



Plate 1. Upper Walker Creek valley, showing extensive areas of vine thicket (type 4), dominated by *Backhousia angustifolia*, on western slopes of Bunya Mountains. Narrow-leaved bottle-tree (*Brachychiton rupestris*) in foreground.



Plate 2. Vine thicket (type 5) with emergent ooline (*Cadellia pentastylis*) and bottle-tree (*Brachychiton rupestris*), Bullaroo Creek, Carnarvon National Park, between Injune and Rolleston (site 37).

# CHAPTER ONE

## INTRODUCTION

Rainforest\* communities extend in a discontinuous series along the eastern Australian coast, with major areas in the humid tropics ("Wet Tropics") of north-eastern Queensland, the humid subtropics (south-eastern Queensland/north-eastern New South Wales) and the moist temperate regions of Tasmania.

Prior to European settlement, seasonally dry rainforests occupied large areas of subcoastal and near-inland eastern Australia. These communities were particularly widespread in central and southern Queensland, forming a distinct floristic subgroup ('region C' of Webb, Tracey and Williams 1984). There are two major groups among the seasonally dry subtropical rainforests;

- (a) the araucarian notophyll and microphyll vine forests ("hoop pine scrubs") in the moister areas, and
- (b) semi-evergreen vine thickets, which extend to the limits of rainforest distribution in inland areas.

The vine thicket communities, often known colloquially as "softwood scrub" or "bottle-tree scrub" (from the characteristic emergent *Brachychiton* spp.), are closely associated with brigalow (*Acacia harpophylla*)-dominated communities on relatively fertile clay and clay loam soils, and extend through the major part of what is known as the Brigalow Belt Biogeographic Region (Stanton and Morgan 1977, Thackway and Cresswell 1995) of Queensland and northern New South Wales.

The total area of vine thickets prior to settlement is uncertain. In the Fitzroy River catchment of central Queensland alone, they are estimated to have covered more than 6 000 km<sup>2</sup> (Nix 1977), with other major areas in the Burnett and Moreton regions of south-eastern Queensland (Young and McDonald 1987). The latter areas were mostly cleared for cropping and dairying 80-100 years ago, but through much of the brigalow region vine thickets remained essentially undisturbed until the late 1950s/early 1960s.

During the Fitzroy Basin (Brigalow) Land Development Scheme of the 1960s and 1970s, large areas of vine thicket were cleared by pulling and burning, particularly in the Central Highlands district. Apart from the fact that they generally occupied fertile soils, these communities attracted development because they produced very little woody regrowth after clearing, whereas this was a major problem in

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\* This thesis follows Baur (1968) and Webb and Tracey (1981a, etc.) in spelling "rainforest" as a single word. This spelling avoids undue emphasis on rainfall as the sole determining environmental factor (Baur 1968).



other communities such as brigalow (*Acacia harpophylla*) and Dawson gum (*Eucalyptus cambageana*) woodlands and open-forests (Johnson 1964). Many of the vine thicket remnants are small and most are threatened by the effects of recurrent fires and invasion by alien pasture grass species, as well as increasing pressure from grazing animals, both domestic and native.

Aspects of the structure and floristic composition of vine thicket communities have been briefly reported by Nix (1977) and Johnson (1984). The need for ... "a more detailed study of the floristics of softwood communities throughout the brigalow belt".. was noted by Sattler and Webster (1984), and led to the commencement of this project in 1987.

A review of literature was undertaken (**Chapter 2**), from which a range of issues has been highlighted. A series of questions are posed and linked to relevant chapters of this thesis that deal with data acquisition, analysis and discussion aimed at addressing these questions..



Plate 3. Hurdle Gully (Scientific Area 33), Coomingleh State Forest, west of Monto (sites 69, 70). This large area of vine thicket (c. 700 ha) has numerous emergent *Flindersia australis* and *Brachychiton* spp..



Plate 4. Interior of vine thicket/forest (type 1), Coomingleh State Forest (site 70). Note relatively tall, open structure. Trees include *Cupaniopsis parvifolia*, *Brachychiton australis* and *Flindersia australis*.