

Hand weeding and minimal herbicide methods for assisted natural regeneration in subtropical lowland rainforest in Northeast NSW

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Photographic Succession

Photos showing 2013, 2018 position and today

Photopoint 1

Photopoint 2

Photopoint 3

Photopoint 8(2016)

Photopoint 9 (2016)

2013



2018



2024



Introduction

Arrived in 1988 to a previously cattle and banana property with frontage to Upper Coopers Creek. It had 25 acres of weedy subtropical lowland rainforest (with threatened species), interspersed with areas of dense Lantana and Camphor laurel (Figure 1). The riparian zone was dominated by Small leafed privet. The assisted natural regeneration method was developed over many years.

Local rainforest seed arrived during floods, and were dispersed by birds and wind, and would germinate and establish in suitable conditions. Planting began around 1989, but ceased within a few years, except for rare and sought after species.

Weed research and management

- Privet is an obligate seeder, with 98% viable seed, thus is better treated when free of seed. Hand weeding followed drilling or cut and paint control (45% glyphosate with 0.2% metsulfuron added).
- Lantana was splatter gunned once, followed by hand weeding and cut-and-paint (as above) for the next 3 to 4 years.
- Camphor laurels were drilled using 45% glyphosate mix with followup weeding as above.

- There has been no overspraying or spot spraying for around 10 years.*** Weed seedlings always preceded native seedling emergence.

Planting or no planting

- Not planting was less effort than maintaining planted areas, self germinated seedlings growth rates were higher than planted, all the native seed was wild, thus it was easier to cover larger areas.
- Weeding was necessary 3 to 4 times per year at first, lessening to once per year in the fourth year

Figure 1. Successional photos showing regeneration over 12 years. See Figure 2 for location



Figure 2. Google Earth map showing location of Photopoints



Figure 3. Example of restored forest

No planting and reduced herbicide Results

- Species diversity was initially less.
- Numbers of a threatened plant species, some epiphytic orchids, and a male Albert's Lyrebird (*Menura albertii*) have arrived unassisted in the regeneration area.
- A small, dense, native forest emerged, and within four years formed a light canopy of predominantly Pencil Cedar that increased in density over time (Figure 1, 2, 3).
- The 25 acre area is now almost self supporting but requires weeding at the edges.
- Flora and fauna species diversity are increasing.

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- It is hypothesized that over spraying and spot spraying weeds with herbicides affects the invertebrates, mycorrhizal fungi and other soil micro-organism populations.***
- Continuation of regeneration would provide connectivity between the creek and the adjacent plateau.***