

The Importance, Status and Management of Seagrass Systems Adjacent to the Great Barrier Reef – Community Interest Groups can help Maintain Seagrass and Fisheries Production

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Seagrass meadows are common in sheltered bays, inlets and estuary mouths on the Queensland coast. The productive inshore meadows form valuable nursery habitat for juvenile tiger and endeavour prawns and a food chain of fish which support our recreational and commercial fisheries. In eastern Queensland and northern Australia, they are also the staple food of dugong (*Dugong dugon*) and a major feeding habitat for marine turtles. In our sheltered ports and bays, seagrasses are also important in retaining sediments and assimilating nutrient loads, helping to buffer the impacts of land run-off on coastal marine waters.

Recognising these values of seagrasses, the challenge is to search for ways to ensure the continued survival and productivity of seagrass wetlands along the Queensland coast. Seagrasses in deeper water and on reef platforms are also important to the ecology of the Great Barrier Reef region, but from a land run-off perspective a good first step is to address the total run-off impacts on the immediate shoreward seagrasses and fisheries resources.

To guarantee seagrass survival and productivity we currently believe that efforts at good catchment and land run-off management are going to be the lynch pin over the long-term. Most land-use management measures for other coastal wetlands, for in-stream water quality and for fisheries resources, also equate to good management for seagrasses because all the systems from catchments downstream to the coastal seagrasses are inter-linked.

Research and management issues specific to seagrasses relate to the degree of natural variability in seagrass systems. We need to know the levels of natural variability so that impacts from urban and agricultural run-off, coastal developments, port and harbour activities (dredging and point-source effluent discharge) can be assessed.

In order to comment with certainty on how large the risks are to seagrasses in this region, we need much better information on the scale of natural seasonal and year-to-year variations in seagrass abundance. There are natural catastrophic impacts which can cause large-scale losses of seagrasses in Queensland, but we suspect that the additional impacts from current land use (via sediment erosion, sewerage, nutrient and contaminant loads) on coastal systems might reduce the resilience of seagrasses to natural impacts and affect their ability to recover. We know that anthropogenic pressures and threats to seagrasses presently vary from extremely low (e.g. northern Cape York) to intermittently high (e.g. Trinity Inlet). Direct impacts from port and coastal development projects include dredging and point-source discharges of effluent. Controlling these impacts presents a challenge for coastal management agencies and port authorities to design sediment dredging, dumping and effluent discharges which have minimal-to-no impact on seagrasses and fisheries.

In the face of this set of impacts and threats it is necessary to monitor the level of impacts and status of seagrass and other wetland resources so that incremental increases in pressures on these habitats do not go un-noticed, or be mistaken as an inevitable. Our observations of seagrass systems and associated fisheries in other Indo-west Pacific countries have shown clearly how coastal environments have been exploited to meet priorities of immediate incomes and survival at the expense of the health of seagrass systems and the future productivity of coastal fisheries. Urgent destructive harvesting and abuse of coastal systems has left stretches of coastline devoid of their previously rich fisheries output. This is notwithstanding the loss of those other values of

seagrass meadows, such as support to dugongs and turtles and buffering the loads of sediments and nutrients into coastal waters.

Chronic and widespread scales of loss may not yet have necessarily happened in the Great Barrier Reef region, but there is concern that some localities in Queensland may need little further increases in pressure to result in prolonged loss of seagrasses and fisheries productivity. The threats are usually greater in localities with poor water circulation (e.g. parts of Trinity Inlet) and where conditions of poor water quality are prolonged.

Integrated Catchment Management and Landcare programs are possibly one of the best mediums for bringing a broad range of interest groups together in parallel to address downstream effects and coastal development impacts on seagrasses. All sectors on the land from private urban and agricultural land holders to local and state governments and corporations can participate in education and real changes in land-use practices which keep water quality high and the direct impacts on coastal seagrasses to a minimum. Checking the total incremental increase in pressures on coastal habitats is something which all groups must finally consider together and incorporate into Regional Management Plans. Seagrasses are a very low profile and rarely visible part of the coastal ecosystem, but this belies their central ecological role and economic importance to certain fisheries and other valued species. Most people rarely get to ever see seagrass meadows, so it can be difficult to portray to the community what seagrass systems are and why we should protect them. Demonstrating the status of seagrass resources, and measuring our success at maintaining the integrity of the ecosystems, is also expensive and difficult. We stress the need to educate all community groups well on what seagrasses and other coastal wetland habitats are and then to promote an understanding that what we do upstream and in ports, harbours and bays has cumulative effects on seagrass ecosystems in the coastal zone. Seagrasses are downstream of almost everyone, so all catchment management initiatives and good land-use practices which minimise soil erosion, un-natural nutrient loads, and other pollutants, can help the long-term survival of coastal seagrass systems and marine populations which depend on them.