Applying an Attribute Based Classification Scheme

to understand the seascape-scale intertidal and subtidal ecosystems of the Central Queensland (CQ) coast

Problem: To understand and manage intertidal and subtidal ecosystems, a seamless map is needed to answer the questions:

“What is it?” “Where is it?” “How does it work?”

Currently, data integration and context issues prevent answering such questions.

Solution: An ecosystem-based Classification Scheme is needed that relates the observed context to a seamless map that integrates biological, physical and chemical characteristics of the water column and sea floor to classify intertidal and subtidal ecosystems, which also includes coastal and marine environments.

The scheme develops a common understanding and language of classification to improve communication and lead to better management outcomes.

It provides a structured framework and understanding available for mapping.

The scheme separates the stages of attribute classification from Typology.

Features of the scheme are shown in the box below. Refer to Module 1 on WetlandInfo website for page details.

Potential field uses

- Map the Gaps
- Monitor
- Collect data to enrich field inventory using the Attributes and categories of the scheme such as:

  - Structural macrobaita
  - Sediment texture
  - Inundation
  - Substrate composition
  - Terrain morphology

Applications

The products of this project provide a multi-stakeholder knowledge base with many potential uses, including:

- primary tool / framework to support policy development, prioritise on-ground works and investment in natural resource management
- track changes in ecosystem extent / type; supporting program design
- predict key gaps for inventory and data, design inventory
- assess processes such as connectivity, ecosystem services and values
- predict species presence/abundance based upon ecosystem types (e.g. Great Barrier Reef Marine Park)
- develop management guidelines for intertidal and subtidal ecosystems using key attributes
- inform identification of Marine National and State Environmental Significance (MNES and SES) (including Outstanding Universal Value of World Heritage areas and criteria under Ramsar)
- assist assessment of climate change impacts, and
- a baseline for marine park and fisheries habitat, management and review, and initiatives to protect the Great Barrier Reef

The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The project was led by the Department of Environment and Science in collaboration with the Department of Agriculture and Fisheries (DAF) and the Gladstone Ports Corporation (GPC) Limited. Contributions are also being provided by other Queensland universities, Geoscience Australia - Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Great Barrier Reef Marine Park Authority (GBRMPA), natural resource management (NRM) bodies and consultants of the other organisations. DAF has provided financial assistance to this project as a Five Year Initiative (DAF 148BCQA-3), meeting approved development related fish habitat offset requirements for GPC.

The Queensland Wetlands Program provides support and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The tools developed by the Program help wetlands managers and other wetland users to better understand the economic, social and environmental benefits of wetlands and inform decision making in government and industry. The Queensland Wetlands Program is currently funded by the Queensland Government.

Contact wetlands@des.qld.gov.au or visit www.wetlandinfo.des.qld.gov.au

For a given scale or level, attribute values from the Scheme are matched with the candidate dataset (Example)

Q: Can field attributes be mapped and classified against the Scheme categories?

A: Yes, field attributes are matched with the Scheme categories

Potential field attributes

- Name of the attribute
- Attribute hierarchy
- Attribute classification
- Potential field uses

Examples of attributes:

- Structural macrobaita – animals and plants
- Sediment texture
- Substrate composition
- Terrain morphology

Potential ecosystem types

- Marine
- Freshwater
- Wetland

Potential field uses

- Urban development
- Economic
- Marine recreation
- Cultural
- Land use

To devise a typology, the CQ panel shortlisted the attributes and their categories from the Scheme for application. For mangroves and subtidal ecosystems, the panel selected some categories from the Scheme and added a few additional categories. See 2.5 Typology extract (below)

Ecosystem types are combinations of abiotic and biotic attributes

POTENTIAL USES:

- Match them in the field
- Information for management

Typology extract

- Mangrove
- Saltmarsh

Potential ecosystem types

- Marine
- Freshwater
- Wetland

Potential field uses

- Urban development
- Economic
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Online

- 94 Ecosystem types
- Descriptions
- In terms of their attributes
- Interactive web-mapping links to ecosystem type descriptions & underpinning attributes

- Structural macrobaita
- Sediment texture
- Inundation
- Substrate composition
- Terrain morphology

Grassland is elevated on LiDAR

WetlandInfo website

https://wetlandinfo.des.qld.gov.au