

Understanding tropical seagrass light requirements and resilience to effectively manage seagrass health during major dredging projects

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Major dredging projects have the potential to impact on tropical seagrass communities through direct removal and burial and indirectly through turbid dredge plumes reducing the amount of light available to seagrasses. This is a major concern in Australia and elsewhere in the Asia Pacific region where substantial expansion of tropical ports associated with the resources boom is occurring. In the majority of cases managing the impacts from turbid plumes has focussed on a turbidity threshold that has not been related to the true light requirements of the various seagrass species potentially impacted. Here we report on the value of an approach based on determining the minimum light requirements of species, their resilience to impacts and ability to recover and designing a dredge mitigation approach that is focussed on maintaining critical windows of light to support seagrass growth and longer term survival. Results show the value of experimentally determining locally relevant light requirements and the importance of understanding the relationships between light requirements, tidal exposure, shifts in spectral quality of light, seasonality and capacity for species to recover from light stress in determining ecologically relevant triggers. This information combined with a robust toolkit for assessing sub-lethal light stress provides an effective dredge mitigation strategy to protect seagrasses.