LONG-TERM PLANT COMMUNITY PATTERNS IN TEMPORARY FRESHWATER ROCKPOOLS

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Introduction

Context: the temporary freshwater rockpools (TFR) of the Maltese Islands have been studied from 1987 to 2018 at varying levels of detail. Data have appeared in different studies often relating to relatively short periods (1-3 years, maximum 7 years). There has been no attempt to synthesise the data from the whole 30 year period to extract any trends that may be present in the data.

Data available


Quality of data

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<td>Low Quality: seasonal visits, presence-absence data; all taxa</td>
<td>Intermediate Quality: monthly visits, presence-absence data; all taxa</td>
<td>High Quality: fortnightly visits; detailed coverage; all taxa</td>
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Sample Results (2001-2007)

- Relative proportion of obligate aquatic plants, amphibious plants, and terrestrial plants in pools (2001-2007).
- Ratio of obligate aquatic plants to amphibious plants, and ratio of obligate aquatic plants to terrestrial plants (2001-2007). Rainfall data also shown.
- Frequency of Elatine gussonei (amphibious), Chara vulgaris (aquatic) and Damasonium bourgaei (amphibious) 2001-2007.

Longer term patterns (1988-2018)

Conclusions

General trends: 30-year reduction in the frequency of aquatic species and, since 2008, considerable infiltration of terrestrial species into pool basins. Frequency of amphibious species also increasing.

Community cycles: The TFR community undergoes periods of relative stasis, often lasting for several years, followed by abrupt shifts in community composition. The periods of stasis may be attributable to reduced immigration of confiding species, to the filtering effects of hydroperiod duration and water depth, and to the oxidising effects of the summer drought which prevents gradual infill by sediment.

Stochastic meteorological events: unseasonal rainfall episodes or occasional deluges can play a key role in causing abrupt shifts. Unseasonal rain can trigger germination at unfavourable times of year, leading to reproductive failure over a whole population, whilst heavy deluges can wash out sediment and seed banks from pools.