

Biological control of *Sonchus oleraceus*: what is known, what is new and what is still missing?

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Summary Common sowthistle, *Sonchus oleraceus* L. (Asteraceae), is a widespread agricultural and garden weed in its native range of Europe and northern Africa. Now widely distributed, this invasive species is an increasingly important weed in Australia. Development of herbicide resistance is making populations extremely difficult to manage in cropping systems. As an alternative method to herbicides, CSIRO in collaboration with Montpellier SupAgro (France) has initiated a classical biological control program for this weed. Characterising the natural enemy community associated with *S. oleraceus* is crucial to further select potential biological control agent(s). However, this community is surprisingly poorly understood across its native range. From a literature review and early field collections, two flies, the leaf-gall former,

Cystiphora sonchi (Cecidomyiidae) and the bud-gall former, *Tephritis formosa* (Tephritidae), are considered as promising candidates. Their host specificity is currently being investigated by testing a series of key plants (*i.e.* economically important species and Australian native species). Moreover, native range surveys, guided with a climate-matching approach, have been carried out in Morocco and Western Europe in 2017 and 2018. To date, more than 40 arthropods species and, at least, five species of fungi have been collected. Potential new candidates (one rust and one hoverfly) have been identified and are currently maintained at the laboratory for host-testing.

Keywords Common sowthistle, weed, natural enemies' community, arthropods, fungi.