Listronotus frontalis (Curculionidae: Coleoptera): host-specificity testing

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Summary *Sagittaria platyphylla* (Alismataceae) is an emergent aquatic herb native to north America that has become a serious weed of shallow ephemeral or permanent water bodies, in natural and ruderal habitats. This weed is a serious invader of irrigation channels and drains in south-eastern Australia, where it forms dense monocultures that impede water flow, increase the risk of flooding and damage irrigation infrastructure. In natural waterways, extensive infestations threaten native biodiversity and potentially impede the movement of native fish. *Listronotus frontalis* was identified as a promising biological control agent for *S. platyphylla* alongside two other weevils (*Listronotus appendiculatus* and *Listronotus sordidus*). Since little was known about this weevil, host-specificity testing was preceded by pre-host specificity studies of the weevils' basic biology, ecology and behaviour. Results showed that larval development was negatively impacted by high water levels and plant phenology (reduced development on young plants compared to old plants). Laboratory host-specificity testing showed that non-Alismataceae species tested are not at risk off-target attack. Conversely, all of the exotic congeneric *Sagittaria* spp. tested may be at risk since *L. frontalis* larvae completed development on all of these species. Among native Alismataceae, three species *Alisama plantago-aquatica*, *Hydrocleys nymphoides* and *Damasonium minus* supported complete larval development and are therefore predicted to be at risk of off-target attack. *Caldesia oligococca* could not be effectively tested because this species only grows well under submerged conditions that are unfavourable for oviposition and larval development. Native species (*H. nymphoides* and *Caldesia oligococca*) that grow under submerged conditions may not be at risk, however, the safety of *A. plantago-aquatica* and *D. minus* that grow alongside *S. platyphylla* in the field cannot be guaranteed based on these results. Consequently, an application for release of *L. frontalis* will not be submitted until further studies ascertain the safety of these species. This work is part of the AgriFutures Biocontrol of Weeds project, funded by the Australian Government Department of Agriculture, Fisheries and Forestry as part of its Rural R&D for Profit program.

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