

MMCP Collaboration

Executive summary

MMCP Collaboration is a project supported by the Joint State Governments and the Murray-Darling Basin Authority to generate and adopt freshwater ecological knowledge through collaboration, to maintain research capability and contribute supporting science to underpin the Basin-Wide Watering Strategy.



Research themes and key management recommendations

- **Vegetation dispersal:** modifying connectivity modifies the dispersal patterns of seeds, the type of connection affects how water is delivered which influences how many and which plant seeds are transported onto the floodplain (Daryl.nielsen@csiro.au).
- **Fish movement:** increasing the capacity in trained staff to tag fish, results in increased tagged fish in the system (cfe@latrobe.edu.au).
- **Fish growth dynamics:** high flows promote the growth of Murray cod, but the level of climate change currently forecast for the Murray-Darling Basin poses a significant threat to cod populations (Rick.Stoffels@niwa.co.nz).
- **Macroinvertebrates and foodweb ecology:** flow variables alone are not enough to predict macroinvertebrate abundance, yabbies require a diverse range of food sources with benefits from essential fatty acids from both rivers and wetlands. (gavin.rees@csiro.au).
- **Response of basal resources to changing flows:** Some key measures of biofilm quality peaked after substrates were submersed for five weeks, and some further improvement in biofilm quality continued up to 11 weeks after initial submersion (paul.mcinerney@latrobe.edu.au).

Objectives

MMCP Collaboration directly address the Basin Plan environmental objectives outlined below.

Vegetation dispersal	Fish Movement	Fish growth dynamics	Macroinvertebrates and food web ecology	Response of basal resources to changing flows
Improving understanding of the relationship between flow, ecosystem function and biodiversity				
√		√	√	√
Improving managers' capacity to predict the environmental outcomes of water management and complementary natural resource management				
	√	√	√	
Improved capacity to evaluate the threats to ecosystem function and diversity under a range of water management and climate scenarios				
√		√		
Improving capacity to assess ecosystem condition and identify the interventions most likely to effectively and efficiently achieve environmental objectives.				
√		√		√



Project team

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 Rebecca Durant - La Trobe University, Wodonga Victoria
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 Paul McInerney - La Trobe University, Wodonga Victoria
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Murray-Darling Basin Officials Committee (BOC) Questions

The Murray-Darling Basin Officials Committee and the Joint State Governments posed specific questions to the project team that were pertinent to the ongoing management of the Murray-Darling river system. The responses to these questions were in the form of reviews or synthesis papers:

- The potential impacts of climate change on water quality in the southern Murray-Darling Basin - doi.org/10.26181/5d199342d58d5
- Science to support the management of riverine flows - doi.org/10.26181/5d199de729a2c
- Factors contributing to the 2016 hypoxic blackwater event - doi.org/10.26181/5d199d3ce698a
- How will declining water availability as a consequence of climate change affect habitat and species distributions in the Murray-Darling Basin? - doi.org/10.26181/5d199c94772e6
- Connectivity and floodplain infrastructure - doi.org/10.26181/5d199f2cda3cf
- Improving our understanding of the ecosystem effects of varying water levels in weir pools of lowland floodplain rivers: What role can weir pool manipulation play in restoring the health of the River Murray Channel? - doi.org/10.26181/5d1993d78cf52
- eDNA: review of applicability for monitoring and detecting biotic populations of the Murray-Darling Basin - doi.org/10.26181/5d1999a3bc14f
- How can we better mitigate against weed (aquatic and terrestrial) invasions through tailoring flow events in the Murray-Darling Basin? - doi.org/10.26181/5d1995c8aa48e

Education

Student support was an important component, with postgraduate students able to carry out high-quality research at a reasonable cost and make an important contribution to the development of aquatic research capability. Student support was provided through the provision of cadetships, honours scholarships and PhD 'top-up' scholarships. MMCP Collaboration funded: Note: *completed thesis found at [online repository](#)*

- Four cadetships
- Five honour students
- Six PhD top-up scholarships

Factsheets

MMCP Collaboration project

Overview – doi.org/10.26181/5c64f361d67f3

Vegetation dispersal

Overview - doi.org/10.26181/5c64f333845b5

Findings and recommendations – doi.org/10.26181/5d1ace2427856

Fish Movement

Overview - doi.org/10.26181/5c64f2fa910d2

Findings and recommendations – doi.org/10.26181/5d19a24196a2c

Fish growth dynamics

Overview - doi.org/10.26181/5c63a34ad3a6b

Findings and recommendations – doi.org/10.26181/5d1ec8e55cb1b

Macroinvertebrates and foodweb ecology

Overview – doi.org/10.26181/5c64f2c433c3b

Findings and recommendations – doi.org/10.26181/5d19a39e717ea

Response of basal resources to changing flows

Overview – doi.org/10.26181/5d199fdd48383

Findings and recommendations – doi.org/10.26181/5d1acd798a9a3



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