



**Technical assistance programme for effective coastal-marine management in the
Turks and Caicos Islands (DPLUS119)**

Work Package 2: Status and Vulnerability Assessments– Guidance Document

JNCC

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<https://hub.jncc.gov.uk/assets/afd3dc03-9235-41d3-ada8-9f51aa50ed88#dplus119-wp2-guidance-document.pdf>.

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Summary

Work Package 2 (WP2) of the [DPLUS119 project](#) aimed to use existing data and evidence on human activities occurring in the Turks and Caicos Islands (TCI) to, firstly, identify the pressures occurring on marine and coastal habitats in the TCI and the associated sensitivity of these habitats to pressures; and secondly, to undertake vulnerability assessments to assess the extent and condition of these habitats. These processes are summarised in Figure 1.

Vulnerability assessments are used as an initial assessment of likely habitat condition based on the sensitivity of habitats to a particular pressure, which are caused mainly from human activities. This should be contrasted with assessing habitat condition by use of biological indicators (see Work Package 3) where there is a more precise understanding of the state of a habitat from biological monitoring.

One other benefit of this approach is that it recognises that the same changes in biological condition may be caused by different activities (e.g. surface abrasion by several maritime activities) which allows a more targeted assessment using the key pressures, and recognising that activities may cause different pressures at different stages or at different times.

A vulnerability assessment is the output of this work though the understanding of how the seabed responds to activities, and can be enhanced through development of the intermediate products as well, such as benthic habitat maps and sensitivity assessments of a habitat to different pressures.

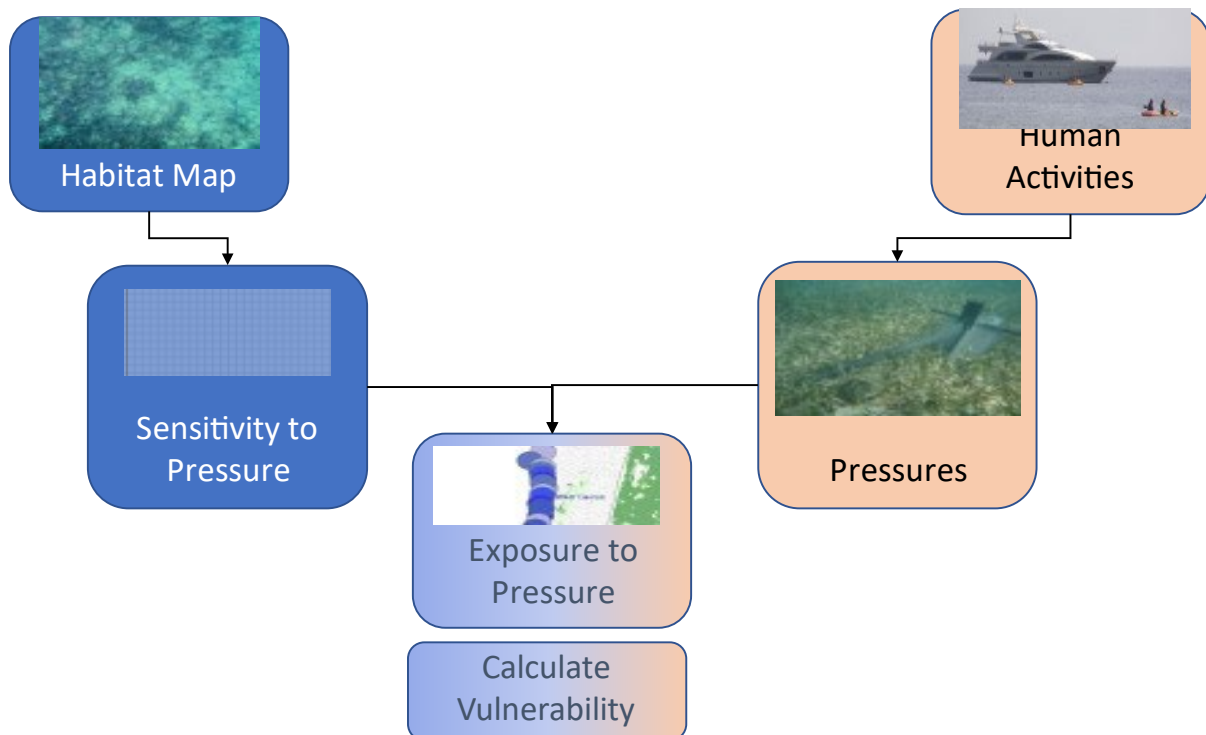


Figure 1. Description of the steps in a condition assessment using habitat maps and human activities.

Key Outputs

- A **map of benthic habitats showing the extent** (and potentially known variation in condition where this has been mapped, such as distinguishing sparse from dense seagrass beds).
- A **list of activities** mapped to the **pressures** they cause.
- A set of **sensitivity assessments for the 3 key habitats** showing sensitivity against seven identified pressures.
- A **literature review of sensitivity assessment work** relevant to TCI key habitats.
- An **assessment of condition** based on globally available datasets adopting a vulnerability-type approach.
- A more **localised map-based assessment of exposure to two key pressures** derived from workshop participation.

Key findings

- There is a considerable need for more accurate benthic habitat maps, as shown by workshop discussion based on local knowledge comparing the maps derived primarily from remote sensing data sources. This will require more in-situ monitoring of habitats, although this will have benefits for a range of marine management activities.
- There is a good understanding of the range of activities occurring in TCI waters, however there were few spatial datasets available showing the location and extent of these activities. Although this did not impact on the ability to identify key pressures to assess sensitivity of habitats against, the lack of spatial data limited the utility of the vulnerability assessments for specific habitats. However, introducing these concepts in a workshop setting did allow greater input on what the key activities are and how they might be monitored and mapped in future.
- The sensitivity assessments were undertaken in a time-limited fashion and, as such, a fully comprehensive search of all available literature has not been undertaken. Often, direct evidence from TCI was not available within the literature and literature from other parts of the Caribbean/world has been used to support the assessments. This is primarily an area where more research is needed to assess sensitivities in the environmental conditions found in TCI waters (and similar regional areas).
- Literature on habitat sensitivity was not always found for all pressures at the benchmark levels. This is common in sensitivity assessment work and is reflected in the confidence scores. It is therefore important that these confidence scores are taken into account when using the sensitivity assessments in any further work.
- As stated above, condition assessment is only possible with very low levels of confidence based primarily on activity data, or proxy data, generated for use in regional-scale models. Local activity data was collected and presented and this can be used as a more reliable resource in future.

How to use these resources

- Further information on the methodology behind the sensitivity assessments is available from the MarLIN project: https://www.marlin.ac.uk/sensitivity/sensitivity_rationale.

Where to find more information

- All outputs, including reports, knowledge exchange presentations and guidance documents, can be accessed from the DPLUS119 WP2 webpage: <https://jncc.gov.uk/our-work/work-package-2/>.
- All data products, including the benthic habitat maps and ASM, can be accessed from the Turks and Caicos Data Portal: <https://dataportal.gov.tc/>.

Glossary of terms

Term	Definition
Benthic habitat	Seabed habitat. The ones of particular focus here were: Coral Reefs, Seagrass beds, and Sandy substrates.
Human Activity	Any human activity in or near the sea which can affect the marine habitats and species.
Sensitivity	A combination of a habitat's likelihood of damage from a pressure and how quickly is it able to recover after that damage has occurred.
Pressure	The mechanism through which an activity has an effect on any part of the ecosystem.