Rather than writing about the activities of a conservation group and its successes and failures, this is a piece about a spontaneous natural vegetation regeneration event that occurred over a period of some 35 years. It is a demonstration of the power of the soil seed bank, and shows that, given time, some degraded plant communities can heal themselves.

Site description prior to disturbance

The South Tuross Beach at Tuross Head on the South Coast of NSW is separated from the village of Tuross Head by the mouth of the Tuross River. Under normal conditions, the southern end of the beach abuts the headland north of Blackfellow Point, while the northern end finishes in the outflow of the Tuross River to the sea at the base of Tuross Head. The beach is composed almost entirely of a volatile sand mass that supports conventional coastal sand dune vegetation, with species density and abundance varying according to local climate and habitat conditions.

In the 50 years preceding 1960, the dunes at South Tuross Beach had been reasonably stable, with no major floods or other weather-related disturbances. The southern end of the beach supported a forest dominated by mature *Eucalyptus botryoides* (maybe some *Corymbia maculata* too), most likely with associated coastal species of the area — *Banksia integrifolia, Acacia longifolia* subsp. *sophorae*, *Monotoca elliptica, Casuarina glauca, Lomandra longifolia*, perhaps *Boobilalia* (*Myoporum insulare*), *Rhagodia candolleiana*, salt resistant grasses as well as other sand binding species.

Human impacts at the time included use of the area as a fishing campsite, with a little jetty into the lake and small tinnies moored there. There was a track through the forest to the river mouth that allowed for vehicle access.

On the seaward side, *Spinifex sericus* and *Austrostipa littoralis* protected the dunes from wave-related sand erosion (up to a point), while *Acacia longifolia* subsp. *sophorae*, the daisy *Actites megalocarpus*, and the introduced *Arctotheca populifolia*, among others, occupied the centre. On the estuarine side of the beach, where the river current was slow and meandering, grew *Banksia integrifolia, Casuarina glauca, Carex pumila* and *Cyperus littoralis, Isolepis nodosa, Juncus kraussii*, with American Pennywort (*Hydrocotyle bonariensis*), *Zoysia macrantha*, and Couch grass (*Cynodon dactylon*) on the dryer sites.

Disturbance event

In 1974, a combination of a huge swell, extremely high tides and a flooded river caused the ocean to sweep over the whole of the sandspit, right up to the base of Tuross Head. All the vegetation and most of the sand were washed away, leaving only a few dead and dying large trees. The dead trunks remained standing for about thirty years, when they finally collapsed in high winds.

Description of vegetation regeneration

The dunes gradually rebuilt, but were initially quite unstable due to the lack of vegetation. This was very slow in regenerating after the flood, with very little increase in plant abundance even by 2000. Added to the havoc wrought by this catastrophic disturbance event, the recovering dunes were subjected to heavy degradation by four wheel drive traffic, mostly driven by fishers, on the seaward beach, through the centre, and on the estuary side.

However, in 1988, when the vegetation was still struggling to establish, the South Tuross sandspit was included in the newly gazetted Eurobodalla National Park. Vehicles were prevented from driving on to the dunes, which greatly assisted plant recovery and improved habitat for several endangered nesting shorebirds, including Pied Oystercatchers, migratory Little and Fairy Terns, common Red Capped Plovers and Hooded Plovers. These birds nest in the sand and the shelter provided by small bushes is essential for the survival of the chicks.

An attempt to revegetate the site and thus stabilise the dunes was conducted at the time of the gazettal of the National Park by the Potato Point Dunecare group. Unfortunately, the area planted was too small to be of any...
significance in the long term, and the species used were, for the most part, unsuitable for the conditions and location. In addition, low soil nutrients, an almost complete absence of organic matter, and relatively dry weather following planting probably contributed to plant mortality. For example, planted Banksia integrifolia seedlings probably had insufficient organic material to build the proteoid roots that enable the plant to take up soil phosphorus; Leptospermum laevigatum is not native to the area and the mineral constituency of the sand was not appropriate; and Westringia fruticosa does not usually grow in impoverished sand (it likes a bit of decomposed plant material).

Fortunately, this failure had minimal effect on the gradual recuperation of the dune vegetation. Over the next ten years or so, plant species gradually covered the sandspit, particularly Acacia longifolia subsp. sophorae on the dunes, and Banksia integrifolia, Casuarina glauca, and the smaller estuarine margin species on the wet heavier sand at the southern end of the lake. On the beach side and adjacent to the Tuross River mouth at the northern end, Cakile maritima, Spinifex sericeus and Austrostipa littoralis encouraged the formation of dunes and swales.

While the river mouth is open, the sand within the estuary is constantly shifting. Islands and shallows come and go, never remaining stable long enough for plants to germinate and mature. But if the mouth closes, it is a different story.

Due to drought conditions in the 2000s, the mouth of the river did close, and remained so for a couple of years. During this time, the vegetation on the estuary side did not suffer any stress due to fast water flows, and consequently became firmly established. A number of mangrove (Avicennia marina) plants germinated in the quiet waters; today a few have grown head high. Even some of the sand islands in the estuary proper supported quite a few low growing species; this was especially important for nesting Little and Fairy Terns.

At present the dunes are clothed in a dense mass of Acacia longifolia subsp. sophorae, with a number of Banksia integrifolia and Casuarina glauca emerging from the prostrate wattle at the southern end. On the estuary margin at this southern end, there is an almost impenetrable growth of Isolepis nodosa. Further away from the water, the sand is held together with the Prickly Couch (Zoysia macrantha), Spinifex sericeus, Pigsface (Carpobrotus glaucescens) and Suaeda australis. At the river mouth on the northern end, the dunes are always unstable, changing tides and swell preventing any permanent growth from occurring.

Conclusion

The South Tuross sandspit is a good example of natural vegetation regeneration, where the soil seed bank was robust enough to provide a stock of viable seed that germinated when conditions were suitable. There have not been any super catastrophic events since 1974 to interrupt the orderly progress from seedling to mature plant. Nevertheless, a repeat of the weather conditions that existed in 1974 could easily destroy the lot again. Who knows how many times this cycle of ‘boom and bust’ has been repeated over hundreds of thousands of years.

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