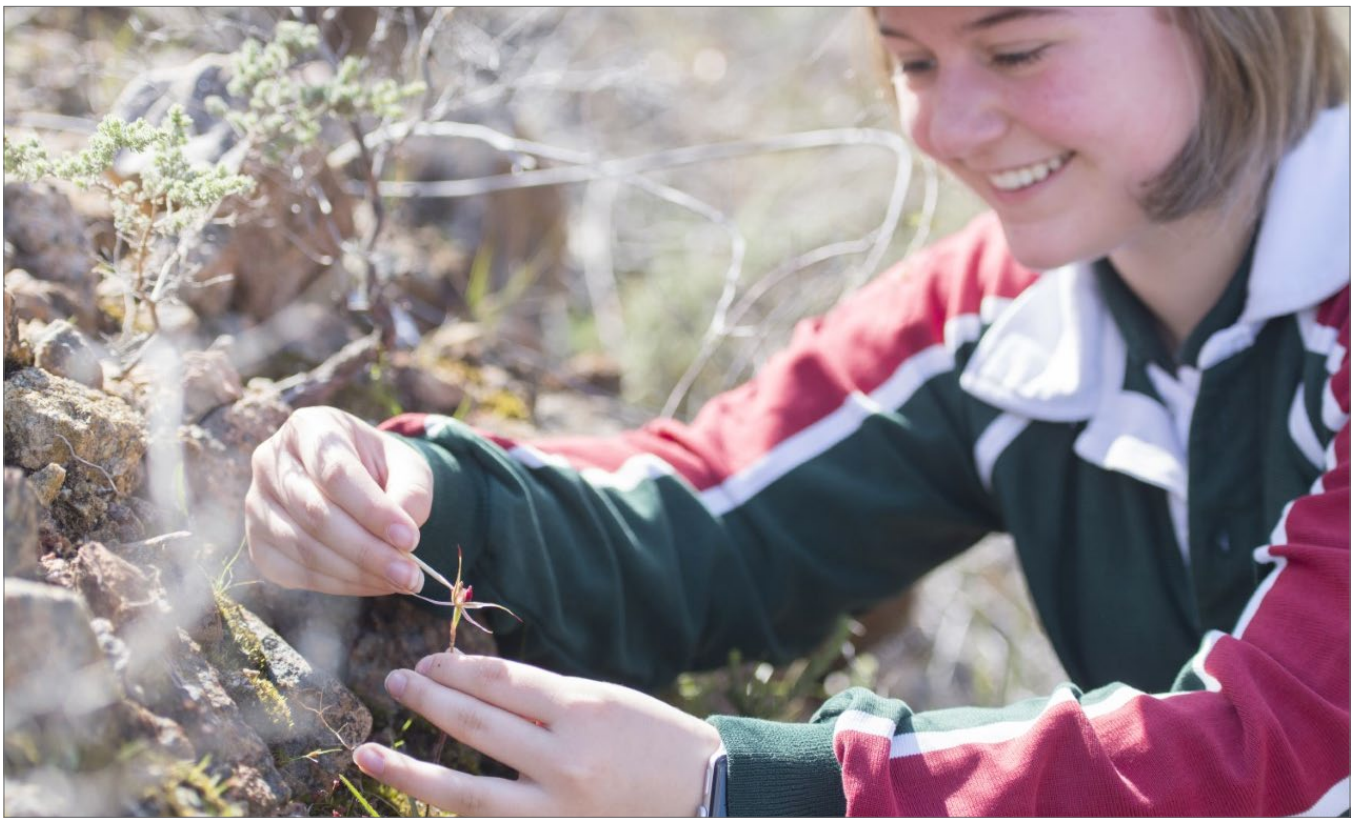
Seeds and Students of South Australia

JENNY GUERIN AND DAN DUVAL*

South Australian Seed Conservation Centre, Botanic Gardens and State Herbarium of South Australia.
*Corresponding author: Daniel.Duval@sa.gov.au

Through its South Australian Seed Conservation Centre, the Botanic Gardens of South Australia is currently the sole organisation in South Australia collecting and banking native threatened plant species in long term storage for future recovery programs and undertaking seed germination research. In the past fifteen years it has achieved collections for more than 80% of South Australia's threatened flora. Numerous threatened species are decreasing in their overall distribution with many populations now in serious decline. These smaller populations represent an important part of the genetic diversity of the species and are at risk of extinction in the short term. Approximately 50% of South Australian orchids are threatened and the majority of these have never been propagated. Staff at the Seed Centre are conducting research into the symbiotic germination of orchid seeds using specific mycorrhiza isolated from orchid tissues. The threatened orchid program is in partnership with Dr Noushka Reiter (Royal Botanic Gardens Victoria) who has propagated some threatened orchids for this project, and has provided invaluable technical advice about orchid propagation and translocation.

Students on a science extension program from Kildare College regularly visit the Seed Centre throughout the school term for laboratory practical sessions assisting with different stages of orchid propagation. Some students have been involved with the program for three years and mentor new students to the program. These include hand pollination and seed collection in the field, isolation of mycorrhizal fungi from root, stem and collar tissues, and germination of seeds-all under aseptic conditions in the laboratory. Young seedlings are then grown in sterile flasks until they can be transferred to potting soil in the nursery. Four species of threatened orchids have been translocated back into suitable habitat this year. The largest known population of the White Beauty orchid (*Caladenia argocalla*) (listed as Endangered under the *EPBC Act*) in the Mt Lofty Ranges had 25 flowering plants with 21 pods in 2019. The threatened orchid program translocated more than 50 plants to this location in 2019. This translocated population produced 27 flowers and 24 pods. An important part of the program has been to provide students with hands on technical experience and to provide opportunities to follow through on this work to demonstrate the tangible conservation outcomes achieved in the field.



Student hand pollinating *Caladenia reticulata* at Blackhill. Photo: Laura Kretschmer

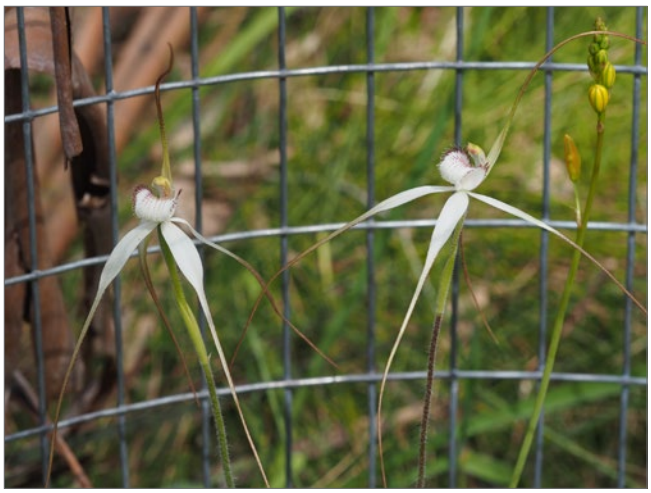
The students from Kildare were asked to provide their feedback on the orchid program and a summary is provided below.

Why do you think the partnership between Kildare College and the Seed Conservation Centre is important?

- Experience a whole new field of study.
- Work closely with real life scientists.
- Able to experiment using authentic scientific equipment.
- Learned about the reasons behind plants/orchids becoming endangered.
- More of an understanding about conservation.
- Skills to address some of the problems.
- Important for kinaesthetic learners who enjoy to learn from hands on work.
- Assisted with deciding about future occupations.
- Put into perspective the role of humanity in saving endangered species.
- We get to be part of something that otherwise we just hear about.
- We get to have a role in conservation.

What have you learned most from the workshops and working closely with Dan and Jenny?

- How to use specialised lab equipment.
- Unique insight into this field of work.
- The importance of patience.
- Appreciate the small wins and learn from the losses.
- I feel as though I am part of something that is making a change in Australia and supporting endangered species.



***Caladenia argocalla* X76 and X77 flowers. Photo: David Kilpin**

What have you enjoyed most?

- The opportunity of a lifetime.
- The ecology of orchids.
- Working in an authentic lab with real life scientists using specialised equipment.
- Learning in a professional environment outside of school.
- The field trips to hand pollinate *Caladenia tentaculata*.
- There is something about seeing these orchid species in the wild and connecting all the work we've done in the labs to what we are seeing in person in nature that is kind of legendary.

Any feedback?

- Do more of this.
- More time allocated to lab and theory work at school.