RIVERSYMPOSIUM

Originally from the UK, Chris gained a BSc in Biology from the University of Manchester, studying among other topics, the effects of light on the health of Costa Rican tree frogs, before commencing an MSc in Marine Environmental Protection at the University of Wales, Bangor. During his MSc, Chris held a volunteer research fellowship at CSIRO in Hobart, studying the diet and feeding ecology of two deep-sea dogfish species on Tasmanian seamounts.

Chris fell in love with Australia during his time in Tasmania, and so in February 2007, began a PhD in the Centre for Fish and Fisheries Research at Murdoch University. His thesis, funded by the Departments of Water and Fisheries, the Swan River Trust and the Western Australian Marine Science Institution, sought to develop a multi-metric index for assessing the ecological health of the Swan Estuary.

Chris' current research centres on estuarine fish community ecology, the concept of ecological health, its monitoring and assessment, and the use of ecological indicators for aquatic ecosystem management. In addition, his broader research interests include approaches to managing and restoring estuaries, wetlands and other ecosystems; the relationship between biodiversity and ecosystem function; studies of diet and trophic partitioning among fish; the factors affecting the temporal and spatial distributions of species, and multivariate methods for analysing ecological data.

RIVERSYMPOSIUM

A fish-based Estuarine Health Index for the Swan Estuary, WA

Abstract:

I describe the development of a fish-based, multi-metric estuarine health index (EHI) for the Swan Estuary, Western Australia. A suite of fish community characteristics (metrics), including measures of species composition, diversity and abundance, trophic structure and life history function, were selected via a novel weight of evidence approach, on the basis of their sensitivity to detect inter-annual change in estuarine condition. Seasonally-adjusted reference conditions for each selected metric were established for each region of the Swan Estuary using 30 years' of historical fish assemblage data, and thus represent a best available standard of biotic integrity against which the current and future health of the estuary may be assessed and compared. Scores for each metric were assigned according to the extent of the metric's deviation from its reference condition. Values for the EHI were calculated from summed metric scores for each main region of the Swan Estuary for each season and year, to identify trends in the recent health of the estuary, and to validate the sensitivity and reliability of the index. The index, which is the first such tool to be developed for Western Australia, will provide managers with a reliable and cost-effective, quantitative method for assessing and communicating the health of the Swan Estuary.