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SOME THECATE HYDROIDS ASSOCIATED WITH POSIDONIA OCEANICA (L.) DELILE MEADOWS IN THE EGYPTIAN MEDITERRANEAN WATERS

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ABSTRACT

Seven thecate hydroids were registered as epiphytes on ***Posidonia*** *leaves in the Egyptian Mediterranean waters. These comprise:* ***Clytia hemisphaerica*** *(Linnaeus),* ***Obelia geniculata*** *(Linnaeus),* ***Dynamena disticha*** *(Bosc),* ***Sertularia distans*** *Lamoroux,* ***Aglaophenaia lophocarpa*** *Allman,* ***Kirchenpaaueria pinnata*** *(Linnaeus) and* ***Antennella secundaria*** *(Gmelin).*

For depth distribution, two zones shallow and deep were distinguised. Each zone was characterized by its own species. In the mean time a few species showed wide depth distribution. The colonization of the thecate hydroids takes place on the edges of ***Posidonia*** *leaves. The widespread adoption of asexual reproduction by stolonization and the usual topographical separation between* ***Posidonia*** *and hard substrata have favoured the isolation of hydroid populations inhabiting* ***Posidonia*** *leaves.*

INTRODUCTION

Philbert (1935) was the first to carry out a specific study on the epiphytic hydroids, giving a detailed description of stolon formation in three species associated with ***Posidonia***. He noted the adaptive advantage of this type of asexual reproduction to life on such a substrate. Later, Picard (1952) studied

hydroid distribution on four species on marine phanerogams. He identified the hydroids as obligate or occasional epiphytes on these phanerogams. A similar study was performed by Eugene (1978). She distinguished populations found on leaves and on rhizomes and included some interesting observations on depth distribution of some species. The study of Boero (1981) delt with the estimation of hydroids growing on ***Posidonia oceanica***. His results were contrary to the observations of Picard (1952), as he reported a totally homogeneous depth distribution of these organisms. These observations were further confirmed by Fresi, et al. (1982). Recently, Boero, et al. (1985) extended the study of depth distribution of epiphytic hydroids on other meadows and suggested that changes with depth conformed to zonation patterns which were constant from place to place.

The aim of the present study is to ofter a general view on the distribution of some thecate hydroids epiphytic on ***Posidonia oceanica*** in the Egyptian Mediterranean waters.

METHODS

The study was carried out on ***Posidonia*** meadow of the Egyptian Mediterranean waters in the area between Port Said and El Dabaa, The specimens were obtained from the old collections of the marine biological reference collection centre (National Inst. of Oceanography & Fisheries, Alexandria. The samples were collected in the period (1966-1979) by means of a dredge. The epiphytic thecate hydroids were classified according to depth distribution: Shallow and deep, beside those, which occupies wide depth distribution.

RESULTS

A total of 7 species of thecate hydroids were enumerated, namely; ***Clytia hemisphaerica*** (Linnaeus), ***Obelia geniculata*** (Linnaeus), ***Dynamena disticha*** (Bosc), ***Sertularia distans*** Lamoroux, ***Aglaophenia lophocarpa*** Allman, ***Kirchenpaueria pinnata*** (Linnaeus) and ***Antennela secundaria*** (Gmelin). Their depth distribution was as follows :

A) The shallow zone, it was inhabited by ***Dynamena disticha*** (Bosc) & ***Kirchenpaueria pinnata*** (Linnaeus)..

B) The deep zone, it was characterized by the growth of ***Antennella secundaria*** (Gmelin), ***Aglaophenia lophocarpa*** Allman and ***Sertularia distans*** Lamoroux.

C) Species with wide depth distribution: These comprised, Generally the colonization of the epiphytic thecate hydroids was confined to the distal half of the leaves.

DISCUSSION

Hydroids are among the first colonizers on newly exposed marine hard substrata. Most of them are substratum generalists, but several species grow on a limited range of surface types. ***Posidonia*** meadows generally occur in shallow sandy bottoms and are widely distributed along all Mediterranean Coasts. They are colonized by a rich hydroid fauna, comprising at least 66 species recorded on leaves, rhizomes, or on both (Boero, 1981).

The association of hydroids with ***Posidonia*** leaves could result from the good trophic conditions achieved in positions raised above the sea bottom (Boero, 1984). Many passive filter feeders, among them a number of hydroids, tend to settle on the tops of organisms. This tendency has been observed over gradients of decreasing rate of water movement (Boero, 1984). But hydroids living on ***Posidonia*** leaves maintain their substratum perferences also in depths as shallow as 1 m or even less, where water movement must provide an equally high rate of water flow also over the rhizomes.

These epiphytic thecate hydroids, seem to be associated with substratum characteristics of the leaves and they have a rapide a bacterial film. Some of the oblighate associates can pass from old leaves to new ones by stolonization (Rhilbert, 1935; Schenk, 1962), which is a common feature among hydroids (Billard, 1904). Propagation by stolonization may indicate that the hydroid population on ***Posidonia*** leaves is reproductively separate from that growing on other substrata. The hydroid species settling on ***Posidonia*** are referred to genera commonly found on hard substrata or on organisms living on hard

substrata. Thus, there is spatial discontinuity between the hydroid populations on ***Posidonia*** leaves and the populations on other substrata, which may explain the high level of specifity in the hydroid fauna of ***Posidonia*** leaves.

As proposed by Boero (1981) the mainly shallow distributions of the hydroids living exclusively on ***Posidonia*** leaves could be explained by the theory of den Hartog (1977), according to which ***Posidonia*** was probably a shallow-water plant which survives nowadays at deeper levels owing to the last rise in sea level in the Mediterranean.

The hydroid species living only at shallow depths, may have started their association with Posidonia leaves long ago, before the rise in sea level.

The differences between shallow and deep water habitats are undoubtedly related to variations in water movement with depth (Fresi et al., 1982). Boero et al. (1985) interpreted reduction and even disappearance of some epiphytic hydroids from the shallow zones by the herbivore grading pressure factor of which the sea urchin ***Paracentrotus lividus*** and the sparid fish ***Sarpa salpa*** formed an important part.

Banoub, 1960 observed that the hydroid ***Sertularia*** sp. was the only thecate hydroid fouling-organism, that grows on the margins and corners of Glass plates submerged in the Eastern-Harbour, Alexandria, where they formed better aggregations.

In the present work, most of the epiphytic thecate hydroids grow almost at the edges of the ***Posidonia*** leaves, which agree with results of the brevious author.

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