GOLD, TIMBER, WAR AND PARKS: A HISTORY OF THE RUSHWORTH FOREST IN CENTRAL VICTORIA

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The Rushworth Forest is a Box and Ironbark open sclerophyll forest in central Victoria that has been subject to a long history of gold mining activity and forest utilisation. This paper documents the major periods of land use history in the Rushworth Forest and comments on the environmental changes that have occurred as a result. During the 1850s to 1890s, the Forest was subject to extensive gold mining operations, timber resource use, and other forest product utilisation, which generated major changes to the forest soils, vegetation structure and species cover. From the 1890s to 1930s, concern for diminishing forest cover across central Victoria led to the creation of timber reserves, including the Rushworth State Forest. After the formation of a government forestry department in 1919, silvicultural practices were introduced which aimed at maximising the output of tall timber production above all else. During World War II, the management of the Forest was taken over by the Australian Army as Prisoner of War camps were established to harvest timber from the Forest for firewood production. Following the War, the focus of forestry in Victoria moved away from the Box and Ironbark forests, but low value resource utilisation continued in the Rushworth Forest from the 1940s to 1990s. In 2002, about one-third of the Forest was declared a National Park and the other two-thirds continued as a State Forest. Today, the characteristics of the biophysical environment reflect the multiple layers of past land uses that have occurred in the Rushworth Forest.

Key words: Forest history, land use history, environmental history, Box-Ironbark vegetation, Rushworth Forest

> Rushworth had its 150th anniversary here a couple of years ago and I always quote that Rushworth had been involved in three different eras: there was the first 50 years it was gold, in the next 50 it was the timber industry and that last 50 it's been all sorts of other things…
> *Ron Risstrom, former Rushworth Sawmill owner, pers. comm. 2005*

The area known as the Rushworth Forest is a continuous forest block between Rushworth and Heathcote in central Victoria. The underlying geology is primarily Silurian and Devonian sandstones, siltstones and undifferentiated sediments, forming low undulating hills and strike ridges (Edwards et al. 1998). The forest has a mean annual rainfall of 550 mm, which is highly unpredictable and intermittent, and a mild temperature regime (a daily temperature range of 8°C to 21°C on a mean annual basis). Broadly speaking, the vegetation of the forest has been categorized as 'Box Ironbark Forest' (ECC Victoria 1997).

The aim of this paper is to outline the post-colonial history of usage of the Rushworth Forest. We believe that there is a public misconception that the Rushworth Forest is chiefly defined as recovering from the harsh impacts of the 19th century gold rush. Whilst we acknowledge that the gold rush had a severe impact on the natural landscape, we aim to demonstrate that there have been important cultural, economic and political factors throughout the last 160 years that have produced the present-day forest landscape. This paper explores the identifying factors within important periods as we see them: eras when gold, timber, war, and parks dominated (*sensu* Ron Risstrom).

THE GOLD RUSH

Some pre-gold-rush glimpses of the Box and Ironbark forest

The Ngurai-illiam Wurrung, Dja Dja Wurrung and Taungurung Aborigines were the first people to associate with the Box and Ironbark forests of the Rushworth region (Parks Victoria 2006). The focus of most Aboriginal activity was the resource-rich riverine environment, but early European visitors to the

area also recorded a strong linguistic and resource association of the Aboriginal people with their forests (Robinson in Clark 1998). For example, Yee-Rip was the Dja Dja Wurrung word for Red Ironbark or Mugga *Eucalyptus tricarpa*, Boo-loitch represented Grey Box *E. microcarpa*, Tarrk was the term for Yellow Box *E. melliodora* and Tee-Ring indicated Red Box *E. polyanthemos* (ECC Victoria 1997). The available evidence suggests the Aborigines utilised the forest resources in a minimalist and selective manner. They appeared to have lived harmoniously with the total environment, even though there are more archaeological sites found along the rivers and on the plains, compared to the hill country such as Rushworth Forest. Varied resources took the Aborigines to different places seasonally, as they followed the seasonal availability of water and food. Massola (1957) contended that a water-well at Whroo, for example, was used to access water in the dryer hill country between the Goulburn Valley and the northern plains.

There is limited knowledge of the local vegetation in the Rushworth Forest area prior to the 1850s gold rush. English author and travelling critic of the early 1850s, William Howitt (1855: 91) recorded that 'the valleys are covered with what they call the whipstick scrub – a scrub of dwarf gum trees, which run about twelve feet high or so, growing densely side by side, and so locked together with cord like runners, that it is impossible to penetrate them'. Another visitor to the area in 1853, George Willmer (1856: 102) described 'passing over sterile mountains, covered with iron-stone and quartz rocks, without any grass worthy of the name'. The Victorian Department of Crown Lands and Survey (1866) described the preselection lands of the Rushworth Forest (immediately south of Whroo) as 'undulating forest land Box and Ironbark with occasional patches of mallee and whipstick scrub'. These descriptions suggest the area comprised a forest of predominantly Box and Ironbark eucalypt species with an understorey of tall shrubs such as Broombush (*Melaleuca uncinata*) intervowen with climbers such as Dodder-laurel (*Cassytha* spp.). Early squatters and graziers were not particularly enamoured with this forest, as they were attracted to the fertile grasslands (Curr 1883), but they may have used the forest for occasional grazing lands.

The gold rush of the 1850s to 1890s

Gold was discovered at Mt Alexander/Castlemaine and Bendigo (about 85 km SW of Rushworth) in 1851 and sparked a rush of people to the region and frenzied activity in search of instant wealth. As a result of these rushes in the 1850s, the Box and Ironbark country of central Victoria suddenly became one of the most densely settled areas in Australia. Between 1851 and 1861, the population of Victoria grew from 77 000 to 540 000, and 'when are you off [to the goldfields]' was the common greeting amongst Melbournians (Searle 1977: 21). The effect of gold mining on the environment was catastrophic. At first the mining was concentrated in the narrow valleys, as the alluvial gold that lay close to or at the surface was sought, having been washed there by rivers and creeks (Flett 1979). Then the miners swarmed up the hillsides, following the alluvial gold back to its origins: the quartz veins that ran through the folded sedimentary ridges from which it had been eroded, or the ancient river beds disappearing under the overlying basalt capping. Many different gold-extraction techniques were used or invented to recover the metal, and the remnants of these can still be found in the central Victorian region. They included trenches, pits, puddling rings, mullock heaps, racelines, tailings dams, and (from later years) cyanide heaps.

Whereas most goldfields were discovered prior to the utilisation of surrounding forests, the timber resources of the Rushworth Forest provided the stimulus for the discovery of gold in the Rushworth and Whroo area (Flett 1979: 80):

> The first gold discoveries… [in] the Rushworth-Whroo area [were] in 1853… The Argus, 3 August 1853… said the diggings were discovered by a sawyer, who, looking for timber, saw the resemblance to Bendigo, and got the first gold in St Louis Creek [later known as Whroo].

A large area of auriferous ground was subsequently worked over in the Rushworth and Whroo areas, but the mining population was not exceptionally large at these locations – probably never exceeding 5000 diggers (Bannear 1993b). Villages associated with mining activities in the Rushworth Forest area included Rushworth, Whroo, Baillieston (Coy's Digging's), Moora, Redcastle and Graytown (Spring Creek), of which only Rushworth survives as a town today. Major mining localities included many reefs within a 3 km radius of Rushworth: the Fontainbleu reef west of Whroo, the Balaklava Hill reefs around Whroo, London Reef north of Baillieston, several reefs east of Redcastle, and the Spring Creek Deep Lead near Graytown (ECC Victoria 1997).

The recorded alluvial gold production from the Rushworth goldfield is about 5000 kg, which is probably an underestimation (Bowen & Whiting 1975).

Every gully in the Forest was fossicked and/or worked (Edwards et al. 1997) but early alluvial gold mining was hampered by a lack of reliable water. Early diggers burnt the whipstick scrub (Howitt 1855), and in 1853, Goldfields Commissioner Richard Horne described 'black, charred gullies' when visiting the Rushworth area (Adcock 1912: 137). Ninety-eight percent of the gold retrieved from the area came from reef mines, and the reefs of Bailieston, Whroo, White Hills and Rushworth yielded 3600 kg, from a total of 383 888 tons of ore extracted and crushed (Edwards et al. 1997). This activity resulted in a pot-holed topography of diggings and mullock heaps, and Howitt's (1855: 254) description of Bendigo of 'one whole chaos of clay, gravel, stones, and pipe clay, thrown up out of the bowels of the earth' could easily have described the mining activity in the Rushworth region as well.

However, gold was not the only resource extracted from the Rushworth Forest in the mid to late 19th century. At least four other industries developed to support mining: the felling of timber, the production of charcoal, the use of wattle bark and the production of eucalyptus oils.

In the first of these industries, large volumes of timber were felled to supply wood to the mining centres. Wood was used for many purposes by miners, with no regard for sustainable supply (Woodgate & Black 1988). Timber was collected for cooking and campfires, the construction of tent frames and log cabins, corduroy (horizontally laid logs) that alleviated the perennially muddy tracks and bridges, maintaining underground mining structures such as pit props, and, fuel for the steam engines that ran quartz crushers and batteries after the 1870s. In 1852, Howitt recorded of the miners that 'it is amazing what a number of trees they fell. No sooner have they done their day's work, than they commence felling trees, which you hear falling continually with a crash, on one side of you or another' (Powell 1976: 37). The Victorian Secretary for Mines, Robert Brough Smyth (1869: 28), thought the gold-miners showed no respect or appreciation for the vegetation: 'a giant of the forest has been killed in order to furnish a sheet of bark, and the smaller kinds have been burnt for the purpose of boiling a kettle'.

It has to be emphasised that timber was the only fuel supply for industry and associated towns, and huge quantities were required on a daily basis. Once the reef mining companies began to dominate the gold industry, the demand for timber became insatiable. By the mid 1870s, the forests around Bendigo were exhausted, and timber from forests further afield was sought. By the mid 1880s, the Bendigo gold field had some 500 mining companies in operation, and Box and Ironbark timber from the Rushworth and Heathcote areas were favoured for the supply of timber to Bendigo, especially for mine props (Bannear 1997). By the turn of the century, over 99% of the Box and Ironbark forests in central Victoria had been cleared, and the focus of large-scale timber extraction shifted elsewhere. This coincided with a down-turn in mining production during the 1890s depression and the subsequent decline in gold output in the early 20th century.

The second industry developed in the Rushworth Forest associated with mining was charcoal production, which became a prominent forest industry from the mid 1850s to the early 20th century. Charcoal was used for blacksmithing purposes for many decades in the mid and late 1800s, for gas-producer plants to power crushing batteries in the 1910s, and as a filter in the cyanidation method of gold recovery in the early 20th century. Polehampton (1862) recorded that the favored method of charcoal production in the central Victorian goldfields was to cover fallen trunks of trees with turf, leaving an aperture at one end for a fire, which was also then covered with turf when the wood was well alight. Bannear (1997) related that charcoal production was probably undertaken by small gangs of men who worked in conjunction with the firewood cutters. Volumes of charcoal produced from the Box and Ironbark forests are unknown, but the remnants of several charcoal burning pits adjacent to cleared areas and dams in the Rushworth Forest dating from the 1890s can still be found (Parks Victoria 2006).

The third industry came from the high levels of tannin in Australian *Acacia* species, which made them one of the world's most sought after products for leather tanning (Searle 1991). The 'wattle bark industry' had its origins in the mid 1830s, but the discovery of gold saw its great expansion. It was a fairly rudimentary industry, which involved the stripping of bark from *Acacia* trees with an axe (which usually resulted in the death of the tree) and the subsequent transport of the bark to tanning factories in major cities. By the 1870s, the Victorian wattle barking industry was selling both locally and internationally. This industry continued until the 1950s when chromium salts replaced wattle bark as the main ingredient in the tanning process (Bannear 1997). The volume of wattle bark removed from central Victorian forests is unknown, but the 'Wattle Bark Board of Inquiry' in 1878 found that years of indiscriminate and unregulated stripping had brought some *Acacia* species to near extinction (Dixon et al. 1878).

The fourth ancillary industry to gold mining in the central Victorian forests was eucalyptus oil production. Bannear (1997) related that the distillation of eucalyptus oil from the oil-rich Blue Mallee *E. polybractea* and Green Mallee *E. viridis* started in the 1870s, but expanded into a significant industry in the 1890s due to declining quartz mine activity in the region. Several unemployed former miners turned to eucalyptus oil production, using the forests in their 'back yard' and stream boilers and large dams abandoned by the miners. By the 1920s, the Forests Commission of Victoria (FCV) had established experimental 'eucy' plants using coppice leaves for eucalyptus oil distillation (FCV 1930). The eucalyptus industry reached its peak by the late 1940s (Bannear 1997) and continues to the present. In 1997, about 11 435 ha of Box and Ironbark forests were designated for eucalyptus oil production (ECC Victoria 1997) and a small business operated in the Rushworth Forest.

Concurrent with the expansion of the gold industry and the supporting timber products industries, land clearance for agricultural and pastoral activities in and around the central Victorian goldfields proceeded to permanently remove large tracts of Box and Ironbark forests. The largest wave of land clearance took place in the 1870s, following the 1869 *Land Act*, when land selectors (many of whom were ex-miners) were required to clear the land, fence their properties, plant crops and build permanent residences (ECC Victoria 1997). The cleared timber was either used for building purposes, or left standing until it rotted in the paddocks. An Acting Mining Surveyor at Rushworth (1885: 1) reported that 'no sooner has a selector got his license in this district than he rings every tree on his selection and consequently he expects the living timber on crown lands to be preserved for his special use'. This action produced the most dramatic change in Box and Ironbark forests, as remnant forests were reduced to stands of roadside vegetation, selected forest blocks that were marginal for agriculture, and scrubby regrowth in abandoned gold mine areas.

THE BEGINNINGS OF FORESTRY

The creation of timber reserves

It was the wood shortages that began to cripple the economy of central Victorian urban centres that resulted in the initiation of forest preservation (Dargavel 1995). The unrestricted supply of timber from forests had sustained economic growth during the gold rush but severe shortages became evident as early as the mid-1860s (Victorian Government 1865). Much of the forest had been cut and left to regenerate, as the Rushworth Inspector of State Forests (1873: 3) reported:

> In the early days of settlement, when timber was abundant and labour cheap, settlers never dreamed of the change that has occurred in so brief a period; everyone thought the forest would last forever... In many localities where fencing timber was abundant in early times, not a tree fit for this purpose is left, and when new fencing is required it has to be brought frequently a distance of ten or twenty miles [15 to 35 km].

As early as the 1850s, when the earliest parishes, townships and roads were surveyed, some areas of forests were fortuitously preserved in water, mineral, timber and other reserves (Wright 1989). Parkinson (2003) examined the early survey maps for the Rushworth area, and identified the existence of native forest along roadsides, in swamps and in the vicinity of goldfields. In 1865, a government report stated that 'rapid and unnecessary destruction of forests in the neighbourhood of the gold fields' had occurred, and heralded the need to regulate 'a more economical use of native timber, and to conserve the forests' (Victorian Government 1865: 3).

The legislative basis for the protection of larger tracts of forests, including Rushworth, as timber reserves was established under Section 41 of the 1865 *Land Act*, which was proclaimed for the 'protection and growth of timber' (Public Record Office Victoria 2005: 1). However, after 1866 it became practice to declare timber reserves under Section 5 (the normal reserve clause) of the same 1865 *Land Act*. Wright (1989: 155) indicated 'that timber reserves [declared under Section 5] could be used by miners and settlers until the supply was exhausted at which time the land was then alienated, while state forests [declared under Section 41] could only be used by approved, licensed timber-millers and fellers'. Several blocks of the Rushworth Forest were reserved under Section 41 of the 1865 *Land Act*: for example, in 1868, the Victorian Government (1868b: 2263) proclaimed about 32 000 acres [13 000 ha] in the Parish of Rodney between Murchison to Whroo 'for the preservation and growth of timber'. Thus much of the Rushworth Forest was preserved with a view to timber resource perpetuity, rather than under a temporary arrangement with a view to land clearance.

To ensure regulations relating to the Rushworth timber reserve were met, a number of officers were appointed. Land officers were first appointed in 1866 to oversee proceedings, and the Land Officer at

Rushworth was Nehemiah Wimble (Victorian Government 1866). Two years later, the title of 'Bailiffs of Crown Lands' was added to 'members of the police force, stationed at the places mentioned in conjunction with their respective names' for the purpose of enforcing regulations. Of the nine police acting as bailiffs throughout Victoria, five were stationed in the Rushworth Forest area: Senior Constable James Pherson at Rushworth, Senior Constable John Donnelly at Heathcote, Senior Constable George Moran at Redcastle, Mounted Constable Michael Timothy at Murchison and Mounted Constable Martin Costello at Heathcote (Victorian Government 1868a). The large number of police acting as bailiffs in the Rushworth area is suggestive of either high demand of Rushworth timbers, and/or high levels of non-compliance of timber preservation in the area.

Despite this promising start, multiple Acts between the 1860s and 1890s failed to achieve adequate forest preservation (Ferguson 1957). For example, when the 1884 *Land Act* was applied locally, it stipulated (Victorian Government 1891: 890):

> That no person, although he be duly licensed or otherwise authorized, should cut, dig, or remove live or dead timber, or particular description of timber or bark, stone, gravel, sand, loam, brick, or other earth from… the unappropriated Crown lands in the Parishes of Moora, Murchison, Waranga, and Whroo, county of Rodney [i.e. the Rushworth Forest].

However, by 1891, the prohibition against cutting, digging, or removing timber from the Rushworth Forest was partly revoked, to allow for the removal of 'live timber, which, at a height of two feet from the surface of the ground, is twenty inches or more in diameter' (Victorian Government 1891: 850), thus allowing for the removal of all mature timber in the Rushworth Forest by the timber industry. It is worth noting that throughout this period, the Rushworth Forest was consistently referred to as a 'timber reserve' suggesting that its primary value was to provide timber as fuel for the populace.

By the mid 1890s, the timber supply situation in the Box-Ironbark country had become dire, as the Secretary of Mines, Alfred Howitt (1894: 23) described:

> That variety of *E. leucoxylon* [now *E. tricarpa*] which is universally known as 'Ironbark' grows especially in the neighbourhood of Bendigo, Maryborough, Costerfield [south of the Rushworth Forest], Chiltern, and other places to the north of the Great Dividing Range. At places named there are State Forests and timber reserves, but with the exception of the forest between Costerfield and Rushworth, the Ironbark is practically cut out.

This situation developed despite the appointment of an 'Inspector of State Forests' in the 1870s, and the appointment of a 'Conservator of Forests' in 1888 who appointed a number of both trained and untrained foresters in the 1890s (Public Record Office Victoria 2005). The chief forester for the Rushworth District was Mr W.F. McNamara, who was appointed in about 1890 (Anon. 1900: 2). McNamara was in charge of the forests between Rushworth and Heathcote, and received applications from local residents up until 1900 for land to be alienated from the forest on the basis of poor condition. At that time, McNamara reported the following characteristics of the Rushworth Forest (Anon. 1900: 2):

- there were still active reef mines in 1900;
- it was grazed by stock under a royalty system;
- it was subject to ringbarking by graziers;
- it was no longer exporting timber for mining purposes;
- it was predominantly a regrowth forest with most timber around Whroo considered to be of firewood quality only;
- there was an extensive trade in dry firewood, which was usually not Ironbark, 'as the Melbourne people did not care for it' ;
- firewood cutting of Ironbark was allowed by unemployed people;
- the timber was subject to thinning with the intent to improve the growth of young trees;
- timber mills were in operation at Rushworth and Whroo; and
- an annual production of about 50 000 sleepers occurred between ca.1895 and 1900.

There were about six timber mills at Rushworth supplying firewood to the Melbourne market in the 1890s (Ron Risstrom pers. comm. 2005).

A Royal Commission 'to investigate the general question of forestry and forest control and management in Victoria' was constituted in 1897, and ran for four years, but did not feature the Rushworth Forest to any great extent (Tucker et al. 1901:1). Soon after, in 1903 and 1907 (Victorian Government 1903, 1907), it was proposed to completely revoke the entire timber reserve in the County of Rodney at Rushworth, although those proposals never eventuated. The final report of the Royal Commission led to the first effective forest legislation, in the form of the *Forests Act* 1907; this was followed by the *Forests Act* 1915. This ended several decades of the sharing of respon-

sibility for the management of forests between the Ministries of Lands, Agriculture and Mining (Public Record Office Victoria 2005: 1):

> The principle provisions of the *Forests Act* 1907 included constitution of a Department of State Forests under a Minister of Forests, appointment of a conservator with necessary staff, confirmation and creation of permanently reserved forest and provision for future dedications, placement of control of timber on unoccupied timbered Crown land in the hands of the Forests Department and authorising collection of royalties on forest produce.

The *Forests Act* 1915 was a consolidation of all previous acts and reiterated that 'no person shall fell, girdle, ringbark, injure, destroy, or remove any growing tree or any timber in any protected forest without a permit in writing from the Minister of Forests…' (Public Record Office Victoria 2005: 1). This legislation ended many years of largely indiscriminate and lawful removal of timber from the Rushworth and other forests around Victoria, although unlawful timber removal probably continued.

Silvicultural practices in the Rushworth Forest 1890-1939

Practices of forest management started with the first Conservator of Forests in Victoria, Mr George Perrin, and advice from two Indian Conservators of Forests (Mr F. Vincent and Mr B. Ribbentrop) whom the Government had engaged to recommend measures for improvement (Dargavel 1995). As already mentioned, following broad scale forest utilisation during the mining era, the Rushworth Forest was largely regrowth. The Victorian Government (1890: 14) deemed it essential to implement a system of forest management to enhance growth of selective species and larger stems:

> The advantage of this treatment is obvious; the dense undergrowth serves to rob the stems of the tree of much of its nutrients; when this is cut away the sap and nutriment are absorbed into the stems instead of being wasted by dissemination through the branches and leaves.

Despite the enthusiasm for this practice, McNamara (Anon 1900: 2) complained that 'he had been asking for years that this should be done, but without avail'. It seems that forest management was undervalued and underfunded at this time.

The Forests Commission came into existence in 1919 with the passing of the *Forests Act* 1918. This signalled the commencement of organised forest utilisation in Victoria, as the Forests Commission was given control and management (and funding) of state forests for, amongst other things, 'the establishment, maintenance, improvement and renewal of natural forests' (*Forests Act* 1918 Section 15(b) (Victorian Government 1918). There were several ways in which this responsibility was translated into action in the Rushworth Forest.

Firstly, 'forest improvement' was undertaken. This involved attempting to remove young saplings and pole forests to encourage 'more vigorous growth and an improved annual increment in stem growth' (State Forests Department of Victoria 1918: 6). As this commenced in the years immediately following World War I, over 190 discharged soldiers were employed at several camps in the Heathcote and Rushworth Forests. Their tasks were 'cleaning up and stacking of dry debris, with, in a few instances, light improvement fellings in young timber' (State Forests Department of Victoria 1918: 9). Over ensuing years, the ex-soldiers were replaced by Forests Commission of Victoria (FCV) employees or 'Susso' (Sustenance) workers, the later being unemployed men paid by the Victorian Government during the economic depression of the 1930s (Bannear 1997). At least two Susso camps were established in the Rushworth Forest (Fred Ruddy, pers. comm. 2005).

Dense coppice regrowth of species in the Box and Ironbark ecosystem had resulted from cutting extensive stands of timber at stump level during the mining era. The FCV (1930) lamented that stem regrowth from these coppiced trees were crooked and diseased. It embarked on a program of thinning the forest to encourage desirable species such as Red Ironbark *E. sideroxylon* and Grey Box *E. microcarpa* to flourish, 'regeneration or liberation treatment by ring-barking, removal of surplus coppice, artificial regeneration by sowing, and salvage felling' (FCV 1933: 7). The funding for this work was largely provided by the Commonwealth and Victorian Unemployment Relief Funds, where men and boys were employed by the Forests Commission for either three or six months over several summers to thus manage the Box and Ironbark forests (FCV 1935). Initially, this program 'yielded very encouraging results' (FCV 1934: 5), but a couple of years later, the treated forests were 'again becoming overstocked' (FCV 1935: 5) and required an extensive program of re-thinning (FCV 1938).

The annual reports of the Rushworth district forester detail the specific operations undertaken by the unemployed relief workers in various parts of the for-

est (FCV no date). The 1938/39 entry recorded that the main target species were Ironbark (Red Ironbark *E. sideroxylon*), Box (Grey Box *E. microcarpa* and Red Box *E. polyanthemos*) and Red Gum *E. camaldulensis*. Throughout the decade between the late 1920s and the outbreak of World War II, the Forests Commission concentrated their efforts on both thinning the forest and cutting back the coppiced growth. At the same time as the forest workers were cutting timber, they often performed other activities such as mistletoe removal, control-burning and 'scrub removal'. The latter was done under the belief that the shrub layer of the Box and Ironbark forests bled nutrients from the forest floor that should otherwise have been available for tree growth and thus better be removed.

Considerable revenue was gained by the Crown from sales from these forest cleaning operations. Most timber was sold as firewood, although the Forests Commission did note that timber from the Rushworth and other Box and Ironbark forests was 'very durable timber [suitable] for future engineering works, such as railway sleepers, girders, and piles, and… valuable fuel for inland factories and pumping-plants, as well as for domestic purposes' (FCV 1923: 5). The coppice leaves were also used for eucalyptus oil distillation (FCV 1930).

The type of forest management that operated from the 1910s to the 1930s demonstrated a lack of appreciation of the ecological system. The importance of understorey vegetation and ground-cover (including litter) for ground or soil-dwelling fauna was unknown or ignored (ECC Victoria 1997). Essential elements of forests ecosystems such as invertebrates were viewed as a problem. As a 1923 Forests Commission (1923: 9) report put it:

> The long rainless period, and general lack of soil moisture, resulted in low vitality in tree growth in many of the dryer areas. In such places the attacks of leaf-eating insects, grubs, and wood-boring beetles were very noticeable. The cleaning up of the forest floor, and the burning of rotting stumps, dead bark, and surface debris generally in the course of improvement work have greatly reduced the damage caused by insect life. Gradually, as the old trees are removed, and the young forests brought to a better standard of cultivation and treatment, the ravages of such insects will be still further reduced. One of the worst results of fire-damaged forests is the scarring and opening of the sapwood of young trees to the inroads of white ants, which attack equally the hardest and softest of our eucalypts. These pests, too, are kept greatly in check by the careful cleaning of the young forests, and the opening of them to fuller light and air.

Three indigenous and important plants in the Box and Ironbark ecosystem – mistletoe *Ameya* sp., Dodder Laurel *Cassytha* sp. and Chinese Scrub *Cassinia acuarta* – were all considered to be pest plants that were removed as part of the forest improvement operations (FCV 1921). These practices illustrated the paradigm of the time: that maximising production of tall timber was paramount, and that other components of the forest ecosystem required manipulation to meet production objectives.

The second major action taken by the Forests Commission was to place a high priority on the protection of the forests from bushfires, as they believed that 'the greatest enemy to our forests is fire' (FCV 1930: 1). The program of fire suppression took two main forms. As the forest improvement works described above incorporated roughly clearing the forest floor, this was seen as having the added benefit of reducing the fuel load available to a large bushfire, and thus minimising fire-risk. During the 1920s and 1930s, areas of 60 to 120 ha in specific parts of the Rushworth Forest were control burned every few years (FCV no date). Also, a program of re-clearance of existing fire trails was undertaken, and establishing new fire breaks through the forests was implemented.

The Forests Commission's policy of fire protection to maximise tree growth for commercial gain brought them into direct conflict with another Victorian Government department, the Lands Department, who issued grazing agistment licenses in forested lands across Victoria. Graziers had adopted a practice of regularly burning the forest blocks to promote young and palatable understorey growth, which often resulted in fires burning uncontrolled. The Forests Commission worried that funds spent on silvicultural activities in forests such as Rushworth would 'be wasted through loss of valuable timber caused by indiscriminate firing by licensees and others over which the Commission has no control' (FCV 1928: 3).

The third major action by the Forests Commission in the mid 1920s was to adopt principles of silviculture. This came about as a result of delegates from the Forests Commission attending the British Empire Forestry Conference in July 1920 (FCV 1921) and the subsequent visit by an American Government forester, Mr H.D Tiemann, between October 1921 and April 1922 (FCV 1922). Exposure to contemporary trends in international forest management resulted in the Forests Commission adopting international

nomenclature and practices, albeit with a recognition of the need to understand the requirements for maximising production of hardwood eucalypt forests.

For the Box and Ironbark forests of central Victoria in general, and the Rushworth Forest in particular, silvicultural practices entailed an attempt to understand which factors optimised tree growth. In this regard, the Forests Commission began investigating both the role of fire in forest regeneration and the enhancement of forests that had dense coppice regrowth. After the extensive and severe bushfires over the 1925/26 summer, the Forests Commission (1926: 10) became engaged in the following scientific studies:

> Following on the fires of last season, test and control blocks have been established throughout the various districts devastated, in order to determine the absolute and comparative effects of fire on the soil and growing crop of trees and their recovery from the damage done. In each of the different forest types, two blocks were established:-
>
> 1. Control block in unburnt area
> 2. Test block in burnt area
>
> These blocks have been clearly pegged out. A number of dominant, subdominant and suppressed trees were clearly marked and will be measured annually over a period of years.
>
> A progressive record is being kept of the recovery of the fire swept area from the period of the fire until its recovery is complete. This will note changes in trunks, crowns, foliage, seedling or coppice growth, undergrowth and forest litter.

The work was done by the silvicultural officer of the FCV in association with the University of Melbourne (FCV 1926). No outcome to these studies was ever mentioned by the Forests Commission, although data on a number of experimental regeneration plots were collected for the next thirteen years (FCV 1939). The FCV (1940) recorded that work on those plots had been curtailed by 1940.

The second and third actions of the FCV were somewhat at odds with each other, although the FCV didn't realise it at the time. By suppressing fire within the Box and Ironbark forests, the manner in which the Red Ironbark regenerated after silviculture became a mystery. A year after the 1925/26 fires, the FCV (1929: 6) lamented that:

> Following improvement fellings in the Box-Ironbark reserves, a prolific crop of coppice resulted. It is unfortunate that seedling regeneration in these forests, especially in the case of Red Ironbark (*E. sideroxylon*) is sparse.

The Forests Commission found that regeneration of species such as River Red Gum *E. camaldulensis*, Mountain Ash *E. regnans*, Yellow Stringybark *E. muelleriana*, Thin-leaved Stringybark *E. eugenioides*, Silvertop Ash *E. sieberi*, and Coast Grey Box *E. bosistoana* progressed satisfactorily following silviculture, but were perplexed that the Red Ironbark would 'not reproduce readily from seed' (FCV 1927: 6). The Forests Commission grappled with understanding the regeneration requirements of tree species in the Box and Ironbark forests for many years (FCV 1933). A tantalising comment in the Forests Commission (1936) *Annual Report* suggested they may have been on the brink of a break-through when they recorded that seedling regrowth was again scanty, and was confined to ash beds under old ringbarked trees. It was noted that in February 1939, 'bountiful rains' and Ironbark and Grey Box seedling regeneration 'in abundance' was observed in experimental plots (FCV 1939: 10). However, three factors coalesced to suspend interest in this important research, resulting in the findings being forgotten: the 1939 bushfires (which did not burn the Rushworth Forest) focused most forestry activity on salvage operations of burnt forests, mainly in eastern Victoria; the outbreak of World War II focused forest activities towards 'the war effort'; and a shift in focus to the Ash forests of north-eastern Victoria occurred immediately after the War to provide the much needed timber for post-war reconstruction.

The fourth action of the Forests Commission was to recognize the need for a systematic works program for each forest block. Consequently, a Plan of Management for the Rushworth Forest was completed in 1928 (FCV 1928), but despite extensive searching this document has not been located.

WORLD WAR II AND THE FOREST LOCKUP

The declaration of war against Germany on 1 September 1939 by the British Prime Minister Neville Chamberlain, and Australia's commitment to that War by Prime Minister Robert Menzies (Long 1961), had far-reaching consequences for Victorian forests in general and the Rushworth Forest in particular. In late 1939, just five weeks after Australia entered the War, the Commonwealth Department of Supply and Development approached the Victorian Minister of Forests 'for the purpose of considering ways and means of conserving timber supplies, and their most equitable distribution particularly in relation to ac-

tivities directly concerned with the furtherance of the war effort' (FCV 1940: 3). As a result, 'silvicultural and other forms of forest improvement work [were] practically suspended and utilisation [became] the order of the day' (FCV 1943: 3).

The Forests Commission responded to the Commonwealth's approach in five ways. Firstly, they convened a conference between themselves and other organisations with timber interests (FCV 1940). Secondly, arising out of the conference, a State Advisory Committee on Wartime Timber Supplies was constituted, which advised the Commonwealth Government on matters concerning timber supplies (FCV 1941). Thirdly, at the request of the Government of the United Kingdom, the Australian Government raised three Forestry Units to serve in the War. Their officers and men were drawn from the Victorian Forests Commission and forest services in other states (Moulds 1991). Fourthly, in anticipation of restrictions on petrol import due to the War, and the expectation that the demand for substitute fuels would increase, the Forests Commission investigated the charcoal-producing properties of Victorian timber with a view to producing economic quantities of charcoal-gas. Fifthly, a survey was made 'of the possibilities of destructive distillation of wood from Victorian forests for the supply of chemicals used in the manufacture of munitions' (FCV 1940: 4).

In addition to a change of focus enforced on the Forests Commission as a result of the War, there were several unforeseen ways in which the War impacted on its normal operations. In 1942, the Forests Commission (1942: 3-4) lamented:

> The labour problem is acute. Enlistment in the various fighting services, the attraction of more remunerative and easier work in other industries, and call-up for military service combined to deplete the ranks of skilled firewood cutters and millers, bush carters, and others connected normally with the firewood production trade to such an extent that early in 1942, the position threatened to become serious.
>
> Transport difficulties were also experienced, more particularly following the declaration of war against Japan, when demands on railway rolling stock, motor transport vehicles, petrol, and motor tyres to meet defence needs greatly interfered with the transport available for civil requirements. Another factor entering into calculations was the necessity to meet heavy demands for firewood for the many military establishments throughout the State.
>
> In January, less than 1000 tons of firewood was being delivered in Melbourne weekly, large quantities normally available for civilian use were diverted for military use, and firewood was placed low on the railways preferential list due to the necessity for utilising the bulk of railways rolling stock for military movements.

For the Rushworth Forest, these issues were particularly problematic: the forestry workforce was reduced, milling operations ran only on a skeleton staff, income from firewood sales was slashed, and eucalyptus oil production also fell (FCV 1942). In spite of this, the production of charcoal-gas from timber in the Rushworth Forest began immediately. By November 1942, 'articulated trucks, operating on charcoal produced on the spot [in the Rushworth Forest] were carting timber out of the area… to the Shepparton Cannery – about 40 miles [65km] distant' (McQuie 1942). There were several charcoal burning operations in the Rushworth Forest, and the remnants of five of them have been documented by Bannear (1997).

During the early 1940s, the timber-cutting operations of the previous two decades in the Rushworth Forest were severely curtailed, but the situation was about to change with the establishment of several 'Civil Alien Corps camps' (FCV 1942: 17). These camps were established to house prisoners-of-war (POWs) from Italy, Germany and Japan, and were financed by Great Britain and administered by the Australian Army (Hammond 1990). Some POWs were Germans living in, or visiting, Australia at the time of the declaration of war, others were transported to Australia from Europe, and others were German navy personnel captured when their vessel sank in Australian waters.

The rationale for establishing POW camps in the Nagambie–Graytown area, which incorporated the Rushworth Forest, rather than other locations, was articulated by Major General McQuie (1942: 1):

1. the POWs could be suitably employed in wood cutting in the Rushworth Forest;
2. the Rushworth Forest was accessible all year round due to the mild climatic conditions;
3. the location was remote from settlement;
4. there was more timber in the forest than could be cut by the designated number of POWs in many years, thus allowing an open-ended commitment of activities using POW labour;
5. there was a gas-charcoal plant already in operation in the forest that was suitable for powering military trucks;
6. retorts were available to be produced at the site;

7. there was a railhead nearby suitable for the conveyance of forest produce to the desired destinations; and
8. the route from the forest to the railhead was predominantly downhill, thus enabling the efficient operation of the charcoal powered trucks.

POW labour was used to construct several camps in the Nagambie–Graytown area. The camps were comprised of tented accommodation, timber and iron mess huts, ablution and latrine facilities, and surrounded by a Dannert fence (McQuie 1942). Watchtowers were constructed for surveillance purposes (Australian War Memorial photo 028565). McQuie (1942:1) stated that 'owing to the nature of the available timber, much of the framing and all of the posts could be cut on the spot'. The use of POWs to construct the camps represented a 90% saving in labour, and they were overseen by experienced personnel from the 23rd Battalion (McQuie 1942).

The Australian War Memorial (AWM) photographic records of this operation provide the best indication of their activities. Once the camps were established, the POWs were given a variety of tasks. 'In addition to construction and maintenance duties inside the camps, prisoners were engaged in timber cutting, road making, quarrying, pig farming and market gardening' (AWM photo 028561). Of the seven camps established in the region, it was POW Camp 6 at Graytown that had the most significance for the Rushworth Forest. The POWs at Graytown consisted of naval officers from the German raider ship Kormoran (AWM photo 061196), which had been sunk off the Western Australian coast by the Australian warship HMS Sydney on 19 November 1941. The 223 men at Camp 6 were photographed on 1 December 1943 (AWM photo 030159).

The Graytown POWs were guarded by personnel of the 3rd Australian Guard Company (AWM photo 061210) and were either marched or driven to designated sections of the Rushworth Forest each day (AWM photos 028561 and 028565). They 'operated a [portable] sawbench in the forests near the camps [where] dead timber [was] collected and green timber cut for conversion into firewood' (AWM photo 028575). In addition to firewood production, the Graytown POWs were 'employed making camp and office furniture for other [POW] camps in Victoria: most of the material used was salvage' (AWM photo 030202). Prisoners were guarded at night but allowed freedom of the bush by day (Fred Ruddy pers. comm. 2005).

The exact forestry operations in which the POWs engaged, were largely determined by the local Forests Commission officer (Bush 1943). According to a former member of the Australian Guard Company (Fred Ruddy, pers. comm. 2005), the main purpose of the forestry work done by the POWs was to clean the floor of the forest. A forest warden would walk throughout the forest and identify trees to be cut - usually trees that were damaged, scarred or hollow – and the guards would then instruct the German POWs to cut the timber into one-foot [25 cm] lengths suitable for firewood. In this way, the aim of providing the POWs with meaningful work was fulfilled, and at the same time the silvicultural aims of the Forests Commission practised prior to the War were not compromised.

Returns on the exact amount of timber removed for firewood from the Rushworth Forest during the War years have not been found. At the time of establishment of the Graytown camp, Major General Harding (1943) set a target of 'a minimum production of 1000 tons [984 tonnes] of sawn firewood per week'. Hammond (1990) recorded that the Italians held the record of 111 tons in a day of 30 cm blocks. Issues relating to equipment malfunction and scarcity usually hindered the realisation of those targets. However, Bush (1943) reported that in early April 1943, 1400 tons of wood had been cut, of which 300 tons had been sawn into foot blocks. Another anonymous note in early May 1943 reported 2500 tons of timber lengths had been cut and stacked in the forest, and 500 tons of one-foot blocks of wood had been cut. If the target of 1000 tons of sawn timber per week was realised, and the operation of the Graytown camp continued for about three years, then it is feasible that 150 000 tons of firewood were removed from the Rushworth Forest between early 1943 and early 1946.

Photographs of the timber operations in the Rushworth Forest taken during the War years depict a largely immature forest with much coppice regrowth. This is the exact description of the forest that the Forests Commission complained about in the late 1930s. Timber cut for firewood was rarely more than 20 cm diameter in any photograph sighted. It seems that the unwanted canopy of the felled trees, and any small twigs and sawdust from the mobile saw bench, was then racked into windrows rather than left on the forest floor (AWM photo 061193) and then presumably burnt. This practice was consistent with the Forests Commission practice of manipulating the forest for tall timber production.

FOREST UTILISATION VS PARKS

Forest resource utilisation after the 1940s

The six years of war dramatically changed the interest of the Forests Commission in the Rushworth Forest. After the end of World War II, the Commonwealth Government began to accept large numbers of immigrants, or displaced persons, from Europe (Bannear 1997) on a scheme that required them to work for two years in a government-directed job (Catrice 1996). A few of those immigrants worked for the Forests Commission, including 31 men stationed at Graytown, who were employed in firewood cutting, forest thinning operations, road making and fire protection (Bannear 1997). The Graytown POW camp was upgraded to accommodate the new immigrants. The production of firewood across Victoria tripled under the emergency firewood program that lasted until 1952 (Moulds 1991).

The post-war reconstruction years and the subsequent development in technology reset the economics of forestry supply in Victoria, as harvesting and management of the tall montane timbers of eastern Victoria took precedence over utilisation of the Box and Ironbark forests (Moulds 1991). The expansion of roads into Victoria's Eastern Highlands, the availability of timber-felling equipment to harvest moist hill-slope forests, and research into the reproductive strategies of Ash Forests (*E. regnans* and *E. delegatensis*) produced 'the shift east', as forester Mr Francis Moulds termed it. References to the Rushworth Forests in the *Annual Reports* of the Forests Commission virtually ceased after the 1950s. The time when the majority of Victoria's timber needs was supplied from the Box and Ironbark forests was over, and the resources derived from places such as the Rushworth Forest took a different form. Calder et al. (1994) would later aptly call the Box and Ironbark country of central Victoria *The forgotten forest*.

Between the 1950s and 1990s, utilisation of the Rushworth Forest resources continued but focused on low-value resource uses. In Rushworth, a family-operated, steam-driven logging operation that had been established in the 1890s continued to operate (Ron Risstrom pers. comm. 2005). The provision of firewood for the Melbourne market dominated operations during the 1950s, as the Rushworth firewood supply was transported to Melbourne by rail. In subsequent decades, the Risstrom mill obtained contracts for the supply of Ironbark railway sleepers and fence posts destined for western Victorian farm properties. Occasionally, Rushworth Forest timbers were used for construction of infrastructure such as bridges (Maughan 1996), and the production of furniture (Plowman 2000). The supply of timber for railway sleepers was then replaced by the provision of timber for roadside marker posts. This practice continued until the business was paid out by the Victorian Government in the early 2000s. Former mill owner, Ron Risstrom (pers. comm. 2005), claimed that there was no section of the Rushworth Forest that had not been harvested for timber since the 1950s.

The expansion of the electricity grid in Victoria in part reduced the need for firewood, but a small, local firewood industry continued from the mid 1950s until the present. Municipal governments such as the Waranga and Heathcote Shires allowed small residential subdivisions on forest/town fringes to increase their rates income. Many of these 'blockies' or 'tree-changers' installed slow combustion stoves for domestic heating purposes, which resulted in the need for firewood collection from places such as the Rushworth Forest. Permits for the collection of fallen timber for domestic firewood were administered by the appropriate government department, and in 2001, amounted to 3890 m^3 of firewood per annum (ECC Victoria 2001: 234). Maughan (2003: 1234) stated the significance of these resources to the local community:

> … [regarding] the provision of firewood for the people of Rushworth and Heathcote. Both of these communities are heavily dependent on firewood for their heating, cooking and hot water requirements. Both towns would be classified as amongst the lower socioeconomic groupings in Victoria. These are genuine, hardworking people - timber-cutters, sawmillers and manual workers… Both communities have a high number of people over 60 years of age. They do not have natural gas, and there is no indication from the government as to when that might be provided… Wood for these communities is a traditional form of fuel, not a luxury but a basic necessity… Residents must pay for a minimum of 6 cubic metres, in advance. With cutting and delivery, the total cost amounts to about $600.

Many local residents maintained the tradition of accessing timber for firewood from the Rushworth Forest, both legally and illegally, throughout the second half of the 20th century. By 2002, the Victorian Government was still concerned about Box and Ironbark

timber shortages when it implemented a new firewood licensing system claiming that 'at the current rate of cutting, there is insufficient firewood in the future to sustain present demand from both commercial and domestic markets' (Garbett 2002: 1).

Victoria underwent significant improvements in road building and surfacing after the war and gravel was often sourced from places such as the Rushworth Forest. The authors have observed hectares of forested areas around Whroo that were scraped of all vegetation, except mature trees which were left standing, in order to extract material for road gravels. These gravel extraction sites were not restricted to areas that had been mined in the nineteenth century, but included otherwise good forest lands. Indeed, the *State Forests Act* 1958*,* under which the management of the Rushworth Forest operated, defined gravel as a 'forest product'. The Waranga and Heathcote Shire Councils have been largely responsible for this forest product removal. The ECC Victoria (2001: 256) admitted that 'the cumulative effect of numerous small extraction sites has been the gradual removal or degradation of areas of Box-Ironbark vegetation'.

A plethora of economic and recreational activities have taken place in the Rushworth Forest in the last few decades. The ECC (2001: 125-128, 233-235) listed the following land uses in the Rushworth Forest at the start of the 21st century: picnicking and barbeques, car touring, car rallies, trail bike riding, bushwalking, camping, heritage excursions, bird watching, nature study, orienteering, horse riding, prospecting, metal detecting, gold mining, mining exploration, apiculture, timber harvesting, domestic firewood collection, eucalyptus oil production, hunting, and army training exercises. Sheep grazing also operated in the forest until the early 1990s.

Towards conservation

By the end of the twentieth century, the Rushworth Forest was displaying the cumulative effects of over 150 years of forest resource utilisation. Highly disturbed areas marking productive gold mining ventures were still evident throughout the forest, and industrial archaeological surveys determined the cultural significance of those scars (Bannear 1993a, 1993b). Virtually the entire forest had been cut over during the gold rush period and in subsequent decades. The twin aims of preserving the forest and harvesting forest resources in the early 20th century had resulted in the manipulation of the forest to enhance the growth of tall timbers at the expense of shrubs and ground cover. Photographic evidence from the early 1940s depicted a largely immature over-storey, as any trees above 20 cm diameter had been harvested. Forest resource utilisation in the last 50 years perpetuated the lack of appreciation of ground cover, as practices such as firewood collection and gravel extraction removed or destroyed what under-storey remained. The prevailing philosophy of what constituted a good forest was highlighted by a photograph of the Rushworth Forest included in Moulds' (1991: 181) book depicting tall Ironbark trees with minimal under-storey species, which was entitled 'improved red Ironbark forest, Rushworth State Forest'.

The publication of *Silent Spring* (Carson 1962) is credited with sparking the international conservation movement of the 1960s and 1970s. In Victoria, this was followed by an influential publication by Frankenberg (1971) entitled *Nature conservation in Victoria: a survey*, which found that the remnant flora and fauna within the remaining Box and Ironbark forests was largely unrepresented in conservation reserves in Victoria. Locally, it was the rediscovery in 1968 of the Rushworth endemic orchid *Calochilus richae*, that had last been seen by local enthusiast, Mrs Edith Rich, 40 years earlier, that sparked a passionate response against gravel extraction in the Rushworth Forest (Jones 1969: 320):

> Already the indiscriminate gravel quarrying which goes on in the area poses a very real threat to the survival of these plants... The species is obviously capable of existing in the natural environment, and its survival could be virtually assured if removal of gravel from the Rushworth State Forest was totally prohibited. It would indeed be tragic if these orchids were to be spread over the country's road surfaces. As one observer stated 'it has taken one hundred years to recover from the effects of gold mining'. Don't let's turn back the clock now.

The Victorian Government responded to these international, regional and local voices in a number of ways. Firstly, existing legislative provisions under Section 50 of the *State Forests Act* 1958 were used, and three areas within the Rushworth Forest received conservation protection (LCC 1978):

- the Aboriginal water well at Whroo was preserved as the Native Wells Reserve in 1959, being 0.2 ha in size;
- the 119 ha Dargile Reserve was declared in 1973, because 'experimental plantings of pines and eu-

calypt form abundant fauna' (LCC 1978: 108); and
- the Gobarup Wildflower Reserve was established in 1974 (259 ha), in recognition of the profusion of wildflowers there.

Secondly, a new State planning organisation was implemented by the Victorian Government (Clode 2006). The Land Conservation Council (LCC) was established under the *Land Conservation Act* 1970. The LCC was kept at an arms-length from the Victorian Government, but worked effectively with various government departments to review public land uses (LCC 1978). In 1981, the LCC reviewed and recommended conservation, historic and recreation reserves across the Box and Ironbark forests of central Victoria, and resulted in some sizable additions to conservation reserves in the vicinity of the Rushworth Forest: namely, the Mount Black Flora Reserve (1630 ha), the Mount Ida Flora Reserve (1070 ha) and the Whroo Historic Reserve (460 ha) (LCC 1981). The Whroo area had been previously described by Garnet (1949) as 'a delight to behold – acres of Calytrix, Pimelea and Grevillea mingled with Wax-lip Orchids, Sundews and Beard-heath'.

Along with the establishment and operation of the LCC, the role and scope of Victorian government departments responsible for forest management underwent metamorphosis. In 1983, the three government bodies responsible for land management in the State - the Ministry for Conservation, the FCV, and the Department of Crown Lands and Survey - were amalgamated into a mega government department entitled the Department of Conservation, Forests and Lands. The rationale for this amalgamation was to achieve 'balanced decision-making on the management of public land' (Moulds 1991: 154). As the new department was responsible for the management of 38% of Victoria, the old mandate of the Forests Commission to foster timber resource utilisation above all else, was gradually replaced by a cooperative approach to timber use on the one hand and conservation of forest ecology on the other. This represented a major shift in the Victorian government's attitude to the management of forests. Further subtle shifts in attitudes to forest management were reflected in subsequent department name changes over the next three decades: Department of Conservation and Environment (1990-1992), Department of Conservation and Natural Resources (1992-1996), Department of Natural Resources and Environment (1996-2002) and Department of Sustainability and Environment (2002 to present).

There has been one last twist in the saga of management of the Rushworth Forest. In 1997, the Victorian Government replaced the LCC with the Environmental Conservation Council (ECC). An investigation by the ECC into the Box and Ironbark ecosystem of central Victoria was commissioned by Parliament in July 1997, and a *Resources and issues report* was published in December 1997 (ECC 1997). The consultation process between the ECC and the public then ran from 1997 to 2001, and the ECC recommendations for the Rushworth Forest were highly contested by the Rushworth community. Ms Tracey Spiby, the partner of a local saw miller, garnered strong community support under the auspices of both the Rushworth Branch of 'Timber Communities Australia' and the 'Bush Users Group' (Hall 2002). At town meetings the ECC was met with raucous jeers from the community, which deeply opposed any suggestion of reduced access to the forest or government management of it. Conversely, the Victorian National Parks Association, the Wilderness Society, and groups like the Bendigo Field Naturalists Club lobbied government and the ECC for the preservation of the biodiversity assets of the Rushworth Forest. Arguably, because of the strong views of the Rushworth community, the ECC (2000) recommended that:
- the Rushworth – Heathcote State Forest (23 650 ha) in the northern section of the Rushworth forest would continue to be protected under Section 50 of the *Forests Act* 1958 to supply sawlogs, fencing products, firewood and eucalyptus oil;
- the Heathcote-Graytown National Park (12 700 ha) be declared under the *National Parks Act* 1975 in the southern section of the Rushworth forest to protect environmental (including 16 threatened species), cultural heritage and recreational values;
- 2298 ha of the Rushworth State Forest become the Whroo Nature Conservation Reserve under the *Crown Lands (Reserves) Act* 1978, to protect 10 threatened species and to complement the extant Whroo Historic Area; and
- that due to on-going mineral interests in an area of high conservation value, the Spring Creek Nature Conservation Reserve (401 ha) also be created under the *Crown Lands (Reserves) Act* 1978 to incorporate the Mt Black Flora Reserve.

After much debate and many rallies, these recommendations were accepted by Government and passed through parliament on 30 October 2002 (Camilleri 2006; Parks Victoria 2006). Although a sizable area of land was conserved as the Whroo Nature Conser-

vation Reserve, we feel that the ECC made their decision with a limited knowledge of the distribution of local flora, as a nearby large population of the rare Whirakee Wattle *Acacia williamsonii* was not included in this reserve. Thus, in 2010, the Rushworth Forest comprises about two-thirds State Forest and one-third National Park.

CONCLUSION

In a period of 160 years, much of the vegetation and soils in the Rushworth Forest have been removed, and what is left has been highly modified. We have articulated the important cultural, economic and political factors that have contributed to those changes, from the gold rush to the present. Over that time period, the Rushworth Forest has been subject to forces of international, national, state and local scale. The gold rush was a period of unprecedented international migration that resulted in unconstrained land use activities, as gold, timber, and other forest products were exploited. Ironically, it was the loss of timber in Box and Ironbark forests that was perceived as a threat to the security of the gold driven economy and population growth of the mid to late 1800s. From the time of the first Land Acts in Victoria, there was a move to preserve the forest estate at Rushworth from free selection as a timber resource for mining interests.

As the 1800s progressed, this preservation interest was formalised, culminating in the formation of the Forests Commission in 1919. Then the management of the forest estate became systematic, using the practice of silviculture, which was highly influenced by the colonial experiences of forest management and concerns, and bore little resemblance to silvicultural practices of the late 20th century in Victoria. Those silvicultural practices emphasised timber extraction, and lacked an understanding of the ecological value of the understorey. The reproductive traits and slow growth of eucalypts such as Ironbark was also poorly understood, and this led to concerns about the economic viability of these forests.

The war effort revolutionised the macro-economics of the Victorian timber industry, as the need for firewood and charcoal across Victoria, and the supply of POW labour subdued the preservation intent of the Forestry Commission in pursuit of international political events. Forest silvicultural practices of the 1890s to 1930s were maintained during the war, namely raking the forest floor to enhance growth of the tall timbers for their logging value.

After World War II the importance of Box and Ironbark forests to the Victorian economy declined, and management of the Rushworth Forest entered a period of stasis when regulated low-value resource extraction dominated. It wasn't until the 1970s that the ecological values of the forest were recognised through flora and land use surveys, which resulted in conservation reserves. Since the mid 1990s, the forest has become the focus of contentious debate between local resource interests and the conservation movement, culminating in the partial declaration of the forest as National Park in 2002, whilst the majority of the forest remained as State Forest.

Throughout all these periods, local and regional timber shortages have featured as a strong preservation motivation, and concerns of this nature continue to the present. The schism of attitude between resource use and preservation, which date from the formation of the Rushworth Forest, is now memorialised in the demarcation of the forest as part National Park and part State Forest.

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