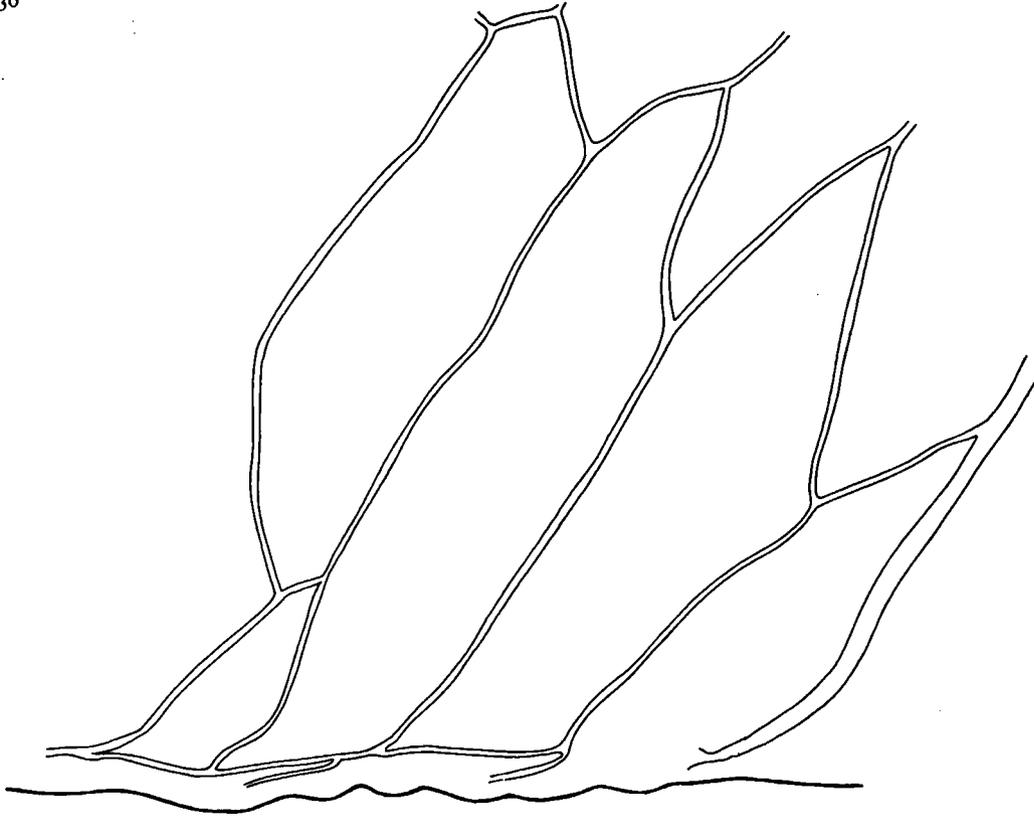


Fig. 2. Detail of the peripheral canal system of *Deepstaria enigmatica* Russell, 1967.

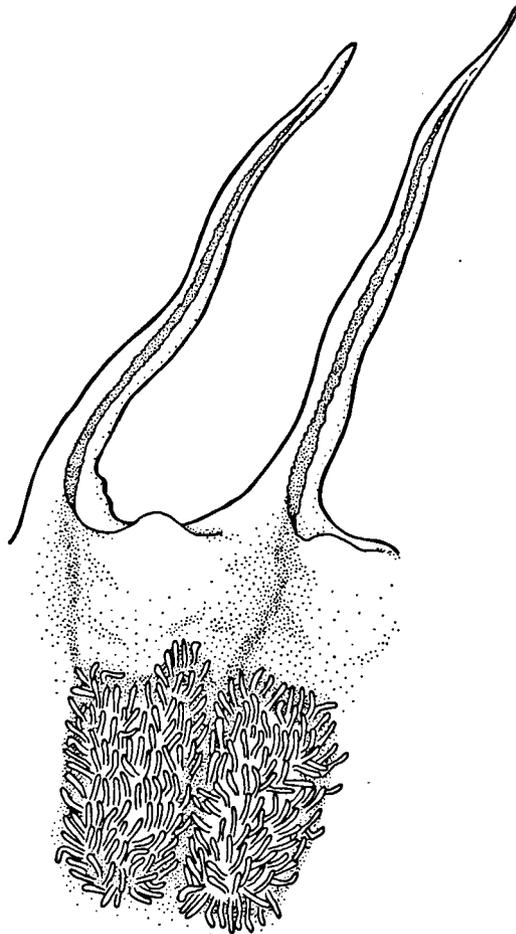


Fig. 3. Detail of the manubrium with gastric cirri at the base of the grooved oral arms.

Deepstaria enigmatica probably is a rare medusa. The three specimens were all collected in the last 15 years. Because the medusa has a large size this phenomenon could be due to increased use of larger trawls during the last decades. The umbrella fragments easily; so it is possible that parts of the medusa have already been collected by other expeditions. A thorough investigation of the residues of these collections might yield further material.

We agree with Phillips (1973) that it is likely, that *Deepstaria enigmatica* has a typical midwater distribution in tropical and subtropical waters of all oceans (Fig. 4).

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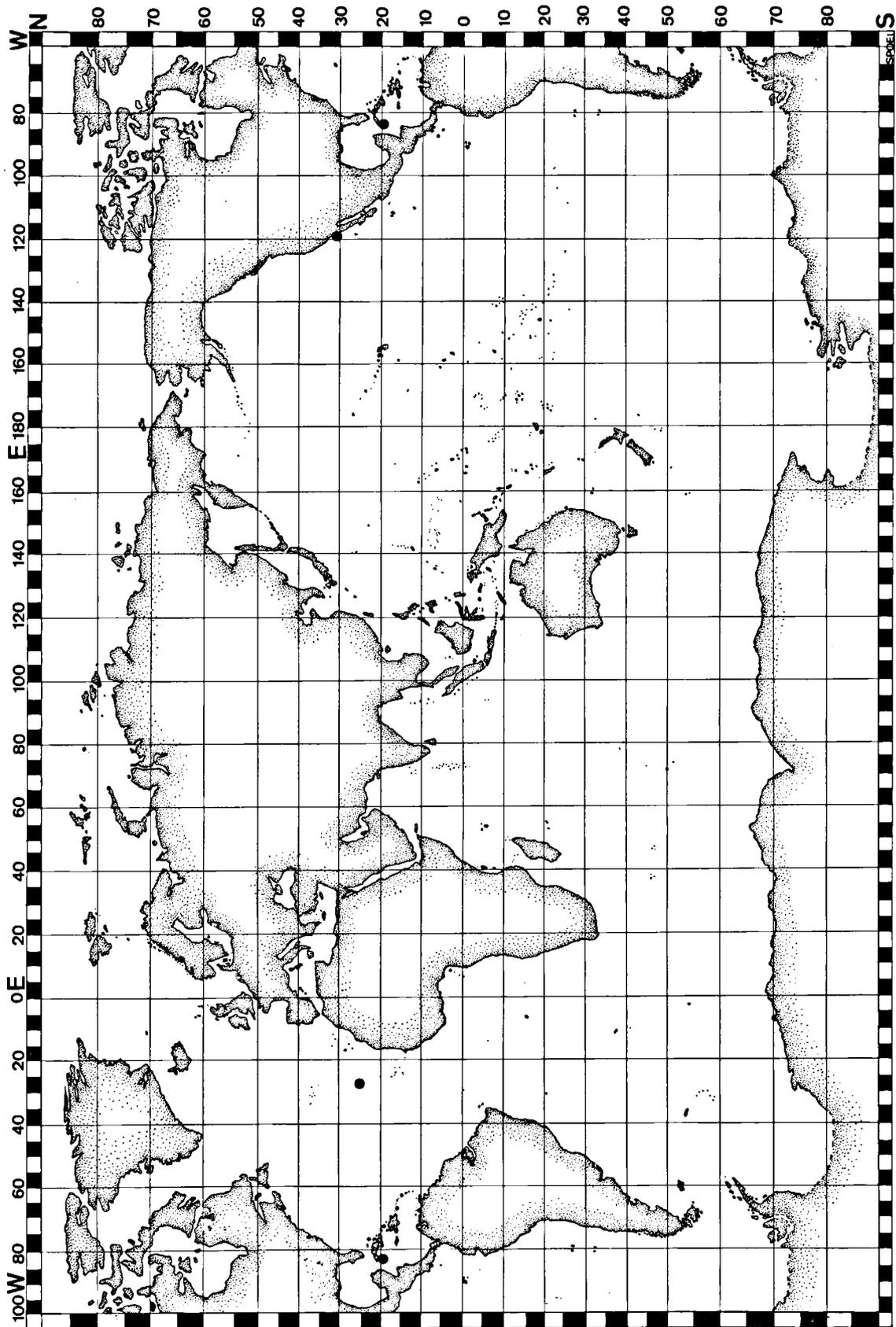


Fig. 4. Known distribution of *Deepstaria enigmatica*.