University of Western Sydney

Research Directions

Office of Research Services

Grevillea seed research all fired up

Dr Charles Morris from the Ecology and Environment Research Group and the School of Natural Sciences is exploring the underlying mechanisms that allow *Grevillea* seeds to take advantage of bush fires to germinate, through an Australian Flora Foundation Research Grant.

'Seeds of the *Grevillea* generally don't germinate when they are shed from the parent plant because they are dormant, and they sprout in response to bushfires in the natural environment' says Dr Morris. 'The dormancy is controlled by the seed coat (the hard, multi-layered covering of the seed which protects the plant embryo inside), although just what the exact mechanism for how this happens hasn't been established. We know that if we break or remove the seed coat the seed will grow and develop, so this project will test the theory that the seed coat acts as a mechanical barrier that physically stops the plant embryo from growing because it cannot effectively break through the hard protective surface layers of the seed from the inside.'

Dr Morris will study the extent of physical force needed to break the *Grevillea* seed coat, and whether the need for such force is reduced after the seed has been exposed to things such as heat and smoke, which occur during fire. The research will also explore how deeply the seed coat must be ruptured through its various layers before the embryo can grow. Whether fire-related cues such as heat and smoke promote the growth of the plant to allow it to break the seed coat from the inside will also be tested.

This research will allow researchers to either support or eliminate one possible mechanism for seed dormancy in *Grevillea* seeds, and increase the understanding of how bushfires break seed dormancy in this important group of Australian native plants. This is likely to assist in Australian bushland management, regeneration and care, thus ensuring protection and continuity of Australia's valuable natural heritage.

Project Title: Mechanical constraint model of seed coat dormancy in *grevillea*

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