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Research Note

A New Record for the Marine Algal Flora of Turkey: *Caulerpa scalpelliformis* (Brown *ex* Turner) C. Agardh (*Caluerpaceae, Chlorophyceae*)

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Abstract: The first record of *C. scalpelliformis* (Brown *ex* Turner) C. Agardh from Antalya harbour (36°53'.1 N, 030°42'.2 E) is reported here. The species was found in the year 1995, in the period August-September, when seawater temperature reached 26.5 to 27°C. After this time, the species seemed to disappear, probably because of low winter temperatures. Thus, the occurrence of this species in Antalya harbour should be considered temporary, not as an indication of the expansion of the distribution area of this lessepsian species in the Mediterranean Sea.

Key Words: *Caulerpa scalpelliformis,* Mediterranean Sea

Türkiye Deniz Alg Florası İçin Yeni Bir Kayıt: *Caulerpa scalpelliformis* (Brown *ex* Turner) C. Agardh (*Caulerpaceae, Chlorophyceae*)

Özet: *Caulerpa scalpelliformis* (Brown *ex* Turner) C. Agardh, 1995 yılı Ağustos-Eylül peryodunda, su sıcaklığının 26.5-27°C ye çıktığı zamanlarda Antalya Limanı'ndan (36°53'.1 N, 030°42'.2 E) ilk kez rapor edilmiştir. Daha sonra belkide kış koşullarının düşük sıcaklığına bağlı olarak bu tür ortamdan silinmiştir. Antalya Körfezinde tespit edilen Akdeniz'in bu lessepsian türü genişleyen bir dağılıma sahip olmayıp, geçici olarak bulunmaktadır.

Anahtar Sözcükler: *Caulerpa scalpelliformis,* Akdeniz

Introduction

The genus *Caulerpa* Lamouroux is represented in the Mediterranean Sea by seven species (1). Of these only *C. prolifera* (Forsskål) Lamouroux is widespread throughout the Mediterranean Sea. Conversely, the other species in general exhibit a more limited distribution area. Nevertheless, in the last few years, *C. racemosa* (Forsskål) J. Agardh (2-4), *C. mexicana* Sonder *ex* Kützing (5) and *C. taxifolia* (Vahl) C. Agardh (6) have expanded their distribution areas.

To date, only three members of *Caulerpa* have been reported from the Turkish coast: *Caulerpa ollivieri* Dostal, *C. prolifera* (7, 8) and *C. racemosa* (Forrskål) J. Agardh var. *lamourouxii* (Turner) Weber-van Bosse f. *requienii* (Montagne) Weber-van Bosse (9). In this paper, the occurrence of *Caulerpa scalpelliformis* (Brown ex Turner) C. Agardh in Turkey is reported.

Materials and Methods

Thalli of *C. scalpelliformis* were collected by had in Antalya yacht harbour (36°53'.1 N, 030°42'.2 E) (Fig.1) in the period August-September 1995, from a depth of 0.5 to 2 m in seawater with a temperature range of 26.5 to 27°C.

Observetainos

C. scalpelliformis was found on concrete walls sheltered from waves, as a dominant species in communities with *Corallina sp.* and *Jania sp.* The plants were stoloniferous, with stolons 20-21 cm long, 1.2 mm wide, with well-developed rhizoids 1.4 to 4.1 cm long. Erect fronds, up to 5-5.5 cm high and 10-13 mm wide slightly stipitate and strongly flattened (except in the stipe), showing a large midrib and margins with deep cuts at regular intervals. The Turkish material (Fig.2a) is similar to var. *denticulata* (Decaisne) Weber-van Bosse, characterised by the margin of founds (Fig.2b).

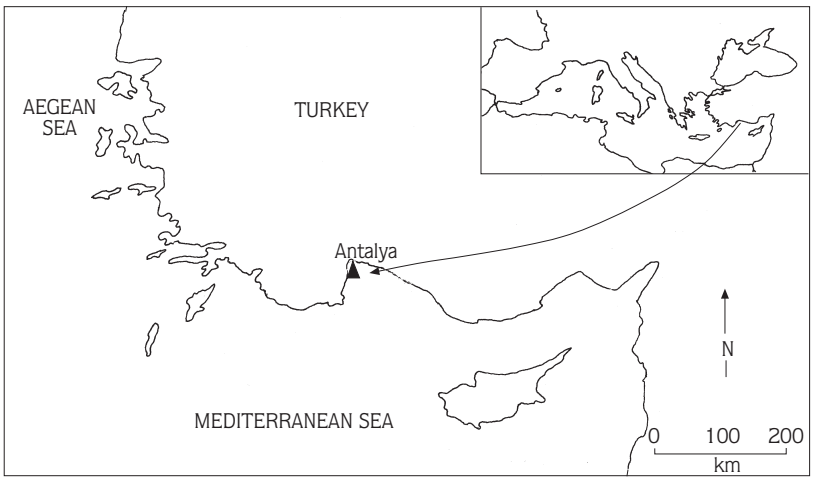

Figure 1. The distribution area of *C. scalpelliformis* on the Turkish coast.

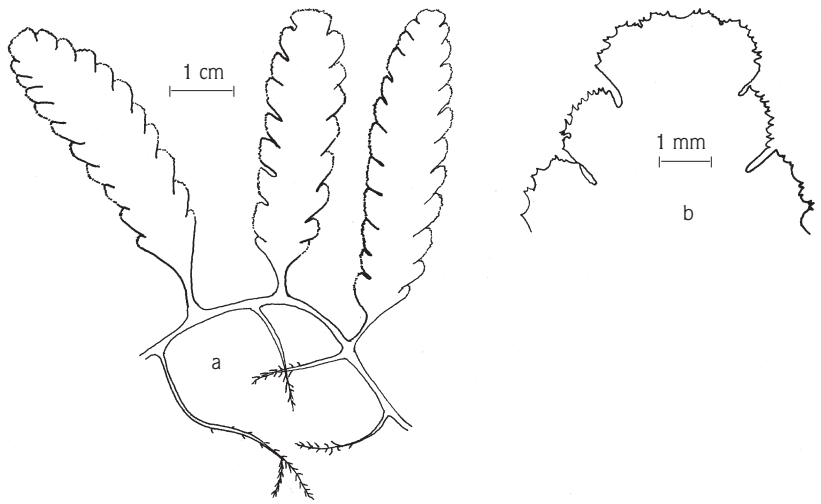

Figure 2. *Caulerpa scalpelliformis*. (a) General morphology. (b) Apical portion of erect branch.

C. scalpelliformis is an Indo-Pacific species with a wide distribution in the Indian Ocean (10) and the Pacific (11) as well as on warm-temperate Atlantic coasts (12). Of this species only two varieties have ever been described: *C. scalpelliformis* var. *intermedia* Weber-van Bosse and *C. scalpelliformis* var. *denticulata* (Decaisne) Weber-van Bosse. The latter is the most widespread in warm waters (11). *C. scalpelliformis* was first recorded from the Mediterranean Sea, from Lebanon, by Hamel (13). Then, it was recorded from Palestine by Carmin in Rayss (14) and more recently from the Syrian coast by Mayhoub (15), who stated that it was the most abundat species of *Caulerpa,* occurring along the Syrian coast. Rayss & Edelstein (16), even though they did not exclude the possibility that the species could have reached the Mediterranean Sea through the Suez Canal, were more inclined to support Rayss' hypothesis that the species is a Tethyan relic (14). However, if we take into consideration the fact that no records of this species exist from before 1930 and that its distribution area in the Mediterranean Sea is restricted to the Levantin basin (Lebanon, Israel, Syria), it seems more probable that *C. scalpelliformis* is a lessepsian migrant that is now expanding in the Mediterranean Sea, following the same course as other lesspsian species like *Cerithium scabridum* Philippi, *Holocentrus ruber* (Forsskål) Pisces (17) and *Caulerpa racemosa* (6). Its spread through the Mediterranean Sea has probably been prevented by the high termophily of the species, which does not permit to it to cross the barriers of relatively cold bodies of water also occurring within the "Lessepsian Province". This is confirmed by its occurrence in Antalya harbour only in the period August-September, when the water temperature reaches 26.5 to 27°C.

Unfortunately, despite monthly observations carried out in Antalya harbour as well as in other stations of the

Antalya gulf from October 1995 to June 1997, the species was never detected again. This could be due to the low water temperatures occurring in winter at that station which cannot support *C. scalpelliformis.* Therefore, this finding should be interpreted as a temporary presence and not as an expantion of the distribution area of this species in the Mediterranean Sea.

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