

NOTE

Scleractinian corals from Lebanon, Eastern Mediterranean, including a non-lessepsian invading species (Cnidaria: Scleractinia)

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SUMMARY: Many fewer species of scleractinians are known from the Levant area (10) than from the western Mediterranean (33). So far 6 species are known to occur in Lebanon, all at shallow depth. One of these is an alien (also very successful in SE Spain) but not a Lessepsian migrant: identified as *Oculina patagonica*, it is presumed to be of temperate SW Atlantic origin.

Key words: Scleractinia, Levant area, Lebanon, alien species.

RESUMEN: CORALES SCLERACTINIARIOS DEL LÍBANO, MEDITERRÁNEO ORIENTAL, INCLUYENDO UNA ESPECIE INTRODUCIDA NO LESSEPSIANA. – Hay muy pocas especies conocidas (10) de la zona del Líbano en comparación con el resto del Mediterráneo occidental (33). Hasta la actualidad tan sólo se conocen 6 especies en aguas costeras. Una de ellas es una especie alóctona (pero común en aguas del Mediterráneo español) pero no es una migrante lessepsiana: identificada como *Oculina patagonica*, que tiene posiblemente un origen en el Atlántico sudoccidental (Traducido por el Editor).

Palabras clave: Scleractinarios, Líbano, especies alóctonas.

INTRODUCTION

Previous information on the scleractinian fauna at the eastern end of the Mediterranean (Cyprus, SE Turkey to Egypt) has been compiled by Zibrowius

(1979, 1980). Six species have thus far been reported from shallow-water of the easternmost part of the Levant basin on the basis of previously published and new records:

- *Cladocora caespitosa*: Lebanon, Israel, Egypt;
- *Hoplangia durotrix*: Lebanon;
- *Madracis pharensis*: Cyprus, Israel;
- *Paracyathus pulchellus*: Israel;

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- *Polcyathus muellerae*: Lebanon, Israel;
 - *Phyllangia mouchezii*: SE Turkey, Lebanon, Israel.

More recently, two more species have been added for this region:

- *Balanophyllia europaea*: Egypt (Aleem and Aleem, 1992);

- *Oculina patagonica*: Israel (Fine and Loya, 1995; Kushmaro *et al.*, 1996; Kramarsky-Winter *et al.*, 1997).

These eight species generally occur in shallow coastal waters and thus are accessible by diving, but some also range down to about 100 m on deeper shelf areas where they have been obtained by fishing gear or dredging. This is a low number compared with the approximately 20 species recorded at similar depths in the western Mediterranean (where altogether 33 species occur, from shallow to deep). One explanation is that, as in other zoological groups, some scleractinian species do not occur along the Levant coast. The second reason for this low number is that the area has been little explored scientifically. The list of Levant coral species, both shallow and deep, will surely increase when a greater research effort is made by diving and dredging. As an example, living *Caryophyllia calveri* and *Desmophyllum cristagalli* have been obtained by a single trawl at 800 m on Eratosthenes Seamount, south of Cyprus (Galil and Zibrowius, 1997). This also represents the first live records of deep-water corals in the easternmost Levant area and the 9th and 10th species records for this region.

The whole eastern Levant, including Lebanon, receives many Lessepsian species, which move into the eastern Mediterranean from the Red Sea via the Suez Canal (Por, 1978, 1989, 1990; Spanier and Galil, 1991). The well investigated groups of molluscs, decapod crustaceans and fishes are thus strongly represented among the Lessepsian macrofauna. But whereas the Red Sea has a diverse and well investigated shallow water scleractinian fauna (coral reefs), no Lessepsian scleractinian migrant has yet been discovered in and beyond the Suez Canal.

An alien non-Lessepsian coral in Lebanon

Ironically the Levant coral fauna, still devoid of Lessepsian species, already includes a non-Lessepsian invader. Identified as *Oculina patagonica*, it is presently known in the Levant from

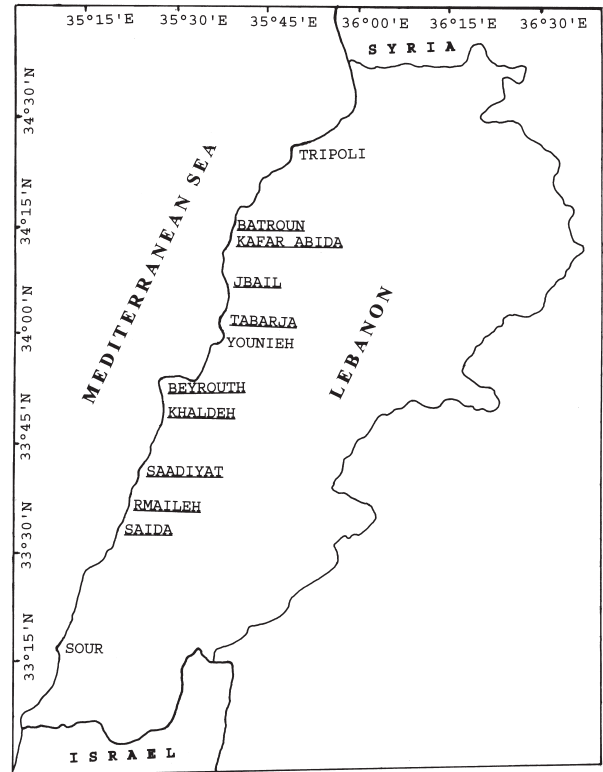


FIG. 1: Map of Lebanon. Scleractinian corals are reported herein from the localities with underlined names.

Egypt, Israel and Lebanon. It is presumed to be of temperate Atlantic - South American origin. This species was accidentally brought into the Mediterranean by shipping from the Atlantic, contrary to Lessepsian species that travel through the Suez Canal, generally by normal migration. In the Mediterranean beginning with 1966, *O. patagonica* was first found around and in harbours of northwestern Italy and southeastern Spain (Zibrowius, 1974, 1980, 1992, 1994; Zibrowius and Ramos, 1983). In Italy it is still known from only a few colonies near Savona, whereas in Spain it was reported in 1983 from 300 km of coastline, including in natural habitats. According to information from Spanish colleagues (pers. comm. to H.Z., 1996) it now has an even wider range in Spain, where it is mentioned in fauna inventories and guides (Ramos Esplá, 1985; García Raso *et al.*, 1992; Calvín Calvo, 1995). This suggests (together with other supporting evidence) that the species first settled in Spain before spreading to other parts of the Mediterranean.

The first published record of *O. patagonica* for the Levant area was from Israel, where the coral was

observed in 1993 as an already common species (Fine and Loya, 1995). These authors point out that the species had not been recorded there during surveys in the 1970s. Prior to the Israeli record, the coral had been observed in Lebanon in 1992, and in Egypt near Alexandria in 1981 (see below under species account).

Coral records from Lebanon

Precise information is provided herein on older records mentioned in the literature and on new records since 1992. The earliest examples are in the collection of the Muséum National d'Histoire Naturelle, Paris, and date from 1929, during the French protectorate period (see Gruvel, 1931). Corals collected by L. Laubier and reported from "Beyrouth" by Best (1966) and Zibrowius (1979, 1980), are in fact from Laubier's station no. 4 (6.9.1965, diving) further to the north: southern point of Tabarja (as Barja in Lauvier, 1966), 15 km north of Beirut. These corals are summarily mentioned as a substrate in Laubier's (1966) polychaete paper. All new samples reported herein have been collected by G.B.

All species currently known from Lebanon are fully described and illustrated by Zibrowius (1980). This monograph is comprehensive for the Mediterranean coral fauna and together with Zibrowius (1979) provides the published Levant records nearest to Lebanon that are referred to herein.

***Cladocora caespitosa* (Linnaeus, 1767)**

The first Lebanese sample was collected by P. Pallary in 1929 in the harbour of Beyrouth (depth 3 m), attached to a stone. This encrusting colony with short corallites was described by Joubin (1930) as a distinct species, *Hoplangia pallaryi* (later recognized to be a form of the variable *Cladocora caespitosa*). A similar colony from Saida, donated by J. Gruvel (no other data), was also identified by Jounin as *Hoplangia pallaryi* but not included in his paper. Both specimens are at the Paris museum.

New records are from Jbail and Saadiyat. At Saadiyat (depth 1.5-2 m) a colony 30 cm in diameter was found at the intersection of vertical and horizontal rock surfaces. At Jbail (depth 0.5 m) a smaller colony was found in a depression of a vermetid platform.

The nearest published record in the Levant area is from Akko, northern Israel.

***Hoplangia durotrix* Gosse, 1860**

The first Lebanese sample was collected by L. Laubier in 1965 in a cave entrance (depth 28 m) at the southern point of Tabarja (first reported by Zibrowius, 1979).

So far this is a unique record on the eastern Levant coast. The nearest published record of this coral, which generally is very common in submarine caves, is from the southern coast of Crete.

***Madracis pharensis* (Heller, 1868)**

These are the first records of this species from Lebanon. At Batroun (depth 12 m) a few small colonies were found with calcareous algae buildups on a gently sloping bottom. The species was more abundant at Kafar Abida, where it was found on a steep cliff (depth 6-9 m), and in the anterior part of a cave (depth 10 m), where encrusting calcareous algae were still present. Judging from the pigmentation of the polyps, both populations from Kafar Abida were zooxanthellate.

The nearest published records in the Levant area are from Haifa Bay in northern Israel, NE Cyprus, and Antalya, Turkey.

***Oculina patagonica* De Angelis, 1908**

Records of this species from three localities are the first from Lebanon. The earliest is from Khaldeh (12.7.1992), in the southern suburban area of Beyrouth. Colonies are abundant there on boulders of the jetty at Villamar beach, not deeper than 2 m. At Saadiyat (depth 1-2.5 m), three colonies (diameter ca. 50 cm) were observed in 1995, one directly below the other on vertical to sloping rock surfaces. At Rmaileh several colonies were noticed in 1993 on boulders in shallow water (depth 1 m).

Probably the opportunistic *O. patagonica* is more widely established in Lebanon, given its success in Israel (Fine and Loya, 1995; Kushmaro *et al.*, 1996; Kramarsky-Winter *et al.*, 1997), and also its remarkable colonizing capacity observed in other areas (Zibrowius, 1974, 1980, 1992; Zibrowius and Ramos, 1983).

The species has been present in the wider Levant area for more than twenty years and thus has had time to spread from its still unidentified and probably unidentifiable starting point(s). As early as 14.11.1981 pieces of a small colony encrusting

crowded *Balanus perforatus* and *B. trigonus* were collected by J.-G. Harmelin at El-Agami Beach, 10 km west of Alexandria, Egypt (31°08'N, 28°47'E). Two colonies had been noticed there: one on calcareous algae concretions in the *Posidonia oceanica* meadow (depth 6 m) and another on a vertical rock surface (depth 3 m).

At Saadiyat repeated observation and sampling (21.9. to 19.11.1995) of fragments from the colonies revealed that the mid-level and especially the lower colony were partly denuded of extracalicular tissues while the polyp tissues inside the calices also had regressed but maintained their brownish zooxanthellae colour. The greater part of the lower colony had lost its intercalicular tissues and thus appeared essentially white. Loss of intercalicular tissues and regression of polyps is a sign of stress, of temporarily adverse conditions, or possibly of predation. Regardless, this tissue regression observed at Saadiyat is not the bleaching by loss of zooxanthellae described by Kushmaro *et al.* (1996) from the Israeli coast. Perhaps *Hermodice carunculata*, a large amphinomid polychaete present along the Lebanese coast, also feeds on *O. patagonica*. In the West Indies it has been observed to feed on reef corals (Ott and Lewis, 1972).

Phyllangia mouchezii (Lacaze-Duthiers, 1897)

The first Lebanese sample was from Gruvel's expedition: a colony at the Paris museum is labeled "Saida, 8 m, dredge, April 1929". The species was also collected by L. Laubier in 1965 in a cave entrance (depth 28 m) at the southern point of Tabarja (Best, 1966: as *Coenocyathus mouchezi*).

The new record is from Kafar Abida, where colonies with rather short and massive corallites were found under an overhang, depth 9 m. At Saida harbour a dead specimen was obtained from a fisherman's net that had been used off Rmaileh, north of Saida. The basally broken, elongate, narrow corallite represents a growth form typical of deeper soft bottoms.

The nearest published records outside Lebanon are from Iskenderun, Turkey (colony at the Paris museum, trawled by W. Besnard, March 1929) to the north, and from Haifa Bay, Israel, to the south. The species also occurs in Cyprus: in February 1996 A. Demetropoulos, head of the Fisheries Department, had a colony collected in Cyprus and an underwater photograph in his Nicosia office.

Polycyathus muelleriae (Abel, 1959)

The first sample was collected by L. Laubier in 1965 in a cave entrance (depth 28 m) at the southern point of Tabarja (Best, 1968: as *Polycyathus mediterraneus*).

New records are from Kafar Abida, where colonies were found under an overhang (depth 9 m; together with *Phyllangia mouchezii*), and in the anterior part of a cave (depth 10 m; together with *Madracis pharensis*).

The nearest published record in the Levant area is from Akko, northern Israel.

Best (1966) noticed that the corallites of the Tabarja colony were smaller and longer than in colonies from Banyuls, NW Mediterranean, but few colonies were then known and the species' variability had not yet been described. The colonies from Kafar Abida also have thin slender corallites.

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