

An Integrated Field and Remote Sensing Approach for Mapping Seagrass Cover, Moreton Bay, Australia

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Creating accurate maps of seagrass cover is a challenging procedure in coastal waters with variable water clarity and depths. This paper presents an approach for mapping seagrass cover from data sources commonly collected by natural resource management agencies responsible for coastal environments. The aim of the study was to develop an approach for mapping classes of seagrass cover from field

and/or image data for an area with variable water clarity and depths. The study was carried out in Moreton Bay in eastern Australia. A Landsat 5 Thematic Mapper satellite image was acquired for the same area in August 2004. The image data were used to map seagrass cover in the exposed inter-tidal and clear shallow water areas to depths of 3 m. Field survey data were collected, in July – August 2004, to map deep (> 3 m) and turbid sub-tidal areas, using: real time video, snorkeller observations and transect surveys. The resulting maps were combined into a single layer of polygons, with the same seagrass cover classes used as existing mapping programs and with each polygon assigned to one of five cover classes (0 %, 1-25 %, 25-50 %, 50-75 %, 75-100 %). As independent field data were not available for accuracy assessment, a reliability assessment indicated that > 75 percent of the Bay was mapped with high categorical reliability. Most previously published seagrass mapping projects covered areas < 400 km², were based on single data sets, and lacked assessment of accuracy or reliability. Our approach and methods address this gap and present guidelines for a generally applicable method to integrate image and field data sets over large areas (> 1000 km²) commonly used for monitoring and management..

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