PREDICTING SEED LIFESPAN FOR THE IMPROVED CURATION OF CONSERVATION SEED BANKS

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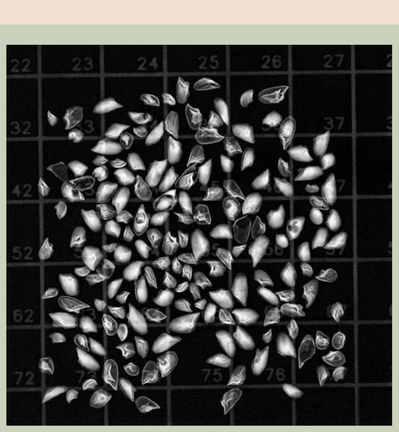
THE PROBLEM

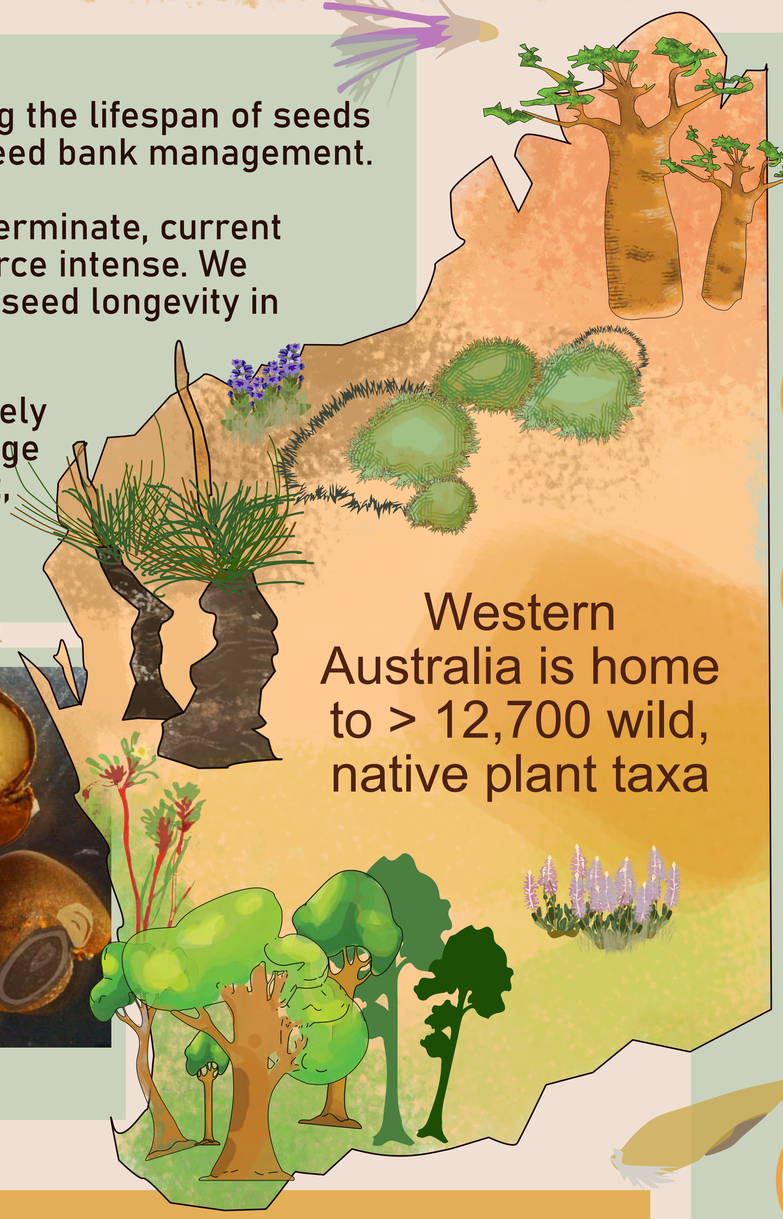
Identifying the storage behaviour and predicting the lifespan of seeds in storage for diverse wild species is key for seed bank management.

In conjunction with seeds that are difficult to germinate, current methodologies of assessing viability are resource intense. We currently have no good method of determining seed longevity in storage.

We aim to develop new technologies to effectively triage and curate seed collections during storage to ensure irreplaceable collections are not lost, and that viable seeds are available for future conservation and restoration.



(L) X-rays can only assess seed fill, (R) while cut-tests are destructive. Photos: David Blumer.



Western Australia is home to > 12,700 wild, native plant taxa

OUR PROJECT

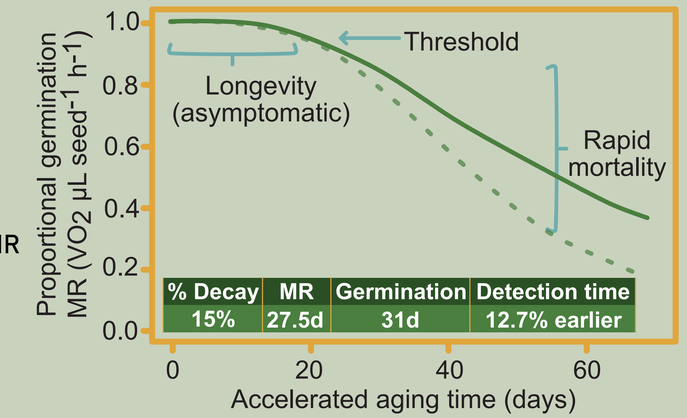
We will develop novel technologies and data interrogation techniques to predict viability maintenance of seeds of diverse wild species stored in seed banks.

We aim to:

ONE
Identify species or collections of Western Australian species that are performing poorly in storage.

TWO
Investigate seed respirometry and multi-spectral imaging to predict seed viability and longevity.

(R) Measurements of metabolic rate (MR) in seeds of oats show promise in the early detection of viability decline. Results obtained more rapidly compared with germination testing (MR = 20h; dashed line, germination test = 14d; solid line)



% Decay	MR	Germination	Detection time
15%	27.5d	31d	12.7% earlier

THREE
Develop alternative storage protocols to improve the storage stability of at-risk species.

FOUR
Develop novel data analysis techniques to more accurately predict the onset of viability decline.

PhD projects available!

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