



Australian Government

**Department of Sustainability, Environment,
Water, Population and Communities**

LIMITS OF ACCEPTABLE CHANGE

In order to better manage our wetlands we need to understand how they function, and how they interact with the surrounding landscape. We need to understand when our wetlands are threatened and what can be done to address those threats. Developing ecological character descriptions for each Ramsar listed wetland means we have baseline information that can be used to inform the management of these sites. Limits of acceptable change are a tool for assessing when the character of a wetland may have changed.

Maintaining the ecological character of Ramsar wetlands

As a signatory to the Ramsar Convention¹, Australia is expected to promote the conservation of Ramsar wetlands and as far as possible, the wise use of all wetlands in its territory. Wise use is defined as "... the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development^{2,3}". In order to promote conservation and wise use, it is important that the ecological character of Ramsar wetlands in Australia is well understood and described.

Ecological character is the combination of the ecosystem components, processes and benefits/services that characterise the wetland at a given point in time⁴.

In Australia, ecological character descriptions are being prepared for all Ramsar sites.

The ecological character descriptions include a description of limits of acceptable change of critical components, processes and benefits or services in order to provide a better understanding of the ecological character of the wetland (DEWHA 2008).

Limits of acceptable change

Limits of acceptable change are defined as the variation that is considered acceptable in a particular component or process of the ecological character of the wetland, without indicating change in ecological character that may lead to a reduction or loss of the criteria for which the site was Ramsar listed (modified from definition adopted by Phillips 2006).

Purpose

Limits of acceptable change can be a useful tool to help Ramsar site managers understand and describe the ecological character of the wetland. This information can help site managers monitor the site, identify management actions and determine



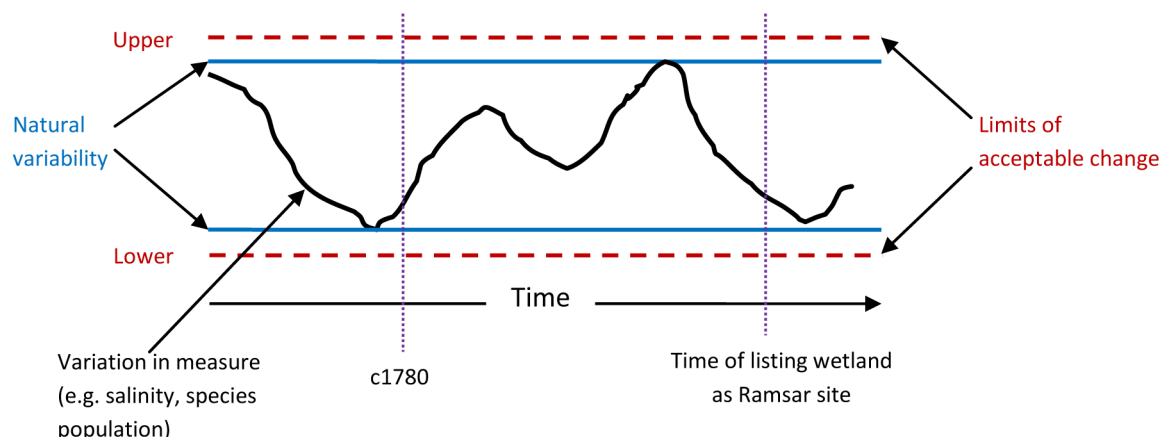


Figure 1 Comparison of natural variability and limits of acceptable change (Source: adapted from Phillips (2006)).

limitations to activities to maintain the ecological character of the site. The limits of acceptable change can be used to monitor ecological character over time to inform wetland managers of the status or health of that wetland. It should be noted that limits of acceptable change do not constitute a management regime for the Ramsar site.

Setting limits of acceptable change

In most cases, limits of acceptable change are based on conditions at the time of listing. Limits of acceptable change can be established for those components and/or processes and/or benefits/services:

- for which there is adequate information to form a baseline against which change can be measured
- for which there is sufficient information to characterise variability around the time of listing
- that are critical in determining the ecological character
- that can be monitored.

A simplified concept of limits of acceptable change is presented in Figure 1 as a range within which the ecological condition of a wetland may vary under natural conditions. When taken simply, Figure 1 depicts limits being set around maximum and minimum range of a parameter, however, in many cases it may not be sufficient to solely define the extremes of a parameter. Consideration should also be given to seasonal patterns; the frequency and magnitudes of extreme events; cyclical events; and ecosystem or species resilience.

Limits of acceptable change should be evidence based and drawn from the best available quantitative information from relevant monitoring programs, scientific papers, technical reports, or other publications and documented information on the wetland. Wetland experts, Indigenous leaders and oral histories may also provide information that can be useful in setting limits of acceptable change.

For some critical wetland components, processes and benefits or services, there may be insufficient good quality data or



information available to be able to determine the natural variation at the time of listing and the limit of acceptable change in a particular wetland feature. Where available information is insufficient to be able to set a limit of acceptable change, a 'knowledge gap' may be identified and efforts can be made by site managers to undertake investigations or research, or initiate a targeted monitoring program to provide the required information.

Challenges

The principle or concept of limits of acceptable change is useful, however, the process of defining limits of acceptable change can be challenging for a number of reasons. For example, there may be:

- insufficient data (for example, inadequate data, data gaps, absence of long-term data), which may mean that limits of acceptable change cannot be set for all parameters
- limited understanding of the natural variability of the site including understanding of the natural dynamics, cyclical change and seasonality. This may mean that a comprehensive understanding of site character may not be possible for all sites
- limited understanding of ecosystem or species resilience making it difficult to determine what the limits of acceptable change should be
- lack of understanding of what would actually constitute a change in ecological character (even when data is adequate) and therefore what the limit of acceptable change should be.

Updating limits of acceptable change

Limits of acceptable change can be updated as new or more information becomes available to ensure they more accurately reflect the natural variability (or normal range for artificial sites) around the time of listing of critical components, processes and benefits or services of the Ramsar wetland.

If a site has improved or has been restored and is being managed to maintain an improved baseline, it may be appropriate to review and update the limits of acceptable change to ensure they reflect the new baseline.

Exceeding or not meeting limits of acceptable change

Given the challenges with setting limits of acceptable change, exceeding or not meeting limits of acceptable change for any component may not necessarily indicate that there has been a change in ecological character for the whole site. However, when a limit of acceptable change is not met or has been exceeded this may require investigation to determine whether there has been a change in ecological character within the meaning of the Ramsar Convention.



References

1 *The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.*

2 *The phrase “in the context of sustainable development” is intended to recognize that whilst some wetland development is inevitable and that many developments have important benefits to society, developments can be facilitated in sustainable ways by approaches elaborated under the Convention, and it is not appropriate to imply that ‘development’ is an objective for every wetland.*

3 *Wise use was redefined in 2005; Resolution IX.1 Annex A*

4 *at the time of designation as a Ramsar Wetland of International Importance (Resolution VI.1 Annex Para 2.1)*

Department of the Environment, Water, Heritage and the Arts (2008). *National Framework and Guidance for Describing the Ecological Character of Australia’s Ramsar Wetlands. Module 2 of the National Guidelines for Ramsar Wetlands—Implementing the Ramsar Convention in Australia.* Australian Government Department of the Environment, Water, Heritage and the Arts, Canberra.

Phillips B (2006). *Critique of the Framework for describing the ecological character of Ramsar Wetlands (Department of Sustainability and Environment, Victoria, 2005) based on its application at three Ramsar sites: Ashmore Reef National Nature Reserve, the Coral Sea Reserves (Coringa-Herald and Lihou Reefs and Cays), and Elizabeth and Middleton Reefs Marine National Nature Reserve.* Mainstream Environmental Consulting Pty Ltd, Waramanga ACT.

