RESEARCH PAPERS : EFFECTS OF WILLOW REMOVAL

Potential effects of willow removal on freshwater ecosystem dynamics

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Research scope

In March 2006, the MDFRC was commissioned and funded by the North East Catchment Management Authority (NECMA) to develop a literature review and a long term monitoring program detailing the effects of willow removal on freshwater aquatic systems. The literature review summarised previous literature on willow effects and attempted to predict the potential short and long term effects of willow removal on aquatic ecosystems. The issues and monitoring report outlined a protocol for identifying key issues and a monitoring program associated with potential long term effects of willow removal on aquatic systems.

Results to date

Monitoring will commence in early March.

Implications for management

Catchment managers require access to knowledge that will enable willow removal to be undertaken in a manner which minimises detrimental short and long term ecological impacts and accelerates the recovery of an aquatic system. For best management practice to occur, quantitative information of the economical, social and ecological implications associated with willow invasion and willow removal is necessary. The willow literature review revealed that we are lacking a strong component of such necessary information. The long term monitoring program will provide vital information to quantify ecological patterns following willow removal and provide valuable knowledge and resources for the future management of willows in Australia.

Further work needed / gaps

The lack of comparable and consistent data means that key knowledge gaps currently exist. To provide focal management direction, key gaps can be grouped into six strategic themes:

1. Extent of impact on fish community composition and abundance (habitat, shade, temperature, feeding and predator avoidance).
2. Extent of impact on macro invertebrate community composition and abundance (feeding and habitat).
3. Extent of impact on food web (timing, quantity and quality of allochthonous input, shade, temperature and algal production).
4. Extent of impact on water quality (nutrient input and runoff, pH, salinity and dissolved oxygen levels).
5. Extent of impact on riparian habitats (bank soils and erosion, use of riparian corridors by animals, impact of riparian zone fragmentation following dewillowing and riparian vegetation).
6. Extent and timing of impacts and recovery periods.

Related publications

Zukowski, S. and Gawne, B. (2006). Potential Effects of Willow (*Salix* spp.) Removal on Freshwater Ecosystem Dynamics. A Literature Review. Report for the North East Catchment Management Authority. Murray-Darling Freshwater Research Centre, Wodonga.

Zukowski, S., Gawne, B., Gigney, H. and Huzzey, L. (2007). Potential Effects of Willow (*Salix* spp.) Removal on Freshwater Ecosystem Dynamics. Key Issue Assessment and Long Term Monitoring Program. Report for the North East Catchment Management Authority. Murray-Darling Freshwater Research Centre, Albury.

Acknowledgements

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