Metadata for Moreton Bay Seagrass 2004

Data Set

Title: Moreton Bay seagrass 2004

Custodian: Environmental Protection Agency Queensland (EPA) and Centre for Remote Sensing and Spatial Information Science (CRSSIS), University of Queensland (UQ).

Jurisdiction: QLD

Description

Abstract: Seagrass mapping of Moreton Bay between the Bribie Island bridge and Kangaroo Island: Mapping conducted as part of the Ecosystem Health Monitoring Program (EHMP) in conjunction with research by the CRSSIS, UQ (funded by Coastal CRC).

Search Word(s): seagrass, Moreton Bay, Moreton Bay Marine Park, vegetation, biota, ecology, estuarine, Queensland.

Geographic Extent: Bribie Island bridge to Kangaroo Island.

Approximate Coordinates: N:-27° 05’
S: -27° 47’
E: 153° 30’
W:153° 00’

Data Currency

Beginning Date: July 2004

Ending Date: May 2005

Dataset Status

Progress: Complete

Maintenance and Update frequency:

Irregular

Access:

Stored Data Format: DIGITAL - ESRI ArcView Shapefile (.shp)

Available Format: DIGITAL- ESRI ArcView Shapefile (.shp)

Access Constraint: EPA/UQ data - release outside EPA/UQ on completion of licence agreement

Data Quality

Lineage: Polygon boundaries and attributes derived from field and satellite image data. Field data Polygon boundaries digitised using information from 4900 EHMP survey sites and bathymetry data at scales ranging from 1:300 to 1:5000 depending on the size of the polygon.

Satellite image polygon boundaries and attributes

A supervised classification was applied to a Landsat TM5 image. This image was acquired on the 8th August 2005, 15 minutes after low tide. The image classification was applied on areas of clear waters up to three metres depth and for exposed regions of Moreton Bay. Field validation data was collected at 2800 survey sites by UQ, 18 Seagrass-Watch sites and 60 Port of Brisbane Corporation survey sites. GPS referenced field data were used as training areas for the image classification process. For this training the substrate DN signatures were extracted from the Landsat 5 TM image for field survey locations of known substrate cover, enabling a characteristic "spectral reflectance signature" to be defined for each target. The Landsat TM image, containing only those pixels in water < 3.0m deep, was then subject to minimum distance to means algorithm to group pixels with similar DN signatures (assumed to correspond to the different substrata). This process enabled each pixel to be assigned a label of either seagrass cover (0, 1-25%, 25-50%, 50-75 % and 75-100 %). The resulting raster data was then converted into a vector polygon file. Species information was added based on the field data and expert knowledge.

Both polygon files were joined by overlaying features of remote sensing files with the EHMP field data to produce an output theme that contains the attributes and full extent of both themes. If polygons of remote sensing were within polygons of field data the assumption was made that the remote sensing polygon was showing more detail and the underlying field polygon was deleted.

Positional Accuracy:

Polygons +/- 10m. Positional accuracy of polygon linework is noted in the field 'Pos_Acc' which gives a reliability code of high, moderate, or low confidence in accuracy for polygons derived from the EHMP field survey sites. The level is derived on the basis of positioning and the frequency of survey sites, the distinctiveness of discrete boundaries evident from the field surveys and the georeferencing accuracy of the satellite image.

Attribute Accuracy:

Attribute accuracy for the field denoting cover, is provided in the field "Att_acc". It gives, for the polygons derived from the EHMP survey sites, a reliability code of high, moderate, or low confidence in accuracy. The level is determined on the basis of reliability of field observations. For polygons derived from the classification of the satellite image, attribute accuracy is denoted as "OA 60%" or "OA 72%". Where OA stands for "Overall Accuracy" which is commonly expressed as the probability that a classified image pixel actually represents that category on the ground.

Attribute accuracy for the field denoting seagrass species is provided in the field "Att_acc_sp" which gives a reliability code of high, moderate, or low confidence in accuracy. This level is determined on the basis of reliability of field observations.

Attributes:

The field,'seagrass', provides a description of the visually estimated ground cover of the seagrass and is generally classed as either:

- 0-25% cover (sparse)
- 25-50% cover (low)

- 50-75% cover (medium)
- 75-100% cover (dense)

The fields,'H_ovalis', 'Z_muelleri', 'H_spinulosa', 'H_uninervis', 'C_serrulata', and 'S_isoetifolium' refer to the relative proportion of the seagrass species occurring within each polygon.

The field, 'Source_type' refers to how the attribute and spatial information was acquired and includes satellite image, snorkel, drop camera held over the side of a stationary vessel and expert knowledge.

The field, 'Source_data' refers to the organisation / program responsible for data collection and analysis.

The field, 'Polygon' refers to how the polygon was created.

The field, 'Rs_domain' refers to the domain for which the image data is analysed (exposed regions or shallow clear waters).

Logical Consistency:

All polygons visually checked at a scale of 1:500.

Completeness:

The dataset is complete.

Datum:

WGS84

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