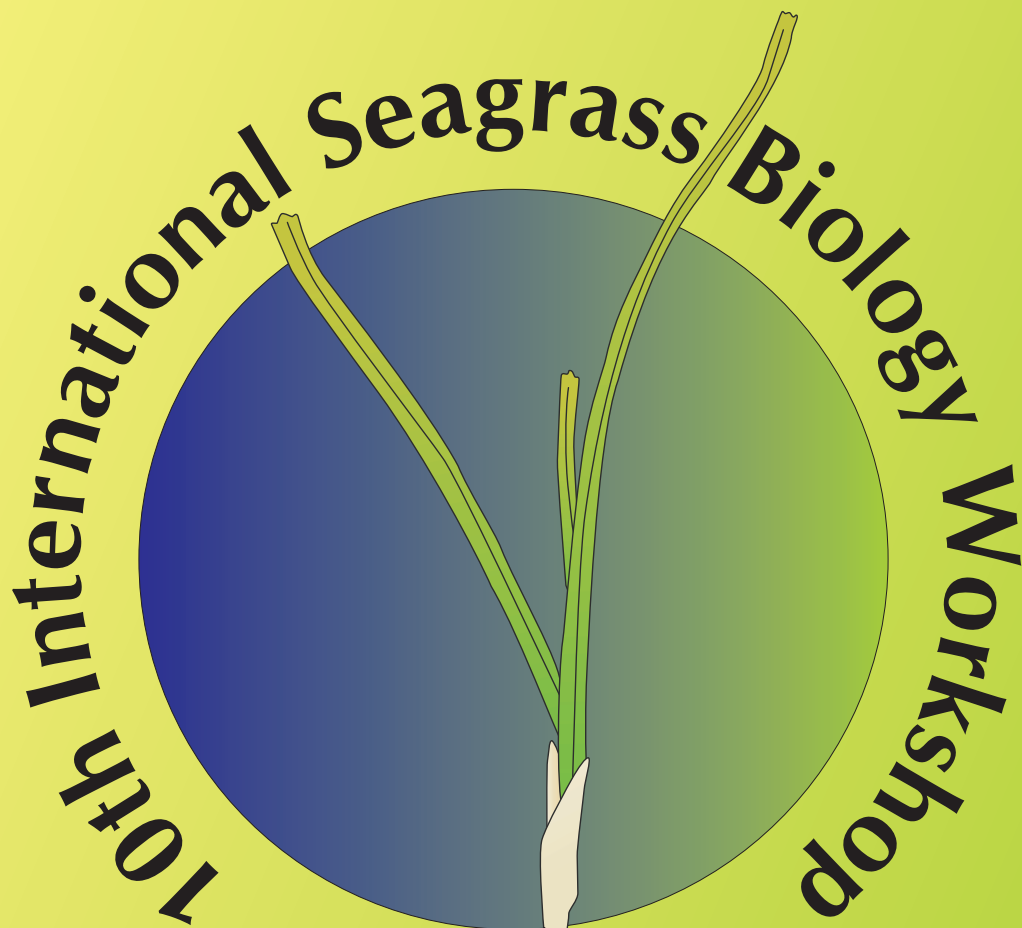
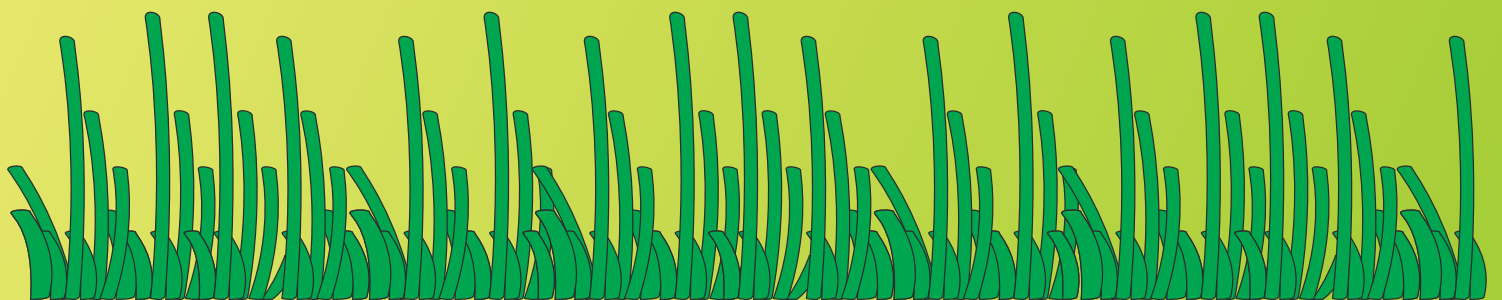


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Abstract O6.2

Oral session 6 Taxonomy, Physiology

Compared photophysiology of native seagrasses with an invasive macroalga in Sydney Harbour, Australia

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Abstract. The comparative photophysiology of the seagrasses *Zostera capricorni* and *Halophila ovalis* and the invasive macroalgae *Caulerpa taxifolia* was investigated in a shallow mixed meadow at Chowder Bay (Sydney, Australia), where the three species coexist. This study was developed under the auspices of the COST Action “Seagrasses: from genes to ecosystems”, targeting one of its objectives, the development of innovative devices for the continuous measurement of seagrass photosynthesis. Automated multi-channel chlorophyll fluorometers were deployed for 24-hour periods to examine and compare the changes in the photosynthetic efficiency and energy quenching mechanisms of the 3 species. Tissue samples were collected at predawn and noon, frozen and analysed by HPLC for detailed pigment analysis. The invasive *C. taxifolia* showed generally higher photosynthetic efficiency than both *Z. capricorni* and *H. ovalis*. Both seagrass species showed down-regulation of photosynthesis at noon, evidenced by the low quantum yield and the significant reduction of the antennae pigments between pre-dawn and noon. In contrast, *C. taxifolia* showed no reduction in antennae pigments or total photosynthetic pigments along the day. While both seagrasses showed 3- to 7-fold increases in the epoxidation state of xanthophyll cycle pigments between pre-dawn and noon, in *C. taxifolia* there was no significant change. Our results show that *C. taxifolia* is better adapted to high light conditions than *Z. capricorni* and *H. ovalis*, which means that, from the photophysiological point of view, this invasive macroalgae constitutes a serious competitor for seagrasses in shallow areas with high irradiance.

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