At each site the following activities were conducted:

1. Photographic transects to estimate percentage cover of seagrass and other benthos.

2. Cores (11 cm diameter) to provide estimates of above and below ground biomass, shoot density, leaf length, leaf width and flower counts.

3. Representative samples of each seagrass species for stable isotope analysis;

4. An RBR Concerto submersible Conductivity, Temperature and Depth recorder with a Licor 192SA PAR sensor (fitted with a Zebra-Tech Hydro-Wiper H) was moored approximately 15 cm above the substrate, and programmed to record parameters every 30 seconds; data were downloaded during each survey.

5. Additional core samples (11 cm diameter to 5 cm depth where possible) to provide estimates of seagrass seed density;

6. Core samples (2.5 cm diameter to 5 cm depth) for sediment grain size analysis;

7. Water samples were collected for measurement of total suspended solids (TSS), nutrients, and chlorophyll.

Data Workflows:

Photographic transects

* 5 x 50 m transect

* photographs taken of 0.25mx0.25m quadrat every 2m

* photos uploaded and georeferenced and renamed using JetPhoto Studio software

* A 20 point dot grid (4x5 dots) was transposed onto the photographs in TransectMeasure Â® and attributes identified. (attribute table was constructed and applied to the photos. Attributes included appropriate substrates, seagrass spp, macroalgal type, biota, bioturbation)

* TransectMeasure Â® output (txt file) uploaded into open source software, R Studio, for graphing and statistics

Biomass

* 5 x11cm cores of all present seagrass species were collected

* each sample was labeled and frozen (-20oC)

* samples were defrosted in the laboratory at ECU

* seagrass was cleaned of sediment and epiphytes collected by careful scrapping of the leaves

* each individual leaf was laid out and a photograph of all the sample leaves taken

* the sample was divided into its different plant parts (above ground biomass (leaves, petioles and sheaths), vertical rhizome (if appropriate), horizontal rhizome and roots)

* plants parts were dried at 60oC for 24 hours or until dry and weighed
* the photos were uploaded to Jetphoto Studio and renamed
* using ImageJ software, the length, width and area of each leaf was measured.
* All information was input into an excel spreadsheet for graphing and statistical analysis in the open source software, R Studio

Nutrient/Isotopes

* 5 hand grabs of each present seagrass species were collected
* each sample was labeled and frozen (-20oC)
* samples were defrosted in the laboratory at ECU
* seagrass was cleaned of sediment
* cleaner, younger leaves were chosen and placed in a microtube
* if the leaves had epiphytes, they were scraped clean using a razor blade
* the samples were dried in an oven at 60oC for 24 hours or until dry
* each sample was then ground using a MM-200 ball and mill grinder to a fine powder
* 1.1-1.2 mg of sample were weighed out into a tin capsule and sent to UWA Isotope facility for analyses.
* All information was input into an excel spreadsheet for graphing and statistical analysis in the open source software, R Studio

Sediment Grain Size /LOI

* 5 x 2.5-5cm depth sediment cores were collected
* each sample was frozen (-20oC)
* samples were defrosted in the laboratory at ECU
* each sample was dried at 60oC for 48hours or until dry
* 3 of the 5 replicates were sieved into 8 grain sizes (4mm, 2mm, 1mm, 0.5mm, 0.25mm, 0.125mm, 0.063mm and <0.063mm)
* each size was transferred into a pre-burnt, pre-weighed crucible and weighed
* the crucibles were burnt in a furnace at 550oC for 4 hours
* after cooling, the crucibles were re-weighed
* data was entered into an excel spreadsheet for graphing and statistical analysis in the open source software, R Studio