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The Presence of *Corallium rubrum* (Linnaeus, 1758) in the Eastern Mediterranean Sea

H. CHINTIROGLOU, C. DOUNAS and ATH. KOUKOURAS

With 1 map in the text and 1 figure on plate I

Abstract. Numerous colonies of *Corallium rubrum* were found in 4 areas in the North Aegean Sea, proving the doubtfull presence of this species in the Eastern Mediterranean, up to date. Additional information is also given on its geographical distribution, the form and the size of its sclerites and its habitat.

Key words: Cnidaria, Anthozoa, Coralliidae, *Corallium rubrum*; description; faunistics; Eastern Mediterranean Sea.

Introduction

The presence of *Corallium rubrum* in the Eastern Mediterranean has been questioned, due to the lack of clear evidence. In 1979, ZIBROWIUS had reviewed the relevant literature — which he characterized as confused and contradictory — and he had also reexamined the material collected by "Calypso" during its expeditions in the Eastern Mediterranean (1955, 1956, 1960, 1964). Although the above author had found in this material a branch of ded red coral coming from the area off Castelorizo Island (stat. SME 1018: 274—128 m), he considered that the information collected did not prove its presence in the eastern basin and he concluded that "... la répartition de *Corallium rubrum* en Méditerranée orientale reste un problème intéressant à étudier en detail".

Some years later, in 1984, CHARBONNIER & GARCIA published the report of the "Technical Consultation on red coral resources of the Western Mediterranean and their rational exploitation" which met in Palma de Mallorca, in December, 1983. In this report, it can be seen that the members accepted finally the aspect that *C. rubrum* is absent from the Eastern Mediterranean with the exception of Cyprus, although no evidence of its presence there exists. On the other hand, the report mentions that some of the members, based on the information available from the red coral commerce, have been convinced that it exists almost all over the Mediterranean Sea and certainly in the greek coasts where it is still being collected.

Recently, as a result of our persistent research for more relative information, three old reports were found, suggesting the presence of red coral in the Eastern Mediterranean. Two of these (APOSTOLIDIS 1907, DOSIOS 1926) refer to illegal coral fishery by Italian fishermen in the Ionian Islands (Leucada, Ithaki, Corfu) in the beginning of the 20th century, as well as on the efforts of the greek authorities for the localization of areas with corals in the greek seas. In the third report (BELLOC 1948), *C. rubrum* is recorded

as a species of the greek fauna but no localities are mentioned. However, the author notices that "the sponges are of commercial interest, as is also the red coral and, therefore, deserve to be mentioned in fishing charts".

Materials and Methods

All the colonies of red corals were collected by scuba divers or dredge, fixed with 10% formalin, and have been deposited at the Department of Zoology in the University of Thessaloniki.

The various types of sclerites were named according to BAYER et al. (1983) and their morphometry is according to WEINBERG (1976).

In order to estimate the mean length, the mean width, the mean width of collar and the mean slenderness (maximum width/total length) for every type of sclerites, more than 80 measurements were made in each case.

Results and Discussion

The dives which took place in the localities of the North Aegean Sea shown in the map (fig. 1), in depths between 50 and 80 meters, revealed the presence of numerous colonies of *C. rubrum* in each one of them. Most of the colonies were branched, but encrusting ones were also not rare. In stations 1 (Myrmigonisia), 3 (Moni Vatopediou) and 4 (Cape Arapis), only one colony was collected, while in station 2 (coasts of Pilion) four.

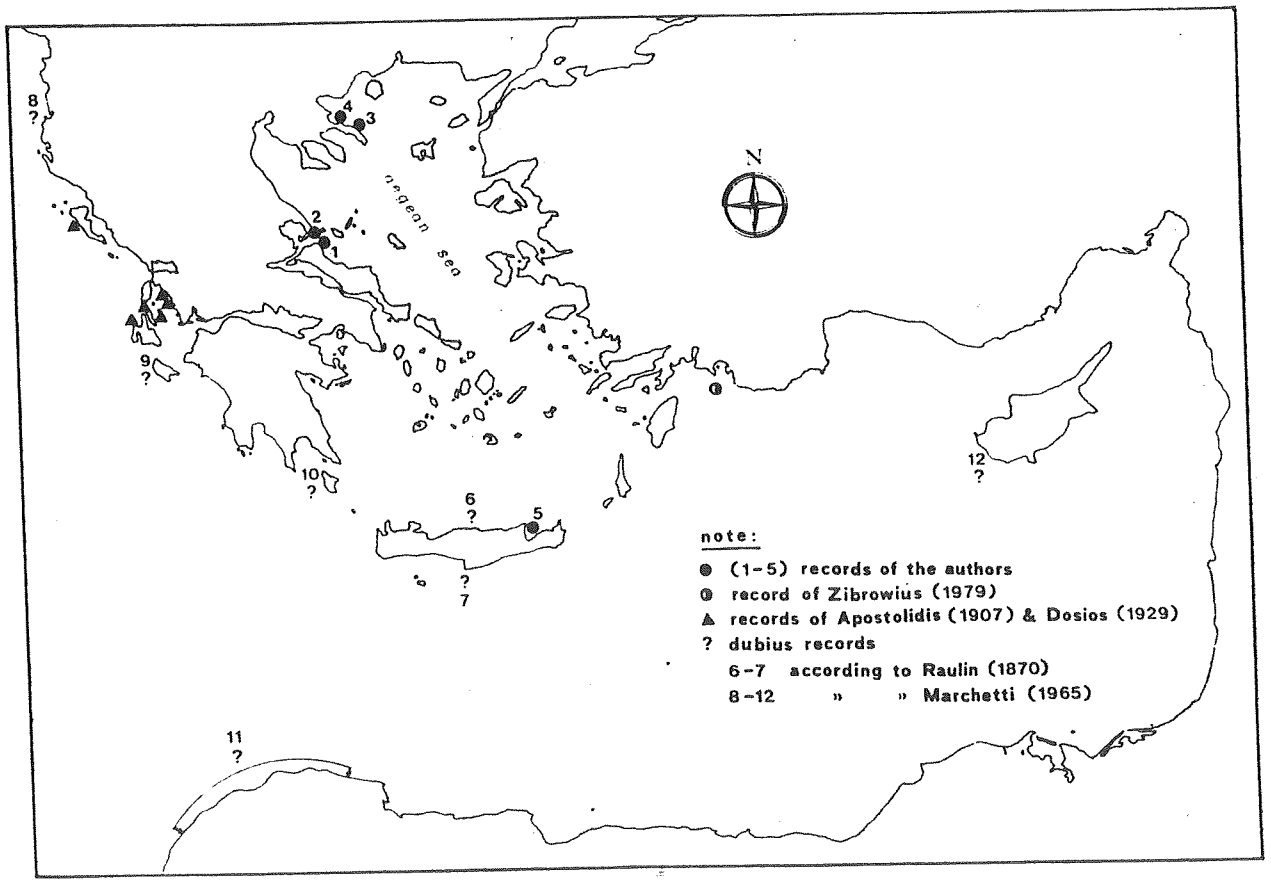

Fig. 1. Map indicating the geographical distribution of *C. rubrum* in the Eastern Mediterranean Sea

Another alive colony was collected in a depth of about 110 m, in station 5 which is located in Mirabellou Gulf, Kriti Island, South Aegean Sea (fig. 1). Some of the collected colonies are shown in figure 2 (pl. I).

In station 2, the colonies were settled on a substrate consisting of dead or alive bivalve, belonging to the species *Lopha* (= *Ostreola*) *stentina* (PAYRAUDEAU), of calcareous tubes mainly of the polychaete *Vermiliopsis infundibulum* (PHILIPPI) and of various sponge species.

The height of the collected colonies was between 30 and 58 mm, and the width of the central branches between 4.0 and 7.2 mm.

The dimensions of the various types of sclerites, in the above colonies fluctuate as follows:

Eight radiate capstans: mean length 77.18 μm (standard deviation 5.54; extreme values 55.00 μm—101.25 μm), mean width 43.42 μm (1.66; 30.00 μm—65.10 μm), mean width of collar 22.62 μm (0.90; 15.10 μm—30.00 μm), mean slenderness 0.56 (0.02; 0.54—0.60).

Seven radiate rods: mean length 70.81 μm (6.22; 52.50 μm—97.50 μm), mean width 43.05 μm (2.79; 31.25 μm—55.00 μm), mean width of collar 22.15 μm (1.26; 17.50 μm to 30.52 μm), mean slenderness 0.60 (0.03; 0.58—0.66).

Six radiate rods: mean length 68.80 μm (10.42; 47.50 μm—87.50 μm), mean width 43.83 μm (6.58; 37.50 μm—60.00 μm), mean width of collar 22.91 μm (3.50; 17.50 μm to 30.20 μm), mean slenderness 0.07 (0.08; 0.56—0.83).

Cross shaped sclerites: mean length of axis A 65.47 μm (14.55; 43.75 μm—100.00 μm, mean length of axis B 64.32 μm (4.73; 43.75 μm—90.10 μm), mean width of collar 33.65 μm (8.19; 17.50 μm—57.52 μm).

Among the sclerites the eight radiate capstans and the seven radiate rods seem to be the most common.

From the related literature it seems that there is only a little information on the form and the dimensions of the various sclerites of *C. rubrum*, given by PAX & MÜLLER (1962) and WEINBERG (1976). The former, without discriminating categories of sclerites report that their length varies between 50 μm and 70 μm and sometimes reaches 100 μm. WEINBERG gives for "capstans", the following measurements: mean length 77.9 μm (74.8 μm—81.0 μm; mean width 44.7 μm (42.8 μm—46.7 μm); mean slenderness 0.574 (0.562—0.586). The above values which concern colonies from the Western Mediterranean, is not easy to be compared to that measured in the colonies collected in the Eastern Mediterranean. However, a good comparison of the form and the dimensions of the sclerites, based on a sufficient number of colonies from various sites of the Mediterranean is necessary, because it seems that such differentiation are possible to be found.

In the assemblages where the colonies of *C. rubrum* were settled the following species were found and collected: the sponges *Geodia conchilega* SCHMIDT, *Dysidea fragilis* (MONTAGU), *Erylus* sp., *Axinella guiteli* TOPSENT, *Agelas oroides* (SCHMIDT), *Petrosia dura* (NARDO), *Ircinia dendroides* (SCHMIDT) and *Ircinia foetida* (SCHMIDT), the alcyonarian *Sarcodictyon* sp., the corallimorpharian *Corynactis* sp., the bivalve *Lopha stentina* (PAYRAUDEAU) and the serpulids *Vermiliopsis infundibulum* (PHILIPPI), *Placostegus crystallinus* ZIBROWIUS and *Janua pagenstecheri* (QUATREFAGES).

Information on the qualitative composition of the red coral assemblages have been given mainly by LABOREL & VACELET (1961) and TORTONESE (1963).

Information on the use of *C. rubrum* as a substrate of settlement for other organisms does not seem to exist, except for those few given by BARLETTA & VIGHI (1968). These authors report 6 sponge species which can bore the skeleton of *C. rubrum*.

In the map (fig. 1) all the information collected up to date, concerning the distribution of *C. rubrum* in the eastern mediterannean basin are given. This information is according to RAULIN (1870), APOSTOLIDIS (1907), DOSIOS (1926), MARCHETTI (1965), ZIBROWIUS (1979) and the data of the present study, as it is explained in the note of the map. FORBES (1844) and BELLOC (1948) are not included because they do not refer to certain geographical areas.

The fact that, up to date the presence of *C. rubrum* in the Eastern Mediterranean was uncertain, should be attributed to two main reasons. The first is that in the eastern mediterranean basin this coral seems to live deeper than in the western basin, for the reasons mentioned by BARLETTA et al. (1968). The second seems to be the unwillingness to announce its presence obviously for economical reasons. Nowadays we are sure that *C. rubrum* is being collected in the Aegean Sea for several years, without any restrictions, because until recently there was no relative legislation. It is also believed that some of the scuba diving accidents occur during its collection.

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Address of the authors: H. CHINTIROGLOU, C. DOUNAS and ATH. KOUKOURAS, Department of Zoology, University of Thessaloniki, 54006 Thessaloniki, Greece

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Buchbesprechung

Pinter, Helmut: Salmler. Schwarmfische im Aquarium. — Stuttgart (Verlag Eugen Ulmer), 1988; 176 S., 58 Farbabb.; 36 Zeichnungen; 2 Karten; DM 48,—. — ISBN 3-8001-7180-5.

Wenn von Zierfischen im Sinne des Wortes die Rede ist, dann fallen dem Kenner sofort die Salmler ein, vorwiegend kleine grazile Fischchen aus den Süßgewässern Afrikas, Mittel- und vor allem Südamerikas. Glühlichtsalmler, Neontetra, Brillantsalmler, Karfunkelsalmler und Laternenträger — so heißen einige Arten wegen ihrer leuchtenden Signalfarben, an denen sich die Angehörigen eines Fischschwarmes in den oft dunklen Urwaldbächen erkennen.

Ihnen hat HELMUT PINTER das vorliegende Buch gewidmet, in dem er zweihundert biologisch besonders interessante und aquaristisch bekannte Arten aus der umfangreichen Unterordnung Characoidei in Wort und teilweise auch Bild vorstellt. Der Autor hat als ehemaliger langjähriger Aquarienkurator am Skansen Djurgården in Stockholm reiche Erfahrungen auf dem Gebiet der Zierfischhaltung und -zucht gesammelt und diese bereits in einigen anderen Fachbüchern und vielen Zeitschriftenartikeln der Allgemeinheit zugänglich gemacht.

Sein neuestes Werk über die Salmler ist übersichtlich gegliedert und bietet nicht nur dem Aquarienfreund, sondern ebenso dem Ichthyologen eine Menge interessanter Informationen. Nach einem einführenden Kapitel, in dem der Autor die salmlerartigen Fische gegenüber anderen Fischgruppen abgrenzt, behandelt er die komplizierte und teilweise noch ungenügend erforschte Systematik der Characoidei, wobei sich PINTER an der jüngsten taxonomischen Gesamtdarstellung von J. GÉRY (1977) orientiert. Es folgt ein Kapitel über die Hauptverbreitungsgebiete mit grundsätzlichen Erläuterungen über die unterschiedlichen Verhältnisse von Wasserchemismus und Klima in den tropischen Herkunftsgebieten der Salmler, was zum Verständnis ihrer ökologischen Ansprüche sehr wichtig ist. In den beiden folgenden Kapiteln werden die Salmler als Speisefische (z. B. Pacus und Tigersalmler) und als Aquarienfische vorgestellt. Bei den Verhaltensweisen behandelt der Autor das Fortpflanzungsverhalten aus verständlichen Gründen besonders gründlich. In den drei folgenden Kapiteln über Haltung, Vermehrung und Krankheiten werden neben allgemeinen Hinweisen auch viele persönliche Erfahrungen des Autors mitgeteilt, die sehr wertvoll für jeden sind, der sich ernsthaft züchterisch mit dieser Fischgruppe befassen will, und die für viele Leser neu sein dürften. Die Seiten 58 bis 167 sind der Darstellung der einzelnen Gattungen und Arten in systematischer Reihenfolge vorbehalten, wobei der Autor besonderes Gewicht auf äußerlich sichtbare Merkmale legt, die auch für Laien erkennbar sind. Erfreulicherweise werden hier auch die wichtigsten Synonyme erwähnt. In einem Literaturverzeichnis mit 116 Titeln sind neben einigen wissenschaftlichen Standardwerken und aquaristischen Fachbüchern vor allem Zeitschriftenartikel aufgeführt, die Angaben über charakteristische Verhaltensweisen von salmlerartigen Fischen, spezielle Zuchtbedingungen, Nachzuchten seltener oder schwer züchtbarer Arten und Erstnachweise enthalten. Ein sechsseitiges Register bildet den Abschluß und erleichtert das Auffinden gesuchter Arten.

Das empfehlenswerte Buch präsentiert sich in einem sehr ansprechenden flexiblen Einband und ist gut illustriert, wobei die meisten Farbfotos vom Autor selbst stammen. Bei einer eventuellen Neuauflage könnten vielleicht zwei kleine Fehler ausgemerzt werden: Auf Seite 36 erwähnt PINTER eine Publikation von BREIDER aus dem Jahre 1948, zitiert dann aber im Literaturverzeichnis lediglich eine andere desselben Autoren von 1949. Mehrfach werden (völlig korrekt) die Widerhäkchen an den Afterflossen der Männchen mancher Arten erwähnt, die einem besseren Kontakt der Fortpflanzungspartner beim Laichakt dienen. Auf Seite 31 wird dagegen (fälschlicherweise) von den Bauchflossen gesprochen, an denen sich diese Hilfsorgane befinden sollen. Diese Geringfügigkeiten mindern den Wert des Buches aber keineswegs, das sicher dazu beitragen wird, den schönen Salmlern viele neue Freunde zu gewinnen.

H.-J. Paepke (Berlin)

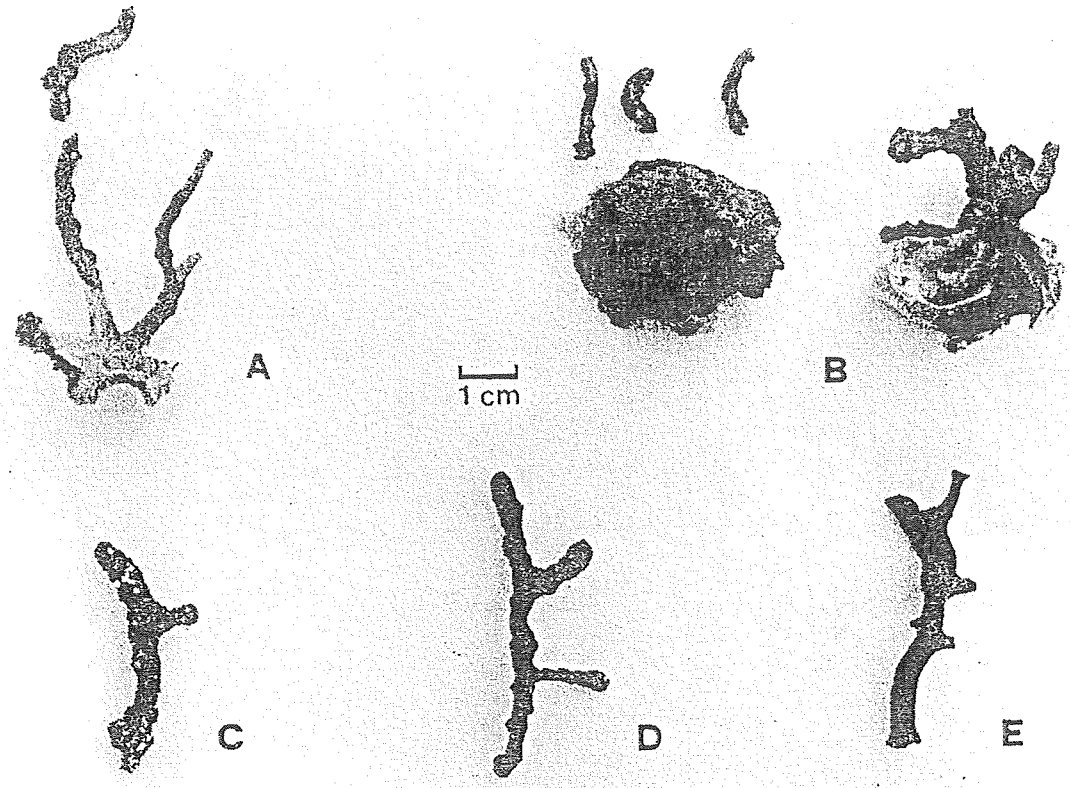

Fig. 2. Some of the collected colonies: A, st.1 (Myrmigonisia); B, st.2 (Coasts of Pilion); C, st.3 (Moni Vatopediou); D, st.4 (Cape Arapis); E, st.5 (Mirabellou Gulf)