



Northern  
Territory  
Government

# Darwin Harbour Region



This coral (*Tubastrea* sp.) is commonly found in Darwin Harbour.  
Photo by Tony Ayling

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### Summary

The aquatic environment of the Darwin Harbour region is overall in a healthy state, but vulnerable to localised degradation mainly from wastewater, urban stormwater, and the impact of aquatic weeds and pests.

Rivers and streams of Darwin Harbour's catchment are largely in good health. River flows have not been significantly modified by dams and weirs, water quality is considered good in most cases, and it supports a diverse range of flora and fauna. The fringing vegetation or the riparian zone of streams helps protect them from the effects of catchment land use, and is mostly in good condition, except in urban areas of the Darwin region where the pressures of land use have impacted stream water quality and macroinvertebrate diversity.

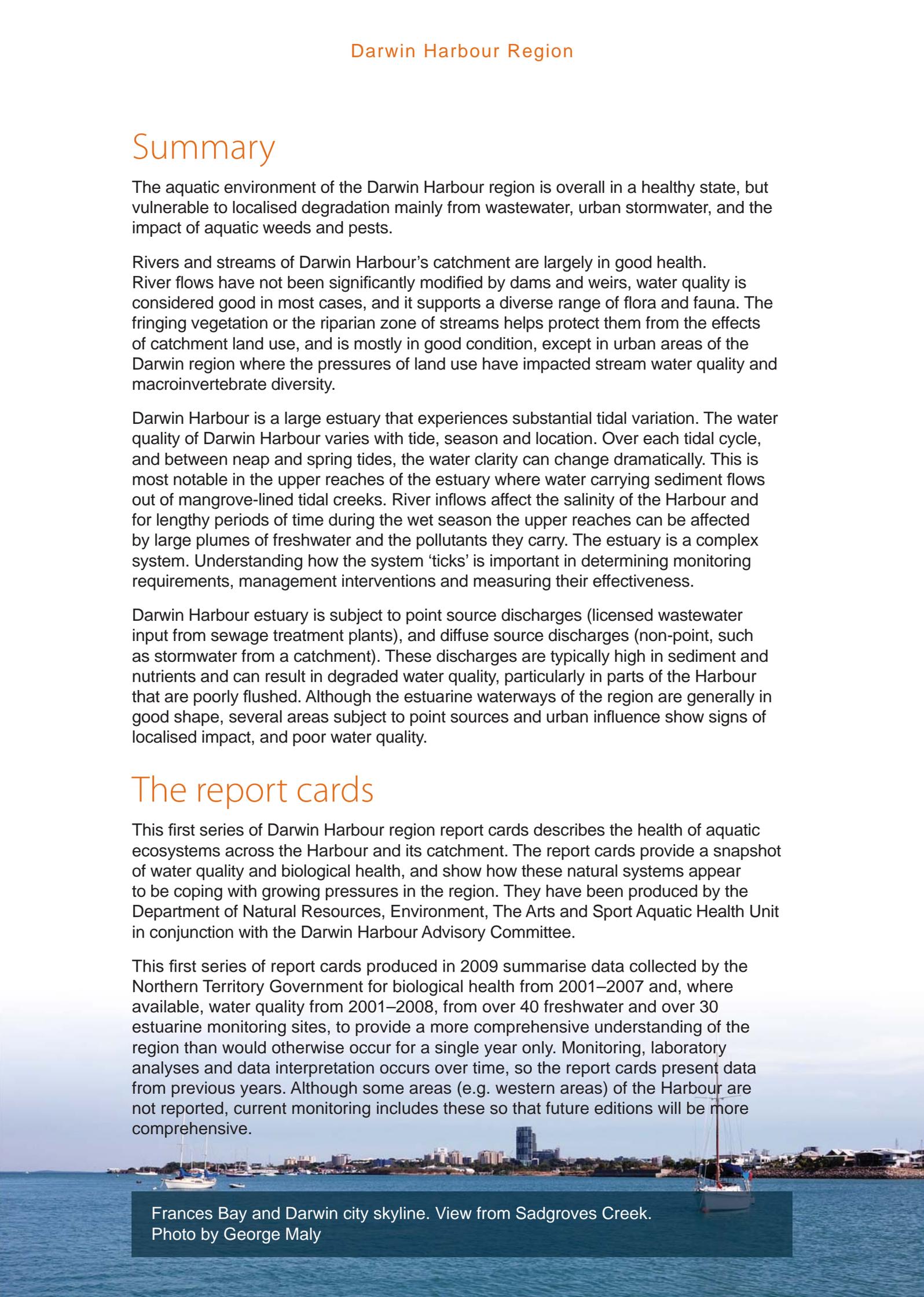
Darwin Harbour is a large estuary that experiences substantial tidal variation. The water quality of Darwin Harbour varies with tide, season and location. Over each tidal cycle, and between neap and spring tides, the water clarity can change dramatically. This is most notable in the upper reaches of the estuary where water carrying sediment flows out of mangrove-lined tidal creeks. River inflows affect the salinity of the Harbour and for lengthy periods of time during the wet season the upper reaches can be affected by large plumes of freshwater and the pollutants they carry. The estuary is a complex system. Understanding how the system 'ticks' is important in determining monitoring requirements, management interventions and measuring their effectiveness.

Darwin Harbour estuary is subject to point source discharges (licensed wastewater input from sewage treatment plants), and diffuse source discharges (non-point, such as stormwater from a catchment). These discharges are typically high in sediment and nutrients and can result in degraded water quality, particularly in parts of the Harbour that are poorly flushed. Although the estuarine waterways of the region are generally in good shape, several areas subject to point sources and urban influence show signs of localised impact, and poor water quality.

### The report cards

This first series of Darwin Harbour region report cards describes the health of aquatic ecosystems across the Harbour and its catchment. The report cards provide a snapshot of water quality and biological health, and show how these natural systems appear to be coping with growing pressures in the region. They have been produced by the Department of Natural Resources, Environment, The Arts and Sport Aquatic Health Unit in conjunction with the Darwin Harbour Advisory Committee.

This first series of report cards produced in 2009 summarise data collected by the Northern Territory Government for biological health from 2001–2007 and, where available, water quality from 2001–2008, from over 40 freshwater and over 30 estuarine monitoring sites, to provide a more comprehensive understanding of the region than would otherwise occur for a single year only. Monitoring, laboratory analyses and data interpretation occurs over time, so the report cards present data from previous years. Although some areas (e.g. western areas) of the Harbour are not reported, current monitoring includes these so that future editions will be more comprehensive.



Frances Bay and Darwin city skyline. View from Sadgroves Creek.  
Photo by George Maly

# Our harbour, our life, our future

Life in Darwin and the Top End means being able to live among a variety of unspoilt environments and wildlife. How many other cities can boast of having turtles, dugong, barramundi, sea eagles, magpie geese and agile wallabies in the Harbour and the suburbs?

Compared to other Australian ports and tropical ports around the world, the Darwin Harbour region is only partially modified. The Darwin region faces increasing population and industrial growth in the near future. This growth will intensify pressure on the Harbour environment and the wildlife it supports.

Our intact natural systems underpin our lifestyle. Many Darwin region residents have an appreciation of the great wealth of natural resources that this region provides. Sustainability demands that our use of the natural resources we so value and derive benefit from are maintained for future generations. Therefore, to maintain the enviable Darwin lifestyle we all enjoy, it will be necessary to match economic growth with sound environmental management.

Water resources in the region support a diverse range of aquatic ecosystems and species which are significant cultural and recreational assets. However, the recent discovery of the aquatic freshwater weed Cabomba (*Cabomba caroliniana*) in Darwin River, reminds us of the vulnerability of the environment to exotic species. Water resources in the region include perennial and seasonally flowing waterways, lagoons, floodplains, springs and estuaries. To preserve these important natural resources, land and sea managers need to understand them as completely as possible.

The Darwin Harbour region stretches from Gunn Point in the north, to south of the Darwin River Dam. The region has a population of over 120,000 people within the cities of Darwin and Palmerston, and the Litchfield and Cox Peninsula shire areas. Catchments draining to the Harbour include the Elizabeth River, Blackmore River, Shoal Bay catchments and several smaller urban and rural catchments. The area covers over 3,200 km<sup>2</sup> – 65% of which is terrestrial and 35% coastal and marine. Much of the region is undeveloped, with about 20% of the catchment being urban or rural land use.



### Culture – land and sea country

Darwin Harbour has been home to the Larrakia people for thousands of years. For the Larrakia, the region's environments are 'cultural landscapes' that are vital to their well-being. Larrakia 'country' consists of both land and sea. Tidal mudflats and mangrove lined waterways, lagoons, floodplains, woodland and the sea itself comprise a variety of plant, animal and marine resources which are managed, harvested, hunted and fished by Larrakia people. Larrakia people have oral traditions and written documentation of their unbroken relationship to their land, sacred sites, stories and resources. A rich oral history links land, sea and culture from generation to generation.

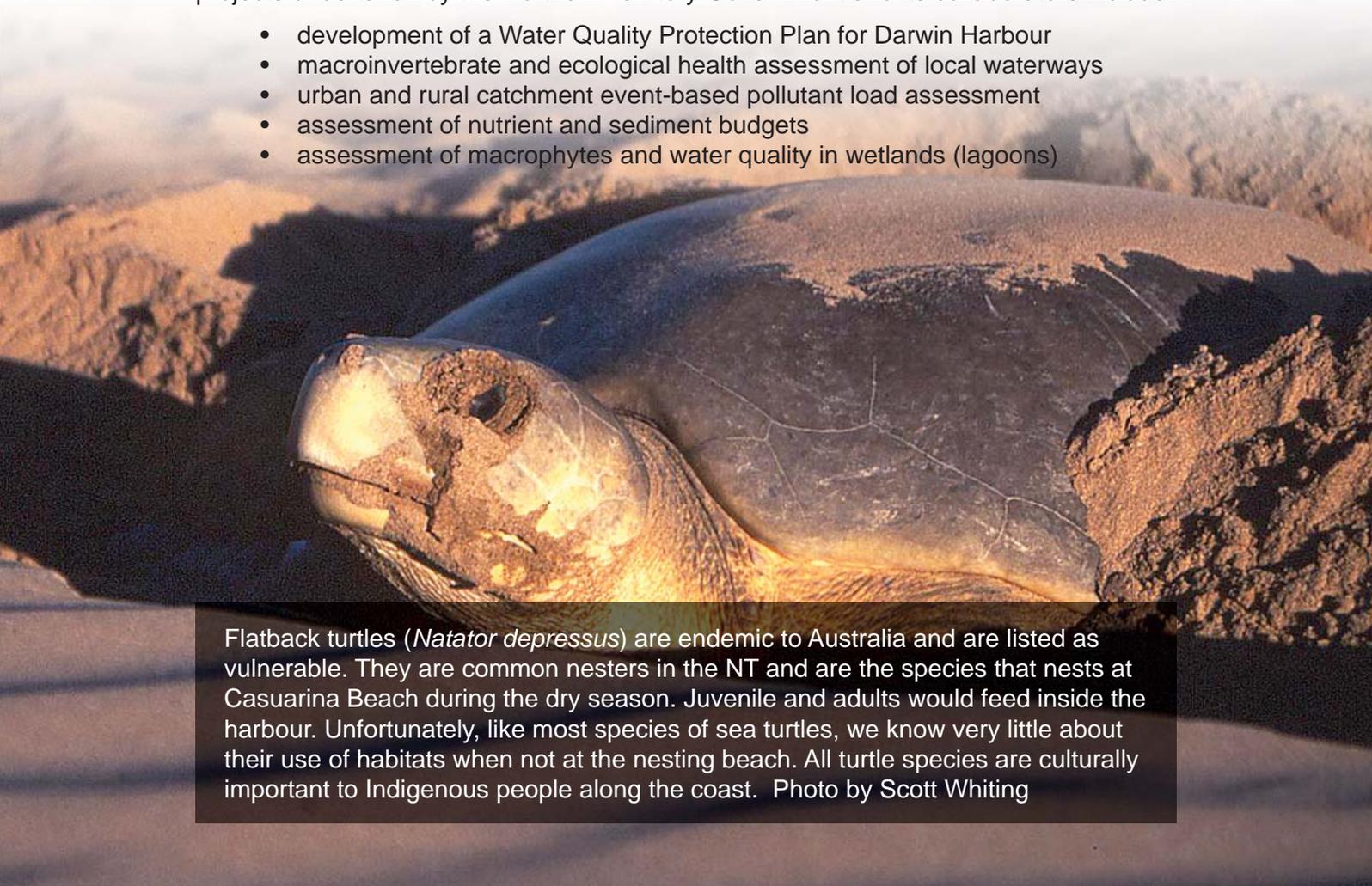
The incredible value of the Harbour's biodiversity is still being realised. Its flora, in particular mangroves and aquatic plants, and threatened or rare fauna present immense biological and cultural value to the region. Exploring opportunities to maintain these iconic species through the combination of traditional knowledge and scientific approaches to conservation is important.

### The Aquatic Health Unit

The Northern Territory Government's Department of Natural Resources, Environment, The Arts and Sport (NRETAS) has an Aquatic Health Unit. The Northern Territory Government has an established record in monitoring and collaborative research in fresh, marine and estuarine water quality including biological health projects in the Darwin Harbour region and selected catchments in the Top End of the Northern Territory.

The NRETAS Aquatic Health Unit has expertise in aquatic ecology, limnology, estuarine science, catchment water quality modelling and water quality evaluation. Research and projects undertaken by the Northern Territory Government and its collaborators include:

- development of a Water Quality Protection Plan for Darwin Harbour
- macroinvertebrate and ecological health assessment of local waterways
- urban and rural catchment event-based pollutant load assessment
- assessment of nutrient and sediment budgets
- assessment of macrophytes and water quality in wetlands (lagoons)



Flatback turtles (*Natator depressus*) are endemic to Australia and are listed as vulnerable. They are common nesters in the NT and are the species that nests at Casuarina Beach during the dry season. Juvenile and adults would feed inside the harbour. Unfortunately, like most species of sea turtles, we know very little about their use of habitats when not at the nesting beach. All turtle species are culturally important to Indigenous people along the coast. Photo by Scott Whiting