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A contribution to the ecological history of Nadgee Nature Reserve, on the south coast of New South Wales

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Introduction

When one of us (DL) was attending the annual scientific meeting of the British Ecological Society some 20 years ago, it was instructive to hear an astonished gasp from the audience when the speaker announced that he had found a patch of original British vegetation, never disturbed by people, stock or pest herbivores. The patch was about 1–2 metres long, much less than 1 metre wide, and located on a ledge at about the halfway point on a sheer cliff. The astonishment stemmed from the understanding that humans have affected and modified every part of Britain's terrestrial surface.

If we think on a world scale, Nadgee Nature Reserve, in the Eden region on the far south coast of New South Wales (NSW), is a rare gem because by European standards this large (20,671 ha) tract of forest is hardly disturbed by European occupation. It has been grazed by cattle, mainly on the heaths; there are two modest areas where farming has been briefly applied; and before Europeans there was an Aboriginal presence. Otherwise, it is a pristine area of immense beauty and one of biological wealth for scientists.

This paper is based on a tape recording of the recollections, gathered over five days in 2008, of Allan Fox, one of the people most responsible for achieving the reservation of Nadgee. It provides a glimpse of the state of the area around the time of reservation and of events before and after that time. Such a record is essential for ecologists who need to know the historical background of their research area to interpret their results and compare them with other areas, most notably the nearby forests of the Eden region that have been intensively logged since the advent of woodchipping. Woodchipping began on a trial basis in 1968 on the northern side of the intersection of Ireland Timms Road and Connection Road in Nadgee State Forest, and began full operation elsewhere in 1969. The first export was in 1970; that year is most commonly used to denote the beginning of the export woodchip industry from Eden.

Allan Fox recalls that his friend and colleague Allen Strom, both before and during his period on the NSW Fauna Protection Panel (set up under the NSW *Fauna Protection Act 1948*), drafted hundreds of proposals for nature reserves. Their evaluation was based on four themes: the geology of an area; the land-shaping processes (geomorphology); the colonisation of the place by plants and animals (ecology); and the colonisation of the place by humans (anthropology). Nadgee Nature Reserve was no exception. The role of Allen Strom is integral to this historical account, and Allan Fox has acknowledged that role in his forthcoming book *Strommy* (Fox, in press). Allen Strom (1978) wrote a small article in the *National Parks Journal* in which he asked, 'Nadgee: Will the wilderness survive?' By wilderness he meant the Reserve as he first saw it in 1954 and as had been maintained by ranger David Hope. The article was in fact about David Hope and his years in the Reserve as the ranger (1964–1978). Allen Strom briefly mentioned his trip in February 1954 into what became Nadgee Nature Reserve with Charles Witheford and Allan Fox. Strom recounted that at the time, 'Allan and I pondered the question... can this little corner of the state be kept as it is now?' Strom ended his paper with the question: 'It is now almost a quarter of a century since I first saw Nadgee. David Hope made it possible to keep that picture intact. Will his successors do the same?' Our paper provides some answers to these questions.

An ecological history since European settlement

A primary purpose of an ecological history is to utilise the historical record to construct an ecological appraisal of an issue. This could be for a species, a local area, or a nation. Some history is presented in the Plan of Management of Nadgee Nature Reserve (National Parks and Wildlife Service NSW 2003), prepared by Lyn Evans, ranger for the Reserve. The plan points to elements of the relevant history, but it was not designed to be an historical document. The full history of Nadgee is yet to be written. This paper is a step in that direction, with the emphasis being that of ecologists (particularly HR, DL and PC) and with a long (43 years) history of ecological research on wildlife in Nadgee Nature Reserve.

Prineas and Gold (1983) have a chapter on Nadgee in their book *Wild Places*, which crucially identifies the historical context in which the Reserve is framed. They put forward a strong view on the logging for woodchips in the adjacent State Forests: 'West of the protective boundary of Nadgee Nature Reserve it is nearly all state forest and fodder for the woodchip mill that squats repulsively on the shores of Twofold Bay' (p. 118). They add (p. 127) that: 'The head of the Merrica River Valley was laid bare in the 1970s by clearfelling, something for which there would have been no economic incentive in the days before woodchip.' Allan Fox (1970) wrote a report (unpublished) on the impact of woodchipping on the wildlife of the County of Auckland, which approximates the Eden region, for the NSW Minister for Lands, Tom Lewis. Lunney (2005) records the bitter debate over woodchipping in the Eden region as reflected in print media. Three specific ecological histories relevant to the Eden region have been published. Lunney and Leary (1988) examines the changes in the fauna of the Bega district since the first European settlement in 1830; Lunney and Matthews (2002) outlines the land tenure changes; and Lunney and Moon (1988) describes the fire and logging history of Mumbulla State Forest from long before it became a State Forest and subject to woodchipping.

If an area is selected for reservation and ecological study primarily because of its relatively undisturbed condition, as Nadgee is, then it is especially important to know its usage history, and how significant this primary value might be. A private consultancy, Ecology Australia

(1998), prepared a report for the New South Wales National Parks and Wildlife Service (NPWS) and Parks Victoria on the intrinsic values of the Nadgee/Howe area of south-eastern Australia. The report concluded that the near-pristine condition and remote location of the Nadgee/Howe area accord the area pre-eminence as the best example of undisturbed biophysical systems on the south-eastern Australian coast. The report further notes that the coastal complex is of outstanding significance by any standard, supporting widespread national values of all the major attributes assessed. The report considers the coastal complex to be of international significance as it represents a range of national values not repeated elsewhere in Australia. We note that the study plot where Recher et al. (2009) have been studying small mammals since 1969 is in this area of international significance. We also note that the report excludes the logged headwaters of the Merrica River.

Detailed ecological histories enable researchers to interpret events that they are studying, such as droughts, fires or changes in vegetation, faunal groups or water quality, with more certainty as to what had occurred prior to their current study. For example, when Scanes et al. (2011) wrote that Nadgee Lake and the Nadgee and Merrica Rivers are 'believed to be among the least disturbed estuaries in NSW', they were relying on an incomplete history of the Reserve. It might be noted that only the Nadgee River and Little River have undisturbed catchments. Parts of the Merrica catchment were logged in the mid-1970s, and the Merrica was muddy during the flood years in Nadgee in 1974 and 1975 (DL personal observation).

Australia's first recognised naturalist, Joseph Banks, on the voyage with Lieutenant James Cook, sailed past Nadgee Nature Reserve at night on 19 April 1770 (Beaglehole 1963). He recorded the land to the south, now Point Hicks, Victoria: 'it was made in sloping hills, coverd in Part with trees or bushes, but interspersed with large tracts of sand'. In the evening, the ship was off Cape Howe. The next morning, Banks recorded: 'The countrey this morn rose in gentle sloping hills which had the appearance of the highest fertility, every hill seemed to be cloth'd with trees of no mean size; at noon a smoak was seen a little way inland and in the evening several more.' By then, Banks was off Mount Dromedary, just north of the Eden region. By interpolation, the quote applies to an area north of Nadgee Nature Reserve, but well within the Eden region.

Michael Devine (2005) wrote a dissertation on the region, mostly about the small settlement of Wonboyn on Wonboyn Lake just north of the Reserve, but he included some information about Nadgee. The purpose of the dissertation, given to Allan Fox by a friend in Wonboyn in 2008, is not known, nor for which institution it was written, or whether it was even submitted. Devine wrote that towards the end of the 19th and the beginning of the 20th centuries, many blocks had been taken up around the Wonboyn Lake, all for farming. But in 1924–25 there was a new venture; a guest house was established called Wonboyn House. It advertised 'boating, shooting, fishing, river and surf bathing, etc. Oysters a-plenty. Launches and skiffs available.' Devine says 'It appears that apart from great fishing and beautiful scenery, people (mostly men) were attracted by the "roughing it" aspect of these holidays.' In the early 1940s there was a second guest house called Kosy Cottage, which is where Allan Fox and party stayed in 1954.

Disaster Bay is a substantial bay near Wonboyn. The northern border of the Reserve strikes the ocean at the bay. Devine says, 'In 1802 Matthew Flinders, master of the *Investigator,* put a boat ashore for water. None of its crew of eight ever came back, an event which reportedly gave the name to Disaster Bay.'

Devine mentioned the Palmers, one of two families (the other being the Newtons) that lived for a period in the early part of the 20th century in what became Nadgee Nature Reserve. Devine records that in 1904, Lawrence Palmer married Eliza Newton. About 1913 he took up a type of lease of 1,630 acres and established a homestead near what Devine said was Nadgee Lake, but was Nadgee River. They had four children: Nancy (1910), Miriam (1913), Desmond (1915) and Annette (1923).

Miriam was ill throughout her life and died at 17 years of age in 1930. Desmond also died young, although his death is not recorded in the NSW Index of Births, Deaths and Marriages, so its date is not known. The father Lawrence, always known as Jimmy, was described by Fox as a 'grumpy old fellow' in the 1950s, when he would have been in his seventies. Devine says that when the Palmers abandoned their homestead in the 1930s they maintained the lease for several more decades. The lease was finally revoked in 1964.

William Newton left Nadgee and moved to Sydney where he died in

1935 in his nineties, but his son, Wally, continued to work in the Nadgee, growing seeds for Yates (seed dealers) because the Newtons' area was disease free. This activity was finally dropped due to the continuous depredations of swamp wallabies *Wallabia bicolor*, red-neck wallabies *Macropus rufogriseus*, and grey kangaroos *Macropus giganteus*. There are various stories as to what happened to the Newton homestead, which was located on Newtons Flat at Newtons Beach—one is that it was destroyed by fire in 1933, and another that it was washed away in a storm. Wally was, however, still in the Nadgee in 1939, when he sat down under a tree to rest and never woke up. Todd McCamish was told by his brother, Albert, who was living at Wonboyn at the time, that they 'brought him out of the Nadgee on a shovel because that was all that was left after the goannas ate him.' After the 1950s, Newton's lease was not renewed.

Devine's (2005) account is one of the personal history of the families, and the environmentally relevant aspects of his history are that the Newton and Palmer families were living/farming/grazing cattle in Nadgee from just before the First World War to just before Second World War, with grazing continuing until 1974. There were no records of stock numbers, but one can glean that the two families did not work large areas of land, and that the grazing was confined to the heaths. The isolation points to a low level of exploitation, one more consistent with farming, such as for seed beans, at a low level of technology. Thus, the impact on Nadgee was neither extensive nor profound.

Bill Brown produced *Looking For Blackfellas Point* for the ABC in August 2004, with the aim of publicising a book of the same title (McKenna 2002). The text on the ABC website reads as follows: 'Non-indigenous Australians, from sealers to squatters, settlers and sea-changers, when they first settle "in the bush" may at some time wonder who was there before. When Mark McKenna asked this question of his new home—looking across the Towamba River to the arc of bush that is Blackfella's Point—on the south coast of NSW—his discoveries of the locale go far to answering those national wonderings about what happened between the European settlers and the thriving Aboriginal societies who first knew the land, how we learnt to forget, and, finally, how we came to confront the truth about our past and build a movement for reconciliation.' McKenna's (2002) book used the term *Blackfella's Point* as his opening reference. The Point is on the Towamba River,

Eden, which has its mouth just north of the Nadgee Nature Reserve, and empties into Twofold Bay. It is a river that drains land that has been farmed by Europeans since early in the 19th century and is now quite different to the rivers in Nadgee Nature Reserve. McKenna's book begins to fill a gap in the ecological history of Nadgee Nature Reserve, an area no doubt of sustained occupation by Aboriginal people. Thus, when the Reserve was dedicated as a Wilderness in 1994, with further reservation in 1997, it meant that the Aboriginal history did not play a role in that decision, except for a small area, Greenglades on the Wonboyn dunes section of the Nature Reserve.

Any full account of the ecological history of Nadgee would seek to explore every reference, but the focus in this paper is on 1954, because it was the pivotal year in what led to the setting aside of Nadgee as a Nature Reserve. This is the year that Allan Fox and Allen Strom saw the ecological value of Nadgee in a modern sense, although the word 'ecology' was then almost unknown. Fox and Strom were leaders in seeing a modern Australia, with increasing needs for nature conservation. It was the vision of people like Fox and Strom that gave impetus to the dedication of large tracts of land as conservation reserves that are now national treasures and will be more so in the future.

Nadgee Nature Reserve

Australia's first National Park, Royal National Park just south of Sydney, NSW, was established in 1879 and was among the very first of the world's National Parks. It has had multiple purposes, public recreation being the primary justification in 1879, but its nature conservation values as an urban National Park are now widely appreciated. The notion subsequently developed that there should be other locations where nature conservation would be paramount. In NSW, this found definition in the *Fauna Protection Act 1948*, with the concept of Faunal Reserves, now known as Nature Reserves. Nadgee Nature Reserve, in the south-east corner of NSW, was among the earliest to be established. Initially 11,331 ha, Nadgee Nature Reserve has grown in size (Figure 1) and is now 20,671 ha, 22 km long on a north-south axis, and up to 15 km wide. Most of it was gazetted as Wilderness in 1994 and 1997 (Figure 2). This occurred amid controversy because it changed the

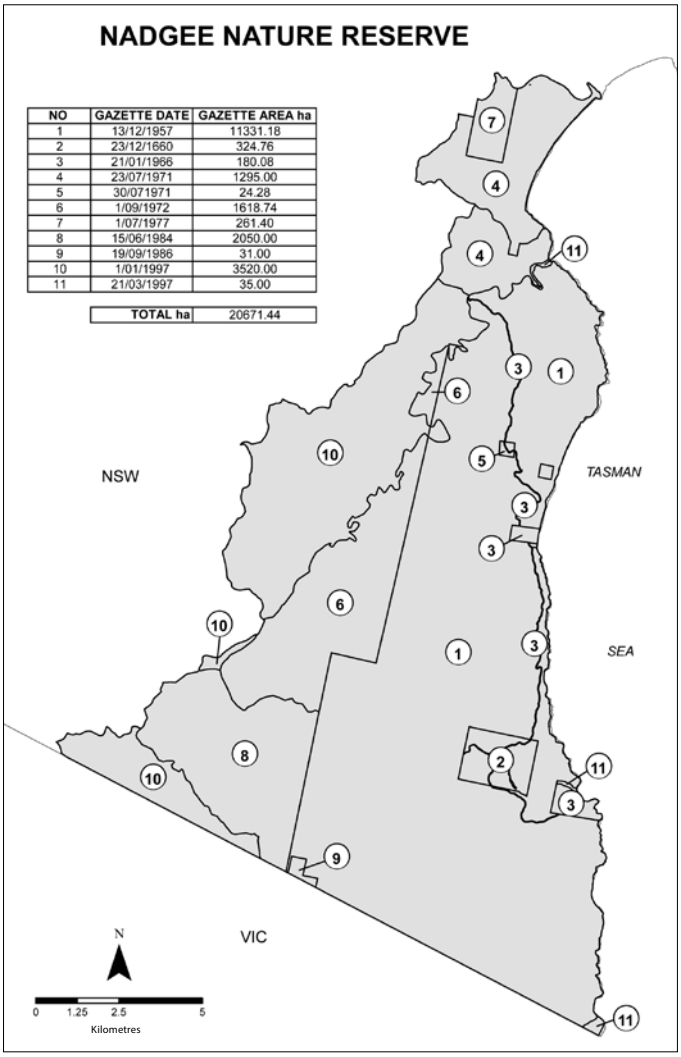

Figure 1: Nadgee Nature Reserve. The date and area gazetted are shown in the map and the table. The reserve is in the far south-east corner of New South Wales, with the southern boundary being the border with Victoria and the eastern boundary being the Pacific Ocean. Map prepared by Cathy Johnson, land information officer, National Parks and Wildlife Service, Office of Environment and Heritage, New South Wales. Places mentioned in the text, although not marked on this map, may be located as follows: Wonboyn Beach is the stretch of coastline at the northern end of the Reserve; Newtons Beach is about midway between the words 'Tasman' and 'Sea' and on the coast next to the rectangle marked with a 3 and a line; Little River has its mouth in line with the word 'Sea'; Nadgee River mouth is situated between the 11 and the 3 on the coast from the rectangle marked 2; Harry's Hut is at the site of 2; and Nadgee Lake, or Salt Lake, is almost midway between Nadgee River mouth and the Victorian border.

original intent of Nature Reserves, and of Nadgee specifically, from places where nature conservation was paramount to greater emphasis on recreational activity. As a result, the research value of Nadgee was diminished (Recher and Lunney 2003).

Nadgee's eastern border is the Pacific Ocean, its western border a State Forest named Nadgee, and its southern border the State of Victoria. The far south-east of the Reserve is Cape Howe, 'corner' of the Australian continent, so that the weather blowing across Nadgee is often stormy. Apart from the frequent storms, Nadgee has a temperate climate with mild winters and summers, although the annual pattern is very variable. Rain falls throughout the year, but droughts of a few months to a few years are common. The two main rivers draining Nadgee (Nadgee and Merrica) are unique in that their small catchments contained no settlement apart from the Palmers on the Nadgee River. Their openings to the ocean are frequently barred by sand, and both have small estuaries. Floods occur both during drought, when the river is blocked, and when heavy rains fall.

Nadgee Nature Reserve is heavily forested. Dry sclerophyll forest, dominated by silvertop ash *Eucalyptus sieberi* and yellow stringybark *E. muelleriana* in association with bloodwood *Corymbia gummifera* and *Angophora floribunda*, occurs on ridges and slopes. On lower slopes and along drainages there is wet sclerophyll forest, with rainforest elements, where monkey gum *E. cypellocarpa* is abundant. Along the coast are extensive shrublands or heaths dominated by species of *Banksia*, *Casuarina*, *Melaleuca*, *Leptospermum*, *Hakea* and *Callistemon*, and woodlands. There are four coastal heaths, known locally as moors (a term introduced by Allan Fox), with only low vegetation: Hakea Moor (just south of Newton's and north of Little River); Impressa Moor (the shrub *Epacris impressa* flowers there, and it is situated between Little River and Nadgee River); Nadgee Moor between Nadgee River and Salt Lake; and Endeavour Moor south of Nadgee Lake. There is also a heath at a higher elevation fire trail, that follows the ridgeline from Tumbledown Mountain, near Newtons, to the Nadgee River. There is dense sedge, grass and herb ground vegetation on the moors, and elements of these shrublands form a layer through much of the Reserve's dry sclerophyll forest.

Nadgee Nature Reserve is one of the better-studied sites in south-eastern Australia. CSIRO Sustainable Ecosystems, formerly the

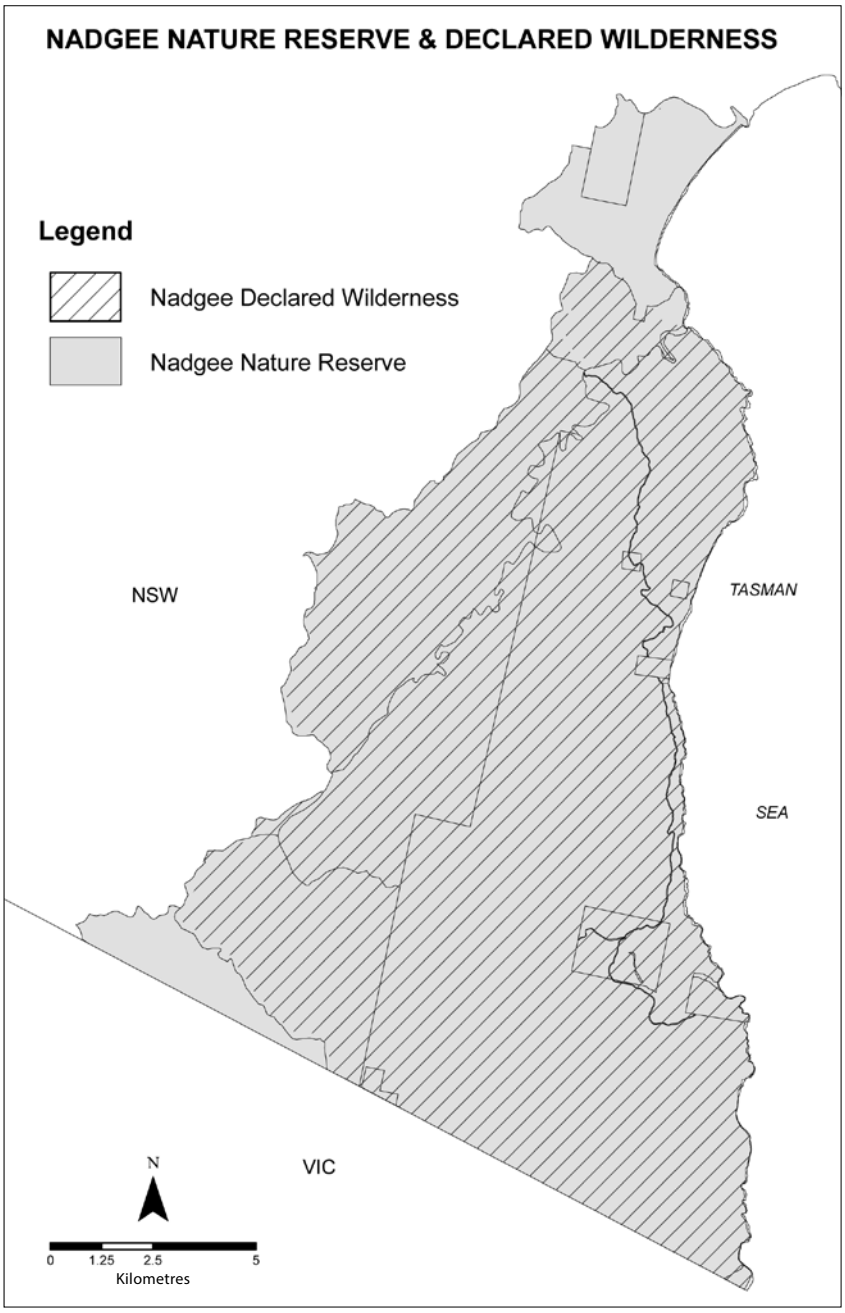

Figure 2: Nadgee Nature Reserve and declared wilderness as of 2011. The map shows both the boundary of the Reserve and of the Wilderness. The Wilderness was declared in three parts, the first declaration being in 1994. Map prepared by Cathy Johnson, land information officer, National Parks and Wildlife Service, Office of Environment and Heritage, New South Wales.

Division of Wildlife Research, has had a long history of research in Nadgee dating back to 1969. Research began with a study of dingoes and their ecology. During that study successive wildfires in 1972 and 1980 provided a unique opportunity to study the effects of wildfire on native animal populations. The study of dingoes was completed in 1976, but the study of the recovery of the fauna after wildfire continued until 2010 with the dissolving of the Division (Figures 4–6). In addition to studies by CSIRO (e.g. Newsome et al. 1975; Catling et al. 2001) there has been a number of studies involving Australian and international researchers and by other organisations such as the Australian Museum (e.g. Recher et al. 2009), State Forests of NSW (e.g. Kavanagh and Peake 1993; Kavanagh and Bamkin 1995), and the NSW National Parks and Wildlife Service (now the Office of Environment and Heritage NSW; e.g. Lunney et al. 2008). The studies of Kavanagh and colleagues were used to compare occurrences of owls, possums and gliders in Nadgee Nature Reserve with those in State Forests to the west. In the 1960s the Australian Atomic Energy Commission conducted research on the movement of phosphorus in the estuary of Little River (Figure 3). Giles (1972) stated that the estuary 'proved ideal for this experiment since it is small, easily mapped and free from human interference which might introduce extraneous factors such as the presence of phosphorus from agricultural pursuits'.

Figure 3:
Dr Max Giles working in the field laboratory at Little River in the 1960s. 'Wilderness' now makes such work impossible, even though Little River was found to be the only 'natural' estuary between Gladstone in Queensland and Adelaide in South Australia.
Source: AEC and University of NSW

Figure 4: Alan Reid preparing a sand plot in Upland Sclerophyll Forest. Changes in the abundance of 19 species of ground-dwelling wildlife were surveyed twice per year using soil plots on vehicle and walking tracks and beaches to preserve their footprints for identification. Soil plots are an indirect method of gathering information on medium-sized and large ground-dwelling wildlife. The plots are tilled one day and read for tracks for 3 consecutive days during each sample period. Throughout the Reserve there were 130 plots placed about 0.4 km apart.
Photograph by Julian Seddon, April 2008.

The Nadgee study area includes the declared Nadgee/Howe Wilderness within Nadgee Nature Reserve (NSW) and adjoining Croajingolong National Park (Victoria), which represent some of the least disturbed areas of temperate coastal ecosystems on the Australian mainland. The area is included in the UNESCO Croajingolong Biosphere Reserve and on the Register of the National Estate. It contains many fauna habitats and assemblages unique to south-eastern Australia, and plays a critical role in the long-term conservation of many of these species, such as the ground parrot *Pezoporus wallicus*, and for the achievement of State, National and International biodiversity goals.

The Nadgee Nature Reserve serves as a unique research site on the ecology of individual species and ecosystems of south-eastern Australia.

Figure 5: Peter Catling weighing a captured Bush Rat *Rattus fuscipes* in Coastal Melaleuca Scrub. Small mammals were surveyed by live trapping with Elliott traps at six permanent sites. Also, changes in the vegetation and its structure were recorded at all sites every 2 years. Photograph by Alex Drew, March 2005.

Figure 6: Mick Burt of CSIRO about to pin a dingo, using a forked stick, so he can remove the radio-tracking collar. The dingo, which had been caught in a trap, was in fact being re-caught, as is evident from the collar around its neck. Radio-tracking of dingoes was part of the research program of the Alan Newsome team. The face in the far edge of the photograph is Heimo Posamentier, of the Australian Museum. Photograph by Dan Lunney, early 1974.

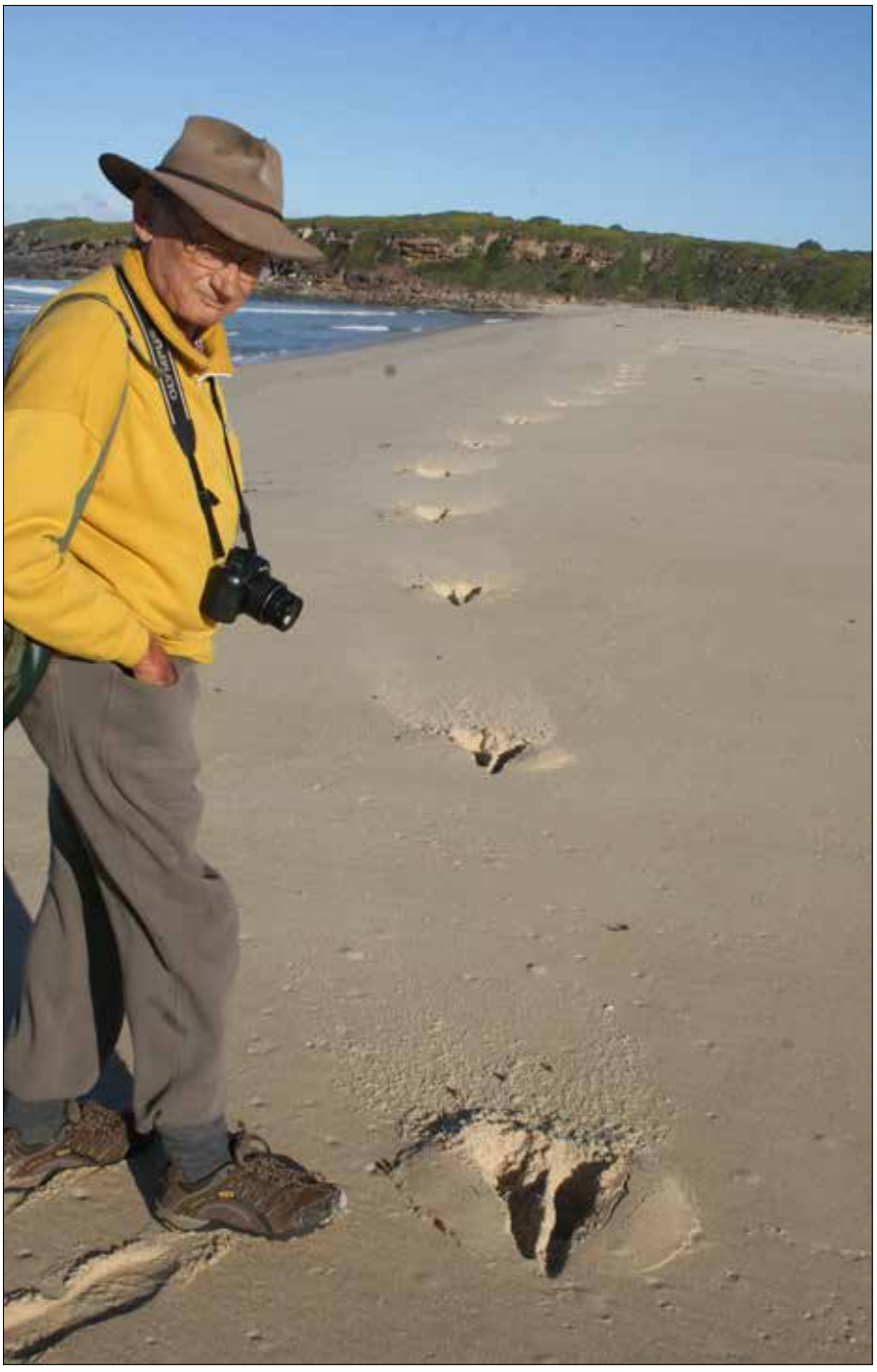

Figure 7: Allan Fox on the beach at Nadgee Lake, also known as Salt Lake. The footprints are grey kangaroo. Photograph by Dan Lunney, May 2008.

Research and monitoring of many forest-dependent threatened fauna in the Eden Region of NSW is advocated by many researchers and conservation agencies. It is ideal as a control site for experimental ecological research and as a definitive site of descriptive research. The data are used in the ongoing Plan of Management for Nadgee Nature Reserve, and in the study of climate change.

The Memories of Allan Fox

Allan Fox worked for the Education Department when the following account begins. He later transferred to work for the Fauna Protection Panel, then for the NSW National Parks and Wildlife Service when it was established in 1967. This is an edited transcript of an interview recorded by one of us (DL) on tape during 2008 in Nadgee Nature Reserve (Figure 7). The editing involved deleting repetition and material not relevant to Nadgee. Editorial and explanatory comments are included in italics throughout the narrative, whereas the quoted material is in normal font. Allan Fox has also produced a book on Allen Strom (Fox, in press), with one of the chapters devoted to Nadgee, and while there is overlap with this account, the two differ in emphasis.

First visit

The first time I went into Nadgee was 1954 with a friend, Allen Strom. A man called Charlie Witheford rang Strom and said, 'I believe you and Fox do trips around the place to investigate areas.' 'I've got a place down the south coast that's second to none. I'd like to get your opinion on it.' So Strom rang me and said, 'What about you?' 'I'm quite happy to go.' So we decided to go with Charlie and see this Nadgee place he talked about down the south coast. We went in his car to Wonboyn [*on Wonboyn Lake just north of Nadgee Reserve*], stayed at the Kosy Cottage guest house there, and walked in to the homestead in a day. It was a pretty arduous walk. [*When Allen Strom walked into Nadgee with Allan Fox in 1954, he too was working for the Education Department. He later became Chief Guardian of Fauna and Chairman of the Fauna Protection Panel, which administered the* Fauna Protection Act 1948. *Allen Strom died in 1997. Strom (1980, p. 42) started his account of this trip by stating that,* 'Nadgee Faunal Reserve, No. 6, was the first major success for the Fauna Protection Panel in securing a significant area

of land containing a diversity of habitats and presenting opportunities for a broad spectrum approach to wildlife conservation: high level scientific research, preservation of the gene-pool, encouragement of community interest in educational studies and appreciation of [the] natural environment.' *The aim of high level research is noted, and that was what attracted one of us (HR) from the Australian Museum, and the team from the then CSIRO Division of Wildlife Research, led by Alan Newsome, and represented here by his colleague (PC). Newsome became aware of Nadgee and its research potential through John Calaby, who had accompanied HR on a visit to Nadgee in 1968. Calaby had never been to Nadgee, but was aware of its ecological and research values and had contacted HR, then advising the Scientific Committee on National Parks reporting to the NSW Minister for Lands, Tom Lewis, with a view to exploring Nadgee and confirming its research values. Strom noted that,* 'despite its great value to wildlife conservation, its "discovery" was a matter of chance, and consequently dedication was largely fortuitous…' [*That places Fox's account in a clearer light, namely the fortuitous nature of the discovery of the ecological values of Nadgee.*]

Charlie Witheford had a map he had made from data in the Lands Department, which controlled the area at the time. Quite a remarkable map for an amateur! There were no other maps available, not even military maps, so we asked him for a copy. He said 'No, no. What do you want it for?'

The military still had it as a strategic corner because you could land aeroplanes on it, as they did during World War II. They had a military camp down here and a lookout tower from which they had a view north, east and south. They landed light aircraft on the heaths.

We spent 10 days looking closely at what is now the Reserve, making notes and taking photographs. And on the second last evening, Charlie's true colours came to light, he was interested in developing the place as a resort. When we quizzed him, the backer was going to be Reg Ansett. [*Sir Reginald Ansett had risen from a Victorian country hire-car operator to become Chief of Ansett Airlines, which had expanded into subsidiaries, such as interstate Pioneer Coaches, tourism, and holiday resorts.*] That's why Witheford wanted to keep his map. He wanted us to make comments on the value of the area for tourism.

So while he was away catching a fish to eat, Strom said 'Hey, get it!' I said 'What are you talking about?' He said 'The Map! It's in the lid of

Figure 8: Allan Fox sitting where he sat in February 1954 when he photographed Charlie Witherford's map that was a crucial element in the dedication of Nadgee Nature Reserve. These rocks are on the north side of the mouth of Little River. Allan may well look reflective—there is much to reflect upon, with the untouched local environment evident in this photo being just part of the magnificence of the Reserve. Photograph by Dan Lunney, May 2008.

his pack' so I whipped over and pulled it out. He said 'Photograph it!'

We laid it out between the rocks near Little River and we photographed the map, and then put the map back (Figure 8). Charlie never knew we did that.

Harry's Hut

Reg Ansett was a Melbourne man and there was Melbourne interest in the area. Harry Redman and some other hardware operators in Melbourne used to come up every Christmas for six weeks, taking a Land Rover into Nadgee with a trailer. It was Harry Redman who built 'Harry's Hut' at a crossing on the Nadgee River [*possibly around 1936*], and which is still there. They were nice people. Redman made friends with Ranger Dave Hope and helped him. [*Harry's Hut was spelt 'arry's 'ut in a sign above the door, a spelling used by ranger David Hope, but, to prevent confusion, noted only, not used, in this paper. In a NPWS map, Harry's Hut is named 'Wildlife Research Base', but it has no research space; it is a shelter for sleeping and cooking. However, as a shelter, it is*

Figure 9: The Palmer house not long prior to it being taken down. This was on the south side of the Nadgee River near the crossing on the track through the reserve. The modest scope of the building shows the limited extent to which Nadgee was modified by development, but it does show that the area had some European farming settlement. The forest immediately behind it became the site for the small mammal study started by Harry Recher in 1969, and continues today (2011).
Photograph by Allan Fox.

Figure 10:
This site (D6) on the long-term study plot for small mammals by the Nadgee River has been photographed since before the 1972 fire and regularly since. The person on the left is Tessa Lunney and on the right is Alison Matthews. What is noticeable in this photograph from four decades post-fire is the increasing depth of the leaf litter, the increasing openness of the ground storey, and the diversity of the forms of the vegetation in the background. The dedication of Nadgee Nature Reserve in 1957 was a brilliant step in the collective effort of the nation to value its wildlife and the areas on which that wildlife depends.
Photograph by Dan Lunney, June 2011.

invaluable to be able to cook, sleep and store food, clothes and equipment away from the elements, particularly in wet weather and in winter.]

Nadgee Flat

There was a cleared area called Nadgee Flat on the immediate north side of the Nadgee River. It was rutted with plough marks. It was probably about two years after the last crop of corn and the like. Then the blackberries started to take over. [*The area immediately south of the crossing was also cleared. Palmer had his house on this clearing, with log stockades for holding cattle, and a milking bail. The forest around this clearing and the flat to the north became the site for the study of the population ecology of small mammals in 1969, which continued as a study of the effects of wildfire on fauna after the 1972 wildfire (Recher et al. 1975, 2009; Lunney et al. 2008).*]

Nadgee Lake

Water in the lake [*a coastal lagoon south of Harry's Hut is called Nadgee or Salt Lake*] is critical for ground parrots, because in droughts they come here for sedge [*Leptocarpus tenax*], the basic food of the ground parrots, and also for button grass.

Jimmy Palmer and the old homestead

In 1954 there was a homestead right in front of where Harry's Hut now stands [Figures 9 and 10]. Jimmy Palmer was the homesteader. It was a delightful old house made of slabs of that black ash [*silvertop ash*] *E. sieberi,* which termites won't eat. It had six rooms, kitchen, big open fireplace, a typical country homestead. It would have been liveable with a few repairs. The rooms were all complete, it was waterproof. Around the house there was a massive blue flowering hydrangea and other exotic plants and a lot of bulbs. The house had not been lived in since 1936. Palmer had cattle against all the conditions on the lease, there were no fences to speak of, and it was supposed to have been fenced.

The track into Nadgee was made by Palmer, helped by Wally Newton, perhaps in the 1890s. It probably followed an old Aboriginal track as John Braithwaite thinks. Most of the original tracks in this back country, apart from the modern fire trails, tend to be old Aboriginal tracks. [*Newton had a lease north of the Palmer lease. Newtons Beach is named after the family.*]

Palmer made a track, not wide enough for a vehicle but just wide enough for a horse, from Narrabarba to his old Nadgee property [*The track was through what is now Nadgee State Forest*]. He'd come cross-country from Narrabarba with a lady called Cissie, a big, hulking woman about four pick handles across. They both wore big army overcoats which went down both sides, and they'd sit on these horses like they were part of the horse.

He would bring cattle in to graze, up until recent times. [*Cattle were highly conspicuous in 1973 on the newly-burnt heaths. DL.*] Unfortunately for Palmer, he hadn't taken any notice of the lease conditions. They [*the NSW National Parks and Wildlife Service*] used that to get rid of him, because he was still burning it regularly to get 'green pick' for his cattle. If you look at the aerial photograph of burning patterns in 1948 compared with the 1972 burn, you'll see a totally different pattern, because he wouldn't get off his horse to set the fires going, he used to drop a straight line of matches up the heathlands. And he had a block down in Howe Flat, at Mallacoota. He was running cattle there and he'd bring them up back through Nadgee. [*This pattern of burning was still evident as late as 2000, with the unburnt sections of Nadgee Moor (those to Palmer's right as he rode his horse south) being long unburnt and having a different flora and vegetation structure from the heath immediately to the east of the track. Nadgee Moor, the moor most heavily burnt by Palmer, only began to show recovery from Palmer's frequent burning in the late 1990s. Personal observation, HR*]

The first use of Nadgee was in 1860, and after that irregularly, for grazing sheep from the highlands during droughts, from Dry Plains station. They came down the Wallagaraugh River [*see Fox 2012*]. There's an Aboriginal track, and still signs of yards that were built by the stockmen. Knowledge of the place was in the Wally Newton family because old Newton, the grandfather of Wally, was the manager of Dry Plains [*a station near Jindabyne*].

Palmer got out of Nadgee and opened a homestead, again at Narrabarba on the Princes Highway a few kilometres to the west. The reason why he left was because, first of all the river came down in huge flood almost up to Harry's Hut, and he had a child which died in the homestead, and they believed it might have lived if they had been nearer to a doctor. He couldn't get to hospital, to Eden. I think the

child was in the early teens. He had probably started to become one of his right-hand men, at that age on the farm.

While the homestead was there, it was the link that Palmer had with the area and that was the reason I gave the instruction it had to be destroyed. It would have been lovely to have the house, no doubt about that, it was a fine old house, built in the tradition of pioneer houses.

The big '72 fire

This country was totally burnt out and there was virtually no green vegetation on the ground. Infra-red photographs show no living chlorophyll for about a month after the fire. And then came a few epicormic shoots, then an insect attack started, a plague which killed many of the *E. sieberi*. There was healthy shooting going on in the red bloodwoods [*C. gummifera*] down the coast; they were finally wiped out by insect attack not bushfire. The insect attack was regenerated by the massive production of young green growth.

By chance I had photographic records [*Fox had marked fixed photographic points where he took photos whenever at Nadgee. HR*]; an aerial view of Nadgee Beach and the estuary by the NPWS helicopter, and then just as the fire was dying I went by Cessna and took almost the identical photograph (Figures 11 and 12). Wonderful comparisons, one four months before the fire and one during or just after [*see Fox 1978*].

After that fire there were four stages. First there was the conflagration itself up the sides of these ridges, fire storms and very intense winds which broke the trees at about hip height, followed by the immediate famine, because there's no food around, the bulk of the insects were gone unless deep underground. The only mammal that seemed to do reasonably well were the wombats, because they were underground. A number of other species we found behind Jane Spiers beach had taken refuge in the wombat burrows. We didn't understand how the big pythons survived, beautiful reptiles, yet they were out on the heath very quickly after the fire, I guess eating anything that was injured. [*Many mammals and reptiles survived the fire by retreating into wombat burrows, including an abundance of burrows on the moors, which HR suspects were goanna burrows. These included large numbers of small mammals (*Rattus, Antechinus*) that had been recently weaned. Most then died progressively from predation and starvation. HR*]

Figure 11: Photo from the air with Nadgee Beach in the foreground, Nadgee Lake and Nadgee Lake Beach in the middle ground, and the dunes on Cape Howe in the background. The heath in the middle of the photograph is Nadgee Moor, with Endeavour Moor beyond Nadgee Lake and Nadgee Lake Beach. The photo was taken shortly before a major fire in December 1972. Photograph by Allan Fox.

Figure 12: Photo from the air of the mouth of the Nadgee River immediately after the fire of December 1972. Note that the area is black because the fire was so extensive that it burnt to the water's edge. Nadgee Flat and Harry's Hut are about 2 km inland from the mouth of the river. Photograph by Allan Fox, December 1972.

Just after the fire, Ranger Dave Hope realised there were a lot of kangaroos with burnt feet. To help them he put out bins of food. It was not a lot of help, but it gave them a couple of weeks where they didn't have to use their feet much.

I never saw any dingoes, but saw plenty of tracks. [*In a detailed article in* Parks and Wildlife *2: 2, 1978, Allan Fox writes of the 1972 fire in Nadgee, describing 'a scene of almost complete desolation. Gaunt black skeletons of the trees. Looked as if all wildlife had been extinguished'. There were 'some 30 ha of unburnt floor', chief of which was Nadgee Flat.*]

The 1929 Fire

The biggest wildfire I ever heard about was when my father came through down the highway in 1929 in an old Buick with a cloth roof. At Timbillica [*on the Princes Highway south of Narrabarba*], an ember dropped on the car roof and set it alight.

Early History

After the 1860s, I expect the 1880s, came the wattle bark industry. Nadgee became one of the most productive areas for wattle [*Acacia* spp.] bark for tanning. It was a very big industry here, they ran tracks all through the country and then sleeper cutters came in. One of the remaining pieces of evidence is the slots, cut for springboards, in a tall stump on the left of the track about 100 m south of Harry's Hut.

And then the gold miners came. Most of the gold was alluvial, in the swamps, they dug them all up. There wasn't a great deal.

The first non-Aborigines to see Nadgee would have been the survivors from the ship, the *Sydney Cove*, that was wrecked down in Bass Strait, near Cape Barren. A number of the crew tried to walk to Sydney. Three of them got through; [*they were*] picked up at Wattamolla in the Royal National Park. They were on their last legs.

A full history of Nadgee must take into account the Aboriginal story. I'm sure the Aborigines burnt the heaths. [*Probably to encourage kangaroos and facilitate hunting, perhaps using fire to drive game. HR*] Access was always a big problem; they would use fire simply to make easier country to walk through. And for hunting, because every 10 metres or so there were round pebbles about an inch in diameter brought up from the shoreline. Perfect missiles to throw at birds, but

not kangaroos. We've tested their accuracy at Uluru and Kakadu, and about ninety percent of the time they hit the target plumb in the middle.

It's obvious that Aborigines were around in numbers because there are big middens [*of discarded shells*] at Cape Howe [*and on the dunes at Nadgee Beach among other sites. HR personal observation*]; 6,000 years ago the sea reached its present level, and that's when the middens start. Older stuff, 30,000 years, is under the sea. You can learn the sort of food they ate from middens. They [*the local Aboriginal people*] finished up at the mission station at Lakes Entrance.

There's also the travels of Robinson who went through Nadgee three times. His geographic descriptions were pretty spot-on. He zig-zagged, he changed his mind, he went back to the Lakes Entrance area, and then came back up through to Eden, and then went back again. [*The trip described here was between 1835 and 1852, when George Robinson returned to England. McKenna (2002) comments on Robinson a number of times in his local history, and records that he passed through in 1844.*]

Fauna Reserve / Nature Reserve

Back in Sydney, Strom re-drew the map, and we added a lot of extra material from our notes, and that became the basis for the proposal for Nadgee as a Faunal Reserve, as they were known. Eric Willis, the NSW minister involved, agreed to the name change to Nature Reserve.

The proposal was agreed to by the Lands Department very quickly. It was mostly vacant Crown Land at the time with a leasehold block, a square mile round the [*Palmer*] homestead. We had no problems with the Mines Department, which surprised us; apparently their records didn't include the gold mining down here.

As for the Witheford proposal? It died. There was no further commercial interest in this area. There would be now! It would leave places like Merimbula for dead. There's all that flat country that you could use for an airstrip. And what staggers me is the big market of wealthy people.

We put up a proposal for a Marine Reserve off Nadgee. There are big reefs off-shore and we reckoned you could protect a huge area of coast with abalone. It lingered for a while but it died. [*The abalone along Nadgee were extremely abundant during an Australian Museum survey in the late 1960s, but by 1971 had been exploited by abalone fishers*

to the point that only small numbers survived in the intertidal zone where waves hindered access from the sea. These were later exploited to near extinction by Aborigines who had access to the Nature Reserve for 'traditional' purposes and reportedly sold their catch in Eden. HR personal observation] In *Mutton Fish*, Cruse et al. (2005) explain the importance of abalone to the Aboriginal people of the far south coast.

Drawing the threads together

From Allan Fox's recollections, three conclusions stand out in the history of Nadgee Nature Reserve. The first is that Nadgee Nature Reserve is world class in its value as an area largely unaffected by European development. Its value will grow as the rest of Australia is increasingly transformed to a landscape dominated by people and their industries. There are now few opportunities in southeastern Australia to dedicate areas like Nadgee, an area of coast that would look familiar to Cook and Banks (Figure 13).

The second conclusion is that the vision of two players, Allan Fox and Allen Strom, was enough to convert a remote and little known

Figure 13: Three members of the Caloola Club walking across Nadgee Moor, just south of Nadgee River inlet. The three people are Bernie Braggrah, Bonnie Fox and Fiona McDonald. The heath appears in this photograph as it is seen today, free of human settlement. This is remarkable for a coastal heath in New South Wales. Photograph by Allan Fox, 1963.

area of vacant Crown Land into a Faunal Reserve under the *Fauna Protection Act 1948*. This points to the farsightedness of this Act, and the growing sense in the community of the value of nature, natural areas and wildlife conservation. Fox and Strom, aged 23 and 39 respectively in 1954, were well ahead of their time. One of us (DL) can remember as a young education officer in 1970 in the newly formed NSW National Parks and Wildlife Service that the concept of the value of National Parks and Nature Reserves did not enjoy wide understanding and acceptance. Allan Fox was then the chief wildlife officer in the NPWS, and served as a mentor for many staff, including DL, and Allen Strom was in the NSW Department of Education. Both were guides to the meaning, options and limitations of nature conservation in a modern economy. Their ideas have no more solid and enduring testament than Nadgee as a Nature Reserve. Their lessons have provided new generations with the opportunity to see and appreciate that value.

The third conclusion is one dear to us as wildlife ecologists; the dedication of the Nadgee Nature Reserve as a place not just for conservation, but one where ecological research was seen as a priority. This was truly visionary and set the stage for a suite of long-term ecological studies. The importance of long-term ecological research is now recognised, but it took the vision of Fox and Strom to create the opportunity. We can only regret that the dedication of Nadgee as a 'Wilderness' has compromised established and future studies at Nadgee. The Wilderness designation has done nothing to enhance the ecological integrity of Nadgee and by restricting research, it has done significant harm to the conservation of Australia's biodiversity. For example, at least one long-term program has been prematurely ended—the long-term monitoring of heath vegetation and bird populations started in 1972 by HR, ceased in 2000 with demands that its transect markers be removed as 'incompatible' with a 'Wilderness'. Restricting vehicle access and use within Nadgee also makes it difficult to get heavy research equipment to study sites and for older researchers to gain access to their study plots (Figure 14). In the current political, academic, and economic climate, establishing long-term studies is nearly impossible. Those at Nadgee should have been enduring, a legacy to the vision of Fox and Strom, but they will die with the researchers who established them. Unfortunately, CSIRO ceased wildlife research with the dissolution of the Division of Sustainable Ecosystems in 2010.

Figure 14: Peter Catling on holidays in 2011 demonstrating the sense of humour that sustained him through four decades of wildlife research in Nadgee Nature Reserve, which included fishing. Photograph supplied by Peter Catling.

The Office of Environment and Heritage NSW, including the NSW National Parks and Wildlife Service, has the expertise and it is hoped that they will continue the CSIRO study, at least until the next fire. We note that, in the plan of management for Nadgee (National Parks and Wildlife Service 2003), research remains one of the aims, and our comments here are to give that aim greater importance and not let the concept of wilderness management trump long-term research projects.

Dedicating Nadgee Nature Reserve was one of the most inspired decisions in nature conservation in NSW. It ranks with the dedication of Royal National Park in 1879, and contributes to the claim that NSW has a brilliant history of dedicating natural areas for nature conservation, for their beauty, and for future generations to see values that we have not yet articulated. Fox and Strom drew strength from a growing nature conservation movement, and in turn they gave great impetus to its growth, and Allen Strom set up most of the Nature Reserves that we have in NSW. If they had done nothing else in their professional lives, the dedication of Nadgee Nature Reserve would

forever have justified their place in the history of ecology in Australia, even before the idea had a name.

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