

Mon, 19 August 2013 | 4pm | DBS Conference Room 1

Hosted by Dr Jeff Kwik



Brad's Background

Brad is an Australian riverine ecologist with research interests in the ecology, evolution and biography of northern Australia's freshwater fish fauna, hydrology, environmental water management and incorporation of traditional Aboriginal ecological knowledge into environmental management. He undertook his Ph.D. in Western Australia (1991) examining the ecology and physiology of fishes in the acid peat swamps of south-western Australia before moving to the Australian Rivers Institute at Griffith University in Queensland to investigate the community and flow related ecology of stream fishes of north-eastern Australia, culminating in the publication of the book *Freshwater Fishes of north-eastern Australia* with his coauthors Angela Arthington and Mark Kennard. He has led or been involved in several programs with the recent Tropical Rivers and Coastal Knowledge (TRaCK) program including a continental classification of Australia's river flow regimes, mapping the distribution of freshwater biodiversity and conservation significance across northern Australia, a long term study examining flow and habitat relationships of fishes in the perennially flowing Daly River and several studies examining the nature of freshwater foodwebs in tropical northern Australia. The results of this research will be drawn together to illustrate the importance of maintain natural levels of riverine connectivity. More recently Brad has been appointed to a Research Professorship at the University of Western Australia and is currently on an extended sabbatical gathering material for a book on Barramundi or Asian Sea Bass.

Fish, flows, isotopes and foodwebs: the importance of connectivity in northern Australian rivers

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The freshwater biodiversity of Northern Australia remains rich and distinctive; in part, due largely to low levels of human impact. Most rivers remain are free-flowing and minimally impacted by human activities. The free flowing nature of these rivers is important as it ensures that there exists natural levels of connectivity throughout the riverine landscape enabling organisms, and importantly carbon and nutrients, to be shifted between ecosystems and different parts of the landscape. This high degree of connectivity differs between rivers according to their flow regime however; most rivers of northern Australia are highly seasonal, flooding annually and flowing intermittently. This provides both opportunities for movement, growth and reproduction but also imposes a severe existential threat. The freshwater fish fauna consists 176 teleost and 5 eleasmobranch species, well over half the continent's total fish diversity. More than half of this total need to move freely between estuarine and freshwater components of the riverine landscape and some such species occupy almost all available habitats within the greater riverine landscape. The present paper details the importance of maintaining connectivity within these rivers and between the river and its floodplain for the maintenance of species diversity and the structure of aquatic food webs. It draws upon large datasets concerning fish biodiversity and several foodweb studies using stable isotopes assembled or conducted with the Tropical Rivers and Coastal Knowledge program to illustrate the importance of connectivity.