

Black Mountain Symposium 2018 Background Paper No. 17

Black Mountain recreational, educational and creative activities

Rosemary W Purdie

rwpurdie@netspeed.com.au

Abstract. Public use of Black Mountain for recreation and education was actively promoted after the area was declared a reserve in 1970, with the first management plan flagging the development of a system of walking tracks to showcase the area's natural features. In the decades since, walking, bird watching, mountain biking, recreational and competitive running and many other activities have been popular in the area, and facilitated by the publication of maps, leaflets and books by both government authorities and private individuals. Educational activities have included school and university student excursions, post graduate research studies and public walks to help people learn about the biota and other values. Community groups and individuals have played a prominent educational role, their activities including the long running Burbidge/Chippendale wildflower rambles, more recent spring orchid walks, publication of a range of booklets, pamphlets and display material, installation of interpretation signs to complement those erected by government authorities, periodic public talks, and art or other exhibitions featuring the area's plants and animals. While most activities have had little impact on the local environment, constant and sometimes illegal use of formal and informal walking tracks has often exacerbated natural erosion and in some places led to increased habitat disturbance and fragmentation. Managing the reserve to meet the disparate public uses while protecting the area's integrity and biophysical values is likely to be an increasing challenge in coming decades.

1. Introduction

Prior to its declaration as a reserve, Black Mountain was little used for recreational activities such as bushwalking although the dirt roads established there from 1952 to 1965 when it was managed as a protection forest (Coyne 1969; Elliott and Douglas 1974) would also have provided recreational access. A road to the summit constructed in 1961 provided an alternative for people who previously had used walking tracks to reach it (Manley et al. 1981) and facilitated the construction there of TV transmission towers and a lookout the following year¹. The National Capital Development Commission had established a new lookout and picnic areas towards the summit² by December 1963, cutting through "swathes" of "the high trees on the slopes" to provide viewing points (Manley et al. 1981). An article in *The Open Road*, March 1, 1964 said visitors to the lookouts could "enjoy lunch with a magnificent view of the lake, the dam and Government House; or the rolling Belconnen Valley; on down the Yarralumla area to the Woden Valley" as well as "across the lake to the Houses of Parliament and Government buildings" and "across the Civic Centre, with the skyline now dominated by the multiple storey buildings" (Manley et al. 1981). The article also noted that visitors could drive to the summit on a road soon to be bitumenised all the way, park near the television transmitter stations and enjoy "an eye-catching panorama over 360 degrees, with views over lake, city and valleys".

The first management plan for the newly declared reserve envisaged the public being encouraged to visit the area, with the pattern of use aligned towards education and recreation through the development of facilities such as "graded walking tracks and opportunities to see plants and animals indigenous to the area living essentially under relatively wilderness conditions" (Elliott and Douglas 1974). The plan's emphasis on retaining "the natural character of the main central block" resulted in activities such as organised group sport, trail biking and horse riding being considered inappropriate because of their potential effect on the area's ecology or its aesthetic values. The

¹ From bushland to TV in six months, *Canberra Times*, 26 March 1962, pp. 3 and 10.

² The same location as the current mid-level car park and picnic areas off Black Mountain Drive.

“pressure of school use” was expected to increase dramatically in the following decade with the reserve becoming “the focal point of education and interpretative programmes for a developing system of nature reserves in the ACT”. The plan predicted the need for a visitor’s centre to “provide for the expected number of visitors and to inject conservation information into them”, and included a map showing the possible locations of nature trails that could be constructed to “take in the widest possible range of interesting subjects, including plants, animals and rock formations”.



Fig. 1. View over Parliament House, March 2018, from one of the lookout/picnic areas constructed by the National Capital Development Commission in 1963 and upgraded by the Department of the Capital Territory in 1975. Photo: R Purdie.

Over two decades later the management plan for Canberra Nature Park (CNP), that included Black Mountain Reserve, noted that the component CNP areas provided “opportunities for nature based recreation in the urban area that are rarely matched by other Australian cities” (Department of Urban Services 1999). An earlier survey revealed that while walking was the most popular activity in CNP, jogging, bicycle riding, bird watching, organised events, photography, painting, wildlife observation and study, orienteering and outdoor relaxation were also carried out (ACT Parks and Conservation Service 1990).

By their very nature, educational and recreational activities are often inseparable, and frequently result in people developing strong attachments to specific places. This attachment in turn leads to individuals or groups lobbying against what they feel are detrimental activities and/or becoming involved in on-ground management or citizen science projects there. This paper provides an overview of the range of recreational and educational activities related to Black Mountain since the 1960s based largely on published/public information. Lobbying, park management and citizen science activities are variously discussed in Beveridge (2018a), Hotchin (2018a) and Purdie (2018a).

2. Recreation

The main forms of recreation on Black Mountain in the first few years after reserve declaration were “picnicking and sightseeing on the top and upper slopes”, with “200 people often present during peak times” (noon to 2 pm on Sundays and public holidays), and “walking and relaxing” on

the lower slopes (Elliott and Douglas 1974). Recreation and education were closely linked with the development of nature trails, these being seen as a way of facilitating both. A proposed trail from the summit to the Botanic Gardens referred to log chairs and tables being located at points along it where “visitors could eat a packed lunch” (Elliott and Douglas 1974). Map 7 in the first management plan showed a series of possible nature trail routes, including one winding up the eastern slope of Black Mountain to a circuit around the upper slopes. Another started in what is now the Australian National Botanic Gardens (ANBG) Bushland Precinct and continued across the southern slopes of the mountain to meet up with trails on the south-west side, a route similar to that recently proposed to link ANBG with the Arboretum (TCZ and TCL 2015). The trails system was gradually established in the 1970s and 1980s (see section 3.1 below), although some of the routes bore little resemblance to those proposed in Elliot and Douglas.

The 1963 picnic area “near the summit” underwent major repairs/upgrades in 1975 by the Department of the Capital Territory (Logan 2018). It remained the only one in the reserve and had toilets, picnic tables and wood BBQs that were to be phased out in the early 1980s (Manley et al. 1981). The development of the nearby Touch and See Nature Trail in 1978 (see section 3.1) would have increased usage of the facilities. Manley et al. (1981) also commented on human behaviour in the picnic area, noting that “people fall over the acacia trees, illegally collect firewood and park in the wrong areas”!

More generally within the reserve, there was “evidence of rapid changes in recreational behaviour” with most of the new recreation taking up “a good deal of space” (Manley et al. 1981). A specific example of the latter was illustrated in a photo from the Canberra Chronicle on Wednesday Sept 30, 1981 showing three students from Waramanga Primary School taking part in the ACT Schoolboy–Schoolgirl orienteering championships held that year in Black Mountain Reserve. Manley and co-authors reported that Department of the Capital Territory infra-red counters located on the yellow, blue and green walking trails (see section 3.1) had registered an average of 10,000 counts annually. They also noted that assistance from rangers was available for small groups, that “Joggers seem to have their ‘own’ trails, straight up the slope, which can cause erosion and damage”, and that “local people use the trails more often than the casual visitor”. Use of the reserve by locals was echoed by the Canberra Ornithologists Group (1986) who reported considerable informal and recreational bird watching on Black Mountain (and Mt Ainslie and Mt Majura), especially by those living within walking distance, with many other people just deriving pleasure from the avifauna as a secondary activity.

Walking tracks were publicised through government maps of the reserve prepared and periodically updated from the 1970s onwards, and from being included in various popular books published over the decades (see section 3). A signposted walk from the Australian National Botanic Gardens to Black Mountain's summit, a cooperative project between ANBG and the ACT Government, was officially opened in July 2000. In 2009 Black Mountain summit was included in Track 3 of the Canberra Tracks network showcasing the territory's historic sites (Territory and Municipal Services 2009), with information about it subsequently made available on the web³. Four years later walking tracks in the reserve were included in Section 5⁴ of Canberra's widely publicised Centenary Trail. These features and the opening of a walk and lookout in the ANBG Bushland Precinct in December 2016⁵ are examples of recent iterations of new facilities for and/or ongoing publicity about recreation on Black Mountain, much of it now generated informally through the internet and supported by apps.

As well as a place for self-organised recreation, Black Mountain has also been a location for walks run by local bushwalking and other clubs. The National Parks Association of the ACT has organised

³ <http://www.canberratracks.act.gov.au/heritage-trails/track-3-looking-at-canberra/black-mountain>, accessed 26 March 2018.

⁴ https://www.environment.act.gov.au/__data/assets/pdf_file/0010/508519/Map-of-Section-5-from-Frith-Toad,-Black-Mountain-to-Stromlo-Forest-Park.pdf, accessed 26 March 2018.

⁵ <http://www.inthecitycanberra.com.au/canberra-another-brilliant-bush-trail-walkers-offering-whole-new-view-city/>, accessed 27 March 2018.

recreational activities there over many years, including a *Life Be In It the Senior Way* walk in 1982, honing map reading and compass skills as part of training sessions in 1986–87–88 led by Margus Karliaid, general walks and the occasional bicycle tour⁶, as well as the educational Burbidge/Chippendale walks (see section 4.1). The Canberra Bushwalking Club has periodically held walks wholly or partly in the reserve, including torchlight walks at night to the summit and around the Forest Trail and back⁷, as has the Brindabella Bushwalking Club⁸.

Recreational running on Black Mountain has taken place since gazettal of the reserve, and apart from individuals or groups jogging (a popular activity to the present), has mostly taken the form of competitive activities. Those associated with orienteering, rogaining, cross country events and triathlon, duathlon and adventure races are outlined in Hogg (2018). A photo from the Canberra Times published on 4 June 1982 in an article by Tim Isles titled *A contest in short pants* shows some more light-hearted competitive running.⁹ The photo's caption read "Mr Rohan Greenland ... of the Deadly Serious Party, and Mr Larry Anderson ... independent candidate, lead the field at the start of yesterday's run up Black Mountain". The article described the contest as "a bizarre race for votes in tomorrow's House of Assembly election" in which some candidates taking the field were "wearing fancy-dress costumes adorned with bold placards".

Cycling has also been popular on Black Mountain, especially with the advent of modern mountain bikes, often as self-organised individual or small group activities along the reserve's dirt management road network. A ride to the summit along Black Mountain Drive has been part of Pedal Power's annual non-competitive Five Peaks Challenge¹⁰ and also features on cycling web sites such as MapMyRide¹¹. Trail bike use of Black Mountain, especially off-road activity (that is not a permitted activity there), appeared to increase in the early 2010s. The construction of more bike trails on the adjacent Bruce Ridge led to the development of a new illegal trail in the north-west of Black Mountain Reserve, presumably to complement the cycling experience on Bruce Ridge and provide an additional link to Aranda Bushland. The closure of the Stromlo Forest mountain bike facilities around 2013/14 for the construction of Majura Parkway also saw a surge of mountain biking activity on Black Mountain. The re-opening of Stromlo Forest Park in 2016 and rehabilitation of the trail on Black Mountain's north-west slopes saw a subsequent drop in riders using the reserve, although mountain biking remains a popular recreational activity there.

A survey in 2010 of groups using Canberra Nature Park indicated that at least 13 local organisations were regularly visiting Black Mountain for recreational activities, viz. ACT Cross Country Club Inc., ACT Veterans Athletic Club, ACT Walking for Pleasure, Australian Mountain Running Association, Birds Australia, Canberra Bushwalking Club, Canberra Ornithologists Group, Family Bushwalkers Inc., National Parks Association of the ACT, Orienteering ACT, Scouts Australia – ACT Branch, Sri Chinmoy Marathon Team and Women's International Club (Chevalier and Hoffman 2011).

⁶ See NPA bulletins 20(2), 21(5), 24(1), 24(4), 25(1), 25(4), 25 (5), 26(3), 27(4), 38(2), 40(1), 48(2), 51(2) and 53(1), available at <http://www.npaact.org.au/index.php/publications/bulletin/bulletin-back-issues>, accessed February 2018.

⁷ <http://canberrabushwalkingclub.org/program/>, accessed February 2017.

⁸ <http://www.brindabellabushwalking.org.au/bbc/>, accessed February 2017.

⁹ <https://trove.nla.gov.au/newspaper/article/126900301?searchTerm=Rohan%20Greenland%20%20Deadly%20Serious%20Party%20Black%20Mountain&searchLimits=l-state=ACT||l-title=11>, accessed 26 March 2018.

¹⁰ <http://www.pedalpower.org.au/news/rotary-rides-canberra-five-peaks-challenge-2/>, accessed 26 March 2018

¹¹ <http://www.mapmyride.com/au/canberra-canberra/black-mountain-climb-route-21149050>



Fig. 2. Jogger on the Summit Track, March 2018 (left) and family group cycling along the Orchid Track, February 2015. Photos: R Purdie (left) and J Geue (right).

3. Education/interpretation and recreation resources

3.1 Resources in the 1970s and 1980s

After Black Mountain Reserve was declared, some of the first educational material focussing on its natural environment appeared in the bulletin of the National Parks Association. They included a general description of Black Mountain's geology (Henderson 1971) and the location of fanglomerate deposits on its lower south and east slopes and an adjacent Pleistocene lake along what is now Sullivan's Creek (Dickins 1973).

The first nature guide to the reserve was published by the Department of the Capital Territory (Williams 1976) which at that time was responsible for the area's management. The guide provided general information about the area's geology, characteristic plants, and birds, mammals, reptiles, amphibians and insects found on Black Mountain and the nearby Ainslie–Majura Reserve. It also included information about plants and other points of interest along three walking trails that had been established on Black Mountain, one on the north-west side, a second accessed from the lower entrance off Caswell Drive, and the third accessed from entrances off Belconnen Way and upper Caswell Drive (opposite Wangara St). The Department of the Capital Territory's ACT Conservation Service also produced pamphlets, giving basic information about the reserve and a map showing trails, picnic areas, seats and carparks, that were made available at the beginning of the trails (Manley et al. 1981).

The walks on Black Mountain were further publicised in a book by Mortlock and O'Loughlin (1977) that included the reserve among its suburban Canberra walks. The accompanying text outlined the geology, history and vegetation of Black Mountain, describing it as a botanically unique area because of its sandstone geology, and noted that stiles were provided at four places (two off Caswell Drive, one near CSIRO and one off Belconnen Way) to allow access over the "formidable fence" that surrounded the reserve. As the "provision of proper nature trails" was "still in the planning stage", a map in the book showed the "present system of tracks" on Black Mountain. The notes concluded with the observation that you could "still see the occasional kangaroo, 3 kilometres from the centre of the city", something that many Canberra residents treasure today.

A Touch and See Nature Trail was developed at the south end of the mid-level car park off Black Mountain Drive in 1978; a photo on the front page of the Canberra Times on 17 August that year shows it being tested by Mr David Clulow prior to its official opening¹². Designed by ACT Parks and Conservation Service rangers following discussions with local handicapped and disabled

¹² Although the caption locates the trail on Black Mountain Peninsula, the photo itself is taken on Black Mountain.

people, it included 11 signs with information in braille and print form that encouraged visitors to use all their senses to stimulate their imagination. The trail was 160 m long, with a guide rope leading from one sign to the next and a piece of leather located on the rope about 20 cm before each sign. Visitors were encouraged to touch and smell objects along the trail and sit on log seats at the site to listen to “the sounds of the wind in the trees, the birds and insects” (Shorthouse and Taylor 1981). The trail was visited regularly by school groups, as well as casual visitors who were reported to often return with friends and relatives. Vandalism of the trail appeared to be a problem from the start, with constant damage being reported, including to the exhibits, as well as the guiding rope being stolen several times (Manley et al. 1981). By 1999, ongoing vandalism caused the government to consider relocating it to another site (Department of Urban Services 1999).



Fig. 3. This lichen-covered track is all that remains of the Touch and See Nature Trail, March 2018. Photo: R Purdie.

Naturalist Ian Fraser wrote a detailed account of Black Mountain for the second Canberra Environment Walk on 1 November 1981 to provide "a layperson's introduction to ecology, using the fauna, flora and history of Black Mountain", drawing together a wide range of material available at the time (Fraser 1981). The guide included the history of Aboriginal and early European use of the Black Mountain area and the development of roads and other facilities on the mountain, including controversies about the Telecom Tower and proposed gondola to the summit. The majority of the guide was devoted to describing the area's biophysical attributes and extensive ecological notes helped readers understand both the Black Mountain ecosystems and their component plants and animals. A map on the back cover showed the walk starting and finishing on Black Mountain Peninsula and winding across the northern and western mid to lower slopes of the mountain after passed through the National Botanic Gardens.

In the same year Graeme Barrow's book on bushwalks in the Canberra area (Barrow 1981) included green, blue and yellow arrow walks in Black Mountain Reserve. The walk descriptions showed they were similar to the three walks in Williams (1976), the names presumably based on an ACT Conservation Service map. Most of Barrow's text related to navigating the walks and views seen from them, with limited information about the reserve's vegetation or other features. A year later David Hogg (Hogg 1982) published a map showing the three coloured trails on the north and west sides of the reserve as well as the location of the Touch and See trail. The leaflet also provided information about the eucalypts seen in the Black Mountain – the Pinnacle area, and notes about features of ecological, geological and historical interest.

The nature guide of Williams (1976) remained the main government source of information about Black Mountain until at least 1983. A leaflet printed that year titled *Walking in Black Mountain Reserve* (ACT Conservation Service 1983) referred readers to the guide for information about natural aspects of the reserve, although it noted that the leaflet's map superseded the map shown in the guide. Walking tracks referred to as Trail 1, 2 and 3 in the guide were referred to as the Yellow, Blue and Green trails in the leaflet, the latter's route slightly modified compared with William's Trail 3. The 1983 leaflet also noted that the reserve's walking trails mostly followed "existing fire trails and service roads" and that "a system of trails designed to embrace a variety of environments and features" was still being planned. A 1985 version of the map (ACT Parks and Conservation Service 1985) had no reference to the reserve's biota, and just included dot points relating to visitor behaviour and a comment that planning was still underway for the "system of trails".



Fig. 4. Log seat on green walk around 1981 (left) and in March 2018 (right). Photos: from Barrow 1981 (left) and R Purdie (right).

A leaflet titled *Canberra Nature Park Black Mountain*, probably dating from the late 1980s, provided very general information about geology, vegetation and wildlife on one side, noting also that a "system of marked trails and service tracks" provided access to the bushland. The map on the reverse side showed the location of a Forest Trail and Woodland Trail that were presumably part of the planned system of trails referred to in earlier leaflets, as well as other un-named trails (mostly along management roads) and entry points to the reserve. A 1989 leaflet titled *Canberra Nature Park Black Mountain Walking Tracks* (ACT Parks and Conservation Service 1989a) provided general descriptions of some plants, animals and other features that could be seen along three named trails shown on a map. It described the 2 km long, gentle grade Forest Trail as looping around the upper slopes of the mountain from the mid-level car park off Black Mountain Drive. The 4 km return Summit Trail was described as a steady climb to the summit, starting from Frith Road and following an east–west ridge before continuing along the upper northern slope to the summit. The 2.5 km long Woodland Trail in the south-west of the reserve was described as a mostly gentle grade following a loop from the lower Caswell Drive entrance. The leaflet also mentioned the Touch and See Nature Trail near the start of the Forest Trail.

A two-page *Background notes* about Black Mountain was also published in 1989, providing a brief summary of its geology, biodiversity, cultural and natural values and the main management issues, as well as a map showing all the management trails, and the Summit Trail, Forest Trail, Woodland Trail and Touch and See Nature Trail. It was contained in a booklet of material prepared by the ACT government (ACT Parks and Conservation Service 1989b) to promote community feedback as part of the preparation of a draft management plan for Canberra Nature Park, and was distributed through the City Management shopfront on London Circuit and Canberra's community libraries.

Other material produced in the 1980s helped to publicise Black’s Mountain’s walking facilities and provide information about its biophysical resources. In 1988 the ACT Schools Authority published a Youth Trek handbook for primary and secondary students, teachers and community leaders (Baker and Blunt 1988) that included Black Mountain. The handbook aimed to encourage students to explore the local region to better understand and "build a personal relationship with" the region's cultural and natural heritage. The Black Mountain track notes included a brief description of the area's geology, habitats and common plants and animals, and referred readers to the Williams (1976) and Fraser (1981) field guides for more information.

Tour 7 of a heritage field guide aimed at the general public (Aslanides and Stewart 1988) was focused on the Australian National Botanic Gardens and Black Mountain Reserve (including the telecommunication tower at the summit) and showed three walks in the reserve on a map similar to that of the ACT Parks and Conservation Service (1985). The Tour 7 notes included general information about Black Mountain’s geology and commented that 36 orchid species (two-thirds of known species in the ACT) occurred there¹³. A brief description of Black Mountain’s geology was also published in a supplement to the Canberra Times prepared by the ACT Geological Monuments Subcommittee (1988). The supplement included a general account of Canberra’s geological history and listed places where particular types of rocks could be found, including Locality 5 on the “Black Mountain Road” (now called Black Mountain Drive) where an excellent exposure of Black Mountain Sandstone could be seen.

The National Capital Planning Authority (undated) erected interpretive signs on Black Mountain in the late 1980s as part of inner Canberra’s National Capital Open Space System. A large sign was erected at the start of the Forest Track (Fig. 5, left) and included a map showing its route as well as those of the Woodlands Track, a Summit Track going up the south side of the mountain from the sign, and other unnamed tracks corresponding with management roads. Smaller signs that still exist were erected along the Woodlands Track, each covering a single topic, viz. Tree Hollows for Animals (Fig. 5, right), Plant Diversity, Old Fence Line, The Formation of Black Mountain, Birdlife of Black Mountain, Wallabies and Kangaroos, and Life Among the Boulders.



Fig. 5. Iron-framed National Capital Open Space signs at the start of the Forest Trail (left) and on the upper Woodland Trail (right), March 2018. Photos: R Purdie.

3.2 Resources from the 1990s to the 2010s

Maps showing walking trails on Black Mountain continued to be published by relevant parts of the ACT Government (e.g. the Department of Territory and Municipal Services; Environment ACT) either in hard copy or electronic form available on the internet. The woodland and forest tracks

¹³ The orchid data were probably sourced from National Capital Development Commission (1984) that in turn drew on Shorthouse (1979).

were popularised by Barrow (1991) as were the summit trail and Forest Track in subsequent editions of his books (Barrow 1997, 2002, 2006, 2014).

Descriptive information about the area also continued to appear in the 1990s, the most comprehensive of which was in a school educational kit about Canberra's prominent hills prepared by the Heritage Week Committee (1993). The section on Black Mountain included possible origins of its name, Aboriginal and European history, precipitation, geology, topography, soils, flora, fauna and features such as the forest, summit, woodland and touch and see trails. Its faunal list included 90 species of birds, 21 reptiles and referred to >5,000 insects, and noted that Black Mountain was the type locality of about two dozen insect species (moths, butterflies, crickets, beetles, wasps and bees). Information about the "stormy dispute" that occurred between the public and bureaucrats over the Telecom Tower, views from the area and current management issues (largely based on those listed in ACT Parks and Conservation 1989b) was also provided.

In the late 1990s Leon Horsnell, a member of the Society for Growing Australian Plants (SGAP) and the Field Naturalists Association of Canberra (FNAC) came up with the idea of using hand-out sheets to promote self-guided walks on Black Mountain along specific routes where plants were known to be in flower in spring, modelling the concept on the ANBG's *In Flower This Week*¹⁴ (Blemings 2017). Volunteers with a good knowledge of the area's plants would walk a route and prepare a hand-out describing what species could be seen. The hand-outs were Roneo-copied for distribution until 1997 when another SGAP and FNAC member Rosemary Blemings obtained financial sponsorship from Telstra to print them as triple-fold pamphlets called *Black Mountain Wildflower Walk* (Anon 2010). Three or four pamphlets were produced each spring depending on seasonal conditions, each issue providing a map of the walk, descriptions and locations of plants observed on the route, and line drawings of some species. Copies of the pamphlets could be obtained from locations including ANBG, ACT Government shopfronts, Canberra Nature Park depots, the Canberra Region Visitor Centre, the Environment Centre, The National Trust shop at Old Parliament House, Telstra Tower and local libraries (Wade 2003; Blemings 2017).

The first pamphlet was published in early September 1997 and the initiative officially launched in October by Gary Humphries, the then ACT Minister for the Environment (Metcalf 1997). Publication ceased after 2003 when Telstra financial sponsorship was discontinued. Over the period 1997–2003, 29 pamphlets were published under the sponsorship of Telstra, SGAP (renamed the Australian Native Plant Society in 2000), FNAC and ACT Parks and Conservation (renamed Environment ACT in 2000). The Friends of Aranda Bushland produced the pamphlets, and its volunteers or those from the other sponsoring societies prepared the content. Volunteer authors included Blemings, who wrote almost half the pamphlets, Geoff Clarke, Rosemary Metcalf and Winifred Mumford, and author-teams Geoff and Gwyn Clarke, Audrey Jones and Trish Gresham, and Barbara Daly and Naomi Bell. Janet Twigg-Patterson prepared the line drawings and Winifred Mumford the cartography. Through their efforts, the walks "introduced the treasure trove of native plants on Black Mountain to many people who were previously unaware of the wealth of native plants in the area" (Anon 2010). The walks were given additional publicity by being included in Margaret Wade's book about Canberra's secrets (Wade 1999; Wade 2003). The field guide *Our patch* published by the Friends of Aranda Bushland (1997) also promoted interest in Black Mountain's plants by allowing plant enthusiasts to identify them more easily.

Around the early-2010s the ACT Government erected new interpretive signs in the reserve, including a large multi-panel sign cum shelter (Fig. 6) on the Link Trail near its junction with the Orchid Track and several medium-sized signs along the Forest Trail and at the summit (Fig. 7). The large sign describes the reserve as "The most diverse of Canberra's Nature Parks with 100 species of birds, 500 species of plants and 5000 species of insects". One panel has a map showing management tracks and five named walking trails, with descriptions of these on an adjacent panel. They were the Forest Trail (marked in blue on the map) circling the upper slopes, Summit Trail (red), Little Black Mountain Walk from the Belconnen Way entrance (yellow) exploring the

¹⁴ See <http://www.anbg.gov.au/gardens/visiting/iftw/iftw-archive/index.html>

northern sections of the park, Woodland Trail (green) in the lower south-west slopes, and the Western Slopes Ramble (purple) in the west of the reserve. Other panels provide information on the area's Aboriginal history, European exploration, land title holders, resources used by early settlers and natural values, biodiversity, ecology and management issues. In 2015 a ParkCare Noticeboard was also constructed adjacent to the Belconnen Way entrance gate allowing the Friends of Black Mountain to advertise its educational and other activities. Additional signs erected in May 2018 at major entrances to the reserve included a map showing the main walking tracks in the area and illegal and permissible activities there.

Since 2012 the Friends of Black Mountain has produced a wide range of educational material about Black Mountain, described by Beveridge (2018a). They include leaflets, a public display that has been exhibited in Telstra Tower, ANBG and the Jamison Centre, and interpretive signs (Fig. 8) along the Woodland Trail in the south-west of the reserve that complement the older National Capital Open Space System signs.



Fig. 6. Canberra Connect sign/shelter on the Link Fire Trail, March 2018. Photo: R Purdie.



Fig. 7. Canberra Connect sign at the summit, March 2018. Photo: R Purdie.



Fig. 8. Friends of Black Mountain sign on the Woodland Walk, March 2018. Photo: R Purdie.

4. Community educational activities

In the first couple of decades after Black Mountain was declared a conservation reserve, rangers from the ACT Parks and Conservation Service conducted educational activities there, including

general bushwalks and twilight walks mostly targeted at family groups during the school holidays (Canberra Ornithologists Group 1986). However, community-run activities had been prominent in the area from the early 1960s.

4.1 Burbidge/Chippendale wildflower rambles

Walks on Black Mountain aimed at introducing interested members of the public to its flora and helping them learn about the plants were initiated by Dr Nancy Burbidge around ten years before the area was declared a reserve. Burbidge had been appointed systematic botanist at the CSIRO Division of Plant Industry herbarium in 1946 (CHAH 2017). A strong advocate of nature conservation, in 1960 she helped establish the National Parks Association of the ACT and was its founding president.

In the early 1960s Burbidge started organising walks on Black Mountain for National Parks Association members “to show people the plants and to talk about them informally” (Kelly 2007). The walks were described as “a friendly social ramble” in which “talking of the plants” and “talking to one another” were of equal importance (Chippendale and Geue 2010). At Burbidge’s request, George Chippendale accompanied her on the walks to provide ecological information. He had taken up a senior botanist position at the Forest Research Institute, Canberra (later the CSIRO Division of Forest Research) in 1966 (CHAH 2015). When Burbidge’s health failed, Chippendale took over the walks around 1968 (Kelly 2007) backed up by Laurie Adams, a botanist who had worked in the herbarium of the CSIRO Division of Land Research and Regional Survey since 1962 (CHAH 2014). Both Chippendale and Adams were “passionate botanists. George led and inspired while Laurie showed people ... how to look for differences” between plants (Kelly 2015).



Fig. 9. George Chippendale explaining a plant to participants on the October 2001 Burbidge Walk. Photo: J Geue.

Notices of the Black Mountain walks became a regular feature in the National Parks Association’s quarterly bulletins from issue 8(5) in 1971. In that issue, it was noted that several attempts to hold the walk the previous year had been thwarted by bad weather, and that the walk eventually held was “completed during a rain storm”. The hope was expressed “that this walk can be organised each year during the main flowering season, as Black Mountain is convenient, particularly for families with young children”. After running three walks in 1971, one each in September, October and November, a walk was held in September and October each year (except for 1973) until 1979. Almost all the walks over the period 1971–1978 were held on a Saturday from 2 pm and started at either the Belconnen Way or Caswell Drive entrances. Leaders included Chippendale (8 walks), Adams (4 walks), John Baker (2 walks) and Edna Watson (1 walk).

From 1979 onwards the walks became an annual event, mostly departing from the Belconnen Way entrance, and for the first time in Bulletin 17(1) were advertised to National Parks Association members as a “Nature Ramble” where people could “learn more about the local flora under the guidance of an expert”. Chippendale led the walk each year until 2003. The walks were generally on a Saturday in September or October until 1987, after which most were run in October with a few organised for November. A mid-week ramble was run in September 1983 and October 1984. In 1981 Chippendale decided to change the time of the walks from 2 pm to 9:30 am so that he could watch Rugby League matches live on ABC TV (Chippendale and Geue 2010); they have remained at that time ever since, usually finishing around noon. Most of the walks led by Chippendale were advertised as suitable for those “aged 4 to 80” thus continuing the family friendly nature established by Burbidge. From 1999 onwards National Parks Association members were often joined by members of the University of the Third Age where Chippendale lectured on botany, and Friends of the ANBG.



Fig. 10. Burbidge Walk leaders George Chippendale in October 2003 (left) and Laurie Adams in October 2005 (right). Photos: J Geue.

The walk in 2003 was the last Chippendale led, and was advertised as his 35th walk as a leader (since 1971). Jeane Geue took over organisation of the walks in 2004 (Geue 2010), and although not a member of the National Parks Association, the walks continued to be advertised in its bulletin. Issue 41(3) listed the 2004 walk as a “spring wildflower celebration” that continued “the 33 year Burbidge/Chippendale tradition¹⁵ of a social ramble to enjoy the spring flowering” and be shown “more about the incredible diversity” of Black Mountain’s plants. Geue continued to organise the walks with the sponsorship of the Australian Native Plant Society and the Field Naturalists Association, drawing leaders from the Australian Native Plant Society's Wednesday Walkers (Geue 2010). The Friends of Black Mountain took over sponsorship in 2012, with Linda Beveridge becoming the main organiser in 2014.

All the post-Chippendale walks started at the Belconnen Way entrance and were held on a Saturday except for 2005 and 2006 when they were run on a Sunday. Most walks continued to be advertised in the National Parks Association bulletin, and other groups, such as members of the University of

¹⁵ Inclusion of walks in the 1960s, before the National Parks Association bulletin started being published, would have brought the tradition closer to a 43 year length.

the Third Age, Australian Native Plant Society and Friends of Aranda Bushland invited to attend. Gwyn Clarke from the Australian Native Plant Society led the walks in 2004–05–06, the last with Geoff Clarke, with local botanist Peter Ormay (Kelly 2016) taking over for the 2007 walk. Ormay was joined by Jean Geue, Laurie Adams, and botanist Isobel Crawford for the walks until 2012, with Michael Doherty replacing Adams in 2013. Since then the leaders have continued to include Beveridge, Crawford, Doherty and Geue, with Dave Albrecht, Michael Mulvaney, Rosemary Purdie, Andy Russell and Brigitta Wimmer also leaders at various walks from 2015 onwards (Geue 2014; Beveridge 2018a). In recent years the walk has been publicised through a range of organisations including the National Parks Association, Australian Native Plant Society, Friends of ANBG, Friends of Black Mountain, Field Naturalists Association, University of the Third Age, Molonglo Catchment Group and Parkcare, as well as local newspapers and radio. Wade (2018) has also promoted the Burbidge/Chippendale walks, orchid walks (see section 4.2) and other educational activities of the Friends of Black Mountain in the third edition of her book *Canberra Secrets*.

Few records are available on the number of people attending the annual Black Mountain wildflower walks. The National Parks Association bulletin¹⁶ records 40–50 attended on 12 September 1971, 20 people on 14 September 1985, 65 people on 13 October 2001 and 31 people on 11 October 2008 (Chippendale and Geue 2010). The post-Chippendale walks were attended by fewer participants than previously but aimed to attract at least 20–30 people (Geue 2010). Increased advertising in recent years has seen the number of people attending fluctuate between 54 (in 2013) and 97 (in 2015), with an average of 77 people per walk over the period 2012–2017 (Beveridge 2018a). They remain a popular, family friendly introduction to Black Mountain’s flora consistent with the Burbidge/Chippendale tradition, with the leaders now taking groups of 20–25 people on different routes for the walk to help ensure every participant is easily able to see and hear about the plants in flower at the time.

4.2 Orchid walks

Black Mountain has long been known for its ground orchids, with the preliminary management plan for the reserve noting more than 40 species were present, many of them rare or not recorded elsewhere in the ACT (Elliot and Douglas 1974). For three or four years in the early 1990s Jean Egan led spring walks on the mountain for the Orchid Society of Canberra, as did Ben Wallace for one year (Egan 2018). General articles published about the area’s orchids (e.g. Cudmore 1994a, b; Wood 2007) and what species could be seen in spring (e.g. Egan 1994, 2001) were mostly accessed only by members of groups such as the Orchid Society and the National Parks Association. In November 2001, in response to an article in the National Parks Association bulletin by Egan (2001), Adrienne Nicholson led a special orchid walk on Black Mountain, starting at the Caswell Drive entrance to the reserve (National Parks Association 2001).

Following a request from Warwick Wright, Tony Wood conducted an orchid walk in Black Mountain Reserve in October 2002 for members of the Friends of ANBG (Wood 2018). The walk was well attended and continued on an annual basis, with booking support from ANBG until the early 2010s after which Wood personally handled them. In the early years after 2004, the popularity of the walks saw Wood restrict numbers to 15 people per event, run a morning and afternoon walk to help meet demand, and enlist the assistance of Jean Egan and others to help find and identify species on site (Wood 2018). Publication of a field guide to the ACT’s orchids (Jones et al. 2008) which included details of localities such as Black Mountain where species could be found, and realisation that Black Mountain was an ‘orchid hotspot’ with over 60 species present, probably helped increase public interest in the walks. Wood and Egan now run the annual walk as a joint activity, publicising each through the Friends of ANBG and Friends of Black Mountain networks. In recent years the walks have been focussed on the western side of Black Mountain starting at the lower Caswell Drive entrance, although other areas of the reserve have been visited. Both Wood and Egan have carried out other activities related to Black Mountain’s orchids, including occasional

¹⁶ Issues 9(2), 23(2) and 38(4) in 1971, 1985 and 2001.

presentations on them and field visits for members of the Orchid Society, Friends of ANBG's Botanical Artists Group and for interstate and overseas visitors (Egan 2018; Wood 2018).



Fig. 11. Jean Egan (centre) and Jean Geue (right) in left photo, and Tony Wood (second from left) in right photo, on orchid walks in August 2007 and October 2009 respectively. Photos: T Wood (left) and J Geue (right).

4.3 Other walks and talks

The Friends of Black Mountain has run public educational walks on Black Mountain each year since September 2012, as detailed in Beveridge (2018a), with the objective of increasing public knowledge about the area and its values and biota. They include walks focussing on ants, butterflies, birds, shrubs, trees and Aboriginal values of the area. The Friends has also organised periodic talks about Black Mountain's biodiversity including one on weeds to its members in 2013 by botanist Rosemary Purdie, and public talks during the 2016 heritage week, one on plants by Purdie and another on birds by Canberra Ornithologist Group member Geoffrey Dabb (see Beveridge 2018a). Other opportunistic talks specifically about Black Mountain include Society for Growing Australian Plants (SGAP) member Chris Tynan giving a presentation on the flora of Black Mountain at an Australian SGAP conference in Canberra in 1988 (Tynan 1988), Purdie giving various talks about plants, including to the Friends of Aranda Bushland in 2010 ('Interlopers on Black Mountain'), and ANBG staff ('Flora of Black Mountain: how well do we know it?') and the ACT Australian Native Plant Society ('Black Mountain flora boring? – Never!') in 2015. Dabb repeated his 'Birds of Black Mountain' talk to the Canberra Ornithologists Group in 2016 and gave another presentation ('Threatened and nocturnal birds of Black Mountain') in June 2018 at the Telstra Tower theatre and at the Friends of ANBG Thursday lunchtime talks. The latter program also included two talks in 2017 that featured Black Mountain's invertebrates, one by Suzi Bond on butterflies of the ACT Region and the other by Ted Edwards on the ACT's moths.

5. Student educational activities

The first management plan for Black Mountain Reserve (Elliott and Douglas 1974) anticipated the area would become a major focus for student education, noting that activities should involve “a look-see but not a collecting approach”, particularly “where parties of schoolchildren are taken on conducted tours by informed rangers”. At the time the plan was being prepared, Elliott and Douglas noted the reserve was visited mostly by primary school children, with groups of 30–35 arriving for a half day, often being dropped off at the summit and walking to the bottom after “an uncontrolled scramble downhill”, a practice they noted may need to be discouraged “because of erosion and the threat to plant life”. Secondary students were expected to visit the area “for ecological and geological excursions” for one or two 40-minute periods, with at least six bus loads per day visiting the reserve during the school term.

Few data have been located on the nature and extent of primary and secondary school use of the area since the early 1970s. Logan (2018) noted that in the mid-1970s promotion of Black Mountain

Reserve and its attributes to schools was a key activity of the Department of the Capital Territory (through the Environmental Conservation Section of the Conservation and Agriculture Branch) and was mostly targeted at the 93 primary schools located in Canberra at that time.

The ACT Youth Trek '88 Handbook (Baker and Blunt 1988), which included Black Mountain as a trek location, expressed the hope that the activities would become an annual event that "may be incorporated as an integral part of school curricula" in the territory. By identifying trek locations that were "exciting and adventurous" and providing educational information about them, the program aimed to educate students about the ACT's natural and cultural heritage to help them become future caretakers of it. More recently, teachers from at least two of the ACT's secondary colleges (Radford and Gungahlin) have taken students to Black Mountain for field activities. For example, in 2013 Gungahlin College teacher Stephen Robey arranged for his ecology students to do simple vegetation monitoring on Black Mountain under the guidance of ecologist and Friends of Black Mountain member Michael Doherty, using the latter's community monitoring protocols (Doherty and Meyers 2009).



Fig. 12. Ecologist Michael Doherty with Gungahlin College students during a vegetation monitoring exercise on the eastern side of Black Mountain, February 2013. Photo: R Purdie.

Elliott and Douglas (1974) anticipated that tertiary students from the Australian National University (ANU) and the Canberra College of Advanced Education (later to become the University of Canberra) would also use the area for under- and post-graduate training in biology, geology and land use. They estimated that tertiary students used the reserve for c.400 student days each academic year in the early 1970s and that this would soon increase to 600–700 student days per year in groups of 15–70 students each time. In 1981 ANU students were reported to be using Smith's Paddock on the lower south-west slopes of the reserve "to study ... successional changes which may one day lead to forest or woodland covering the site" (Fraser 1981). This probably referred to field work undertaken by students as part of courses run by Dr John Carnahan, who was appointed Senior Lecturer in Botany (Plant Ecology) at ANU in January 1963 (Carnahan undated).

From at least the mid-1970s to the late 1980s Carnahan used Black Mountain as a site for instructing his botany students on field methods and ecology (Mulvaney 2018). Analysing the vegetation in Smith's Paddock was a major project for final-year students that involved vegetation mapping and investigating how structural and floristic differences related to history of disturbance, soil type, fire history, slope and other micro-environmental features. Students applied basic survey methods

(vegetation quadrats), estimating species and structural cover and mapping broad vegetation communities. Carnahan supplied earlier-year students with a vegetative key to the common trees and shrubs on Black Mountain for use in plant identification, and field sheets for observing and recording edaphic, climatic, physiographic and biotic factors on-site. Another exercise required students to compare the density of Red Stringybark (*Eucalyptus macrorhyncha*) and Scribbly Gum (*E. rossii*) trees on sunny and shady slopes, which Carnahan used to teach about random sampling, plotless sampling for tree density and the use of probability statistics for comparing sampling data. Black Mountain was also the field site for Carnahan's students to compare vegetation under a powerline and adjacent forest to determine the effect of removal of forest canopy on trees, shrubs and grasses. This exercise also required students to undertake plant identification, quadrat sampling and statistical analysis.

In 1981 a group of students enrolled in the Human Ecology Program at ANU wrote a lengthy report that examined Black Mountain's ecosystems and “man’s impact on [them] through its history, its place within the plan of Canberra, the uses to which it is put and the developments that are proposed for it” (Manley et al. 1981). The report included an overview of the area’s history, ecology, developments (such as the Telecom Tower, the proposed extension to the National Botanic Gardens and the proposed gondola to the summit), management and recreation facilities, use and impacts. It provides a snapshot of public issues at the time, with the students questioning the sustainability of the area and decision-making roles, asking “what exactly are the rights for protection of the “reserve” and who decides upon these?”. Their recommendations to facilitate better reserve management ranged from more frequent emptying of rubbish bins to the use of a single management authority. They concluded with the statement “If human ecology is concerned with man’s impact on and interaction with his natural environment then Black Mountain, as an oasis of bushland within a concrete-and-bitumen landscape peopled by 250,000 inhabitants, is central to that concern. Black Mountain Reserve is under threat, directly from the amount of human use it receives and from the developments proposed for it, and indirectly through its separation from other natural areas”. Similar concerns are often expressed today.

Elliott and Douglas's (1974) anticipation of Black Mountain Reserve being used for post-graduate studies proved to be accurate. ANU students have written 18 theses (four PhD, one Masters, 11 Honours, one Graduate Diploma and one Diploma) involving biophysical research carried out wholly or partly in the reserve since 1970, complementing three Honours theses written in the 1960s. Three University of Canberra theses (one Masters, two Honours) and one Macquarie University Masters thesis also involved research on Black Mountain. These theses encompass a wide range of topics (Table 1); an overview of each is provided in Purdie (2018b).

Table 1. Summary of tertiary theses involving biophysical research wholly or partly carried out in Black Mountain Nature Reserve

| Topic | Author |
|--|---|
| Birds (census methods, ecology and biology) | Hermes (1977), Stein (1982), Yu (1988), Heinsohn (1990), Krebs (1999), Legge (1999), Weekes (1999), Sobey (2006). |
| Invertebrates (biology, ecology, seed dispersal) | Gray (1979), Wynberg (1993), McInnes (2001). |
| Mammals (ecology) | Martin (1995), T Buckmaster (2005), Treadwell (2009). |
| Vegetation or plants | Pavlovic (1982), Willis (1988), Osler (1991), Gleeson (1993/94), Sharp (1997), Chalise (2013), Hayashi (2016). |
| Other (fire behaviour, soil properties, management, dieback) | Ashcroft (1967), Johnson (1969), Coyne (1969), Taylor (1974). |

6. Creative activities

Black Mountain has long been a source of inspiration for painters, photographers and others involved in creative endeavour (Hotchin 2018b). For example, HM Rolland painted a watercolour showing Black Mountain as part of the landscape looking north from West Block in 1913¹⁷, while Grace Cossington Smith created a "vibrant modernist" painting of the mountain during a stay in Canberra in the early 1930s¹⁸. Now well-known wildlife photographer Esther Beaton worked with ACT Conservation and Agriculture in the early 1980s and photographed plants and insects in Black Mountain Nature Reserve; 34 images are included in the Environment ACT Natural History Collection held in the ACT Heritage Library. Black Mountain was also a source of inspiration for painter Micky Allan and classical cellist David Pereira in 2002 as part of an exhibition *Collaborations – Artists and Musicians*. Over several interactive "intense hours", each created four compositions for a piece called *Black Mountain Suite*, the sections following the time of day and later named Early, Sun, Storm and Late.¹⁹ The following year Pereira published his four-movement solo cello piece as *Black Mountain views*.²⁰ More recently, Mairi Barton used the Telstra Tower on Black Mountain's summit as the focus of a book meditating on the word "black" that presented a series of panorama-style images of the summit taken from a range of different locations over a variety of environmental and seasonal conditions (Barton 2016).

Over the last decade Black Mountain has been a source of inspiration for photographers, artists and ceramicists who have often used their art to help increase public appreciation of the area and the value of its biodiversity. Photographer Col Ellis has taken colour photos of Black Mountain's landscapes and exhibited them with images from other locations at his gallery in Higgins, Canberra²¹. Photographer Michael John Hood concentrated on black and white images of the area that "visually describe an area of scrubby bushland in the Australian Capital Territory", focussing his work on close-up images of natural textures and patterns of bark, wood, termite nests and rock surfaces as well as images showing grasses, shrubs and *Eucalyptus* trees regenerating after fire (Hood 2013). His photos from Black Mountain were displayed at the CSIRO Discovery Centre in June 2012²² and other locations around Canberra (Beveridge 2018b).

In 2012 and 2013, local ecologist and photographer David Wong in association with the CSIRO Discovery Centre ran the *PhotoEcology: Discover nature through photography* project on Black Mountain as part of the Australian Government's *Inspiring Australia* initiative aimed at inspiring people about science. Between spring 2012 and autumn 2013 Wong, co-facilitator Chris Holly and the five participants repeatedly visited the lower eastern slopes of Little Black Mountain and took photographs at a small site to gain both photographic and ecological insights (Wong 2013). The project culminated in an exhibition *PhotoEcology: Black Mountain* at the Discovery Centre in June 2013 at which photos taken during the project were displayed. Participant Mike Paterson said that it had been "fascinating to 'repeat' visit this very small unassuming patch of bush ... and find such a variety of flora and fauna – how many people walk, run, ride and drive through/past this every day and never see a thing?" (Musa 2013). Black Mountain's plants and animals have continued to provide Wong with inspiration, with some of his photos of them included in an out-door installation *Meet Your Neighbours* at the Australian National Botanic Gardens as part of the March 2016 Enlighten Festival (Wong 2016).

¹⁷ <http://nla.gov.au/nla.pic-an5380481>, accessed March 2018.

¹⁸ <https://nga.gov.au/Exhibition/cossingtonsmith/Detail.cfm?IRN=133763>, accessed March 2018.

¹⁹ <http://www.mickyallan.com/Bodies/Pereira.html>, accessed April 2018.

²⁰ <https://trove.nla.gov.au/work/23242827?selectedversion=NBD24574483>, accessed April 2018.

²¹ <https://www.gallerytwentyseven.com.au>, accessed 25 April 2017.

²² <https://scienceinthecapital.wordpress.com/author/nkelman/>, accessed 25 April 2017.



Fig. 13. One of the *Meet Your Neighbours* installation panels at the Australian National Botanic Gardens, March 2016. Photo: D Wong.

In 2015 Canberra-based ceramic artist Cathy Franzi created an installation called *62 Orchids: Black Mountain* for inclusion in an exhibition *Islands & Corridors* based on Canberra's nature reserves. The exhibition was part of her PhD in which she investigated the representation of Australian flora on ceramic vessels as an expression of botanical and environmental knowledge (Franzi 2018). The installation was based on research that encompassed visits to Black Mountain including on the Burbidge/Chippendale walks and the Wood and Egan orchid walks (see sections 4.1 and 4.2 above). Franzi depicted orchids from Black Mountain on porcelain vessels, black ones with white line carvings reflecting threatened species, and glaze colours on the inside of each vessel hinting at the flower colour of the individual orchid species depicted.



Fig. 14. Cathy Franzi's ceramic vessels depicting threatened and other orchid species on Black Mountain, 2015. Photo: Andrew Sikorski:Art Atelier.

A more recent exhibition relating to Black Mountain's biota was that of artist Sally Mumford whose solo exhibition *Wayfinding on Black Mountain* was displayed at ANBG during February 2018. As

a relatively new Canberra resident, Mumford had explored Black Mountain's urban bushland to help create "a sense of belonging". Her collection of drawings and glasswork also aimed "to connect people to the small gestures of nature that define landscape and place, to inspire people to cherish and care for urban bushland and highlight its beauty and wonder".²³



Fig. 15. Detail from *Stringy Barks Black Mountain*, a watercolour by Sally Mumford, graphite and pencil on paper, February 2018. Photo: Oliver Armstrong.

7. Management issues arising from public use of Black Mountain

Most of the organised recreational and educational activities on Black Mountain are associated with the network of fire/management roads and official walking tracks and have relatively little impact on the local environment. Other organised events, such as orienteering, occur off the roads and tracks but are infrequent and generally routed to minimise environmental damage (Hogg 2018). However, observations over the last decade highlight a variety of recreational activities in the reserve that warrant attention.

Many of the formal and informal walking tracks/trails on Black Mountain, including those on steep slopes, have bare earth surfaces. Constant use of these tracks by walkers and joggers coupled with erosion during rain storms results in increased exposure of rocks from the highly erodible soils and the tracks becoming very uneven. This leads to the use of adjacent smooth surfaces, thus widening the tracks (see Fig. 16), creating further erosion and rock exposure and, with time, leads to repeats of the erosion cycle. When coupled with the intentional and unintentional creation of new informal tracks, this pattern of use has also resulted in increasing fragmentation of habitat and the potential for greater disturbance of the biota. The erosion is accelerated when stones are dug from the path surfaces or dislodged from adjacent areas by individuals using them to mark walking routes; these stones, and sticks and branches used for the same purpose, can also be a tripping hazard for other users. The repeated erection of a stone cairn at the summit of Little Black Mountain has disturbed the local habitat and also encouraged other users to dislodge more rocks in the area.

Mountain bikers regularly use Black Mountain's fire/management road network for recreational riding. However, contrary to the ACT Government's responsible riding guidelines²⁴ there is abundant evidence from tyre marks of continuing irresponsible mountain bike riding in the reserve, including skidding, riding in muddy conditions, and taking short cuts, as well as riders repeatedly

²³ <https://parksaustralia.gov.au/botanic-gardens/do/whats-on/exhibitions/wayfinding-on-black-mountain/>, accessed March 2018.

²⁴ https://www.environment.act.gov.au/parks-conservation/parks-and-reserves/recreational_activities/mountain-bike-riding, accessed March 2018.

ignoring “no bike” signs erected on walking trails. These types of use further exacerbate the erosion, habitat disturbance and fragmentation described above.



Fig. 16. With constant use, barely discernable tracks <0.5 m wide (left) become increasingly eroded (middle) and with time widened to >1.5m wide (right) as users seek smooth surfaces. Photos: R Purdie, April 2018.

It is not uncommon to see individuals jogging or walking with their dogs (mostly off-leash) along the fire trails and walking tracks in the reserve, even though “no dog” signs are present at every entrance to it. Conversations with some of these people indicate often they have not seen the signs, although others choose to ignore them. Informal camping sites have been established in some places in the reserve, some apparently used for extended periods.

The issues described above are not unique to Black Mountain (e.g. see Landsberg 1999; Sharp 2011), and information about them is mostly from chance observations (Beveridge 2018a). While individual actions may seem trivial, collectively and cumulatively over time they can cause adverse impacts on Black Mountain's environment. With Canberra's population size continuing to rise, pressure from these types of activities inevitably will increase in the reserve (and other parts of Canberra Nature Park) and need to be managed appropriately.

8. Conclusions

This paper has provided only a snap shot of educational and recreational activities carried out on or in relation to Black Mountain, as the majority of the area's use and users are not documented. However, public use of the area has been prominent since it was declared a reserve, and over the following decades many activities have been promoted and facilitated by management authorities, educational institutions and community groups. It is clear that Black Mountain is a range of different things to different people: a place for sitting, walking, jogging, running or cycling in order to relax, exercise, contemplate, observe, record, learn or share. Inevitably, not all activities are compatible with each other, and management of the reserve to meet the disparate needs in a way that is not detrimental to the area's cultural, physical and biological systems and values remains a challenge into the future.

9. Acknowledgements

My thanks to Linda Beveridge, Jean Egan, Jean Geue, Bill Logan and Tony Wood for sharing their personal knowledge about the Black Mountain area; to Jean Geue and Tony Wood for the use of their photos; to Cathy Franzi, Sally Mumford and David Wong for permission to reproduce photos of their art works; and to Linda Beveridge and Bill Logan for reading a draft of the paper.

10. References

- ACT Conservation Service (1983) Walking in Black Mountain Reserve. Department of the Capital Territory leaflet DCT I&PR 4000/2/83 (2)
- ACT Geological Monuments Subcommittee of the Geological Society of Australia (1988) *Our Heritage – Geological history of Canberra*. Canberra Times, Travel Times pages 9–12.
- ACT Parks and Conservation Service (1985) Walking in Black Mountain Reserve. Department of Territories leaflet DOT I&PR 5000/8/85 (3).
- ACT Parks and Conservation Service (1989a). Canberra Nature Park Black Mountain Walking Tracks. ACT Parks and Conservation Service leaflet MD 5/89 20,000.
- ACT Parks and Conservation Service (1989b) Background Notes: Black Mountain. In Background Notes, ACT Parks and Conservation Service.
- ACT Parks and Conservation Service (1990) Community responses towards a draft management plan for Canberra Nature Park. Reference cited in Department of Urban Services (1999).
- Anon (2010) Life membership for Rosemary Blemings. *Journal, Australian Native Plant Society, Canberra Region* 16(3), 3–4.
- Aslanides, T & Stewart, J (1988) A heritage field guide: Canberra and the Australian Capital Territory. Kangaroo Press, pages 75–80.
- Ashcroft, NG (1967) The fuel drying process in some typical fuel beds and associated fire behaviour characteristics. Honours thesis, Department of Forestry, Australian National University.
- Baker, A & Blunt, P (compilers) (1988) ACT Youth Trek '88 Handbook. ACT Schools Authority, Canberra.
- Barrow, G (1981) *25 Family bushwalks in and around Canberra*, 2nd edition. Dagraja Press, Canberra, pages 29–31.
- Barrow, G (1991) *25 Family bushwalks in and around Canberra*, 3rd edition. Dagraja Press, Canberra, pages 7–10.
- Barrow, G (1997) *Walking Canberra's hills and rivers*, 2nd edition. Dagraja Press, Canberra, pages 20–22.
- Barrow, G (2002) *30 Family bushwalks in and around Canberra*, 4th edition. Dagraja Press, Canberra, pages 9–10.
- Barrow, G (2006) *Walking Canberra's hills and rivers*, 3rd Edition. Dagraja Press, Canberra, pages 33–36.
- Barrow, G (2014) *Walking Canberra*. Dagraja Press, Canberra, pages 50–51.
- Barton, M (2016) Black. *A Black Mountain photo series by day and night*. Published by Mairi Barton.
- Beveridge, L (2018a). Friends of Black Mountain: golden threads in community awareness. Black Mountain Symposium 2018 Background Paper No. 18. Friends of Black Mountain, Canberra.
- Beveridge, L (2018b) Friends of Black Mountain, personal communication, 25 April 2015.
- Blemings, R (2017) Australian Native Plant Society and Field Naturalists Association of Canberra member, personal communication, June 2017 and April 2018.
- Buckmaster, A (2005) Small mammals in the ACT urban reserves: sustainable populations or species decline? Honours thesis, University of Canberra.
- Canberra Ornithologists Group (1986) The significance of Mt Ainslie–Majura and Black Mountain as habitat for birds. Canberra Ornithologists Group January 1986.
- Carnahan, J (undated) Early days in the ESA. Available on the Ecological Society of Australia website at <https://www.ecolsoc.org.au/events-and-activities/other-esa-activities/turns-50/john-carnahan>, accessed 25 March 2018.
- CHAH (2014) Biographical Notes – Adams, Laurance George (Laurie) (1929 – 2014). Available at <https://www.anbg.gov.au/biography/adams-laurie.html>, updated 17 November 2014, accessed 12 February 2018.

- CHAH (2015) Biographical Notes – Chippendale, George McCartney (1921 – 2010). Available at <https://www.anbg.gov.au/biography/chippendale-george.html>, updated 23 March 2015, accessed 12 February 2018.
- CHAH (2017) Biographical Notes – Burbidge, Nancy Tyson (1912 – 1977). Available at <https://www.anbg.gov.au/biography/burbidge-nancy.html>, updated 6 June 2017, accessed 12 February 2018.
- Chalise, M (2013) Estimation of stand-level aboveground forest biomass: A quest for efficiency and reliability. Masters thesis, Fenner School of Environment and Society, Australian National University.
- Chevalier, B & Hoffman, S (2011) Values and uses of Canberra Nature Park: a survey of Canberra Nature Park user groups. In: *Report on Canberra Nature Park (nature reserves); Molonglo River Corridor (nature reserves) and Googong Foreshores*, M Cooper (2011), Part 2, Appendix B, pp. 40–42. Office of the Commissioner for Sustainability and Environment, Canberra, ACT. Available at http://www.environmentcommissioner.act.gov.au/__data/assets/pdf_file/0011/590897/Part_II_Appendices.pdf, accessed 16 April 2018.
- Chippendale, G & Geue, J (2010) Recollections of Black Mountain spring walks. *National Parks Association of the ACT Bulletin* 47(1), 32–33.
- Coyne, PC (1969) The Black Mountain Reserve, Canberra ACT: description and suggestions for management. Honours thesis, Department of Forestry, Australian National University.
- Cudmore, S (1994a) Orchids of Black Mountain, ACT. *The Orchadian* 11(3), 141.
- Cudmore, S (1994b) Four *Thelymitra* species found growing on Black Mountain, ACT. *The Orchadian* 11(6), 280–281.
- Department of Urban Services (1999) Canberra Nature Park Management Plan 1999. *Department of Urban Service Conservation Series* No. 14, Environment ACT, available at https://www.environment.act.gov.au/__data/assets/pdf_file/0009/906228/canberra_nature_park_management_plan.pdf, accessed 23 March 2018.
- Dickins, JM (1973) Canberra's old swamps and lakes. *National Parks Association of the ACT Bulletin* 10(3), 4–5.
- Doherty, MD & Meyers, JA (2009) Community monitoring of fire at the Urban Bush Interface – a pilot study. Report No. USP2008/014 (CAF R-122-2-7), prepared for the ACT Natural Resource Management Council. CSIRO Sustainable Ecosystems, Canberra.
- Egan, J (1994) Finding native orchids in the ACT. In L Bullivant, S Cudmore and J Wright (eds) *Growing orchids in Canberra and other cool climate districts*, Orchid Society of Canberra, pp. 12–15.
- Egan, J (2001) Black Mountain orchids in spring. *National Parks Association of the ACT Bulletin* 38(3), 10.
- Egan, J (2018) Convenor, OrchidGroupACT, personal communication, February 2018.
- Elliott, MA & Douglas, JS (1974) Black Mountain Reserve preliminary development and management plan. *Conservation Series* No. 1 March 1972, Department of the Capital Territory, Australian Government Publishing Service, Canberra.
- Franzi, C (2018) Personal communication March 2018 and <http://www.cathyfranzi.com/62-orchids>, accessed 28 March 2018.
- Fraser, I (1981) *Black Mountain: a walker's guide*. Canberra and South East region Environment Centre.
- Friends of Aranda Bushland (1997) *Our patch: field guide to the flora of the Australian Capital region, as photographed in the Aranda Bushland*. Friends of Aranda Bushland, Jamison, ACT.
- Geue, J (2010) Memories of George Chippendale. *Journal, Australian Native Plant Society, Canberra Region* 16(5), 27–29.
- Geue, J (2014) Black Mountain wildflower ramble Saturday 12 October 2013. *Field Natter February 2014*, page 2.

- Gleeson, T (1993/94) Patterns of genetic variation in *Grevillea wilkinsonii*, *G. acanthifolia* and *G. ramosissima*. Honours thesis, Australian National University.
- Gray, D (1979) Two studies on seed dispersal by animals in Australia. Honours thesis, Department of Zoology, Australian National University.
- Hayashi, TN (2016) Orchid encounters: ecological and evolutionary implications of pollination by sexual deception in eastern Australian *Caladenia* (Orchidaceae). Honours thesis, Australian National University.
- Heinsohn, RG (1990) The evolution of obligate cooperative breeding in white-winged choughs. PhD thesis, Australian National University.
- Henderson, GAM (1971) Geology in the Black Mountain Reserve area. *National Parks Association of the ACT Bulletin* 9(2), 8–9.
- Heritage Week Committee (1993) Hills of Canberra – people and place. Heritage ACT, pp. 42–55.
- Hermes, N (1977) A comparative study of some methods of censusing birds. BSc (Hons) thesis, Department of Zoology, Australian National University.
- Hogg, D (1982) *Black Mountain – The Pinnacle environmental map*. David Hogg Maps, Jamison, ACT.
- Hogg, D (2018) Use of Black Mountain for orienteering and other competitive activities. Black Mountain Symposium 2018 Background Paper No. 12. Friends of Black Mountain, Canberra.
- Hood, MJ (2013) Australian Bush: Black Mountain. Available at <https://mjhooophoto.photoshelter.com/gallery/Australian-Bush-Black-Mountain/G0000vEwIDIHTVn0/C0000POIKW1344ww>, accessed 25 April 2018.
- Hotchin, J (2018a) Black Mountain as a place of protest: tower, gondola and highway. Black Mountain Symposium 2018 Background Paper No. 20. Friends of Black Mountain, Canberra.
- Hotchin, J (2018b) Quick guide to creative/artistic material relating to Black Mountain. Black Mountain Symposium 2018 Background Paper No. 21. Friends of Black Mountain, Canberra.
- Johnson, DA (1969) A study of spatial variation under several species of eucalypts in the Australian Capital Territory. Honours thesis, Department of Forestry, Australian National University.
- Jones, DL with Egan J & Wood, T (2008) *Field guide to the orchids of the Australian Capital Territory*. National Parks Association of the ACT.
- Kelly, J (2007) Nancy Burbidge: botanist and visionary – Part 1. *National Parks Association of the ACT Bulletin* 44(1), 9–10.
- Kelly, J (2015) Laurie Adams, 1929–2014: botanical sleuth and taxonomist. *National Parks Association of the ACT Bulletin* 52(1), 11.
- Kelly, J (2016) Vale Peter Ormay, 1938–2016. *National Parks Association of the ACT Bulletin* 53(3), 5.
- Krebs, E (1999) Breeding biology and parental care in crimson rosellas. PhD thesis, Australian National University.
- Landsberg, J (1999) Horse rising in Canberra Nature Park. A report to Environment ACT. CSIRO Wildlife and Ecology, Canberra.
- Legge, SM (1999) Cooperative breeding and siblicide in the laughing kookaburra. PhD thesis, Australian National University.
- Logan, B (2018) Formerly with Environmental Conservation Section, Conservation and Agriculture Branch, Lands Division, Dept of the Capital Territory, personal communication, 4 May 2018.
- Manley, A, McDonough, V, Smith, G & Sofield, F (1981) Black Mountain Reserve: a group project in human ecology. Student assignment report for Human Ecology Program, Australian National University.
- Martin, J (1995) Aspects of the ecology of foxes (*Vulpes vulpes*) in urban Canberra. BAppSci Honours thesis, Applied Ecology Research Group, University of Canberra.

- McInnes, J (2001) *Maturity and mating systems of Orthetrumcaele donicum (Odonta: Libellulidae)*. Honours thesis, Australian National University.
- Metcalf, R (1997). *Black Mountain Wildflower Walk 1997-1*. Society for Growing Australian Native Plants, Field Naturalists Association of Canberra and ACT Parks and Conservation.
- Mortlock, AJ & O'Loughlin, C (eds) (1977) *Rambles around Canberra: an illustrated collection of short interesting walks in the Canberra region*. National Parks Association of the ACT Inc and ANU Press, Canberra, pp. 10–14.
- Mulvaney, M (2018) Notes on archival material bequeathed by Dr John Carnahan, personal communication, 6 May 2018.
- Musa, H (2013) Revisiting Black Mountain art. In: *Arts & Entertainment*, June 17, 2013, City News. Available at <http://citynews.com.au/2013/revisiting-black-mountain/>, accessed 5 March 2018.
- National Capital Development Commission (1984) The ecological resources of the ACT. *National Capital Development Commission Technical Paper 42*, May 1984.
- National Capital Planning Authority (undated) Take ten: experiencing the National Capital. Ten places in inner Canberra to stop, look and experience the National Capital open space system. National Capital Planning Authority Leaflet; publication date thought to be 1989.
- National Parks Association (2001) Outings program September – December 2001. *National Parks Association of the ACT Bulletin* 38(3).
- Osler, G (1991) The revegetation of *Eucalyptus melliodora* Cunn. Ex Schaeur (Yellow Box) and *Eucalyptus blakelyi* Maiden (Blakely's Red Gum) on the Southern tablelands of New South Wales. Honours thesis, Department of Forestry, Australian National University.
- Pavlovic, NB (1982) The variation in seed banks on Black Mountain. Graduate Diploma in Science thesis, Botany Department, Australian National University.
- Purdie, RW (2018a) Scientific collecting, monitoring and research on Black Mountain. Black Mountain Symposium 2018 Background Paper No. 16. Friends of Black Mountain, Canberra.
- Purdie, RW (2018b) Quick guide to biophysical research on Black Mountain: an overview of literature. Black Mountain Symposium 2018 Background Paper No. 15. Friends of Black Mountain, Canberra.
- Sharp, S (1997) Diversity, patterns and processes of vegetation and invertebrate orders in natural temperate grasslands in the Australian Capital Territory. MAppSci thesis, University of Canberra.
- Sharp S (2011) Landscape function in Canberra Nature Park and impacts of threatening process on landscape function. In: *Report on Canberra Nature Park (nature reserves); Molonglo River Corridor (nature reserves) and Googong Foreshores*, M Cooper (2011), Part 2, Appendix G, pp. 95–97. Office of the Commissioner for Sustainability and Environment, Canberra, ACT. Available at https://www.envcomm.act.gov.au/__data/assets/pdf_file/0011/590897/Part_II_Appendices.pdf, accessed 16 April 2018.
- Shorthouse, DJ (1979) Ecological resources of the ACT. Report to the National Capital Development Commission, July 1979.
- Shorthouse, DJ & Taylor, NH (1981) The touch and see nature trail: with special provision for handicapped and disabled persons, Black Mountain Reserve, ACT. *Conservation Memorandum* No. 9, Conservation and Agriculture, Department of the Capital Territory.
- Sobey, E (2006) The influence of vegetation structural attributes on bird species richness and abundance. Honours thesis, School of Resources, Environment and Society, Australian National University.
- Stein, J (1982) Bird species distribution in relation to suburban habitat characteristics – Canberra, 1982. Honours thesis, Zoology Department, Australian National University.
- Taylor, PA (1974) Ecological studies on the occurrence of *Phytophthora cinnamomi* on Black Mountain. PhD thesis, Australian National University.

- TCZ (Tonkin, Zulaikha, Greer Architects) & TCL (Taylor, Cullity, Lethlean) (2015) *Australian National Botanic Gardens Master Plan 2015–2035*. Australian National Botanic Gardens, Canberra.
- Territory and Municipal Services (2009) *Canberra tracks*. ACT Government, Canberra.
- Treadwell, M (2009) Bat abundance and species richness of urban nature reserves. Does proximity to suburbs and size of reserves influence bat assemblages in the Australian Capital Territory? Unpublished project report, Masters of Wildlife Management (Habitat), Macquarie University, Sydney.
- Tynan, C (1988) The flora of Black Mountain. Seminar paper, Australian Society for Growing Australian Plants 14th Biennial Convention, Canberra.
- Wade, M (1999) *Canberra's secrets: the essential guide to our national capital for residents and visitors*. M Wade, Fyshwick, ACT.
- Wade, M (2003) *Canberra's secrets: the essential guide to our national capital for residents and visitors*, 2nd edition. Margaret Wade, Fyshwick, ACT.
- Wade, M (2018) *Canberra secrets: your key to the Capital*, 3rd edition. Margaret Wade, Jamison, ACT.
- Weekes, A (1999) Foraging ecology of the White-throated Treecreeper (*Cormobates leucophaeus*) at Black Mountain Reserve. Honours thesis, Department of Geography, Australian National University.
- Williams, J (1976) *Nature Guide Black Mountain Reserve Ainslie–Majura Reserve*. Department of the Capital Territory, Australian Government Publishing Service, Canberra.
- Willis, AJ (1988) Biosystematic aspects of *Stylidium graminifolium* Sw. Ex Willd. and *S. productum* M. Hindmarsh et D. Blaxell (Stylidiaceae). Honours thesis, Department of Botany, Australian National University.
- Wong, D (2013) PhotoEcology Little Black Mountain. Available at <https://photoecology.wordpress.com/2013/07/10/little-black-mountain/>, accessed 5 March 2018.
- Wong, D (2016) Canberra: Meet your neighbours. Available at <http://meetyourneighbours.net/canberra-meet-your-neighbours/>, accessed 5 March 2018.
- Wood, T (2007) Some lesser known ACT orchids. *Friends of ANBG Newsletter* 57, 4–5.
- Wood, T (2018) Convenor, Black Mountain orchid walks, personal communications, February and March 2018.
- Wynberg, AB (1993) The effects of vegetation disturbance on ant communities of the Southern Tablelands. Honours thesis, Division of Botany and Zoology, Australian National University.
- Yu, D (1988) Habitat selection by birds on Black Mountain and Green Hill. Graduate Diploma in Science thesis, Department of Botany, Australian National University.