Senate Standing Committee on Environment and Communications
Legislation Committee
Answers to questions on notice
Environment portfolio

Question No: 75

Hearing: Supplementary Budget Estimates

Outcome: Agency

Programme: Great Barrier Reef Marine Park Authority

Topic: Great Barrier Reef diversity trends

Hansard Page: N/A

Question Date: 21 October 2015

Question Type: Written

Senator Urquhart asked:

1. Is the Reef currently maintaining its diversity of species and ecological habitats with a stable or improving trend?

2. What is the overall trend for these indicators?

Answer:

The Great Barrier Reef Outlook Report 2014 (http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855) assesses biodiversity and ecosystem health condition, along with trend in condition since the 2009 Outlook Report. It also considers the long-term outlook for the Reef overall.

The 2014 Outlook Report findings include:

- At the scale of the Great Barrier Reef Region, the majority of habitats are assessed to be in good to very good condition; however, an increasing number are in poor condition or have deteriorated since 2009. This includes two key habitats — coral reefs and seagrass meadows.

- There is geographic variation in condition. The habitats, species and ecosystem processes of the northern third of the Great Barrier Reef remain in very good condition while those in the southern two-thirds — especially those inshore — have deteriorated, particularly seagrass meadows and coral reefs. The population of the iconic and culturally important dugong, which was already at very low levels compared with a century ago, has declined further in this part of the Region.

- Species diversity remains very high and there have been no records of species extinction. Examples of species showing good recovery after past serious declines are: humpback whales, estuarine crocodiles, loggerhead turtles and green turtles (southern stock) — demonstrating that recovery is possible with long-term, strategic intervention.

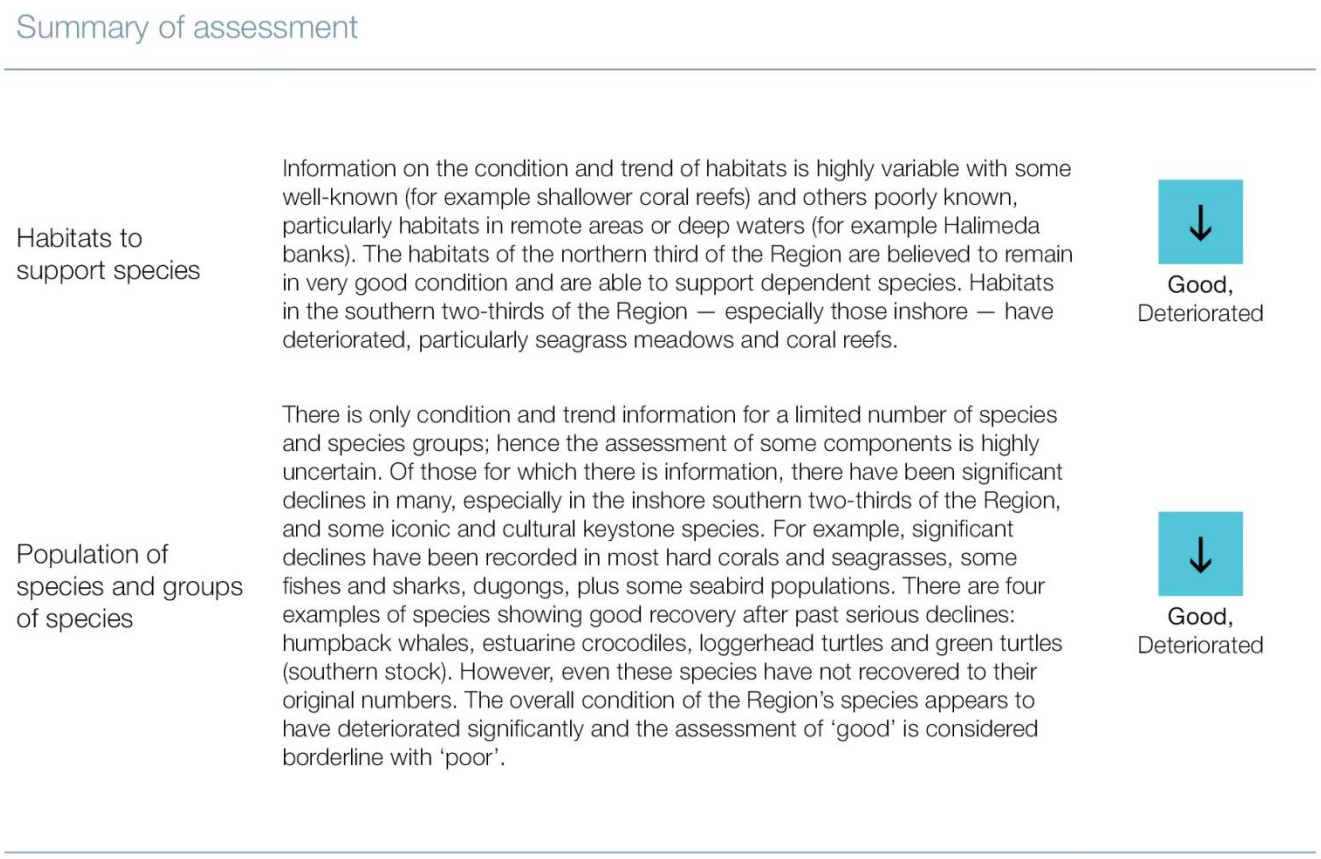
- The condition of a number of species has deteriorated since the 2009 assessment, with some important species such as sharks and rays, corals, some marine turtles and dugongs now assessed as being in poor condition. Two species of inshore dolphins are considered at high risk and in decline.

- The Great Barrier Reef ecosystem is under pressure, including from a series of major storms and floods since 2006.
- The cumulative effects of all impacts on the Reef are diminishing the ecosystem's ability to recover from disturbances. This is likely to affect its ability to recover from serious disturbances, such as major coral bleaching events, which are predicted to become more frequent in the future.
- Even with recent management initiatives to reduce threats and improve resilience, the overall outlook for the Great Barrier Reef is poor, has worsened since 2009 and is expected to further deteriorate in the future.

The biodiversity and ecosystem health assessment summaries from the 2014 Outlook Report are provided in the images below. More detailed assessment tables are found on its pages 34-36, 65-68, and 241-242.

Responding to the issues

The Reef 2050 Long-term Sustainability Plan guides governments, the community and industry in work to maintain and improve the condition of the Reef. Most actions in the Plan contribute to supporting the species and habitat diversity of the Great Barrier Reef, either directly or indirectly. For example, the biodiversity theme includes actions to understand, protect and manage species of conservation concern, especially dugongs, turtles and inshore dolphins. Similarly, a range of actions across both the ecosystem health and biodiversity themes aim to protect and restore habitats, reduce impacts, and ensure the condition of species and habitats is monitored and reported on effectively through time.



Summary of assessment

Habitats to support species	Information on the condition and trend of habitats is highly variable with some well-known (for example shallower coral reefs) and others poorly known, particularly habitats in remote areas or deep waters (for example Halimeda banks). The habitats of the northern third of the Region are believed to remain in very good condition and are able to support dependent species. Habitats in the southern two-thirds of the Region — especially those inshore — have deteriorated, particularly seagrass meadows and coral reefs.	↓ Good, Deteriorated
Population of species and groups of species	There is only condition and trend information for a limited number of species and species groups; hence the assessment of some components is highly uncertain. Of those for which there is information, there have been significant declines in many, especially in the inshore southern two-thirds of the Region, and some iconic and cultural keystone species. For example, significant declines have been recorded in most hard corals and seagrasses, some fishes and sharks, dugongs, plus some seabird populations. There are four examples of species showing good recovery after past serious declines: humpback whales, estuarine crocodiles, loggerhead turtles and green turtles (southern stock). However, even these species have not recovered to their original numbers. The overall condition of the Region's species appears to have deteriorated significantly and the assessment of 'good' is considered borderline with 'poor'.	↓ Good, Deteriorated

Grading statements			
Very good Only a few, if any, species populations have deteriorated as a result of human activities or declining environmental conditions.	**Good** Populations of some species (but no species groups) have deteriorated significantly as a result of human activities or declining environmental conditions.	**Poor** Populations of many species or some species groups have deteriorated significantly as a result of human activities or declining environmental conditions.	**Very poor** Populations of a large number of species have deteriorated significantly.

Summary of assessment

Physical processes	The condition of all physical processes has declined since 2009. Further changes in processes such as sea temperature, sea level, cyclones and wind, freshwater inflow, waves and currents are expected under climate change projections. Reduced sediment loads entering the Region are likely to improve the processes of sedimentation and light availability in the longer term.	↓ Good, Deteriorated
Chemical processes	Nutrient cycling in the Region continues to be affected by nutrients from land-based run-off but changes in land management are likely to result in long term improvements. Heavy rainfall in recent years has temporarily affected ocean salinity in some parts of the Region. Ocean pH is changing and is projected to decline in the future under climate change scenarios. Unlike the Outlook Report 2009, this assessment does not include consideration of pesticide accumulation.	↓ Good, Deteriorated
Ecological processes	At a Reef-wide scale, most ecological processes are considered to be in good condition but significant losses in coral cover and declines in ecosystem health in the inshore, southern two-thirds of the Region is likely to have affected some key ecological processes such as connectivity, reef building and recruitment.	↓ Good, Deteriorated
Terrestrial habitats that support the Great Barrier Reef	Terrestrial habitats that support the Reef are generally in better condition in the northern catchment. However, supporting habitats have been substantially modified in southern areas (south of about Port Douglas), especially wetlands, forested floodplains, grass and sedgelands, woodlands and forests, and rainforests.	Poor, No current trend
Outbreaks of disease, introduced species and pest species	Coral disease is being increasingly observed on the Great Barrier Reef and is predicted to increase in the future. There are few incidences of other disease and introduced species in the marine environment and they tend to be localised. Outbreaks may be becoming more frequent as ecosystem conditions decline. The overall assessment of 'poor' is due to the severity of outbreaks of crown-of-thorns starfish which seriously affect coral reef habitats on a large scale.	– Poor, No consistent trend

Grading statements			
Very good No records of diseases above expected natural levels; no introduced species recorded; pests populations within naturally expected levels.	**Good** Disease occasionally above expected natural levels but recovery prompt; any occurrences of introduced species successfully addressed; pests sometimes present above natural levels with limited effects on ecosystem function.	**Poor** Unnaturally high levels of disease regularly recorded in some areas; occurrences of introduced species require significant intervention; pests outbreaks in some areas affecting ecosystem function more than expected under natural conditions.	**Very poor** Unnaturally high levels of disease often recorded in many areas; uncontrollable outbreaks of introduced pests; opportunistic pests seriously affecting ecosystem function in many areas.