

90 years of Change. The TGB Osborn Vegetation Reserve, Koonamore.

The TGB Osborn Vegetation Reserve, on Koonamore station in the NE Pastoral area of South Australia, is almost certainly the longest-running vegetation monitoring project of its type in Australia.

It was established by Prof TGB Osborn, Professor of Botany in the University of Adelaide, in 1925. A 4 km² rectangle in a heavily overgrazed area was fenced to exclude rabbits and sheep, and permanent quadrats and photopoints set up to record changes in the vegetation.

The area is predominantly chenopod shrubland, with several species of saltbush (*Atriplex* spp) bluebush (*Maireana* spp) and others. Larger shrub species include *Senna*, *Dodonaea*, *Eremophila* and *Acacia*. The tree layer consists of false sandalwood (*Myoporum platycarpum*), mulga (*Acacia aneura*), black oak (*Casuarina pauper*) and bullock bush (*Alectryon oleifolius*).

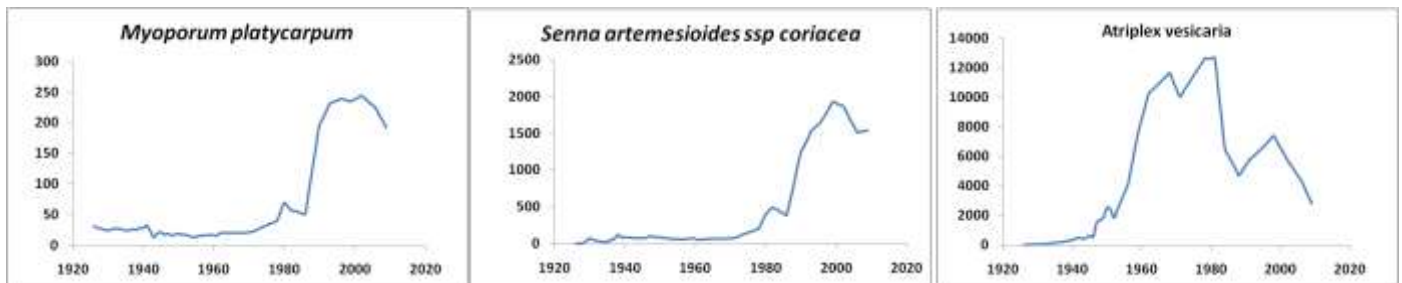
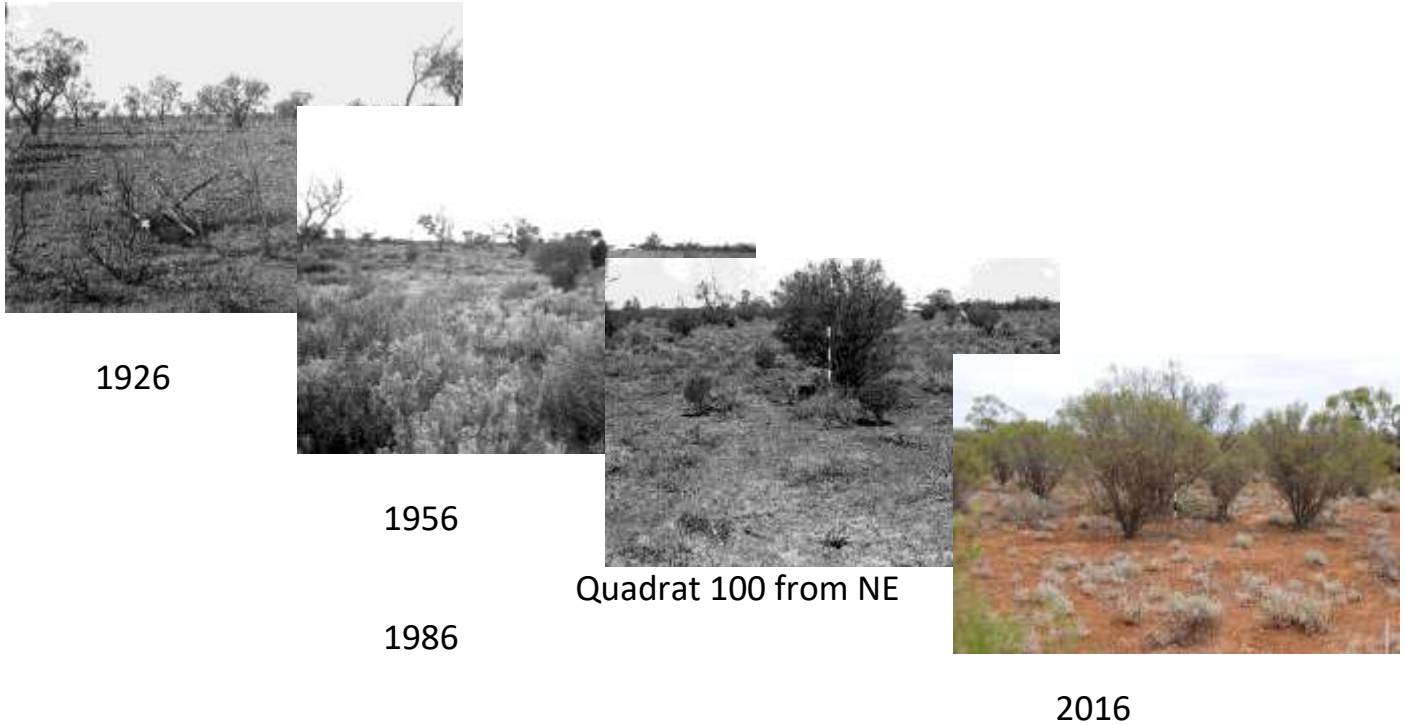
After the initial elimination of rabbits inside the Reserve fence, control slackened and numbers increased again, until **serious rabbit control was resumed in the 1970's**. Since then annual checking, fumigating of warrens, regular fence repair and the arrival of myxo and calici viruses, have kept numbers very low. Consequently the Reserve has had about 50 years without sheep, plus 40 years virtually without either sheep or rabbits. Changes over that time have been very striking.

The saltbush began recolonising the Reserve soon after it was fenced, and by the 1950's dense stands had reformed. In contrast many of the shrub and tree species showed almost no regeneration, until after rabbit control resumed. **Evidently rabbits did not graze saltbush much, but did eat off tree and shrub seedlings.**

Two of the four fences around the Reserve were replaced some years ago, but the other 2 are due for replacement now. The University ran a successful fund-raising appeal in 2016, to which the **Foundation for Rabbit Free Australia** contributed generously. We now have the funds to replace the most degraded fence, and hope to be able to replace the other next year. Keeping the fences rabbit-proof is key to the continuation of this long-term project.

Reserve data have been used for many studies on the ecology of this vegetation, and its responses to rainfall events in the erratic climate of the region. Such records are very valuable for studying long-term trends, and with the current and expected climate changes they will become increasingly relevant.

A new project begun in 2016 by a research group from Flinders University is measuring movement of CO₂ in and out of the soil and vegetation in the Reserve. This may be very important if it shows that such un-grazed vegetation can act as a significant sink for atmospheric CO₂.



Plant numbers, Quadrat 100

Figures show view from a photopoint in Quadrat 100, and plant numbers growing on the quadrat, over a 90 year period.

Many videos made from photopoint image sequences can be found on Youtube; simply search for “Koonamore”.

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