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Spatial and temporal patterns in benthic invertebrate communities of the Walpole and Nornalup Inlets Marine Park

Marine Science

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Project Team	granted
Program Leader	granted
Directorate	granted

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Context

The Walpole and Nornalup Inlets Marine Park (WNIMP) was created in 2009 to include the entrance channel, Walpole and Nornalup inlet basins and the tidal extent of the Frankland, Deep and Walpole rivers. Invertebrates are recognised as a significant ecological value of the marine park and a key performance indicator (KPI) of management effectiveness. The benthic invertebrate community of the inlets has been described from surveys conducted in 1984 and 1987. The fauna was found to be relatively diverse compared with most estuaries in the south-west of Western Australia because of the predominantly marine conditions that are sustained in the inlets. Few subsequent studies have examined this fauna, and the current knowledge of benthic invertebrates in the system is considered to be inadequate for marine reserve management. Little is known, for example, of how the fauna varies in response to the seasonal hydrological cycle.

Aims

- Determine spatial patterns in the WNIMP benthic invertebrate community.
- Determine temporal variation in the WNIMP benthic invertebrate community, particularly in relation to seasonal changes in the hydrological cycle of the inlet system.
- Assist to develop methods for long-term monitoring of benthic invertebrates in the WNIMP and more broadly across temperate estuarine marine protected areas.

Progress

- A collaborative Parks and Wildlife / Edith Cowan University (ECU) student camp was held at WNIMP in April 2016, with Coastal and Marine Management course students undertaking a study of bivalve community structure and recruitment in the estuary. Data were collected over four days and provided to Parks and Wildlife to assist future research planning. This was the third year of data collection for this project.
- Data (species identifications, abundances and shell lengths) collected by ECU students have been verified by Marine Science Program and entered into a database.
- Analysis of spatial and temporal benthic invertebrate community data is continuing.

Management implications

- As benthic invertebrates are a KPI for this marine reserve, knowledge of spatial and temporal patterns in their distribution is important in relation to understanding the condition of this community in relation to the influence of natural processes and possible anthropogenic impacts. This study will also assist the implementation of long-term benthic invertebrate community monitoring at WNIMP.

Future directions

- Detailed analyses of the spatial and temporal invertebrate dataset will be undertaken.
- Additional ecological papers will be prepared.
- Collaborative studies with ECU will continue.
- The data collected by this project will be used in 2016 to aid the development of a long-term monitoring program for benthic invertebrates in WNIMP.