



Communication

Sharing knowledge and raising awareness

As the world becomes a smaller place - measured in terms of improved communication systems, as well as, in terms of the ever-growing impact of human activities on the global environment - there is an urgent need to share information and to raise community awareness based on sound scientific knowledge. A well-informed community is better able to maintain sustainable ecosystems and to maximize the benefits of natural environments.

Strategy

Our approach has been to develop a communication strategy which broadens our impact and disseminates findings more widely. So, while we target scientific peers with research publications in international scientific journals, we also communicate our credible research findings in a broad, more public forum. This communication strategy enhances our ability to advise management authorities, participate in public debate on critical issues, and justify targeted funding from stakeholder agencies and institutions. In this way, we provide objective advice to community and management authorities on the most effective and well-considered responses to solving environmental problems.

Current stakeholders include:

BP Bulwer Island Refinery, Brisbane City Council, CRC for Coastal Zone, Estuary and Waterway Management, Department of Primary Industries Queensland Fisheries Service, Department of Primary Industries Queensland Forestry, Department of Natural Resources and Mines, Environmental Protection Agency, Great Barrier Reef Marine Park Authority, International Tanker Owners Pollution Federation, James Cook University, Moreton Bay Waterways and Catchments Partnership, Seaworld, Sydney Olympic Park Authority, Tangalooma Wild Dolphin Resort, University of Hong Kong, University of New South Wales, United States Department of Agriculture Forest Service



An enthusiastic team

The Centre for Marine Studies Marine Botany Group is an enthusiastic team of experienced scientists and high-achieving postgraduate students applying their specialist knowledge of marine plant ecosystems and tidal wetlands to find solutions for challenging environmental problems. This is achieved with close interactions among group associates, research collaborators and project stakeholders. The products and outcomes of these interactions are internationally recognized research publications, effective management-targeted project reports, and highly sought-after postgraduate students.

Chief topic areas concern marine plant ecosystems:

- Understanding ecosystem processes and function
- Field and remote sensing investigations of ecosystem health
- Surveys of genetic resources of marine plant populations
- Habitat health advisory expertise
- Marine oil spill advisory group
- Education programs with training and educational workshops/courses
- Research & management conferences

For further information about mangrove, seagrass and tidal wetland research and education at the University of Queensland, please contact:

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Mangroves Seagrass Tidal Wetlands

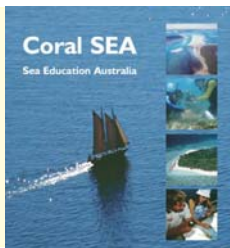
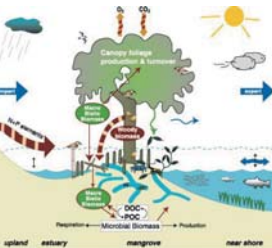


Applying Research and Education



**THE UNIVERSITY
OF QUEENSLAND**
AUSTRALIA

**Centre for Marine Studies
Marine Botany**



**THE UNIVERSITY
OF QUEENSLAND**
AUSTRALIA

'Mangroves Seagrass Tidal Wetlands' - August 2003
Produced by: Centre for Marine Studies, University of Queensland
Text: Norm Duke, James Udy, Alistair Grinham, Chris Roelfsema
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Research



Application



Education

Understanding marine ecosystems

The Centre for Marine Studies Marine Botany Group is interested in solving environmental problems, not just studying them. To preserve the acknowledged benefits of natural marine ecosystems, we need to understand them better and provide effective environmental solutions.

Mangrove dieback and change

Recent group investigations revealed notable areas of mangrove dieback occurring in Moreton Bay and other regions of Queensland. Specific instances of dieback were caused by: 1) natural influences like hail storm damage, local sea level rise, fluctuations in rainfall; 2) indirect human impacts like herbicides in run-off; and 3) direct human impacts notably as reclamation. Assessment methods provide conceptual models and indicator tools to improve management of threatened mangrove and salt marsh wetlands.

Seagrass loss

Group investigations have identified substantial seagrass loss along western Moreton Bay. While there has been limited recovery, a decade of observations now support the conclusion that light and turbidity mostly limit seagrass distributions. Subsequent research has looked at nutrient and growth dynamics in seagrass meadows and the possible impact of chemical toxicants in run-off, including heavy metals and herbicides.

Lyngbya blooms

Blooms of toxic cyanobacteria *Lyngbya majuscula* were first reported as an environmental problem in Moreton Bay in 1997. Since then, blooms appear regularly along the Queensland coast, and the group has identified likely environmental triggers including iron, dissolved organics and light. Current investigations involve close collaboration with environmental managers and other university researchers (University of NSW, University of Maryland).

Solutions to environmental issues

Our objective is to apply expert knowledge of coastal ecosystem processes to solve environmental problems. Projects range from involvement in long term monitoring programs to short term management questions which often require additional scientific research to be answered properly. Group expertise and scientific advice is sought regularly by environmental managers in scientific advisory panels and project workshops.

Monitoring ecosystem health in SE Queensland

The group has an important role in the Ecosystem Health Monitoring Program for SE Queensland, jointly managed with the EPA. In this monitoring program, the group leads research and development, undertakes sewage plume mapping and interpretation of indicator findings, and assists with health report cards, annual reports and newsletters. The program involves collaborations with additional industry partners like CSIRO and Queensland Health Scientific Services, creating spin-off benefits with associated investigations.

Remote sensing and GIS

Powerful spatial tools have been developed and refined in close collaboration with the Biophysical Remote Sensing Group in the School of Geography, Planning & Architecture at UQ. Spatial data used incorporates not only physical structure and colour but also water quality parameters to address broad management questions. Specific maps of impacted marine habitats have been produced using expert field evaluation of the distribution and health of key marine vegetation types including: mangrove, seagrass and algal blooms.

Empowering problem solvers for the future

To help meet and solve future environmental challenges, we educate, involve and inspire students interested in marine plant ecosystems. Many key environmental problems are subtle and their causes and implications remain unknown or poorly understood. Our strategy has been to encourage and train students who can help meet such challenges with probing questions, skill and enthusiasm, and with occasional creative genius.

Marine plant courses

Courses on marine plant ecosystems consist of classroom lectures and experience-based field trips utilizing University marine research stations and vessels. Students are exposed to real environmental problems and current issues, often with their participation in active research conducted by the group. Specialist courses, like College at Sea and the Stanford University course, provide further specialist field-based education giving multi-disciplinary skills and hands-on experience in exotic marine coastal settings in Queensland.

Teaching aids and mentoring

Teaching efforts are enhanced with state-of-the-art research findings described, in part, in information pamphlets identifying current issues. Honours and postgraduate projects are further enhanced with the involvement of stakeholders who often provide funding to assist management-targeted research outcomes. Postgraduate students are also encouraged to join as mentors in undergraduate courses, sharing their research questions, enthusiasm and skills to help inspire a broad range of aspiring managers, researchers and environmental professionals.

