

Abstract

The occurrence of the emerging weed *Glyceria maxima* (Reed sweet-grass) in KwaZulu-Natal and Mpumalanga Province is possibly a threat to aquatic ecosystems. The aim of this study was to determine if *G. maxima* exhibits traits that indicate its potential for invasiveness. Additional aims included determining environmental factors that influence *G. maxima* establishment, preferred habitat and its impacts on plant species diversity in the invaded sites. The study was carried out at a dam at Mt. Shannon, Boston, and the Luhane River, Bulwer, both in the KwaZulu-Natal midlands. The littoral zone was divided into five elevational sampling zones in relation to water depth (i.e. from the terrestrial to aquatic habitat). Vegetation sampling was carried out twice in the 2008/09 and 2009/10 growing seasons. Water depth was found to be the major factor that determines the distribution patterns of *G. maxima*. *Glyceria maxima*'s preferred habitat was found to be semi-aquatic and aquatic habitats with a water depth of 130 cm. An unplanned fire event at Mt. Shannon Dam resulted in an increase in *G. maxima* vegetative recruitment. *Glyceria maxima*'s mode of spread within the study sites was found to be mainly vegetative reproduction as no seedlings were found. This was supported by a very low seed germination percentage (0.3-2%) in the laboratory germination tests although tetrazolium test showed that a considerable percentage of seeds was viable (25-89%; 53% av.). In the 2009/10 season *G. maxima* tiller density, percentage basal cover and height increased relative to 2008/09 which corresponded with a decline in the abundance of other species growing in the *G. maxima* stands. This shows that the habitat in which *G. maxima* is growing is ideal for its spread. Water depth, fire and vegetative reproduction are the main factors that influence *G. maxima* invasiveness in the littoral zone. Immediate attention should be given to the eradication of *G. maxima* while the number of the known infestations remains relatively small and fragmented, rather than waiting until the species is having a noticeable impact on riparian and wetland functioning. *Glyceria maxima* is likely to pose a threat to montane wetlands, which are generally regarded as biodiversity hotspots and water production regions.

Keywords: *Glyceria maxima*, aquatic ecosystems, water depth, vegetative reproduction, seed germination and viability, Invasive.