significantly correlated with response slopes. In this presentation we explore whether the ΔF/Fm' versus irradiance relationship, rather than absolute ΔF/Fm' values, may better reflect seagrass physiological health when measurements are obtained during landscape-scale sampling.

CONTROL ID: 652203
TITLE: Oxidative Stress and Quantum Use Efficiency in the Intertidal Seagrass Zostera noltii
PRESENTER: João Silva
PRESENTER (E-MAIL ONLY): jmsilva@ualg.pt
AUTHORS (FIRST NAME, LAST NAME): João Silva, Isabel Barrote, Rui Santos
Time: 08:30-08:45

ABSTRACT: We investigated the combined effects of several environmental stressors in the photosynthetic performance and in the activation of biochemical defense mechanisms in the intertidal seagrass Zostera noltii in Ria Formosa coastal lagoon (southern Portugal). The maximum (Fv/Fm) and the effective (F'v/F'm) quantum use efficiencies of PSII were sampled monthly in both neap and spring tides over one year. Other fluorescence parameters, such as the Stern-Volmer non-photochemical quenching (NPQ) and the novel parameter LNP (which expresses the general decrease in PSII photochemical activity in the light) were derived from quantum use efficiency measurements. Sampling for antioxidant enzymes activity, pigments, soluble protein and malondialdehyde (MDA) was conducted in parallel. Reactive oxygen species (ROS) are formed as a normal part of the metabolism. An increment on ROS formation is a common response to those stresses and can cause several types of damage, namely lipid peroxidation. MDA is a product of the peroxidation of membrane lipids and thus is commonly used as an indicator of oxidative stress. Carotenoids and antioxidant enzymes such as ascorbate peroxidase (APx) are part of the plants' antioxidative system. Higher content of carotenoids indicate a higher photoprotection and increased activities of ROS scavenging enzymes such as APx are correlated with stress tolerance. The relationships among critical environmental parameters (irradiance, temperature, air exposure), oxidative stress, antioxidative responses and quantum use efficiency in Z. noltii were explored through multifactorial analysis.

CONTROL ID: 652763
TITLE: UVB Promotes Anthocyanin Production and Leaf Reddening in Thalassia testudinum
PRESENTER: Alyssa Novak
PRESENTER (E-MAIL ONLY): abh5@unh.edu
AUTHORS (FIRST NAME, LAST NAME): Alyssa B. Novak, Frederick T. Short
Time: 08:45-09:00

ABSTRACT: Leaf reddening has been observed in multiple seagrass species and is believed to be caused by the accumulation of anthocyanins. We investigated the responses of Thalassia testudinum in the Lower Florida Keys, USA to four light treatments: 1) filters excluding UVB radiation; 2) filters excluding both UVB and UVA radiation; 3) filters reducing ambient solar radiation (including UVB and UVA) by 50%; and 4) ambient solar radiation. Thalassia testudinum with green leaves was transplanted from 1 m depth to 0.3 m depth. Light treatments were then applied to the transplanted shoots, as well as to T. testudinum with red leaves growing at 0.3m depth. Anthocyanin concentrations in green-leaved T. testudinum transplanted to 0.3 m significantly increased and leaves turned red under ambient solar radiation (treatment 4) while anthocyanin concentrations and leaf color remained unchanged