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Distribution of genetic diversity and gene
expression response to environmental
forcing in *Posidonia*
oceanica (L.) Delile, 1813

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Table of Contents

ABSTRACT	1
CHAPTER 1: INTRODUCTION.....	2
1.1 Seagrasses	2
1.2 The Mediterranean Sea	4
1.2.1 Aegean vs. Levantine Basin	7
1.3 General Characteristics of <i>P. oceanica</i> and <i>C. nodosa</i>	8
1.4 Seagrass dispersal and genetic connectivity	9
1.4.1 Dispersal and genetic connectivity of <i>P. oceanica</i>	10
1.5 Heat Stress on Seagrasses	10
1.5.1 Heat Stress Induced Oxidative stress	10
CHAPTER 2.....	13
Genetic characterization of <i>P. oceanica</i> populations along Turkish coastline....	13
2.1 Introduction	13
2.2 Materials and Method	15
2.2.1 DNA extraction and microsatellite analysis	16
2.2.2 Statistical Analysis.....	17
2.2.3 Dispersal analysis	19
2.3 Results	19
2.4 DISCUSSION.....	29
2.5 Appendix	31
CHAPTER 3.....	32
Assessment of oxidative stress response to heat stress of <i>P. oceanica</i> and <i>C. nodosa</i>	32
3.1 Material & Methodology	32

3.1.1	<i>Study area, sample collection and experimental design</i>	32
3.1.2	<i>RNA extraction and cDNA synthesis</i>	34
3.1.3	<i>Target gene selection and primer design</i>	35
3.1.4	<i>RT-qPCR</i>	36
3.1.5	<i>Statistical analysis</i>	37
3.2	RESULTS	37
3.3	REFERENCES	44
CHAPTER 4: Antioxidant response to heat stress in seagrasses. A gene expression study		53

ABSTRACT

Posidonia oceanica and *Cymodocea nodosa* are marine angiosperms widely distributed in the Mediterranean Sea. As habitat builders, they have crucial importance for coastal ecosystems; however, because of human activities and environmental changes populations are in regression.

My thesis focuses on the effect of temperature on the distribution and persistence of *P. oceanica*. I approached the topic from two different perspectives. First, I looked at heat-induced oxidative stress response of the species, in comparison with the other Mediterranean seagrass *C. nodosa*, assessing the variations in gene expression of antioxidant genes. Second, I looked at the putative role of latitudinal and bathymetric thermoclines in shaping distribution and genetic diversity patterns of the species. Among all populations analyzed, two main clusters draw attention on Anatolian coastline: the Aegean metapopulation and the Mediterranean one. Between these, Kas population appears to be a transition area. While results suggest a panmixia in Aegean area we see a more structured population on the Mediterranean Basin. The gene expression study results suggest in both experiment there is a difference between two species and two ecotypes analyzed. *P. oceanica* shows more intense response to heat stress comparing to *C. nodosa*.