

# WAMSI NODE 4 MILESTONE PROGRESS REPORT (MPR)

## Project Details

Project No. and Title	4.2. Assessment of marine communities and the impact of anthropogenic influences.
Node Leader	Rick Fletcher
Project Leader	Euan Harvey
SubProject No. and Title	4.2.1b Estuarine Health Index
Project Start Date	31/12/07
Project End Date	31/12/10
Due Date for this Milestone	31/12/09
Milestone Description	Satisfactory completion of annual university progress report for second year of PhD for Chris Hallett.

## 1. Executive Summary

### ***Aim:***

This project aims to develop an index for assessing the health of the Swan Estuary, based on fish assemblage characteristics. The index will incorporate a suite of metrics, each of which measures a different aspect of the fish community, *e.g.* species diversity and composition, use of the Estuary as a nursery habitat, and the trophic structure (the feeding relationships between species) of the estuarine fish community.

### ***Outline of key stages:***

- **Select appropriate metrics for inclusion in the index:**
- **Establish reference conditions against which each metric is to be compared:**
- **Establish scoring system for each metric, and calculate index values:**
- **Validate sensitivity and reliability of the index**

### ***Progress to date:***

Field sampling to collect data on the fish community of the Swan Estuary has been completed for all of the eight planned seasons. Fish were collected at nearshore and offshore sites throughout the Swan Estuary, using seine nets and sunken gill nets, respectively. All fish were identified to species and the total number of individuals of each species in each sample was recorded.

An extensive suite of fish assemblage metrics have been tested for their suitability for incorporation into the estuarine health index. A variety of graphical and statistical methods were employed to select metrics which are consistently sensitive in detecting changes in the condition of the Swan Estuary over time.

For each of the selected metrics, appropriate reference conditions are currently being established, against which the health of the estuary may be measured.

### ***Outcomes:***

It is envisaged that the outcomes of the project will include a reliable, practical and cost-effective method for assessing the health of the Swan Estuary, and potentially other estuaries across WA. The index developed in this study will allow managers to quantify estuarine health, establish a regime for tracking estuarine health in the future and facilitate more informed and preventative management actions, as well as providing a method for communicating the health of the estuary to the public and stakeholders.

