

Progress Report SP 2018-041

Molecular characterisation of stinking passionflower (*Passiflora foetida*)

Plant Science and Herbarium

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Project Team	granted
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Context

Stinking passionflower (*Passiflora foetida*), a perennial vine from South and Central America, is a highly invasive weed in the Pilbara and Kimberley regions of Western Australia, and in other parts of the world. In the Pilbara, the weed is rapidly expanding its abundance in areas with slightly higher moisture availability than the surrounding landscape, including coastal reserves and riparian habitats. Options for management of weed populations is limited and biological control is being investigated as a potential management strategy in a collaboration with CSIRO. Limited knowledge of the biology and life history of stinking passionflower is a significant impediment for implementing effective weed management strategies, including biological control. Ecological and genetic characterisation of the species in its invasive range is required in order to guide the search for suitable biological control agents from the native range.

Aims

- Use molecular analysis of Australian collections, in the context of samples from the native range and other regions and countries where *Passiflora foetida* is introduced, to identify and characterise the genetic entity(ies) present in the Pilbara.
- Elucidate whether there are multiple origins for the Pilbara invasions.
- Confirm the level of relatedness of the invasive *Passiflora foetida* to native *Passiflora* species and commercial varieties.
- Characterise Pilbara populations relative to less invasive populations to identify any signal of adaption.

Progress

- Samples were obtained from herbarium specimens of *P. foetida* at Missouri Botanical Garden for genetic analysis, including 117 samples from across the native range in South and Central America as well as a number of related species to be used as outgroups for analysis.
- Collections were made from 85 samples representing the invasive range in Western Australia, Queensland and Northern Territory.
- DNA has been extracted from all samples and the first set of samples is undergoing whole genome sequencing.

Management implications

- Information on the potential taxonomic entities and origin of *Passiflora foetida* in the Pilbara is essential to inform identification of putative control agents from the natural range and guide the search for putative control agents.
- Information on local adaptation within invasive populations is important to understand the dynamics of invasion and determine the effectiveness of potential control agents.

Future directions

- Complete collection of samples for genetic work from across study populations and the native range.
- Commence genetic analyses and generate initial results to clarify weed's taxonomic identity and invasion history.