

## SUMMARY

The Queensland dugong population has declined significantly in the Great Barrier Reef (GBR) south of Cooktown during the past decade. In response to this decline 16 Dugong Protection Areas (DPAs) were established in 1997 in the Great Barrier Reef World Heritage Area (GBRWhA) and the Hervey Bay–Great Sandy Strait Region. The establishment of the DPAs has been a key strategy to protect dugongs from direct anthropogenic effects such as drowning in fishing nets and collision with boats.

Dugongs are also threatened by indirect anthropogenic impacts to their habitats from deterioration in water quality that cause either direct adverse effects on dugong health or indirect effects on the distribution and performance of seagrasses, the main food source of dugong. Seagrass growth and productivity is adversely affected by high water turbidity, smothering by sediment or mud, high nutrient availability and the presence of herbicide residues.

The most important water quality issues in the GBRWhA are high loads of river-borne nutrients, pesticides and sediments that reach the GBR lagoon. The nutrient and sediment loads of rivers draining the Queensland catchments have increased since European settlement as a result of intensified land use. The predominant land uses in the 17 major catchments adjacent to the GBRWhA are grazing, cropping, urban development and mining. Intensive cropping requires the application of fertilisers and pesticides, whereas land clearing, removal of wetlands and riparian zones, and over-grazing have caused increased erosion of terrestrial sediments. Consequently, increased loads of sediments, nutrients and pesticides are now exported to the coastal zone of the GBRWhA.

A qualitative risk assessment was completed as a tool to screen the potential of adverse effects on habitat quality to occur in DPAs as a result of activities on adjacent catchments. The level of risk reflects the development and land use on the adjacent catchments and the associated pollution pressures to the marine environment, as well as basic site-specific attributes of the DPAs. The output of the risk assessment is a summary rating of low, moderate or high risk for each of the 16 DPAs, as follows:

**High risk** - Hinchinbrook, Repulse Bay, Newry Region, Sand Bay, Llewellyn Bay, Ince Bay, Rodds Bay;

**Moderate risk** – Taylors Beach, Cleveland Bay, Bowling Green Bay, Upstart Bay, Edgecumbe Bay, Clairview Region, and Hervey Bay–Great Sandy Strait; and

**Low risk** – Shoalwater Bay and Port Clinton.

A significant reduction in nutrient, sediment and contaminant inputs to the GBR inner lagoon is essential to ensure that the DPAs provide favourable habitats. Current land-based pollution control measures have not been adequate to prevent an ongoing decline in water quality. Further steps are required to ensure the protection of downstream habitats. These may include measures such as:

- Queensland to pursue legislative protection of riparian zones and wetlands;
- Queensland to implement ICM strategies as a matter of priority; and
- Queensland to progress Industry Codes of Practice.

With the cooperation of government agencies, peak industry organisations and the community, the protection of water quality and seagrass habitat will form a key part of the strategy for the recovery of the severely depleted dugong population in the GBRWhA.