sloped and rocky landforms common to these mine-site landscapes is one of the important components of improving restoration capabilities.

Research over the past few years has shown that the current practice of sowing seeds onto the soil surface results in almost no germination. Armed with this knowledge, field trials conducted over the past year aimed to identify the optimal seed sowing depth and to test the influence of rocks within the soil on seedling emergence of species of *Triodia* (spinifex), which form the major grassy understorey component of the natural vegetation.

Findings show that covering seeds to a depth of 5 mm yields optimal emergence. Emergence declines considerably at 10 mm depth, reaching almost zero at 30 mm depth. Although rock content contributes to a reduction in emergence of seeds sown deeper than 15 mm, sowing depth is clearly the primary factor controlling emergence.

Most mechanical seeders currently in operation are unable to control sowing depth to this level of precision in such rocky and uneven terrain. A range of machinery components are now being evaluated to improve depth control, including double-disc-opener type assemblies used as pasture drills in the agriculture industry, as well as knife-point tynes, and more novel designs that aim to splay the soil fraction over the seeds, thereby creating a suitable seedbed.

A trial examining seedling emergence at a field station in the Pilbara. Plots within the rainout shelter contain different soil substrates that are used for restoration and that allow for controlled experiments to understand seed biology and to test seed treatments to improve restoration success. (Photo: David Merritt, DBCA).

Back from the dead: the rediscovery of a presumed extinct Acacia in Western Australia

Acacia prismifolia was known from only two plant collections. The first was first collected in 1901, and the second in 1933 – before being listed in the 1990s as 'presumed extinct' after extensive searches failed to find any trace of the species.

That remained the status until late in 2018, when consultant botanist, Libby Sandiford, was doing work in the Cranbrook area and came across an Acacia that she didn't recognise. Curious as to its identity she took a specimen to key it out. Using botanical keys such as WATTLE, Libby quickly came up with a name, *Acacia prismifolia*.

Knowing that this species was presumed to be extinct, Libby rechecked her identification but still came up with the same answer. Excited about her find, but wanting more certainty, Libby made the trip to Perth with her specimen so that the Western Australian Herbarium's *Acacia* specialist, Bruce Maslin, could examine it. Bruce confirmed the identification, thereby confirming that, more than 80 years after it had last been seen, *Acacia prismifolia* had not gone the way of the dodo and was in fact alive and apparently doing okay.

The seeds of *Acacia prismifolia* captured for cataloguing as a reference for the species. The variation among seeds of Acacia species can be significant, so images like these can help to identify species and to share knowledge about seed morphology. (Photo: Andrew Crawford, DBCA)

Acacia prismifolia was rediscovered by chance on the side of a country road in Western Australia. Many species are collected on roadways throughout Australia, illustrating how important even significantly modified habitats can be for threatened species. (Photo: Andrew Crawford, DBCA)

News of the exciting find was brought to the attention of Andrew Crawford at the Department of Biodiversity, Conservation and Attractions' Western Australian Seed Centre. Andrew added the *Acacia* to his seed collection target list. The *Acacia*'s location was visited in November and several small, localised populations of the Acacia were found. The plants had immature fruit so seed capture bags were placed over fruit to catch mature seed when it was shed from the plant. These bags were retrieved in January 2019, and seed collections from each of the populations are now safely stored in the Western Australian Seed Centre.

Tough but successful collecting in the Top End 'build-up'

In October 2018, staff and a volunteer from George Brown Darwin Botanic Gardens spent eight days collecting in Judbarra / Gregory National Park, in the Victoria River District approximately 400 km south west of Darwin. During the trip, the team clocked up more than 1,400 km of driving, utilised a helicopter to reach inaccessible sites and traversed rugged terrain on foot, battling very dry conditions and daytime temperatures in the mid-40s.

Over the course of the week, the team made seed collections of 18 species, seven of which are new to conservation seed banks. Three of the collected species the seed bank was especially pleased about securing were *Melaleuca triumphalis*, *Eucalyptus gregoriensis* and *Brachychiton spectabilis*.

Melaleuca triumphalis is a small tree known only from a few populations in the Victoria River Gorge, where it is restricted to sheltered seepage areas and drip lines at the base of escarpment cliffs. The species was discovered relatively recently in 1996, and is currently listed as Near Threatened under the *Territory Parks and Wildlife Conservation Act (1976)*.

Eucalyptus gregoriensis was also discovered in 1996, but is more widespread than *Melaleuca triumphalis*. The species is also endemic to Judbarra / Gregory National Park, where it inhabits rocky creek lines and slopes on plateau margins. This species is currently listed as Data Deficient under the *Territory Parks and Wildlife Conservation Act (1976)*.

The third species, *Brachychiton spectabilis* is a small tree growing to around 7 metres, usually occurring in woodland on dry, rocky slopes of gorges, ridges and escarpments. Although not currently threatened, *Brachychiton spectabilis* is also endemic to the western Top End of the Northern Territory, with a restricted distribution from Victoria River Gorge, extending almost to the West Australian border.

The seed bank was able to make a large, high quality collection of *Melaleuca triumphalis*, as well as valuable collections of *Eucalyptus gregoriensis* and *Brachychiton spectabilis*, despite populations of the latter two being affected by dry-season fires. These collections will be banked at the GBDBG seed bank, with seeds also identified for sending to the Millennium Seed Bank as part of the Global Trees Seed Bank Project.

Glen Holland (L) and Ben Wirf (R) looking for capsules on a *Eucalyptus gregoriensis* specimen that largely escaped dry season fires in Judbarra / Gregory National Park in October 2018. (Photo: Marjorie King)