

Weeding it out: The Australian online trade of invasive aquatic plants

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Summary In Australia, the trade of plants via e-commerce websites is commonplace and widespread, yet the overall scale, diversity and underlying dynamics of the trade are poorly understood. Accordingly, the trade has rapidly emerged as a major pathway for the spread and establishment of weed species. Aquatic plants, in particular, have been identified as popular across several publicly accessible e-commerce websites, where they are sold primarily for use in ponds and aquariums. They are also a group with considerable invasion concern, with many species historically traded now recognised as invasive and declared in parts or all of Australia. We focused on the trade of five invasive aquatic species and one genus (*Eichhornia crassipes*, *Limnobium laevigatum*, *Pistia stratiotes*, *Salvinia molesta*, *Salvinia minima* and other *Salvinia* spp.). These species are declared in at least one State or Territory, and preliminary analysis indicated presence in the online trade. Trade data for these taxa was collected using

web-scraping technology that records advertisements from a popular Australian classifieds website. Search terms based on scientific, common, and trade names were matched with listing text to detect target taxa, with listing images used to visually confirm the detection. We found evidence of extensive online trade of the invasive aquatic plants, including 194 illegal advertisements. From all advertisements, most sellers only listed one or two advertisements, suggesting the majority of trade is done casually. However, the presence of a small number of sellers with many advertisements indicates that some people may be trading for profit. Our results indicate that the online trade of aquatic plants is an ongoing biosecurity risk for Australia. State legislation appears to decrease illegal trade, however given that illegal trade is still occurring, additional measures such as targeted education and enforcement of repeat offenders is recommended.

Keywords Online trade, e-commerce, web-scraping, aquatic weeds