

DISTRIBUTION AND MAPPING OF *POSIDONIA OCEANICA* (L.) DELILE IN THE DARDANELLE STRAIT AND MARMARA SEA

S. Cirik^{1*}, A. Meinesz², B. Akcali³, F. Javel², T. Thibaut² and H. B. Ozalp¹

¹ Canakkale 18 Mart University Fisheries Faculty Terzioğlu Kampusu Canakkale - cirik@comu.edu.tr

² Dokuz Eylül University Institute of Marine Sciences & Technology

³ Université de Nice Sophia Antipolis, Laboratoire Environnement Marin Littoral Park Valrose, NICE

Abstract

In the Mediterranean Sea, the richest coastal marine ecosystems are the *Posidonia oceanica* beds (endemic Mediterranean species). This species is a key ecosystem in the Mediterranean sea and strictly protected (classified list "species strictly protected" in the Bern International Convention). The aim of this study is to better know the distribution of *P. oceanica* in the northeastern boundary (Dardanelle straits and the Sea of Marmara). The lower and upper limits of *Posidonia oceanica* at the Dardanelle Strait was between 0-17 m deep and covered approximately 30 km long at both sides of the Dardanelle Strait. *Posidonia oceanica* is covered the coastline of 3,13 km at Pasalimani Island and 8 km at Kapıdağ Peninsula.

Keywords: *Posidonia*, Mapping, Dardanelles, Marmara Sea

Introduction

Posidonia oceanica (L.) Delile is an endemic and the most abundant species in the Mediterranean Sea. It is a protected species (classified list "species strictly protected" in the Bern International Convention). This endemic species forms very dense beds between 0 and 40 m deep. *P. oceanica* grows very slowly (3 cm.y⁻¹) and its reproduction by seeds is very rare. *Posidonia oceanica* beds are very sensitive to disturbances caused by human activity (e.g. coastal development, pollution, turbidity, anchoring...) and their loss has been observed in a number of regions. Due to its ecological role and to growing concern about its decline, *P. oceanica* is now a protected species in Turkey by the laws. [1; 2; 3; 4,5]. Since the years 1970, repetitive surveys of the seagrass beds became an important way to check on a long term basis the general health of littoral water. They led to stress the relative importance of different causes of the major negative impacts. More recently the effects of the global change on the hydrologic conditions of the Mediterranean Basin (temperature, salinity, currents, introduced species) can affect the deepest and geographical boundaries of the *P. oceanica* beds and need a particular survey. About the Northeastern Mediterranean Basin boundaries of the *Posidonia* beds contradictory informations are available in the general descriptions of the repartition of this seagrass. It is mostly checked absent in the Dardanelle straits and in the Marmara sea [6, 7, 8]. In 2005 an isolated bed of *P. oceanica* has been checked in the middle and southern part of the Sea of Marmara [5]. This region is under extreme hydrologic conditions in comparison for most of the ecological condition of *P. oceanica* development in the Mediterranean Basin with low salinity and low temperatures due to the flow of brackish waters coming from the Black Sea [5]. The aim of this study is to better know the distribution and mapping of *P. oceanica* in the northeastern boundary (Dardanelle straits and the Sea of Marmara). Also there are two monitoring stations established at Dardanos (Dardanelle Strait) and Pasalimani Island to monitor the changes about the meadows.

Material and Methods

In 2004 all bibliographical informations on the distribution of *Posidonia oceanica* meadows in the strait of Dardanelles and the Marmara Sea were collected. After that an investigation has been done with the professional fishermen and diving clubs around Dardanelle and Marmara Sea with personal communications and questionnaires. The surveys were continued with beamtrawls and dredges. Afterwards field work has been done by scuba and skin diving for determining the upper and lower limits of the *P. oceanica* beds with the help of a GPS. All these data were processed and put in the digital maps.

Results and Discussion

The distribution of *Posidonia oceanica* beds in Dardanelle and Marmara Sea were; at the Europe side of Dardanelle strait (Seddulbahir, Morto bay, Havuzlar, Kilya bay); at the Anatolian side (Odunluk port, Youth Camp, Dardanos, Kepez, Çanakkale Underwater sports club, at Marmara Sea; Pasalimani Island and Erdek Gulf, Kapıdağ Peninsula. The lower and upper limits of *Posidonia oceanica* in these stations were between 0-17 m deep. *Posidonia oceanica* covered approximately 31 km long with low density at the Europe side of the Dardanelle Strait and 35 km long at the Anatolian side of the strait. The density of the *P. oceanica* at the Europe side was weaker than the Anatolian side because of the surface currents. *Posidonia oceanica* has been seen only at Pasalimani Island and the coastline between Ocaklar and Narlı at Kapıdağ Peninsula at the depth of 2-7 m. In these areas the meadow structure

is patchy. The total length of the coastline which is covered with *Posidonia oceanica* is 3,13 km at Pasalimani Island and 8 km at Kapıdağ Peninsula. All *P. oceanica* rhizomes at the lower limit are plagiotrophic at the monitoring stations. Monitoring of the meadows are still continuing at two stations (Dardanos and Pasalimani Island).

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