6. ASSESSMENT AND MONITORING OF POLLUTANTS IN DUGONG PROTECTION AREAS

The GBRMPA is supporting several research and monitoring programs, the outcomes of which will contribute to the future management of DPAs, and in particular, will facilitate the completion of more detailed interagency environmental risk assessments for dugong habitats and stocks in Queensland waters.

6.1 Monitoring of Pollutant Levels in Marine Mammals

Tissue samples are being collected from dugongs (and other marine mammals) reported stranded in or adjacent to the GBRMP. The level of contaminants in the animal tissue is analysed with regard to the age, sex, condition, and home range of the animals. Potential hazard to human health from tissue consumption is also examined.

6.2 Monitoring of Pollutant Levels in Dugong Habitats

Sediment, seagrass, selected invertebrate and fish samples are collected from up to 11 locations from Cape York to Moreton Bay. Sites include Hinchinbrook Channel, Cleveland Bay, Upstart Bay, Shoalwater Bay, Keppel Bay, Port Curtis and Morton Bay. All sites selected are recognised as important dugong habitat and are influenced by a range of human urban and agricultural activities. Samples are analysed for organochlorines, PCBs, atrazine and heavy metals. First results of samples, taken at non-flood conditions, show relatively low concentrations of a range of pesticides in sediments and seagrass along the GBR coast. The future sampling program will also include flood conditions to measure potential peak concentrations.

6.3 Long-term Water Quality Monitoring

Additional to the programs specifically targeting dugong conversation issues, two general water quality monitoring programs are in place at GBRMPA, which deliver important information for the management of water quality in the DPAs and elsewhere in the GBRWHA.

6.3.1 Chlorophyll Monitoring

This program uses the concentrations of chlorophyll *a* in the water column as an indicator for nutrient levels, i.e. eutrophication (Steven et al. 1998). Higher chlorophyll *a* concentrations close to the coast, and hence higher nutrient availability, compared to further offshore have been detected in samples extending south of Cooktown. The catchments adjacent to this area are used for intensive agriculture (grazing and crop cultivation).

6.3.2 Flood Plume Monitoring

Since 1991, a multi-institutional research program targets flood plumes associated with tropical cyclones, and investigates their temporal and spatial extent and the chemical composition. Results to date indicate that these flood events are especially important because the bulk of terrestrial material, such as sediments, nutrients, and associated contaminants, is then transported into the inner lagoon (Devlin et al. 2001). At these times, inshore seagrass meadows experience the highest concentrations of nutrients, suspended solids, and possibly contaminants during the year.