



Environment & Society Portal



The White Horse Press

Full citation: Robin, Libby. "Radical Ecology and Conservation Science: An Australian Perspective." *Environment and History* 4, no. 2, Australia special issue (June 1998): 191–208.
<http://www.environmentandsociety.org/node/2973>.

Rights: All rights reserved. © The White Horse Press 1998. Except for the quotation of short passages for the purpose of criticism or review, no part of this article may be reprinted or reproduced or utilised in any form or by any electronic, mechanical or other means, including photocopying or recording, or in any information storage or retrieval system, without permission from the publishers. For further information please see <http://www.whpress.co.uk>.

Radical Ecology and Conservation Science: An Australian Perspective

LIBBY ROBIN

*Humanities Research Centre,
Australian National University,
Canberra 0200, Australia
e-mail: libby.robin@anu.edu.au*

SUMMARY

Histories of environmentalism in Australia often overlook the 1950s, an era when scientific ecology dominated environmental activism. The political work of A.B. Costin in the CSIRO Alpine Ecology Unit in the Snowy Mountains, New South Wales, is examined closely as an example of how a scientist working within the limited institutional structures available to ecologists was able to defend natural areas against formidable odds. The successes of the 1950s established the credibility of science and scientists in conservation matters in the 1960s and later. When radical environmentalism emerged in the late 1970s, many scientific ecologists were angry or hurt about the fact that they became distanced from political power, and some have adopted backlash positions as a result. The history of the involvement of scientific ecologists in political activism in the 1950s sheds light on their reactions to radical environmentalism as it emerged later.

The political difficulty of undertaking conservation is always greatest when the imperative for economic development is at its most jingoistic. In 1950s Australia, the post-war development boom was in full swing. The population was growing rapidly, both through post-war births and through immigration. Between 1945 and 1960 the population rose from 7.3 million to 10.4 million, and it was a young population, a population 'with a future'.¹ The demand for housing materials, for example, seriously exceeded supply. Governments were actively encouraging people to build their own homes because of the shortages of skilled builders to meet the demand, and were requiring that such houses be limited in size to reduce demand on such basics as nails and timber.² The rhetoric encouraged individuals to make personal sacrifices in the interests of 'nation building'.

At the centre of 'national reconstruction' was a project to build a massive hydro-electricity scheme in Australia's highest mountains. The Snowy Mountains are in the south-eastern corner of the continent, strategically located between Australia's largest cities, Sydney and Melbourne, and rather closer to Canberra, the seat of national government. The hydro-electricity scheme was devised and managed by the Snowy Mountains Authority, a massive government agency with a brief to build a system of hydro-electricity stations (through both private and public funding). The complexities of the scheme were considerable as it straddled two states (New South Wales and Victoria) and the Australian Capital Territory, and had implications for a third state, South Australia, down-stream of the works. The states' co-operation was at least partly gained through the offer of 'free irrigation to farmers downstream' as a by-product.³ The hydro-electricity scheme was rhetorically linked to national pride. It was associated with building secondary industry, something very important to a nation with a predominantly agricultural economy at the time. The 'Snowy Scheme' was the subject of jingoistic films, was promoted as a tourist attraction, and was an important 'topic' in the curriculum of school children in the eastern states. Newly arrived immigrants from war-torn Europe provided the work force for the scheme and were told by William (later Sir William) Hudson, the scheme's first commissioner: 'You won't be Balts or Slavs... you will be men of the Snowy'.⁴ Hudson's nationalistic rhetoric was typical of the time. The scheme was so 'Australian', its imprimatur was capable of giving new immigrants quick status as 'real Australians'. The scheme's overwhelming contemporary popularity and the subsequent perception of its 'success' is attributable, at least in part, to the capacity of the Authority to take advice at critical times. The young science of soil conservation, which offered significant (but not always popular) advice to the Authority, was important to the perceived success of the scheme in both engineering and in politics.

Australia, like the United States of America, had suffered massive soil erosion in the 1930s resulting in enormous ecological damage and personal suffering. Country people, like the 'Okies' in John Steinbeck's *Grapes of Wrath*, left the land for the cities. There was often deep shame felt by these people, especially those farming the small allotments issued to soldiers returned from the first world war, who felt they had failed personally. Some left their properties in the middle of the night without farewelling neighbours.⁵ Government agencies for soil conservation were established in New South Wales in 1938 and Victoria in 1940, and while they were never big, in the 1950s they were taken seriously, as the nation's response to the massive agricultural disaster which had touched so many people.

The central story in this paper is about the role of science in mediating the nationalism inherent in both the grand engineering scheme and in the management of soil conservation. The science in the cross-fire was ecology.

'Ecology' first came to popular notice in Australia through nature study in the 1940s, and was often associated with romantic views on the 'web of life'.⁶ Most practising ecologists of the time were quite comfortable with this type of popularisation. In the 1950s, ecological scientists were glad of a public profile. But by the 1970s, when the word 'ecology' came increasingly to mean politics rather than science, many scientific ecologists became disconcerted. They sought to distance themselves from the popular images of the subject, in particular the anti-science and anti-technology rhetoric of parts of the environment movement, and to reassert the scientific status of the discipline.⁷

Dr Peter Attiwill, an Australian forest ecologist from the University of Melbourne's School of Botany, has had a high profile in the 1990s defending the logging industry and government forestry against 'sentimental' claims of radical 'greenies'.⁸ In an interview in 1991, he claimed that he and a 'lot of good scientists' left the conservation movement in the early 1970s when it 'became a ratbag lot' – when it 'became political and taken over by the powers of the Left'.⁹ Attiwill was referring to the shift away from conservation to 'environmentalism' in Australia, marked by a major split in the Australian Conservation Foundation (ACF). The ACF had been established as the premier national 'conservation' institution in 1965, under the patronage of Prince Philip. It was identified with Australia's senior establishment, and with a strong scientific commitment to conservation.¹⁰ In 1973, as the waters rose to flood the wild Lake Pedder in Tasmania in the interests of another hydro-electric scheme, there was a 'coup' in the ACF, and an astonished Prince Philip found himself presiding over a meeting where most of the Executive, including many senior scientists, were either voted out or resigned in protest. The urgency of the Pedder situation gave the edge to those prepared to take quick, and if necessary radical, action over the pragmatic negotiators who had dominated the ACF until then.¹¹

Attiwill is an interesting example because he was actively involved in the politics of conservation only four years before the ACF split. Attiwill made an important statement about the inappropriateness of developing the Little Desert area of western Victoria for agriculture when its biological character was unmapped.¹² He denied that this role was political, saying (in 1991): 'I think my role in the Little Desert dispute was as a scientist, not as a political lobbyist'.¹³ Attiwill's 'scientific' statement was nonetheless presented at an incontrovertibly political forum: it was an opposition-led Upper House Parliamentary inquiry into the proposed agricultural scheme for the Little Desert. Attiwill's shift from describing parallel activities as 'non-partisan' to 'political' must be read as a statement that he was opposed to the direction of the later politics. In a sense, he was expressing frustration with the loss of freedom to act politically and call it 'science'. But in the period since 1991, he has actively sought political spaces in newspapers and other media to present comments on environmentally sensitive issues, often in direct opposition to the predominant environmentalist voice.

This paper explores the role of science in the management of the environment through conservation and ecology. It focuses on the 1950s, what (in an American context) Gregg Mitman has described as a 'lost decade in environmental history'.¹⁴ It is a decade which has been lost perhaps because of a perception that it was a time of 'political contentment and acquiescence in the system'.¹⁵ But while the 1950s were a time when scientific understandings themselves were less closely scrutinised, there is no doubt that scientists were far from acquiescent in the 'system'. It was a formative period for many senior ecologists, and may, in subtle ways, still be shaping Australia's environmental debates.

THE INSTITUTIONAL STRUCTURE OF SCIENTIFIC ECOLOGY IN AUSTRALIA

Ecologists in Australia are generally sponsored by universities or government agencies, but not by the corporate or private sectors. Australia's scientists traditionally have been forced by isolation to work as all-rounders rather than narrow specialists, and even academic scientists have rarely had the privilege of being funded for 'pure research'.¹⁶ This pattern is particularly apparent in a discipline as small as ecology. Ecology is not prestigious in Australian universities. Ecology is generally regarded as a subset of Botany, Zoology, Biology, Environmental Science or even Forestry. It seldom stands alone as a teaching or research discipline. Ecological scientists who work in universities therefore have to be actively concerned about their image within their wider scientific departments.¹⁷ There are a number of chairs in environmental science and biological sciences that have been held by practising ecologists, but the lack of named ecological chairs is a reflection of the fact that ecology is low in the hierarchical stakes in Australian universities.

Raymond L. Specht, himself a distinguished ecologist and former Professor of Botany at the University of Queensland, surveyed forty of his contemporaries who undertook postgraduate ecological studies in the period from 1930 to 1955.¹⁸ He described a drift of ecologists away from ecology towards other fields as they get older. He noted that half of these opted out of field work, seventeen moving to taxonomy and three to plant physiology. Only seven of the early plant ecologists were still active in plant ecology in 1981. Four died relatively young, and the remaining nine took early retirement from university employment to pursue careers as environmental consultants. These figures are reminiscent of the trends in (or rather out of!) ecology in America thirty years earlier noted by the American historian of science, Eugene Cittadino, who described ecology as 'a young man's specialty'.¹⁹ In addition to the hard physical requirements of field work, there is the question of time. Most senior university-based positions carry a heavy administrative and teaching load, making it difficult to undertake field

work in distant places at the ecologically appropriate time. Universities in Australia are mostly located in large cities well away from interesting ecosystems, so few field sites can be reached with less than several hours travelling time. Only a full-time researcher can undertake year-round studies on remote ecosystems. The fact that time and physical fitness are less available to senior academics serves to reduce the prestige of ecology in universities further, and to reinforce its status as a junior sub-discipline of something else.

The pragmatic construction of academic ecology as a sub-set of something else sits uneasily with the popular perception of ecology as an over-arching world view in environmental politics. At the turn of the century, the founders of scientific ecology saw the potential for the subject to have a broad scope. For example, the British physiologist, J.S. Burdon-Sanderson, in his presidential address to the British Association for the Advancement of Science in 1893 told the audience 'that "oecology" was one of the three great divisions of biology, along with physiology and morphology'.²⁰ But the way power is organised in universities and research institutions is by discipline, administered through chairs or directors, not by 'great divisions in biology'. At the pragmatic level, ecology is regarded in Australia as either too specialised or too general to be the central organisational focus of a department. University ecologists fight for their space and their research dollar in hostile departments. They have therefore sought and found allies outside university structures.

The most important allies for Australian ecologists historically have been government agencies, especially those charged with responsibility for natural resource management and land use. More ecologists have been employed by government conservation agencies than by universities.²¹ The conservation agency sector has contributed significantly to ecological research in many fields. Such agencies have the structural arrangements that make it possible for long, intensive field trips in remote places at the 'right' ecological time (for example, during the relevant flowering or breeding season). The majority of positions for ecologists still come up in the government sector – in land-use management, forestry, national parks and soil conservation agencies. Universities provide a significant number of salaries, but frequently the research funding for these ecologists also comes from the government sector, and work so funded often has an applied or management dimension.

From the 1920s, South Australian university ecologists worked with the Waite Institute for Agricultural Research on the ecology of arid lands.²² In the early 1940s, Victorian botanists were conscripted into alpine ecology by the Soil Conservation Board.²³ In the 1950s, the Snowy Mountains Authority became interested in alpine ecology through the mediation of the Soil Conservation Service of New South Wales. Ecology and conservation became synonymous and interchangeable terms.

A.B. COSTIN AND ALPINE ECOLOGY IN THE 1950s

Alec Costin is arguably Australia's leading Alpine ecologist, but he is not an 'academic'. Costin's distinction in his field has been recognised by the prestigious Australian Academy of Science, of which he is a Fellow. But his career has been constructed almost entirely outside the university system: he worked for the Soil Conservation Service of New South Wales for eight years, the Soil Conservation Authority of Victoria for three years, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) for nineteen years.²⁴ His university affiliations were brief: two years as a scholar affiliated with Sydney University in the early 1950s and a visiting fellow at the Australian National University when in semi-retirement. The support for his fine basic and strategic research came almost exclusively from organisations with utilitarian management obligations. But it was only such organisations that could make ongoing structural allowances for the difficulty of travelling to and from the remote alpine regions where Costin often spent many weeks on field trips.

Costin's eminence in alpine science began with work in the 1940s and 1950s that provided much of the primary descriptions of vegetation communities and soil types of the Australian Alps, especially in the Mt Kosciuszko²⁵ area. His later analyses built on his descriptive ecology and included catchment hydrology, glaciology and Carbon-14 dating. His most important environmental management papers dealt with the key issue of grazing in the alpine areas. In the mid-1950s Costin was the leader in the move to end 'snow leases', the leases that privilege certain families to graze sheep and cattle in the country above the snow line. Some bushwalking groups had expressed concerns about overgrazing in the fragile alpine country, but the political campaign to remove hard-hooved animals from its delicate soil structures was spearheaded by ecologists, especially those working for soil conservation agencies in Victoria and New South Wales. In Victoria, the pioneering ecologist, Maisie Fawcett, also succeeded in drawing political attention to the destruction of alpine ecosystems in the 1940s.²⁶ Fawcett's collaborator, John Turner, Professor of Botany and Plant Physiology at the University of Melbourne, who co-authored publications associated with the Victorian high-plains research, was also a great supporter of Costin and the environmental campaign for the Kosciuszko 'Tops' in the 1950s.

Costin was able to tackle snow leases more directly in New South Wales than Fawcett was in Victoria because he received strong support from the Snowy Mountains Authority. An enterprising Soil Conservation Service chief convinced the Authority that it had an interest in ensuring that soil drift did not threaten hydro-electric works.²⁷ Initially, in Costin's words, the Authority 'buggered up the country pretty well everywhere they went'.²⁸ But once the Snowy Mountains Authority decided that good soil conservation practices were in its interests, it not only softened its own approach to the environment, but it funded the CSIRO to establish an Alpine Ecology Unit at Island Bend, in the

middle of its works. Costin was appointed as Senior Research Officer in CSIRO's Alpine Ecology Unit because of his experience in the analysis of alpine ecosystems, including those near the Authority's works, which he had studied for his postgraduate work, sponsored by the New South Wales Department of Agriculture. His credentials as an outspoken opponent of grazing in the high country may well have enhanced his attractiveness to the Authority.²⁹ The Authority wanted the snow leases ended ostensibly for the sake of water-catchments critical to its hydro-electric works.³⁰

It was probably one of the best public relations exercises ever undertaken by such an authority. Not only did it take attention away from its own mistakes, it also served to point the finger at the local farmers as the 'poor land-users' who created environmental havoc by grazing hard-hooved animals on country that could not tolerate such treatment. 'Snow leases' have been central to environmental protests in Australia on and off ever since, especially in Victoria where the mountain cattlemen and cattlegirls (as they call themselves) still have limited use of the high country.³¹ Yet, until recently, very few activists or scholars criticised the destruction of alpine environments caused by the Snowy Mountains Authority itself, which is on a much grander scale.³²

The CSIRO 'Kosciuszko School', as the Alpine Ecology Unit is often called, has earned its right to the title 'School' because alongside its applied research brief, it has also provided leadership and support to many postgraduate students tackling ecological tasks in the high country.³³ Costin's first research focused on the Snowy Mountains Authority's needs, considering vegetation and soil management in relation to water yield in the alpine area.³⁴ The experimental plots he established in the 1950s are still monitored and are used for considering the effects of the latest problem land-users, the tourists, who now flock to Mt Kosciuszko and surrounding areas in thousands.³⁵ The soundly analysed plots have also provided longitudinal information which has backgrounded a range of other recent scientific investigations, including the effects of 'greenhouse' and cloud-seeding experiments.³⁶

ECOLOGY AND ENVIRONMENTAL ACTIVISM

The Snowy Mountains Authority's 'public relations exercise' – the Alpine Ecology Unit – was not, however, without its problems. A crisis came in the late 1950s when it proposed a dam on Spencers Creek, near the summit of Mt Kosciuszko. This was not an essential dam, but a minor independent project which could bring hydro-electricity into the New South Wales grid relatively quickly, whilst other works were in progress. It was important to the Authority as a way of convincing New South Wales sceptics of the value of the main scheme, but not essential to its success.³⁷ Spencers Creek did not have sufficient water in its own catchment for hydro-electric purposes, so the Authority

proposed the building of aqueducts on both sides of the main range. Costin saw this proposal as a threat to continuing glaciological studies of the Mt Kosciuszko area.³⁸

The building of aqueducts was also a violation of National Parks values set out in the *Kosciuszko State Park Act* of 1944 and later amendments. This was in the days before a National Parks Authority existed, when each park was managed by a separate small committee. The Kosciuszko State Park Trust, which had official control over the area, was simply a small band of nominees and never a strong organisation. Its power had been further eroded by its changing membership during the 1930s and 1940s.³⁹ Costin and a number of other senior scientists put pressure on the Kosciuszko State Park Trust to declare up to ten percent of the land in its care a 'primitive area'. Such a declaration would legislatively preclude intrusions like aqueducts. Without the pressure from the scientists, the Trust would never have attempted to oppose the giant Snowy Mountains Authority, the 'great development' leader in Australia at the time.

A formal submission to the Kosciuszko State Park Trust was prepared early in 1958. It was entitled 'Proposed Kosciuszko Primitive Area' and was signed by fifty scientists, including thirty-six from CSIRO, eight from universities and six from other government authorities including the Australian Museum. The majority of these scientists were biologists with at least some ecological interests. The submission was quite explicit. The declaration of a primitive area was a scientific matter: 'the views of scientists should be presented on the location and management requirements'.⁴⁰ The document also proclaimed that:

successful management of the primitive area must be based upon sound ecological principles. To ensure this the scientists who have given their support to this submission are prepared to co-operate fully with park authorities in future management.⁴¹

The ecologists here represented the 'radical' view, taking on the biggest development scheme in Australia's history. Conservation in the 1950s was ecology, not just for the scientists, but also for the wider community. Organisations such as the Wild Life Preservation Society of Australia in its popular magazine *Australian Wild Life* in 1958 and 1959 strongly endorsed the right of scientists to take a leading role in matters of environmental management.

Although Costin and other activists appreciated the aesthetic values of the high country, these values were not used in the appeal for the preservation of the Kosciuszko Tops. The campaign was for the preservation of sites suitable for scientific study because of their 'naturalness'. Geological and vegetational sites were foremost in the appeal, not the scenic beauty of the area. In 1950s Australia an 'objective argument' based on science was seen to be the way to apply radical political pressure.

The conservative Australian Academy of Science supported the campaign to preserve the 'primitive' aspects of Australia's highest mountains, though it

distanced itself from the strongly worded 1958 proposal, preferring to make separate statements on the subject. The Academy had already published a general report on the High Mountain Catchments of New South Wales and Victoria, edited by John Turner, who was one of its Fellows.⁴² This publication was followed by articles in the *Australian Journal of Science*.⁴³

The scientists' campaign was successful: the Spencers Creek dam was never built. Their 'victory' was also couched in scientific language: the 'important glaciological sites' around David Moraine and Mt Twynham were spared inundation. The fact that aqueducts are very unsightly was almost certainly the key to the hearts of the campaigners, but this was not mentioned. The parameters of the debate were scientific, ensuring scientific hegemony over the discussion. Perhaps, too, the scientists were aware of their political credibility within the Snowy Mountains Authority itself. The Authority's 'conservation conscious' image, bought at some expense through the funding of the Alpine Ecology Unit would have been seriously tarnished by an open rift with the senior scientific community.

Although it was a grand victory for science and the mountains, the 'primitive area' decision was not advantageous to Costin personally. He was a signatory of the 1958 report, and his Snowy Mountains Authority-sponsored work informed the Turner report. As he put it: 'The SMA [had] plugged in quite a bit of money until that primitive area thing came out and they promptly scrubbed the money [for the Alpine Ecology Unit]'.⁴⁵ Costin thought he was going to lose his job but at the last minute CSIRO found the money to continue his appointment. Costin was grateful to stay in Canberra as a major move would have been very difficult for him at that time with six children under five – including triplets and twins. The federal government by underwriting the Alpine Ecology Unit through CSIRO, also indirectly 'bailed out' the conservation conscious image of the Snowy Mountains Authority. The rift between conservation scientists and the Authority never reached headlines.

CONSERVATION AS APPLIED ECOLOGY

The campaigns of the 1950s established the right of scientists to speak on behalf of nature. The science of ecology emerged throughout the western world in the late 1960s and early 1970s as the 'voice of nature'. But the 'age of ecology' and the ecological movement were part of a wider counterculture, rather than something which emerged directly from the science. Nonetheless, some scientific ecologists welcomed the new popularity and sought to embrace it as a new phase of the 1950s conservation movement. In 1965, the Oxford ecologist, H.N. Southern, expressed concern about the 'dangerous' increase in population and the corresponding diminution of resources, and sought a 'wise principle of coexistence between man and nature', mediated by scientific ecologists. South-

ern argued that this principle was 'conservation' and conservation was 'applied ecology'. The definition of the population/resource problem as 'ecology' translated directly for Southern into a justification of more funds for (scientific) ecological research.⁴⁵ The massively well-funded International Biological Program's (IBP) effort in ecology was justified by a similar logic.

The treating of conservation and ecology as synonymous was common throughout the western world. It was particularly strong in Australia because it reflected the fact that scientific ecology had strong continuing links with agencies of natural resource management. The conflation of the terms was often politically convenient for practitioners of both. The CSIRO ecologist Francis Ratcliffe, for example, who was a prime mover in the establishment of the ACF in 1965, firmly believed that conservation was science, and that the science of ecology was central to all conservation decisions. He was puzzled when he sought scientific advice on the question of whether Lake Pedder in Tasmania should be flooded, and discovered that none of the Executive of the Tasmanian Conservation Trust were scientists. He was so convinced of the identity of conservation and science that he sought to keep the ACF at arms length from the Lake Pedder debate until he could get advice from a reputable scientist on the subject.⁴⁶

Radical ecology brought with it the need to consider cultural and aesthetic arguments, as well as democratic participation in conservation debates. The forestry professionals felt this change most acutely and struggled to justify their place in a debate where all the parameters seemed to change overnight. In Australia, Richard and Val Routley's book of 1974, *The Fight for the Forests*, was the catalyst for admitting values other than scientific and economic to debates about forestry practice. Foresters were appalled by the book which criticised clear-felling on both scientific and aesthetic grounds and questioned the extensive planting of *Pinus radiata* sponsored by the Commonwealth government. The book was very unpopular with the forestry establishment. The Routleys claimed they were subjected to intellectual suppression (through limited library rights) by the Australian National University's School of Forestry.⁴⁷ This new 'war' with foresters, seemingly on the 'wrong side,' was a source of particular tension for many ecologists. Foresters and ecologists often worked together. Some, like Peter Attiwill, belonged in a sense to both groups. Attiwill trained as a forester and paid back a bond to the Victorian Forests Commission in order to pursue a doctorate in ecology in the United States of America. The perceived oppression of foresters by radical environmentalists has angered and politicised some practising ecologists to take backlash positions.

Other ecologists feel flat, de-politicised and disempowered. The networks of the new environmentalists do not privilege them as senior scientific ecologists in the way the utilitarian conservation networks did. It was not the fact that ecology was being directed towards 'quality of life' concerns that disturbed them. Many of them had always understood it in those broad terms, even if they used scientific jargon to mount their political arguments.

In the late 1980s, the Australian Academy of Science sought to weigh into the debates about the environment through a series of conferences sponsored by the distinguished international virologist, Professor Sir Frank Fenner and his wife, Mrs Bobbie Fenner. Fenner is not an ecologist, but his interest in ecological matters dates back to the 1950s and earlier.⁴⁸ He has a direct lineage with the 1950s scientific activists, as he was Secretary, Biological Sciences in the Academy of Science in 1958 when the Kosciuszko Tops debate was at its peak. Fenner's recent involvement has tended to emphasise 'science' as opposed to professional ecology, and suggests another route by which scientists can assert hegemony in environmental discussions. Under the auspices of the Academy, the environment becomes a subject for the generalist scientist rather than the ecologist *per se*.⁴⁹

Some ecologists, too, saw their environmental activism as part of their role as scientist in general, rather than ecologist in particular. They were comfortable with the notion of science as an important cultural activity, and their visions of its role in society were informed by this. Eminent Melbourne ecologist David Ashton, for example, commented:

I think that the science of ecology is so fundamental that we have to, in our urban environments anyway, take in not only the economics but the sociology, all the interactions in the human level (which) have been mirrored in the animal and plant level... We need things to support us. We need open spaces. We can't just have a concrete jungle or you get people going nuts ... we've got to take cognisance of our human ecology – our relation to our environment, and this is a man-made environment, so we have to think about how we react to it.⁵⁰

Ashton, however, has serious reservations about radical ecology and the green political movement. The shift in the definition of 'experts' and the revised power relations has left him concerned that the decisions are now out of the hands of science, something he regards as undesirable. His views mirror those of his mentor, John Turner, whose own scientific activities were inextricably linked with concerns about the social fabric and education. But Turner, was 'too busy' to spend the time attending flat-hierarchy committees which shared power in a 'democratic' way and this led him to join the spate of resignations from the ACF in 1973.⁵¹ Fundamentally, Turner and Ashton assumed that their scientific authority gave them a cultural status that should be trusted. Their difficulties were not with the political and cultural resonances of science, but with a new environmental movement that demanded popular participation in framing the activist agenda.

The science of ecology in Australia has been nurtured in a strongly utilitarian context, and many practising scientists have taken for granted its domination by conservation science professionals. The culture of bureaucracy contrasted sharply with the 'public participation' demanded by the green political movement, and this contrast has contributed significantly to the discomfort of practitioners who saw the media identifying the term 'ecology' with new

environmental politics. Australian ecologists have seen profound structural changes in a short time. They were the radical reformers in the 1940s and 1950s and the central experts in control of the government's conservation agenda in the 1960s and 1970s. Many, however, feel only marginality and frustration in the 1980s and 1990s.

The deep suspicion of science and technology that is associated with 'radical ecology' makes rapprochement between 'utilitarian scientists' and 'environmental activists' difficult in the 1990s context. The caricature of the 'greenie' as 'anti-science' does harm to both parties. One retired forester put it heatedly '[greenies] are just bloody ratbags... but they're the ones the governments are listening to'.⁵² The polarised and oppositional relations between greenies and foresters that emerged in the 1980s mask their shared heritage and this is regretted deeply by those with sympathy for both. Since the green revolution, many ecological scientists have felt reduced to mere 'informants', or worse, unconsulted, witnessing rather than shaping and participating in debates. Environmental historians can ensure that the historically deep links between scientific conservation and radical ecology are not forgotten. Identifying a common heritage may lead to a more thoughtful and precise analysis of what aspects of the 'system' are problematic for the Earth.

NOTES

Dr Libby Robin is Australian Research Council Postdoctoral Fellow in the Humanities Research Centre, Australian National University, Canberra, Australia.

An earlier version of this paper was presented at the biennial conference of the International Society for the History, Philosophy and Social Studies of Biology, Leuven, Belgium on 21 July 1995.

¹ Statistics from the *Year Book of the Commonwealth of Australia*, 1944-45 (no. 36), and 1961 (no. 47), pp. 455 and 290, respectively. Australian population growth has continued, though with significantly less jingoism since the 1970s. The 1997 population is about eighteen million.

² Dingle and O'Hanlon (1996)

³ Collis (1990), pp. 35-38; also McHugh (1989). The 'official' Snowy Mountains Authority history of the scheme is Wigmore (1968). The federal government drove the scheme through against the wishes of the New South Wales government, in particular, but by the late 1950s, it had the blessing of all the States affected by it.

⁴ Collis (1990) p. 40.

⁵ Borthwick (1990) related this memory as part of what motivated him to set up Victoria's first Ministry of Conservation in 1973. See also Lake (1987).

⁶ (F.G. Elford), 'Ped' (1945) p. 351.

⁷ This phenomenon is well documented for both the United States (Nelkin 1971, 1975, 1977, 1987) and the United Kingdom (Sheail 1987, especially pp. 224-262).

⁸ For example, Attiwill (1997), Ansell (1993).

⁹ Attiwill (1991) p. 1.

¹⁰ Robin (1994a).

¹¹ See Australian Conservation Foundation (1972) for the analysis of the Pedder dispute by the 'new wave' ACF. Some of the new incoming Executive were also scientists, but generally not as hierarchically senior as those who left.

¹² Robin (1993a).

¹³ Attiwill (1991) p. 1.

¹⁴ Mitman (1995).

¹⁵ Gottlieb (1993), p. 79.

¹⁶ For more on the structure of the discipline of ecology in an earlier period, see Robin (1997). There is an established literature about the effects of isolation on Australian science, especially physics. Examples include Home (1984); Jenkin (1985); Chambers (1991).

¹⁷ General Source: *The Commonwealth Universities Yearbook, 1993*. Further details were ascertained (in August 1994) by a brief survey of relevant university departments. Only Monash University in Australia has a department of 'ecology' (created by a merger of Botany and Zoology in 1990, and entitled 'Ecology and Evolutionary Biology'). [Professor J. Warren, Chairman of Ecology and Evolutionary Biology, letter to L. Robin, 23 August 1994]. Only two professorial chairs (at other universities) are earmarked 'ecology'. At the University of Sydney there is a Chair of Experimental Ecology established in 1992 as a personal chair for A.J. Underwood, and named by him. [Professor R.G. Hewitt, Dean, Faculty of Science, letter to L. Robin, 28 August 1994]. In the same year, a Chair of Ecology was established at Griffith University in Queensland (occupied by Professor Roger Kitching). [D. Smith, Faculty of Environmental Sciences, letter to L. Robin, 26 August 1994].

¹⁸ Specht (1981) esp. p. 410.

¹⁹ Cittadino (1980) p. 191.

²⁰ Cited by Bowler (1992) p. 365. Another example was Moore (1920).

²¹ In the 1950s, State-funded soil conservation agencies and also CSIRO Wildlife Survey branch (later the Division of Wildlife and Ecology) and the Alpine Ecology Unit were all important supporters of ecological research. Departments of agriculture and forestry were also important. While conservation is not the 'primary mission' of CSIRO, the rabbit research of Wildlife Survey and the soil conservation work of the Alpine Ecology Unit were central to those particular branches. In the period since the 1950s, the (state and federally funded) national parks services have also become important employers of ecologists.

²² Osborn (1925); Osborn et al. (1932); Robertson (1986), pp. 116-119.

²³ Gillbank (1991, 1993); Robin (1993b) pp. 229-240.

²⁴ This information is based on A.B. Costin's *curriculum vitae*, supplied to Libby Robin at the time of interview (19 April 1994).

²⁵ Gillbank (1991; 1993).

²⁶ Formerly Mt Kosciusko.

²⁷ Breckwoldt (1988) pp. 100-105; Griffiths and Robin (1994) p. 7.

²⁸ Costin (1994), Tape 1, side B.

²⁹ In 1955 he prepared a major report to Victoria's Land Utilization Advisory Council on the detrimental effects of cattle grazing in the Bogong High Plains. (See Gillbank, 1991, pp. 32, 38).

- ³⁰ Costin (1954); Breckwoldt (1988).
- ³¹ Griffiths (1991).
- ³² One recent critic is Lawrence (1990; 1992; 1994).
- ³³ The term 'Kosciusko School' was used by Williams (1985) in the acknowledgements for his thesis. Many other students have received informal support from Costin and his associates. (Roger Good, personal communication, April 1994).
- ³⁴ This resulted in a series of papers on the catchment hydrology of the area: Costin et al. (1959, 1960, 1961a, 1961b, 1964).
- ³⁵ Griffiths and Robin (1994).
- ³⁶ Harasymiw (1991); Costin (1994); Griffiths and Robin (1994).
- ³⁷ Wigmore (1968), pp. 61-2.
- ³⁸ Glaciological work had been undertaken in this area by Edgeworth David and others since the first decade of the twentieth century. (Browne, 1914, 1943; Jennings and Costin, 1977).
- ³⁹ Breckwoldt (1988), pp. 95-99.
- ⁴⁰ 'Proposed Kosciusko Primitive Area', roneoed typescript, Australian Academy of Science Archives, Canberra [File No. 1002, National Parks Committee], p. 3.
- ⁴¹ Ibid., p. 2.
- ⁴² Turner (1957).
- ⁴³ Australian Academy of Science (1961); Browne *et al* (1965).
- ⁴⁴ Costin (1994).
- ⁴⁵ Southern (1965) pp. 6-7.
- ⁴⁶ Robin (1994a).
- ⁴⁷ Routley and Plumwood (1986). Val Routley now writes as Val Plumwood. Richard Routley later changed his name to Richard Sylvan.
- ⁴⁸ Fenner(1989) comments that his interest in the environment began when he accompanied his father Charles Fenner on geomorphological trips in his childhood from 1928 onwards. In the same paper, however, he comments that his concern with the role of science in the management of the environment began in the Academy of Science, and continued through his involvement in the establishment of the Centre for Resource and Environmental Studies (CRES) in Canberra (p. 3). Also discussion with Libby Robin 21 April 1994.
- ⁴⁹ The Fenner conferences have considered the Australian Alps National Parks in 1988, (Good, 1989), Protection of Marine and Estuarine Areas in 1991, (Ivanovici, Carter and Olsen, 1991), the Conservation of Biological Diversity in Australia in 1992, (Australian Academy of Science, 1993) and a Conservation Strategy for the Australian Antarctic in 1993, (Handmer and Wilder, 1993).
- ⁵⁰ Ashton (1991) p. 23; Also discussion 10 March 1994.
- ⁵¹ Robin (1994b).
- ⁵² Middleton (1990) p. 16.

REFERENCES

- Ansell, Kay 1993. 'Risen from the Ashes', *The Age*, 16 February, p. 11.
- Ashton, David 1991. Transcript of interview with Libby Robin, 30 October.
- Attiwill, Peter 1997. 'Letters to the Editor', *The Age*, 25 February, p. 11.
- Attiwill, Peter 1991. Transcript of interview with Libby Robin, 21 October.

- Australian Academy of Science 1961. 'The Future of the Kosciusko Summit Area: A Report on a Proposed Primitive Area in the Kosciusko State Park', *Australian Journal of Science*, **23**: 12.
- Australian Academy of Science 1993. *Biological Diversity: Its Future Conservation in Australia*. Canberra: AAS.
- Australian Conservation Foundation 1972. *The Pedder Papers: Anatomy of a Decision*. Parkville: ACF.
- Borthwick, W.A. 1990. Transcript of interview with Libby Robin, 8 June.
- Bowler, Peter 1992. *The Fontana History of the Environmental Sciences*. London: Fontana.
- Breckwoldt, Roland 1988. *The Dirt Doctors: A Jubilee History of the Soil Conservation Service of New South Wales*. Sydney: SCSNSW.
- Browne, W.R. 1914. 'The Geology of the Cooma District: Part I' *Proceedings of the Royal Society of New South Wales*, **48**: 172-222.
- Browne, W.R. 1943. 'The Geology of the Cooma District, NSW: Part II' *Proceedings of the Royal Society of New South Wales*, **77**: 156-172.
- Browne, W.R., A.B. Costin, M.F. Day and J.S. Turner, 1965. 'The Kosciusko Primitive Area', *Australian Journal of Science*, **27**: 7.
- Chambers, David Wade 1991. 'Does Distance Tyrannise Science?' in R.W. Home and Sally Gregory Kohlstedt (eds) *International Science and National Scientific Identity*. Dordrecht: Kluwer, pp. 19-38.
- Cittadino, Eugene 1980. 'Ecology and the Professionalization of Botany in America, 1890-1905', *Studies in the History of Biology*, **4**: 171-198.
- Collis, Brad 1990. *Snowy: The Making of Modern Australia*. Rydalmere, NSW: Hodder and Stoughton.
- Commonwealth Universities Yearbook*, 1993.
- Costin, A.B. 1954. *A Study of the Ecosystems of the Monaro Region of New South Wales: with special reference to Soil Erosion*. Sydney: Soil Conservation Service, New South Wales.
- Costin, A.B., D.J. Wimbush, D. Kerr and L.W. Gay 1959. *Studies in Catchment Hydrology in the Australian Alps I*, CSIRO Division of Plant Industry, Technical Paper No. 13, Canberra.
- Costin, A.B., D.J. Wimbush and D. Kerr 1960. *Studies in Catchment Hydrology in the Australian Alps II*, CSIRO Division of Plant Industry, Technical Paper No. 14, Canberra.
- Costin, A.B., L.W. Gay, D.J. Wimbush and D. Kerr 1961a. *Studies in Catchment Hydrology in the Australian Alps III*, CSIRO Division of Plant Industry, Technical Paper No. 15, Canberra.
- Costin, A.B. and D.J. Wimbush 1961b. *Studies in Catchment Hydrology in the Australian Alps IV*, CSIRO Division of Plant Industry, Technical Paper No. 16, Canberra.
- Costin, A.B., D.J. Wimbush and R.N. Cromer 1964. *Studies in Catchment Hydrology in the Australian Alps V*, CSIRO Division of Plant Industry, Technical Paper No. 20, Canberra.
- Costin, A.B. 1994. Taped interview with Libby Robin, 19 April.
- Dingle, Tony and Seamus O'Hanlon 1996. 'Ten per cent Modern? Reshaping Melbourne's suburban homes, 1945-1960', in Tom Griffiths (ed.) *People and Place: Australian Heritage Perspectives*. London: Sir Robert Menzies Centre for Australian Studies, pp. 25-52.

- (Elford, F.G.), 'Ped' 1945. 'Ecology in General Science', *Wild Life*, 7 (November).
- Fenner, Professor Sir Frank 1989. 'Introduction', in Roger Good (ed.) *The Scientific Significance of the Australian Alps*. Canberra: Australian Alps Liaison Committee and Australian Academy of Science, pp. 3-5.
- Gillbank, Linden 1991. *The Biological Heritage of Victoria's Alps: An Historical Exploration*, Mimeo Report (72pp.) prepared for the Historic Places Section, Department of Conservation and Environment, Melbourne.
- Gillbank, Linden 1993. 'Into the land of the Mountain Cattlemen: Maisie Fawcett's ecological investigations on the Bogong High Plains', in Farley Kelly (ed.) *On the Edge of Science: Australian Women in Science*. Melbourne: Text Publishing, pp. 133-154.
- Good, Roger (ed.) 1989. *The Scientific Significance of the Australian Alps*. Canberra: Australian Alps Liaison Committee and Australian Academy of Science.
- Gottlieb, Robert 1993. *Forcing the Spring: The Transformation of the American Environmental Movement*. Washington DC: Island Press.
- Griffiths, Tom 1996. *Hunters and Collectors: The Antiquarian Imagination in Australia*. Melbourne: Cambridge University Press.
- Griffiths, Tom and Libby Robin 1994. *Science in High Places: The Cultural Significance of Scientific Sites in the Australian Alps*. Canberra: Australian Alps Liaison Committee.
- Handmer, J. and M. Wilder (eds) 1993. *Towards a Conservation Strategy for the Australian Antarctic Territory*. Canberra: Australian Academy of Science.
- Halasymiw, Bohdan 1991. *Notice of Intention for a Cloud Seeding experiment in the Snowy Mountains Region of South East New South Wales*. Melbourne: State Electricity Commission of Victoria, on behalf of Snowy Mountains Council.
- Home, R.W. 1984. 'The Problem of Intellectual Isolation in Scientific Life: W H Bragg and the Australian Scientific Community, 1886-1909', *Historical Records of Australian Science*, 6(1): 19-30.
- Ivanovici, A., D. Carter and M. Olsen (eds) 1991. *Protection of Marine and Estuarine Areas*. Canberra: Australian Academy of Science.
- Jenkin, John G. 1985. 'Frederick Soddy's 1904 Visit to Australia and the Subsequent Soddy-Bragg Correspondence: Isolation from Without and Within', *Historical Records of Australian Science*, 6(2): 153-169.
- Jennings, J.N. and A.B. Costin 1977. 'Stone movement through snow creep, 1963-1975, Mt Twynam, Snowy Mountains, Australia', *Earth Surface Processes*, 3: 3-22.
- Lake, Marilyn 1987. *The Limits of Hope: Soldier Settlement in Victoria 1915-1918*. Melbourne: Oxford University Press.
- Lawrence, R E 1990. 'The Interaction between the Environment, Land Use and Hydrology of the Bogong High Plains Area between 1850 and 1985', PhD thesis, University of Melbourne.
- Lawrence, Ruth 1992. 'Use and abuse of water in the Victorian alps', in Babette Scougall (ed.) *Cultural Heritage of the Australian Alps: Proceedings of the symposium held at Jindabyne NSW, 16-18 October 1991*. Canberra: Australian Alps Liaison Committee, 1992, pp. 295-308.
- Lawrence, Ruth 1994. 'Environmental Changes on the Bogong High Plains, 1850s to 1980s', in Stephen Dovers (ed.) *Australian Environmental History: Essays and Cases*. Melbourne: Oxford University Press, pp. 167-197.

- McHugh, Siobhan 1989. *The Snowy: the People behind the Power*. Port Melbourne: William Heineman Australia.
- Middleton, W G D 1990. Transcript of Interview with Libby Robin, 9 February.
- Mitman, Gregg 1995. 'High Over the Borders: Visions of Conservation from Pan-Americanism to the Arusha Conference', paper presented at the biennial conference of the International Society for the History, Philosophy and Social Studies of Biology, Leuven, Belgium, 21 July.
- Moore, Barrington 1920. 'The Scope of Ecology', Presidential address delivered before the St Louis meeting of the Ecological Society of America, 31 December, 1919. Reproduced in *Ecology*, **1**(1, January): 3-5.
- Nelkin, Dorothy 1971. 'Scientists in an Environmental Controversy', *Science Studies*, **1**: 245-261.
- Nelkin, Dorothy 1975. 'The political impact of technical expertise', *Social Studies of Science*, **5**: 35-54.
- Nelkin, Dorothy 1977. 'Scientists and Professional Responsibility: The Experience of American Ecologists', *Social Studies of Science*, **7**: 75-95.
- Nelkin, Dorothy 1987. 'Controversies and the authority of science', in H Trislan Engelhardt, Jr and Arthur L. Caplan (eds) *Scientific Controversies*. Cambridge: Cambridge University Press, pp. 283-293.
- Osborn, T.G.B., 1925. 'On the Ecology of the Vegetation of Arid Australia, No. 1. Introduction and General Description of the Koonamore Reserve for the study of Salt-bush Flora', *Transactions of the Royal Society of South Australia*, **49**: 290-297.
- Osborn, T.G.B., J.G. Wood and T.B. Paltridge, 1932. 'On the Growth and Re-action to Grazing of the Perennial Salt-bush, *Atriplex vesicarium*', *Proceedings of the Linnean Society of New South Wales*, **57**: 377-402.
- Robertson, Enid L. 1986. 'Botany' in C.R. Twidale, M.J. Tyler and M. Davies (eds) *Ideas and Endeavours – The Natural Sciences in South Australia*. Adelaide: Royal Society of South Australia.
- Robin, Libby 1993a. 'Of Desert and Watershed: The Rise of Ecological Consciousness in Victoria, Australia', in Michael Shortland (ed.), *Science and Nature: Essays in the History of the Environmental Sciences* (Monograph of British Society for the History of Science). Cambridge: Cambridge University Press, pp. 115-149.
- Robin, Libby 1993b. 'The rise of ecological consciousness in Victoria: the Little Desert dispute, its context and consequences', PhD thesis, University of Melbourne.
- Robin, Libby 1994a. 'Nature Conservation as a National Concern: the Role of the Australian Academy of Science', *Historical Records of Australian Science*, **10**(1): 1-24.
- Robin, Libby 1994b. 'The Professor and the Journalist: Scientists in Popular Conservation Campaigns', *Victorian Historical Journal*, October, pp. 154-168.
- Robin, Libby 1997. 'Ecology: a science of empire?' in Tom Griffiths and Libby Robin (eds) *Ecology and Empire: Environmental History of Settler Societies*. Edinburgh, Keele University Press, pp. 63-75.
- Routley, Richard and Val Plumwood 1986. 'The "Fight for the Forests" Affair', in Brian Martin, C.M. Ann Baker, Clyde Manwell and Cedric Pugh (eds) *Intellectual Suppression: Australian Case Histories, Analysis and Responses*. North Ryde: Angus and Robertson, pp. 70-73.
- Sheail, John 1987. *Seventy-five years in Ecology: the British Ecological Society*. Oxford: Blackwell Scientific.

- Southern, H.N. 1965. 'The Place of Ecology in Science and Affairs', *Proceedings of the New Zealand Ecological Society*, **12**: 5-9.
- Specht, Raymond L. 1981. 'Australia', in Edward J. Kormondy and J. Frank McCormick (eds), *Handbook of Contemporary Developments in World Ecology*. Westport, Connecticut: Greenwood Press, pp. 387-415.
- Turner, J.S. (ed.) 1957. *A Report on the Condition of the High Mountain Catchments of New South Wales and Victoria*. Canberra: Australian Academy of Science.
- Wigmore, Lionel 1968. *Struggle for the Snowy: the background of the Snowy Mountains Scheme*. Melbourne: Oxford University Press.
- Wild Life Preservation Society of Australia 1958, 1959. *Australian Wild Life* **3** (3 and 4).
- Williams, R.J. 1985. 'Aspects of shrub-grass dynamics on the Bogong High Plains (subalpine), Victoria', PhD thesis, University of Melbourne.