

DEPARTMENT OF PRIMARY INDUSTRIES
&
DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT



Tree Decline: A North East Perspective



Department of
Primary Industries



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ISBN 1 74106 649 2

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June 2003

Published by Department of Primary Industries

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Front Cover: (Photograph by Peter Ockenden)

Acknowledgements

The author wishes to acknowledge the hospitality of the landholders involved in this study. Your openness assisted greatly in documenting the findings, which has resulted in a greater community awareness of natural resource management issues facing land managers now and in the future.

Tree Decline:

A North East

Perspective

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June 2003

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Summary

This project was developed as part of the Environmental program as a component of the North East Salinity Strategy and the implementation of the Heartlands initiative in the Ovens Catchment. The detailed mapping of native vegetation covers two properties located in the Byawatha Hills, North East Victoria.

A comparison of vegetation cover over a 29 year period indicated large decreases in the area covered by native vegetation on both properties. The area and condition of remnant native vegetation and revegetation works were quantified to provide base data prior to an integrated program of works being undertaken by landholders in the Springhurst Byawatha Salinity Priority Area.

During the process of mapping paddock trees, the decline in health of trees was obvious. Paddock trees were mapped and assessed for signs of dieback. The results indicated that *Eucalyptus* trees suffering moderate to severe dieback accounted for one-third of existing paddock trees.

The causes of such extensive losses are numerous, and the extent is broad-scale across the catchment. Landholders involved in this study are attempting to combat these losses through revegetation and fencing, with assistance from Department of Primary Industries, North East Catchment Management Authority, Heartlands program and Natural Heritage Trust.

Introduction

The decline of isolated remnant trees across north east Victorian farmland is reaching staggering proportions, with paddock trees disappearing in many agricultural landscapes.

This study of paddock trees in high salinity recharge country of north east Victoria has quantified this loss. Using aerial photography, over a twenty nine year (29) period to present, researchers have identified a decline in number of isolated paddock trees in the order of 47% on farmland.

The study focused on granite hill country in the Byawatha Hills east of Wangaratta (Figure 1). Funding was provided through the Natural Heritage Trust as part of the North East Salinity Strategy.

Dryland salinity is a problem throughout the study area and is particularly apparent at the break of slope with the plains. There are major revegetation programs in progress to address high recharge in this area, however the value of the revegetation is being compromised by the losses of existing remnant trees in the study area. The study area is also part of the North East Catchment Management Authority Heartlands program of which landscape change is a critical component.

The study focused on two properties with the aim to determine the extent of native vegetation cover, and the threats and trends that have been occurring during the period 1972 to 2001. The data collected will be used for future monitoring of the Salinity and Heartlands programs.

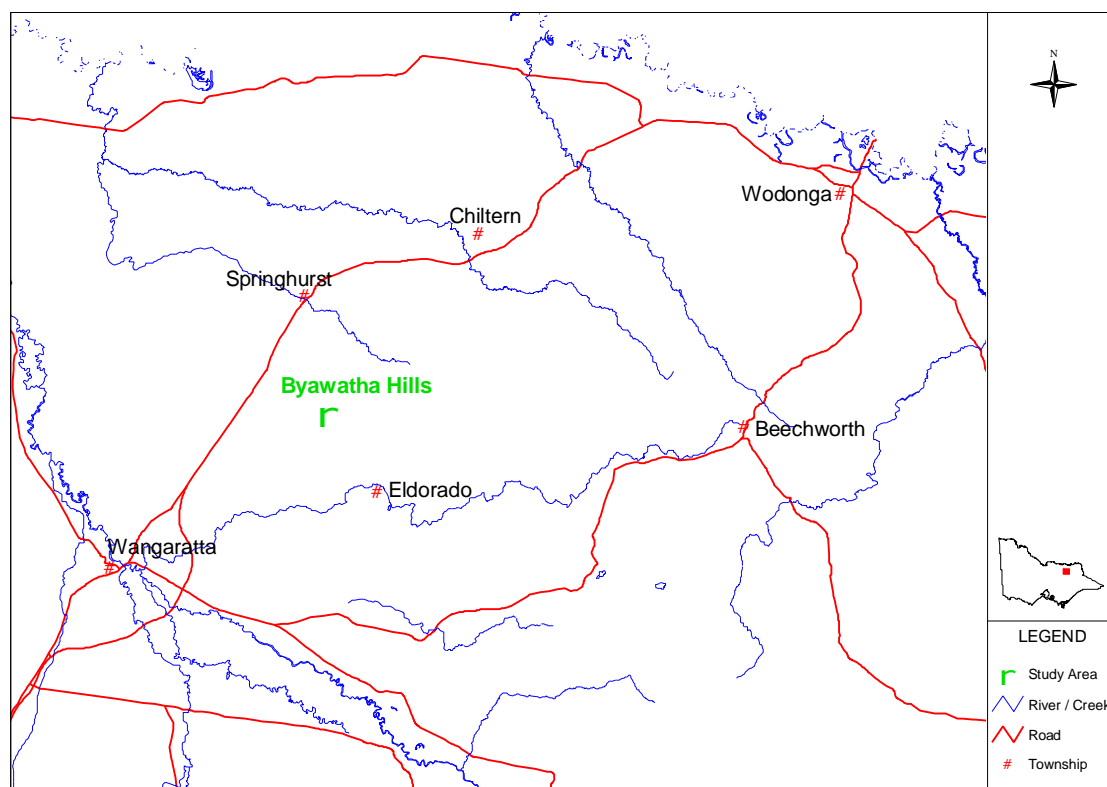


Figure 1: Location of the study area



Figure 2. Typical Byawatha Hills landscape

Historically, the land uses in the Byawatha Hills has been diverse. The majority of the area was Crown Land, which was divided into agricultural / grazing land, auriferous land, timber reserve and state forest reserve. Large tracts of timber and state forest reserves were retained to provide timber for associated mining uses. Land identified for agricultural development was thrown open for lease. When the valuable timber had been removed from the reserves, surplus land was excised from Crown ownership, explaining the varying periods of vegetation clearing across the area.

The land use history of the two study properties are of a similar nature. These properties are referred to as Property 1 and 2. It was common practice for the land to be leased for several years prior to purchase. During the lease period, in addition to productive agricultural practises, the landholder was to make 'improvements' on the land in accordance with legislation (ie *Land Act 1869*). These improvements included activities such as fencing, constructing water storages, and clearing of native vegetation. The time period of clearing plays an important role in the land degradation issues that landholders are facing today.

Property 1 had a north western section that was leased from State Forest for grazing for several years prior to freehold purchase in the 1940's. The State Forest was retained to provide timber resources for generating electricity at the Powerhouse for the Eldorado gold mines. The north east section was leased until the 1940's when it was purchased, and later purchased by the current owners. The remainder of the property (southern section) was also purchased by the current owners during the early 1940's.

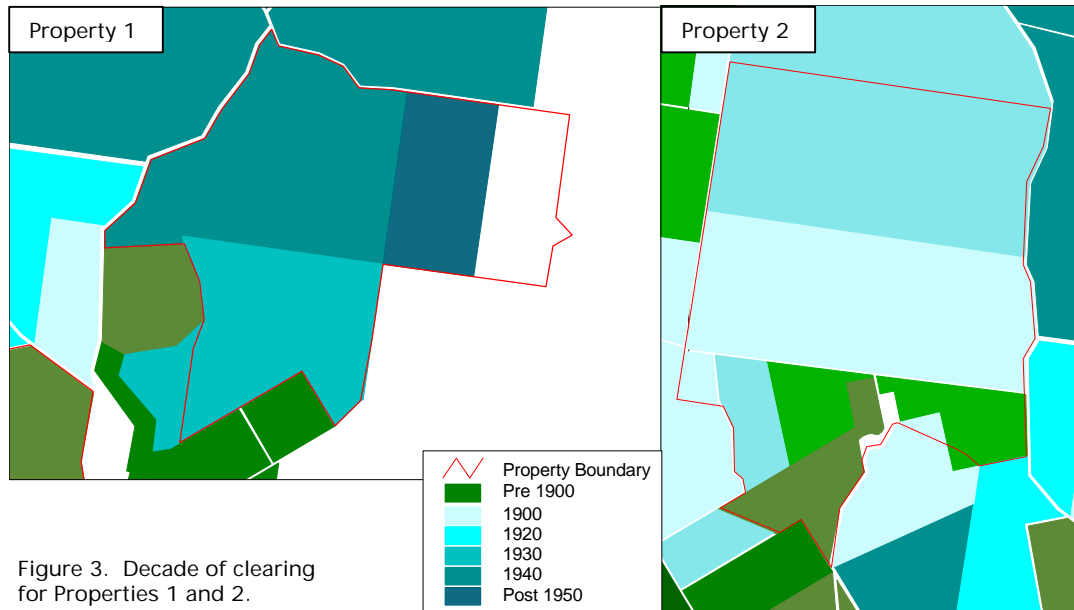


Figure 3. Decade of clearing for Properties 1 and 2.

Property 2 was largely (at least 60%) cleared by 1910. The land parcels that were located along creek lines (the southern section) were subdivided into parcels that were leased for agricultural purposes. These were cleared and developed during the 1880's, as were the steeper slopes during the period 1900 – 1920. The current owners initially purchased the steeper sections, with the southern sections purchased at a later date.

The greater part of this property remained leased from State Forest until 1905 – 1909. Gradually, as the desirable timber was utilised, sections of State Forest were excised for freehold purchase. Although the land was under Crown ownership, it was leased for productive agricultural purposes, and purchased in 1909 – 1910.

Methodology

The initial stage of the study was carried out by examining and comparing aerial imagery. Digital colour photography of 2001 was compared with black and white aerial photography from 1972. Smart Image, an ArcView geo-referencing program, was used to correct scaling anomalies between the two sets of photographs.

The two images, spanning 29 years of land use, were used to quantitatively record native vegetation cover on the two properties. (For this study, the term *native vegetation* refers to trees and shrubs.) Native vegetation was recorded in ArcView using two methods:- polygons for vegetation stands; and points for isolated paddock trees. The area of native vegetation cover was calculated and isolated trees counted, with the results presented as raw data. This process was graphically illustrated by maps.