

Sustainable Timber Tasmania carbon, environmental planting and seed provenance research project

Bruny Island is home to several threatened species including the Swift parrot and all 12 Tasmanian endemic birds. Sustainable Timber Tasmania (STT) is working to enhance the carbon sequestration and future conservation outcomes in this unique place by undertaking a permanent environmental planting project near Adventure Bay (Figure 1). The project has several co-benefits, including providing foraging habitat for the threatened Swift parrot, carbon sequestration and storage, and providing an opportunity for the University of Tasmania to conduct climate change resilience research.



Figure 1 – Location of the project on Bruny Island.

The project is being undertaken on Tasmania's Permanent Timber Production Zone (PTPZ) land in an area known locally as 'The Plains' (Figure 2). The Plains was previously under a long-term grazing lease and was historically cleared for this purpose. The 55-hectare area is being planted with two tree species, *Eucalyptus ovata* and *E. globulus*, both of which are important foraging and habitat trees for the endangered Swift parrot. Sustainable Timber Tasmania is planting over 23,000 seedlings and 375 advanced trees between Spring 2023 and 2025, at a stocking of approximately 600 stems per hectare.



Figure 2: Aerial image of the project site at 'The Plains'.

The project is an environmental not-for-harvest planting registered as an Australian Carbon Credit Unit Scheme project with the Commonwealth Government. The activities are undertaken under the Reforestation by Environmental or Mallee Plantings Method. Activities under this method are subject to a permanence obligation, which means that the project must be maintained 'permanently' for a nominated period, which has been set at 100 years.

The carbon stock held in the project's trees, debris and roots is calculated using a computer modelling tool called the Full Carbon Accounting Model (FullCAM). The net amount of abatement during a project's reporting period is then determined by subtracting any emissions incurred i.e., due to bushfires from the amount of carbon stock. The resulting net abatement for the project can then be used to apply for Australian Carbon Credit Units (ACCUs). It is expected that the Bruny Island project will generate around 15,000 ACCUs, representing 15,000 tonnes of carbon dioxide equivalents sequestered and stored.

A changing climate requires a future focussed approach, and the plantings have an experimental role in confirming which seed provenance will locally persist under changing conditions. Recent research has found the present genotypes of some eucalypt species are likely to be maladapted to the

predicted future site conditions, which will occur with climate change, therefore reducing local fitness and increasing the risk of tree mortality (Wardlaw, 2021).

Sustainable Timber Tasmania has worked with the University of Tasmania to select seed sources that will suit the site now and in the future. 14 provenances from most of the Tasmanian geographic range, including Flinders and King Island, and a small selection of Victorian *E. globulus* from the Otway Ranges have been selected. Seed was obtained from Sustainable Timber Tasmania's seedbank, with the additional Victorian seed provided by VicForests – all of which have been grown at Sustainable Timber Tasmania's Perth Nursery. As part of the planting, a sample of trees have been tagged and will be monitored in the long term to determine success rate of different provenances (Figure 3). The aim of this 'climate smart' forestry research is to improve the resilience of *E. globulus* to the changing climate.



Figure 3 – Tagged *Eucalyptus globulus* seedling from Flinders Island.

To provide the trees with the greatest chance of successful growth, all game were removed from paddocks at time of planting. Over 4 kilometres of wallaby proof and electric fencing has been installed to keep game out (Figure 4). The advanced trees have been planted outside the fenced area and are protected from browsing by extended tree guards (Figure 5).



Figure 4 – The contrast between the unfenced area (right) and the fenced project area (left) where animal browsing has been excluded.



Figure 5 – Advanced trees are protected with extended length tree guards.

Once the seedlings have grown to a suitable size, the fencing will be removed, and wildlife will be encouraged to feed in the areas which will help to mitigate weed growth and fire risk in the planted areas.

References

T. Wardlaw (2021) The effect of climate change on the health and productivity of Australia's temperate eucalypt forests, *Australian Forestry*, 84:4, 167-170, DOI: 10.1080/00049158.2021.2013639