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The Changing Light: Snapshots from the Uriarra Forest, Australian Capital Territory

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INTRODUCTION

This paper outlines a case study of the way perceptions of the environment have changed through successive phases of occupation and use, and how these shifts have altered policy and management.

The setting for the case study is the Uriarra Forest, an area of pine plantation and associated native forests in the north-western corner of the Australian Capital Territory (ACT). This area is located within the Lower Cotter water supply catchment for Canberra.

The paper focuses on Blundells Flat within the Uriarra Forest as a case study of successive phases of use and perception. This arises from preparation of a Conservation Management Plan for the area, this work being supported by an ACT Heritage Grant.

The views expressed in this paper are those of the author and do not necessarily reflect the views of the ACT Government or any other party.

Before records

Aboriginal people have played a major role in the evolution of regional landscapes through long established land use and management practices. In the Southern tablelands region this began at least 21,000 years ago (Lennon & Mathews 1996). Early European accounts state that the undulating country of the tablelands supported mobile groups of Aboriginal people, exploiting seasonal food sources. This seasonal existence followed natural patterns, in contrast to the approach of most white settlers (Jeans & Jack 1996).

Many traces of past use by Aboriginal people have been identified and recorded in the Uriarra Forest. At Blundells Flat a large surface campsite was recorded (Flood 1980) and work since that time (e.g. Raath 1989; Winston-Gregson 1993) has confirmed that the extent of the area used by Aboriginal people is potentially much more extensive.

The Blundells Flat site was considered notable for its extent and the large number of artefacts, which suggested occupation by larger groups of people (Flood 1980). Extensive Aboriginal use of the area most likely arose from its being a rarely encountered environment, as an upland wetland below the sub-alpine, sheltered in the lee of the Brindabella Range, of low relief among steep terrain, with an easy and well-watered grade connecting it to the Murrumbidgee River and the Canberra Plain beyond. Relatively open flats with diverse vegetation and tall wet forest adjacent would have offered an abundance and variety of food sources throughout the year (Flood 1980).

When the first white settlers arrived at Canberra in the 1820's, the Aboriginal population was estimated at about 500, in bands of 20 to 30 (Bluett 1954). The local group has been referred to as the Kamberri or Kgamburry (Bluett 1954) or Ngambri (Jackson-Nakano 2005). Their home territory extended from Lake George (Weereewaa) and Gourock Ranges in the east to the Goodradigbee River on the west, and from south of Yass to the headwaters of the Murrumbidgee (Jackson-Nakano 2001). Today the Ngunnawal people are recognised as the traditional owners of the area.

Recent research indicates that 'Condore' or 'Condhoware' or 'Kunderwarre' or 'Goondawarra' (and similar) was the native name for a large area which included the Brindabella Range and the Cotter River, generally the area between the Murrumbidgee and Goodradigbee Rivers (Jackson-Nakano 2005), and including all of the Uriarra Forest area.

Flood (1980) interpreted the Blundells Flat Aboriginal site as a montane valley camp associated with seasonal exploitation of Bogong moths (*Agrotis infusa*) as a food source. These moths make an unusual annual two-way migration, with very large populations descending on the mountains of the ACT from September to November. They cluster among rocks of scree slopes and on the underside of logs in temporary 'moth camps' before moving to peaks at higher altitudes >1,300m asl where they cluster in clefts and small caves in rocks (Flood 1980).

Mount Coree, marking the north-west corner of the ACT, was a regularly used temporary 'moth camp', lying about 700 metres above Blundells Flat, and reached after a climb of about two hours, with another surface campsite noted about halfway to the summit (Flood 1980). The name Coree is derived from the local Aboriginal name of Goree or Gori, which refers to the Bogong moth (Jackson-Nakano 2005).

The Uriarra property to the east was the site of moth 'feasts' in the period following European settlement. The McDonald family, who established the property, reported that a large flat rock there was known to Aboriginal people as Urayarra, said to mean 'running to the feast'. This refers to bringing Bogong moths to be cooked on the rock which had been heated by fires built on it (Gale 1927). Mount Coree is the closest 'moth camp' to Uriarra. Access by foot between Uriarra and Blundells Flat would have involved a 10km walk with a climb of only about 120m in elevation.

European settlement and pastoral use

Settlement on the Limestone Plains (now the site of Canberra) began in 1824. By the time of the 1828 Census, 60 men were employed on six stations, of whom all but the five Superintendents had arrived as convicts (Fitzgerald 1987). In 1829 the occupied lands of the Colony were drawn up into Nineteen Counties, defining the official limits of settlement with County Murray at the south-west limit, itself bounded in the south-west by the Murrumbidgee River (Lea-Scarlett 1968). People were now being counted, and the land was being mapped.

The arrival of settlers in the tablelands from the 1820's had had a significant effect on Aboriginal life, disrupting natural resource availability and seasonal mobility, and introducing exotic diseases. Aboriginal traditional life had effectively ceased on the tablelands by the 1850's, marked by the cessation of Bogong moth harvests and the large inter-tribal meetings and corroborees which had been observed and recorded by early settlers (Jeans & Jack 1996). This was the first recorded dispossession in the Uriarra Forest area.

Aboriginal people had needed no drawn map to know the Goondawarra area, traverse it and use its resources. But to settlers this landscape was strange and unknown, and a map provided both reassurance in navigation and a guide for carving the landscape into administrative units. The first feature in the area to appear on an official map was Mount Coree. When Surveyor-General Thomas Mitchell published the first map of the Colony of New South Wales in 1834 Coree was shown as the peak of Pabral, an isolated landmark between the Murrumbidgee and Goodradigbee Rivers, beyond the Nineteen Counties and the limits of settlement.

In the 1830's land was increasingly being purchased by prosperous settlers such as T A Murray, who acquired Yarralumla (Fitzgerald 1987). He was one of a number of landholders who followed the practice of transhumance grazing, moving stock to higher country in summer and driving them back into the valleys in autumn. This provided a degree of protection from periodic drought as well as resting lowland pastures (Jeans & Jack 1996).

Murray provided the earliest written description of what is now the Uriarra Forest area. His first land holding had been near the north-west corner of Lake George where he learned to speak fluently with the local Aborigines, a skill extended at Yarralumla (Wilson 1968). Both Murray and his friend Stewart Mowle formed close friendships with Aboriginal people and learned the language local to their properties and outstations (Jackson-Nakano 2001).

From 1838 Murray recorded journeys along the Cotter River, along the winding narrow course of Condor Creek, and through Blundells Flat to the crest of the mountain range and to outstations in the high country beyond. It is likely that he was guided in these journeys, although Aboriginal people appear to be mentioned specifically only in 1839 and 1841 (Wilson 1968). In 1839 Murray recorded that he followed the '*marked tree line*', indicating formalisation of a route used by countless generations of Aboriginal people before him. In 1841 he climbed the peak of Pabral and camped at Condor Flat [now Blundells Flat] (Wilson 1968). The name Condor is a variation of the native name of Goondawarra (Jackson-Nakano 2005). Clearly, Murray saw this landscape as something to be conquered and to be used in his pastoral pursuits.

Through a series of legislative reforms in the 1860's ('the Robertson Land Acts'), extensive areas of land which had been the exclusive domain of wealthy squatters were made available to small settlers for selection. The 1871 map of County Cowley shows one portion in Parish Tidbinbilla, at the end of a spur from Pabral (or Coree), and at the end of a dotted track from Uriarra. By the 1881 version, a second and larger portion was added but these small squares remained very isolated in the mountains. Portion 1 (40 acres) was held by John McDonald of Uriarra. Portion 2 (100 acres) was the earliest holding of John Blundell. After further survey and new lines on maps, Blundell later had another 460 acres here, and his son took up an additional 320 acres at what we now call Blundells Flat.

It is likely that the perceptions of settlers were based on the springs, wetlands and flats which had long supported Aboriginal people, and it is feasible that John Blundell had been first shown this place by Aboriginal people. As a child in the 1840's, he went fishing and possum hunting with native boys and had learned to speak some of their language (Bluett 1954).

In 1875, some decades after the journeys of Murray, journalist John Gale made his own journey from Urayarra across the Brindabella Range. He wrote that after leaving the McDonald homestead: '*we pursued our way through a tortuous glen, in the course of half a mile crossing a mountain stream four or five times…we wended our way along slippery sidelings, and through deep gullies, till another hour's ride brought us to the mountain homestead of Mr. John Blundell.*' (Gale 1903a). The mountain stream with many crossings is Condor Creek, with the reach above Thompsons Corner long being referred to as Five Fords.

Gale noted that beyond the Blundell home, they followed a mountain track which was originally cleared by John McDonald as the most direct route to Kiandra at the height of the gold rush in the 1860's. A travelling stock route was defined in 1887 along the ridge from Condor Creek to cross the Brindabella Range. Parts of the same route would have been used in association with mining at the Brindabella alluvial gold workings which began in 1881 and continued intermittently until 1914, and at the Mount Blundell base metal prospect which operated in the late 1890's (Owen & Wyborn 1979).

This suggests repeated use of an established Aboriginal route between the plains and the mountains via Condor (Blundells) Flat. It was adopted by Murray in the 1830's-40's; became a marked tree line; was cleared by McDonald for gold seekers in the 1860's; and was used by settlers, miners and other travellers into the final quarter of the 19th century.

Gale had also commented on the remoteness of the Blundell property, recording that Mrs Blundell and the children '*seldom saw or travelled beyond the circumscribed horizon which girts their home in the quiet and lonely glen*' (Gale 1903a). This sense of isolation would

have been heightened by John's frequent absence as a carrier, travelling with his bullock team as far afield as Sydney, in a round trip of three weeks (Roy Bush *pers.comm.*).

Despite its relative isolation, this area was clearly attractive to settlers. The nature of this attraction, and the response of the settlers, is indicated in original portion plans for the area. At Blundells Flat these were compiled in a succession of surveys from 1871 to 1899. The large wetland area on Condor Creek is clearly shown, flanked by '*well grassed open forest*' on granite and above this were steep heavily timbered ridges. The plans also illustrate the practices of European settlers in clearing and ringbarking. Valuation records date from 1912 to 1914, and offer further descriptions of the landscape and of landholder activities in ringbarking and the draining of swampy ground.

The valuer considered that the McDonald property would be good second class to first class cultivation land but for its distance from rail transport (about 30 miles). Although being '*too wet for sheep*', it was '*first class grazing, high class cattle fattening and carrying*' and was *'suitable for dairying under improved carriage facilities*'. In 1885 John Blundell is recorded to have held 140 acres at Condor Flat supporting 9 horses, 20 cows, 52 sheep and 6 pigs (NSW Legislative Assembly Votes & Proceedings).

These records indicate that the settlers struggled against native forests and wetlands in carving out a living in the bush. In some areas the native vegetation was persistent in regenerating, and the valuer noted that this is '*bad country to kill*'. The settlers would have perceived the landscape in terms of its utility value and they expended considerable effort in altering it to suit their pastoral activities.

Federal Territory

A distinctive aspect of the history of this area is the decision in 1908 favouring the Yass-Canberra site for the new Federal Capital, which followed Federation of the Australian colonies in 1901. Surveyor Charles Scrivener then narrowed the selection to the Canberra plain, with its water supply needs to be served by the Cotter catchment.

This in turn was followed by survey of the boundary of the Federal Capital Territory (later Australian Capital Territory, or ACT). The Territory was separated from New South Wales from 1 January 1911 over an area of 2,360 sq km which was then occupied by 1,714 non-Indigenous people on pastoral properties grazing some 224,764 sheep (CDHS Web site). In 1913 land was compulsorily acquired to establish a leasehold system in the Territory. This phase led to new names and lines on maps, as land became holdings rather than individual portions.

The first part of the Territory border to be surveyed was a straight line from Coree to the Murrumbidgee River. While carrying out this survey in 1910, Surveyor Percy Sheaffe was surprised to find that not all of the Cotter catchment was within the straight line boundary defined by the separation legislation, as he crossed two streams running from left to right (Higgins 1996). Some maps were vague on detail and suggested that Coree Creek was sourced on the east of Coree. If this had been correct, the straight line would have taken in all of the water supply catchment. However, as early as 1871 a map of County Cowley showed this was in error, as Coree Creek begins 4km to the north on the flanks of Devils Peak.

Because of this oversight, the part of the Cotter catchment lying outside the Territory had to be reserved in 1917. Surveyor Astley Pulver was tasked with surveying the head of the catchment from Coree to the straight line border (Pulver 1981). A start was made early in 1926 but bush fires forced their withdrawal (mss NAA). When field work resumed, the surveyors' gear was trucked to Uriarra, and then carried by packhorse. Pulver's photographs show that they camped at Blundells Flat, and also at a higher elevation. The previous summer had brought bush fires; this summer they had snow at 4,000 feet (Pulver 1981).

Catchment protection

The Cotter catchment had been a significant determining factor in selection of the Canberra site for the Federal Capital. Instructions given to Surveyor Charles Scrivener in 1908 regarding selection of the site included the requirement to locate a water supply '*of sufficient magnitude to place the question of volume at all seasons, and purity, beyond doubt'*. Scrivener forecast a '*supply of perennially clear and pure water in the Cotter River*', and work commenced on the dam and associated works in 1913 (Daley 1994).

At least as early as 1911 Commonwealth health officials were urging that lands in the Cotter catchment be 'depopulated'. In 1912 Dr J H L Cumpston inspected the area and recommended that some, including that of John Blundell, be completely removed or moved further away from watercourses (mss NAA).

Scrivener meanwhile was concerned about the impact of complete removal of supervision of improved (cleared) lands, and particularly impacts from rabbits. He favoured continued occupation by lease, but without residential occupation, and he proposed retention of the right to undertake tree planting. Cumpston insisted on complete depopulation, so the land was resumed in 1913 and landholders were removed, among the last to leave being the Blundells in 1917. Scrivener declared that: '*The acquisitions have been made in the interests of the water supply and future action should make that the dominant feature*' (mss NAA).

Depopulation cleared the map. John Blundell was one of the small landholders who lost their entire property in the resumption process, as perceptions of the area were now shaped by the need to protect the water supply for the new city. This was the second recorded dispossession affecting Uriarra Forest.

From 1914 Scrivener was advocating urgent action to exterminate rabbits before the reservoir was finished. He saw this, coupled with fencing, destruction of harbour and planting of trees, as beneficial for employment and as '*a permanent improvement of great value*'. Scrivener hoped to cover the catchment '*with such a dense growth of trees that grass would not grow; thereafter there would be no trouble with rabbits'*. Early in 1914 T C G Weston of the Afforestation Branch for the Federal Territory conducted a field inspection to report on this measure (mss NAA). Progress was delayed by the 1914-18 War but by the 1920's reafforestation had begun, with pines planted on slopes near the Cotter reservoir to address erosion arising from decades of over-clearing, over-grazing and rabbits (ANU 1973).

From 1914 the Cotter water supply was protected by legislation which restricted use in the catchment. This was enforced by resident rangers from the late 1920s' (Higgins 1994b). Pressure grew over the years for relaxation of restrictions on access for fishing and camping. Through the 1930's health and public works authorities remained opposed to these uses, and also to proposals such as rabbit trapping during the Depression, mineral leases at Mount Blundell, and controlled grazing to reduce grass fire hazard in pine plantations (mss NAA).

C E Lane Poole of the Commonwealth Forestry Bureau weighed into the debate on the grazing issue late in 1937, querying (tongue firmly in cheek) whether native animals would also have an impact on the catchment that warranted their exclusion. He challenged the consistency of opposing short term grazing while continuing '*to permit very large flocks of sheep to camp all night at Lees Spring and to pass through the five Condor crossings*'. This referred to continued use of Travelling Stock Reserves which were used by thousands of stock annually. Cumpston held firm and argued that agistment would create the need for expensive water treatment, thus ensuring high level support for his position (mss NAA).

In much the same way authorities fastidiously resisted siting of toilet facilities in any part of the catchment, leading to the siting of such infrastructure at places like Bulls Head forestry settlement and Franklin Chalet short distances across the border in NSW (Higgins 1994b). These authorities were determined to keep maps of the area clear.

Scientific investigation, research and education

Establishment of the Federal Capital Territory led to a wave of scientific investigations of its geology, biology and resource potential. Although much of this was focused on the city area, some studies were Territory-wide and included areas which had previously been barely examined. Their inclusion within the Territory had attracted a higher level of attention and altered perceptions of their value. John Blundell guided botanist R H Cambage to the summit of Coree in 1911, also traversing wet gullies in the area. Blundell was also able to provide information on Aboriginal use of some plant species (Cambage 1918).

In 1939 considerable effort went into documentation of the natural assets of the Territory ahead of the first meeting to be held in Canberra of the Australian & New Zealand Association for the Advancement of Science (ANZAAS) (Binns 1939), and this was greatly expanded for a second ANZAAS meeting there in 1954 (White 1954). These events showcased the scientific knowledge being accrued through establishment in Canberra of national research and academic institutions.

The ranges and diverse landscapes to the west of Canberra attracted the attention of scientists early in the city's development. Forestry related research and education had commenced in the area in the late 1920's; notable biological collection and research was undertaken from the 1940's and 50's; and significant continuing programs to monitor rainfall and hydrology of the Cotter catchment continued through the 1960's to 80's. Perceptions of the area for this purpose are likely to have been shaped by its relative proximity to the city, and by the protection of the catchment area from development and uncontrolled public use.

Australian Forestry School

The Australian Forestry School (AFS) was formally created in 1925 and opened in Adelaide the following year. It moved in 1927 to temporary premises in Westridge (later Yarralumla). The first director chose to stay in Adelaide, and was succeeded by C E (Charles Edward) Lane Poole (Gibbney 1988), who served as Principal of the Australian Forestry School from 1927 to 1944, being succeeded by M R (Max) Jacobs from 1945 to 1959 (Carron 2000).

The National Archives of Australia (NAA) hold a series of nearly 30 images relating to the activities of the Australian Forestry School at Blundells Flat and environs in 1927. Practical field work was a vital part of the AFS curriculum, with several camps included in the school year, two of these being of one month each. The 1927 Calendar for the AFS records that 15% of working hours were to be spent in lectures, 20% in laboratory and demonstrations, and 65% in practical forest work.

Conifer arboreta

Lane Poole was appointed Forest Advisor to the Commonwealth in 1925, and Inspector-General of Forests in the Commonwealth Forestry Bureau from 1927 to 1945, (ACT Government 1992). One of the functions of the Bureau was to establish experimental stations for the study of silviculture, forest management and forest protection (Carron 1985). To this end, 34 arboreta were established in and near the ACT in the period 1928 to 1969, to test various species for possible introduction into Australia for timber production, with a view to reducing imports of timber, particularly softwood. Most of the species planted were conifers and most were sited to the west and south-west of Canberra on the Brindabella Range at elevations from 640 to 1,700 metres asl.

Although the arboreta demonstrated the clear superiority of *Pinus radiata*, this species had already been planted widely since the 19th century. There was concern, however, that heavy reliance on one species made the emerging softwood industry vulnerable to a pest or disease which could affect that species. It was prudent to seek alternative species, and the arboreta were part of such an 'insurance policy' (Turnbull in Higgins 1995).

The first rural arboretum was established at Laurel Camp in 1928, followed by the first 'upland arboretum' at Blundells Flat, 6.1ha in area (Chapman & Varcoe 1984). The first plots were planted there in 1929, with much of the work carried out by students from the newly established Australian Forestry School (Higgins 1995). Arboreta were an integral part of the teaching resource. This declined after the functions of the AFS were transferred to the ANU in 1965, although the University continued to make occasional use of arboreta (Terry 1993).

Blundells was the largest and most diverse of the arboreta. At February 2000, it contained 76 species from 18 different genera, in 97 plots. Some of the conifers were rare, uncommon or unusual in Australia (Fearnside 2002).

Poplar arboretum (populetum)

In 1959-66 an arboretum of poplars, initially about 70m square, was established on a flat adjacent to Condor Creek. Sources of material include the USA, Canada, New Zealand, UK, South Africa and local cultivars (Forestry & Timber Bureau plan n.d.).

These poplars were trialled as part of a research program to improve availability of matchsticks (splints). A statement from Australia to the International Poplar Commission in 1965 noted that in the previous six years demand for poplar timber for matches had stimulated planting. By 1970 the estimated volume required annually for matches would be about 7 million super feet. The report noted that 782 acres of plantations were established near Tumut and Grafton in NSW and Cobram in Victoria. Another 300 acres were proposed in 1965, aiming for a total of 4,600 acres, recommended for development on good, well-drained bottom lands which would otherwise be used for agriculture (Brown 1965).

Other poplar plantings were undertaken by the Forestry and Timber Bureau in the ACT from 1948 to at least 1969, using clone material from a large variety of overseas and Australian sources (ms FRI 2112). None of these other plantings appear to have been as carefully prepared, maintained and monitored as the arboretum at Blundells.

Despite the considerable effort expended on the Blundells poplar arboretum, its clones never became part of the mainstream poplar growing industry. This may be partly due to the arrival of poplar leaf rust in about 1972, and partly due to availability of cheaper supplies of match splints from Scandinavia and more recently Indonesia (Colin Matheson *pers.comm.*), and was not assisted by the onset of cheap butane lighters.

Endangered eucalypt seed orchard

After being cleared of pines after a first rotation, a small site at Blundells Flat was allocated for a 'gene preservation stand' of Small Leaved Gum *Eucalyptus parvifolia*, now within *E. parvula* (Brooker & Kleinig 1999). The species is naturally found on wet to swampy sites at about 1,100m asl in shallow valleys to the south-east of Nimmitabel, and grows to 8-12 m in height (Pryor 1981). The species was selected because it was considered to be endangered due to restricted distribution and impact of grazing. Additionally, interest arose from its high level of resistance to cold when planted in the northern hemisphere (Pryor 1981).

The gene preservation work at Blundells Flat was undertaken in 1992 (Terry 1993). It was a joint project of ACT Forests and CSIRO and was directed at developing a suitable source of seed to ensure the survival of the species (Neil Cooper *pers.comm.*).

Biological collection

The Uriarra Forest area features frequently in localities cited for a range of biological collections based in Canberra. For example, Blundells Flat is cited for a number of species with records in the Australian National Insect Collection, dating from the late 1920's through to the late 1940's at least. There may be in the order of 40 insect species for which Blundells is cited as the type locality (Kim Pullen *pers.comm.*).

Most of these records predated the establishment of pine plantations in the area. However, some published works (e.g. Fuller 1936 and Mackerras & Fuller 1942) record collection of specimens in areas not affected by the plantations, so their habitat may be extant.

André Léon Tonnoir was a notable insect taxonomist and collector who joined CSIR (later CSIRO) Entomology in 1929. Tonnoir frequently spent his weekends collecting insects in the bush. When he failed to return from his camp at Blundells after one such weekend in January 1940, he was located '*lying in the shade of a tree in an attitude of peaceful sleep*', having presumably died of heart failure (Upton 1997).

Other research and education

In the 1980's it was noted that the Cotter catchment was being used extensively by numerous organisations for research. It was stated that there were no equivalent alternative areas in the ACT or surroundings for these uses. Cited examples of research included vegetation stand dynamics, fauna, fire ecology, nutrient cycling, and hydrology and water quality responses to burning and other management treatments (NCDC 1986).

Educational use of the catchment was said to involve students from preschool to postgraduate, as well as many special interest groups relating to birdwatching, nature interpretation and archaeology, with these activities often associated with bushwalking (NCDC 1986).

The CSIRO Divisions of Water & Land Resources and Forest Research were continuing projects established by the Forest Research Institute (NCDC 1986). This included a series of instrumented catchments established between 1964 and 1972 to obtain data on water chemistry and examine impacts of different management treatments. Some catchments were paired for immediate treatment and others subject to long term measurement before treatments were applied. Data on a wide range of water quality parameters were still being collected from 1974 to 1977 at 19 sampling sites (Talsma & Hallam 1982).

Hardwood forestry

The commencement of commercial forestry in the late 1920's marked a new phase in perceptions of the Uriarra Forest and other parts of the Brindabella Ranges.

Hardwood forestry in the ACT had the following objectives:

- production of hardwood to supplement plantation grown softwood
- preservation of an efficient catchment cover where plantations were not established
- provision of future fuel (firewood) supplies for Canberra; and
- maintenance of native forests as flora and fauna reserves and for aesthetic value

(Pryor 1939).

Logging began in the Brindabella Range in 1930, supplying a sawmill at Lees Creek (Higgins 1994b) until it closed in 1938 and was replaced in 1947 by a mill in Canberra, processing timber for post-war building (Rodger & Jacobs 1954). In the late 1930's a forestry ranger was established at Bulls Head. This grew into a small settlement after the Second World War, established to house workers engaged in hardwood forestry and fire protection (Higgins 1994b).

Logging of native forests below Mount Coree is recorded in the periods 1930-38 and 1947-62 (NCDC 1986). This involved selective felling of mainly Brown Barrel *E. fastigata*, but also Alpine Ash *E. delegatensis*, Mountain Gum *E. dalrympleana* and Ribbon Gum *E. viminalis* The timber was taken to the Colless mill at Weston Creek and the government mill at Kingston (Higgins 1995).

In 1954 the extent of the '*better-quality hardwood forests*' of the Territory was estimated as 51,000 acres, some exceeding 90ft in height. Of this, about 16,000 acres were considered '*accessible for economic utilization*'. At the same time hardwood forestry in the Territory

was accompanied by construction of roads to aid fire protection, and silvicultural treatments to regenerate cut-over hardwood forests and boost their future timber yield. The projected annual cut was 2 million super feet of hardwood logs (Rodger & Jacobs 1954). Between 1947 and the early 1960's, when the operation ceased, an estimated 47 million super feet of hardwood timber had been logged (Higgins 1994b).

Softwood forestry

Commercial softwood forestry in the ACT grew out of the establishment of the Federal Capital and an associated program of landscape enhancement by planting of trees, including conifers at Stromlo and Green Hills (ANU 1973). The earliest planting was done in 1915 (Pryor 1939) and by the 1920's trees were being used to control soil erosion in some areas, including the Cotter Dam (ANU 1973).

A report submitted by the Commonwealth Forestry Advisor in 1925 led to appointment of G J Rodger as Chief Forester in 1926. Rodger formulated and implemented a forestry program which included planting of conifers on a commercial scale, anticipating an annual planting of 500 acres (c.200ha) on a forty-year rotation (Rodger & Jacobs 1954).

The plantations had the following objectives:

- production of softwood mill timber and creation of a rural industry in the ACT
- replacement of inferior eucalypt forest of low economic value with plantations of high economic value
- minimising erosion and siltation of the Cotter reservoir induced by former clearing for grazing and establishment of an efficient catchment cover; and
- improvement of the Canberra environs by covering bare hills with trees, and by improved climate

(Pryor 1939).

By the 1930's *Pinus radiata* had been shown to be clearly the most successful species at altitudes up to 4,000ft (1,300m), although experimental plantings had also been undertaken of Ponderosa Pine *P. ponderosa* and Corsican Pine *P. laricio*. Although these species did not display the same vigour as *P. radiata* (Rodger & Jacobs 1954) they were under consideration to replace *P. radiata* at higher elevations (where it is prone to snow damage), when plantations were extended into wetter forest types (Pryor 1939).

During the Depression the program was extended considerably. Plantations were begun at Kowen in 1927, Pierces Creek in 1932 and Uriarra in 1933. By 1940 more than 400 ha of pines were being planted each year (ANU 1973), although the program slowed again during World War II and sustained losses in the wildfires of 1939 and 1952. By 1954 the plantation estate of the Territory totalled 16,500 acres (6,675ha) and was anticipated to grow to 40,000 acres (16,200ha) (Rodger & Jacobs 1954).

In the mid 1950's normal production was about 9 million super feet of logs per year, boosted by an additional 25 million super feet salvaged from pines up to 37 years old which were killed at Stromlo by the 1952 wildfires. The forecast from the anticipated estate of 40,000 acres (16,200ha) was an annual cut of at least 80 million super feet. About half of the timber produced in the plantations comprised logs suitable for making weatherboards, linings, mouldings and other building timbers for use in Canberra, with the remainder exported, mainly for case timber. In the 1950's this was diversified with establishment of a mill to produce woodflour from sawdust and edgings (Rodger & Jacobs 1954).

Prior to the 1950's, most planting had been undertaken in dry forest types. Despite some misgivings, this seems to have been broadly accepted as beneficial in areas previously over-cleared. In 1954 it was forecast that future expansion of plantations in Uriarra would be '*towards areas of better rainfall and better soils*' (Rodger & Jacobs 1954). This would involve clearing of native eucalypt forests.

In the early 1960's, concern at increased turbidity in the water supply due to forestry operations led to cessation of new planting in the Cotter catchment, in Pierces Creek Forest in 1958 and Uriarra Forest in 1961. Later plantings were concentrated on Stromlo and Kowen (ANU 1973). Coupled with the cessation of hardwood forestry, this represented a partial dispossession in that it thwarted the expansion aspirations of forestry agencies.

Recreation and tourism

One factor in the controversy about forestry in the catchment was growth in the number of visitors seeking recreational pursuits, such as trout fishing, bushwalking and snow sports in the north-west corner of the ACT.

Blundells Flat had been specifically linked with early tourism. A newspaper article recorded that John Blundell's residence *'was a very favourite place for tourists, and Mr & Mrs Blundell made their home 'a home away from home' for all who sought their hospitality'* (newspaper clipping, Tumut 1927). This suggests that John Blundell was one of the first in the district to act as what would now be called a nature based tourism operator. Photographs taken by one of John Blundell's clients, Mr A G H Lovell of London, in the 1910's recorded his experiences in the bush. Others show John Blundell with John Gale and others trout fishing on the Goodradigbee near Brindabella in 1910.

A decade after the Blundells departed the area, a new wave of use began which led to new features and names on maps. The Cotter Recreation Reserve associated with the Cotter Dam was a popular destination in the 1930's, with opportunities for picnicking and accommodation. There was growing enthusiasm for hiking into the mountains beyond the Cotter, and organised outings are documented from 1928. Blundells Flat was used by early hikers from Canberra, including the earliest organised mixed hiking to Mount Coree in 1932 (Allen et al 1977). The 'five fords' of Condor Creek were referred to in numerous accounts of walkers and skiers attempting to get vehicles to the Brindabella Range in the 1930's and 40's (Allen et al 1977; Higgins 1994a), just as they had been in Gale's account of his trip on horseback in 1875 (Gale 1903a).

The Canberra Alpine Club was formed in 1934, and this group successfully lobbied for construction of a road along the Brindabella Range and a ski chalet was opened in 1938 at Mount Franklin. After a pause during the years of the Second World War, alpine skiing on the Brindabellas became a popular pursuit, with its heyday in the late 1950's (Higgins 1994a).

In 1963 the Sydney Rockclimbing Club compiled the first climbing guide produced in NSW (and probably Australia), which included climbs on Mount Coree (Gleeson 2001). It remains an attraction to climbers, with Dale & Gome (nd) noting some 51 climbs on Coree.

In the 1970's Blundells Flat was considered as a prime candidate for development to help cater for such a demand for recreation (e.g. ANU 1973). It was becoming popular with visitors and was being promoted in a number of guidebook publications (e.g. Mortlock & Hueneke 1979; Mortlock & O'Loghlin 1977; Fraser & McJannett 1991).

By the early 21st century, the proximity of the plantation areas to Canberra and the kind of recreational opportunity they provided led to very heavy use of pine areas of the ACT, with an estimated usage of one million visitors each year (Mackay 2003). As people became more mobile, the demand for, and range of, recreational pursuits expanded. Activities identified as occurring specifically in the lower Cotter catchment included swimming; car rallies; dog exercise (including dog sledding events); running (including fun runs and similar events); and rogaining and orienteering events (ACT Government 2006c).

Conservation

Blundells Flat began to be perceived as a recreational resource amid a commercial forest landscape, a jumping off point for a wide range of broad acre pursuits, and valued as a day

use area because of its diversity of trees and landscape features, enclosed setting and interpretive tracks. This kind of expanding recreational use created something of a 'constituency' for the forest areas of the ACT, and began to shift community values away from production towards conservation.

The Gudgenby Nature Reserve was established in the 1970's. In 1984 this was subsumed into Namadgi National Park (ACT Government 2005b) covering c.94,000 ha in area (Butler 1994). Namadgi was further extended in 1991, taking in most of the Cotter valley (ACT Government 2005b) and adding a further 11,000ha (Butler 1994).

The gazetted area of the northern extension of Namadgi National Park was defined by the edges of the Uriarra pine plantations, which resulted in the exclusion of Blundells Flat. The report which put the conservation case for that extension (Fraser 1988) advocated the inclusion of Blundells Flat for its intrinsic conservation values. However, the conversion of such a large area to national park was not acceptable at the time to forest managers, and the inclusion of the Flat was not advanced (Ian Fraser *pers.comm.*). The first rotation of pines at Blundells was harvested, and a second rotation planted, in the period between delivery of the report and gazettal of the Namadgi extensions.

The extension of Namadgi marked another partial dispossession, as forestry agencies lost responsibility for most of the native forests they had previously managed, and it became clear that a return to hardwood forestry was now out of the question. Once again, maps of the area were redrawn with new boundaries and new names.

This was also the case across the border in NSW where, from the mid-1970's to 1980, potential new protected areas were being investigated. A series of gazettals established protected areas adjoining the full length of the western boundary of the ACT and extending along parts of the north-western and south-western boundaries (NSWNPWS Web site).

The first big Catchment debate

The Cotter catchment offers a specific example of shifting perceptions and contested values.

The initial reafforestation (pine planting) to control erosion immediately around the Cotter Dam was extended to include areas of native forest from 1931-32. As early as 1930 concern was expressed about the impact of forestry operations on turbidity in the untreated water supply, and this increased at intervals after 1934 (Teakle 1962a). The level of the dam was raised in 1951, and within 5 years an estimated 170 acre feet (about 210,000 cu m) of sediment had been deposited at the head of the reservoir, with additional fine material in lower and deeper parts of the impoundment (Teakle 1965).

In 1955 a '*turbidity "crisis"*' lent weight to a concerted effort on the part of the Commonwealth departments for health and public works to have forestry activity recognised as the major source of turbidity, and to have operations curtailed and practices changed, asserting primacy of water quality in the catchment over any other uses (mss NAA).

An inter-departmental committee met from 1956, and through the ensuing decade a debate raged about catchment protection. Health and works authorities wanted no further clearing in the catchment and sought greater attention to reducing erosion, while forestry managers were pushing on with pine planting while reporting on measures proposed to reduce any contribution from this to turbidity (mss NAA).

The National Archives hold a set of photographs taken in 1958 which illustrate forestry practices of the time, including clearing, burning and roading on steep slopes and beside streams. It is unclear who commissioned these photographs and how they were to be used, although they seem to cast forestry practice in a poor light in relation to catchment protection.

In 1959 questions were asked in both Houses of Federal Parliament about the discolouration of Canberra's water. Three years later M R Jacobs, head of the Forestry & Timber Bureau,

declared publicly and emphatically that forestry operations had not added to the problem of turbidity in the Cotter catchment, even though this contrasted with the views of some of the forest managers. Notable at this time was the independent input of L D (Lindsay) Pryor, who reported on an aerial inspection of the catchment in late 1961. Pryor was clear that roads and firebreaks were the primary and major source of turbidity and that no serious effort was being made to mitigate their impact (mss NAA).

The National Capital Development Commission (NCDC) brought in an external expert L J H Teakle, Professor of Agriculture at the University of Queensland. He produced several reports (Teakle 1962a; 1962b; 1965) which reflect a gradual recognition that forestry operations would continue to contribute to turbidity in the catchment unless strict control measures were implemented.

During this period, considerable effort went into reducing perceptions of the culpability of forestry operations. Claims were made that pines perform better than native forests in terms of runoff and turbidity, and would have actually improved water quality. At times during the debate no clear distinction was being drawn between:

- the original pine plantings to control erosion on overgrazed land versus those for which native forest was now being cleared
- impacts from the plantations themselves versus the roads and firebreaks which accompanied them; and
- impacts from mature plantations versus those from establishment of a new area.

Throughout this debate there was a strong tension between those who wanted softwood and hardwood forestry to continue to enable development of a viable local timber industry (to which there was no return for control of runoff) and those charged with protecting the water supply without the need for filtration. The former became advocates of a water treatment plant, promoting this as inevitable and as a means to enable multiple use of the once tightly controlled catchment, and this latter angle appealed to the NCDC.

The Blundells Flat area symbolises the debate over catchment protection. Early in 1956 it was forecast that over the following four years pine plantations and hardwood logging near Blundells Flat would extend beyond the Flat along the steep northern side of Condor Creek and up Coree Creek to low relief areas around Coree Flats in NSW, coupled with logging of hardwood in upper Musk Creek (mss NAA). Clearing of native forest here began in 1957 and by 1959 its extension was being opposed in the press. This appears to have led to soil conservation measures in the form of dams and banks to intercept sediment before it could enter Condor Creek. This practice had not previously been employed in the catchment, and it was of sufficient interest to warrant an inspection of the measures at Blundells Farm (among other places) by the interdepartmental committee in 1962 (mss NAA).

It has been stated that concerns for catchment protection led to the cessation of hardwood logging in 1960 (Higgins 1994b) and clearing of native forest for softwood plantations in 1961 (ANU 1973). However, hardwood logging above Bendora Dam was still being proposed up to the end of 1961. And in 1962 the Forestry & Timber Bureau were saying only that they had no early plans for further extension of pine plantations in the catchment area or for hardwood logging beyond the general limits already established (mss NAA).

It appears that the cessation of new forest clearing operations was not so much a definitive policy decision but a quiet (and probably reluctant) response to increasing pressure from a growing Canberra for a high quality and economical water supply, coupled with a developing ‘constituency’ for the natural environment. This timing coincided with some significant developments. When the Bendora Dam was completed higher in the Cotter catchment in 1961, the emphasis on catchment protection shifted to the middle and upper sub-catchments. This was partly because water was supplied to the city by a gravity main from Bendora Dam,

which was considerably more economical than pumping from the Cotter Dam. Then in 1963 NCDC announced that an additional dam and a water treatment plant would be built, while the new Corin Dam was completed in 1968 (ACT Government 2006c).

These long awaited developments might reasonably have been expected to clear the way for expansion of forestry operations in the catchment, but this did not occur, presumably because the debate was by no means over. In the period 1915 to 1965 the estimated sediment deposition was up to 500 acre feet, or 13% of the total storage (Teakle 1965). Most of this was attributed to storm events, however in 1965 (some years after expansion of forestry had ceased) the Department of Works estimated that during a period without irregular storms 1 or 2 cubic feet of soil was taken into suspension per day per cusec of stream flow, causing turbidity of the order of 30 (excessive). This was attributed to more than 160km of roads and breaks in the forestry area. Pryor was moved to report after an aerial inspection in 1967 that failure to control sediment input from roads and firebreaks had largely defeated the often cited objectives of reafforestation to control erosion (mss NAA).

Nonetheless, the focus had shifted from the Cotter Dam to higher parts of the catchment, and water quality was being portrayed as a treatment issue rather than a land use and management issue. Second rotations of plantations were planted in the 1980's and 90's, some over reduced areas due to exclusions for excessively steep land, riparian zones and the like. This reflected a new set of perceptions around environmental protection and conservation. Although the maps were again redrawn with new boundaries for compartments, it appeared that plantations in the Cotter catchment were now a *fait accompli*.

Wildfires of January 2003 and lingering drought

In January 2003 extensive wildfires began in the Brindabella Range and burnt about two-thirds of the ACT, resulting in the deaths of four people and the destruction of nearly 500 houses (McLeod 2003). They also destroyed about 10,500 ha of the 16,600 ha of softwood (*Pinus radiata*) plantations managed by ACT Forests. The burnt plantations included all of the Uriarra, Pierces Creek and Stromlo Forests (Bartlett et al 2005).

The intensity of fires in the Uriarra Forest area was high-very high (ACT Government 2006c) and the landscape impacts were consequently significant. There was significant input of ash and debris into streams, water tables were elevated, and significant amounts of soil were mobilised. All softwood plantations and all but one of the arboreta were killed, native ground cover was removed, and huts, fences, tracks, signs and other management infrastructure were destroyed. Further features were now removed from the maps of the area.

Efforts to stabilise the landscape and restore control of public access in the first year following the fires were delayed by the significant scale of damage inflicted on resources and infrastructure, well beyond the capacity of management to address promptly. In the lag time before management effort became apparent once again, the area experienced episodes of significant vandalism, including severe littering and dumping of cars, and baring of regenerating ground surfaces due to uncontrolled vehicle access.

The significant loss of water quality which resulted from the wildfires prompted several reviews of land use and management practices e.g. the 'Shaping our Territory' reports (ACT Government 2003a; 2003b) and of water supply options and protection e.g. 'Think water, act water' (ACT Government 2003c; 2003d; 2003e). 'Shaping Our Territory' concluded that '*future use of the plantation lands should be determined primarily by consideration of water quality, fire protection, ecology, recreation and landscape*'. It considered that revegetation to native species would be too costly, and proposed replanting of pines in much of the catchment with increased attention paid to excluding steep/inaccessible and riparian areas, reducing internal roads, and better treatment of erosion 'hot spots'.

Significant deterioration in water quality after the fires prompted investment in a new and significantly more sophisticated treatment plant. This allowed water to once again be drawn from the Cotter Dam for domestic supply from 2004, and from 2005 water was also able to be pumped from Cotter Dam to Googong Dam to augment storage. In a demonstration of optimism, during this period forestry operations resumed with prompt re-establishment of some plantation areas, totalling 1,215ha in the Lower Cotter catchment (ACT Government 2006c). The plans for replanting included significant reductions in area because of considerations of slope, riparian protection and biodiversity, and removal of numerous roads and tracks (Bartlett et al 2005). This again changed maps of the area.

The second big Catchment debate

In 2006 the ACT Government released a draft Strategic Management Plan for the Lower Cotter catchment. This effectively set out a 100-year vision, with guidance on land use and management decisions in pursuit of a new landscape form broadly analogous to that which prevailed prior to, or early in, the phase of pastoral settlement. The Plan proposed an end to additional commercial or broad-acre pines in the catchment, ultimate conversion of pine planted areas to primarily native vegetation cover, and favouring of regeneration of native species in the catchment. Water yield and quality were to be the primary objectives for management, and plantations and associated roading and operations were seen to be incompatible (ACT Government 2006c).

This emphasis was what water supply managers had sought half a century earlier, and echoed Scrivener's assertion of these priorities forty years before that. But unlike the benign victory of the previous debate, this time it was determined that there would be no further forestry development in the catchment. In the face of protracted drought and intense focus on the water future of the Territory, forestry interests were not paramount. This loss of influence was strengthened by perceptions which emerged following the wildfires, portraying pine plantations as an unacceptable fire risk which had no place in a broad swathe identified as a fire abatement zone between the city and the Murrumbidgee (McLeod 2003). It was clear that the area of plantation would fall below critical mass for a viable softwood industry. This was not unwelcome to those who sought a higher level of return to the economy from land which had been under plantations but which is suitable for future urban development.

Policy on management of the water supply catchment had come full circle over a period of just under a century. This marked the fifth phase of dispossession in the Uriarra Forest area.

New directions and closing circles

The draft Lower Cotter Catchment Strategic Management Plan (ACT Government 2006c) proposed that adaptive management and research and monitoring would provide opportunities for partnerships between government, scientific community and community groups, and would foster community involvement in catchment restoration programs.

The Plan also stated that natural and cultural heritage of the catchment would be identified, conserved and interpreted. Within this it is implied that local Aboriginal people will be accorded greater opportunities for direct involvement in heritage protection and presentation.

At the same time, across the whole Territory, there is also consideration of dual naming of geographic features, based on research and consultation with Ngambri descendants. This may result in dual naming of Condor Creek/Goondawarra Creek, Cotter River/Goondawarra River, Mount Blundell/Mount Condore or preferably Mount Goondawarra, Coree/Goree or more accurately Gori, and Uriarra/Yuriyarra (Jackson-Nakano 2005).

In this new initiative a circle is closing, as Aboriginal names are once again applied to this landscape, and its native forests and wetland systems are fostered under a 'land stewardship ethic'. And the maps will change yet again.

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