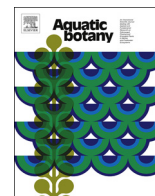




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## On the move: New insights on the ecology and management of native and alien macrophytes



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### ABSTRACT

Globally, freshwater ecosystems are under threat. The main threats come from catchment land-use changes, altered water regimes, eutrophication, invasive species, climate change and combinations of these factors. We need scientific research to respond to these challenges by providing solutions to halt the deterioration and improve the condition of our valuable freshwaters. This requires a good understanding of aquatic ecosystems, and the nature and scale of changes occurring. Macrophytes play a fundamental role in aquatic systems. They are sensitive indicators of ecosystem health, as they are affected by run-off from agricultural, industrial or urban areas. On the other hand, alien macrophytes are increasingly invading aquatic systems all over the world. Improving our knowledge on the ecology and management of both native and alien plants is indispensable to address threats to freshwaters in order to protect and restore aquatic habitats. The International Aquatic Plants Group (IAPG) brings together scientists and practitioners based at universities, research and environmental organisations around the world. The main themes of the 15<sup>th</sup> symposium 2018 in New Zealand were biodiversity and conservation, management, invasive species, and ecosystem response and restoration. This Virtual Special Issue provides a comprehensive review from the symposium, addressing the ecology of native macrophytes, including those of conservation concern, and highly invasive alien macrophytes, and the implications of management interventions. In this editorial paper, we highlight insights and paradigms on the ecology and management of native and alien macrophytes gathered during the meeting.

### 1. Introduction

Freshwater resources are essential to our well-being, providing the very basis of human health, ecological sustainability and supporting economic activity. The life supporting capacity of freshwaters globally is under threat, with invasive pests second only to habitat loss, as a driver of freshwater biodiversity decline. These threats to freshwater ecosystems have not decreased, despite efforts taken in many regions of the world. An increasing problem is the combined action of multiple

stressors acting at the same time or sequentially. Main threats for lakes, rivers, wetlands and other aquatic systems come from catchment land-use change, modified water regimes, anthropogenic eutrophication, invasive alien species, and climate change effects (e.g., Moss et al., 2013; Hilt et al., 2017; Hussner et al., 2017). There is a need for scientific research to respond to these challenges by providing solutions, preferably with predictable outcomes, to halt the deterioration and improve the condition of our valuable freshwaters. This need can only be met by understanding aquatic ecosystems, the role of macrophytes in

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