LA TROBE UNIVERSITY

Centre for Freshwater Ecosystems

Fact Sheet

MMCP Collaboration

Response of basal resources to changing flows

Background

Water level variations due to managed flows are known to influence both productivity and structural aspects of biofilms that inhabit hard surfaces within rivers. Microbial communities (algae, bacteria and fungi) that make up hard surface biofilms within streams support diverse macroinvertebrate communities and are the first responders to changed flow patterns. Biofilms are an important source of food for herbivorous consumers and form the foundation of many aquatic food webs. This project will investigate how flow influences the food quality of biofilms and implications for higher consumers.

Management implications

Protect and restore the ecosystem functions of water-dependent ecosystems

Flow influences biofilm communities that inhabit hard surfaces within rivers indirectly via mobilization of carbon and nutrients (N and P) and directly via physical abrasion. In order to fully understand how flow influences higher consumers (e.g. birds and fish) it is necessary to improve our knowledge of the basal resources that support our fresh-water food webs. This project aims to contribute to improving our understanding of ecosystem function in response to changes in flow regime, focusing particularly on biofilm community responses to in-channel parts of the flow regime. This research will aid in improving knowledge of the influence of flow magnitude and duration on basal resource quantity and quality.

Objectives

- Provide an improved understanding of basal level ecology and processes associated with environmental watering
- Demonstrate the use of new tools and the development of protocols to better manage environmental water allocations

Outcomes

- Generate information that can be directly used by environmental water managers to report on outcomes of changed flow regimes for biofilms as a critical base re-source supporting riverine productivity and food webs
- Provide environmental water managers with the capacity to act and refine future management options that will boost riverine productivity and best support desired food web outcomes such as successful breeding and survival of waterbirds and fish.

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