

PST28 - Assessing the ecological quality of pools and pool landscapes in the Maltese Islands

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The temporary freshwater rockpools of the Maltese Islands are important biodiversity hotspots that have been shown to provide an early-warning indicator of climatic change. Despite their importance, there is no systematic monitoring of these habitats nor is there any methodological framework within which this can be carried out at present. This study therefore proposes two indices, accessible to non-specialist personnel, that can be used to describe these pools and their pool landscapes in monitoring programmes.

The development of the indices was based on community data and pool morphometric data collected over three decades, from 1987 to 2016. The first index is an ‘Ecological Integrity Index’ (EII), that is applicable to individual pools and that aims to evaluate their ecological status by comparing the functional complexity within the pool ecosystem during the wet phase against a hypothetical ‘reference pool’. The second index is a ‘Conservation Index’ (CI) that applies to pool landscapes and that categorises these according to the presence of species of conservation significance in pools.

The Ecological Integrity Index is a three-point scale that classifies pools as having ‘Good’, ‘Intermediate’, or ‘Poor’ Ecological Integrity. It scores pools positively on abiotic and biotic components characteristic of a stable reference pool ecosystem, including the presence of hydrophytes and amphiphytes, low water turbidity, and the presence of microcrustaceans. Factors that contribute a negative score include spatial isolation of a pool, patchy or thin sediment, the absence of characteristic species, and proximity to anthropogenic activities.

The Conservation Index is based on policy indicators. Its components include species listed in the Habitats Directive, in the Red Data Book for the Maltese Islands, and species that are considered of national importance. Different weightings were given to species depending on their place in the legislation, with the highest weighting being given to species protected across the EU, and the lowest to species considered ‘important’, but not mentioned in legislation. Species specific to pools but unlisted in legislation were also added to the Conservation Index because of their importance based on their biodiversity value for the MTP habitat.

The indices were tested using biotic and abiotic data collected during the 2013/14, 2014/15, and 2015/16 wet seasons. In general, the values returned by the indices were consistent with the trends observed in the field during those years, suggesting that these indices are reflective of the ecological and conservation status of these habitats.