COMMUNITY ARCHAEOLOGY

WORKING ANCIENT ABORIGINAL WETLANDS IN EASTERN AUSTRALIA

Edited by

Wendy Beck,
Catherine Clarke
and Robert Haworth

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Cover: Little Llangothlin Lagoon, April 2016 © Terry Cooke Armidale

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Dedication

The editors would like to dedicate this book to family we lost during the project, for all your years of support and encouragement

Merlin Benjamin Beck 1928-2015

Fabian Haworth 1984-2018

Annette Marshall 1946-2019

Summary

This book has three concurrent aims for investigating wetland heritage as well as increasing opportunities for Australian Aboriginal people to be partner researchers. The research questions are: (1) To undertake a landscape archaeology associated with 'lagoons' (depressional wetlands) of the Tasmanian Midlands region and the New England Tablelands region in eastern Australia (2) To establish whether archaeological research of ancient landscapes can contribute to the theory and practice of community archaeology and (3) To investigate whether successful engagement and educational outcomes can be achieved, using Fraser's ideas (2001) about the 'politics of recognition' as well as Work Integrated Learning.

The book reports several important discoveries which contribute to the archaeology of the Tasmanian Midlands and New England Tablelands. Ours was the first substantial project carried out in these bioregions since 1991. Rockshelters are rare here. Previously no dated sites in New England extend beyond the early Holocene but using OSL and radiocarbon dating at six lagoon sites we obtained dates going back to 8000BP. In both Tasmania and New England a range of new stone artefact scatters were recorded adjacent to lagoons.

Across Tasmania and New England 37 new OSL dates were obtained for lunette formation. These were diverse, ranging from Last Glacial Maximum (LGM) dates in Tasmania to a wider range in New England starting at 70 ka. Records of lunette initiation may indicate drier previous climates which provide sediments for subsequent deflation. However, unexpectedly, our OSL dates (11 sites) were not clustered around the Last Glacial Maximum at 20 k, but ranged from 72 k to 2.2 k in New England and from 48.5 k to 7.2 k in Tasmania. The sediment particle sizes suggest both wind and water deposition. This suggests individual local depositional histories for the lunettes, rather than deposition related to global climate variation.

This book contributes to the important global field of community engagement and education. Unlike most projects where Aboriginal people are involved in commercial archaeology, this project was focused on archaeological research. Elders from the community participated fully in the project. They were equal partners in the research team during field-work and training. This is Fraser's 'politics of recognition'. Work integrated learning was very successful as a site of learning and included partly University locations and partly work on country. The book reports community archaeology which has global implications.

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Contributors

John Appleton is an Adjunct Senior Lecturer in Archaeology at the University of New England. After a successful career in Senior Management in a major tobacco company and having become a Fellow in Governance, Company Management and Company Secretarial Practice, he turned his attention to archaeology in 1985. Since then he has performed over 650 archaeological investigations as principal Archaeological Consultant of ASR Pty Ltd throughout NSW and Southern Queensland, and taken part in excavations in Thailand and England and restoration work in Macedonia.

Wendy Beck is an Adjunct Associate Professor in Archaeology at the University of New England. She was appointed to a Lectureship at UNE in 1986. Her research interests include Palaeoethnobotany, Place Studies in Archaeology and Teaching and Learning in Higher Education. While retired from full time academia, she continues archaeological pursuits and much of her field-work is carried out within northern NSW. She is presently working and excavating in her local area around Armidale. Wendy has a longstanding interest in transdisciplinary and community-based research.

Judith Burns is an Adjunct Academic with the University of New England. After graduating in Civil Engineering, she entered Urban and Regional Planning through her involvement as a local government councillor, and undertook the Graduate Diploma in Urban and Regional Planning at UNE. Her Geography PhD explored residential mobility among Aboriginal people in far western NSW. Since 1992, Judith has been a partner in a busy multi-disciplinary consulting practice working with Aboriginal communities in western NSW, in the area of housing and infrastructure development, community development planning, regional planning, negotiation of training and employment programs and enterprise development.

Catherine Clarke is a past academic staff member and Adjunct Senior Lecturer at the University of New England. Her research pursuits included significance assessment in cultural heritage and her PhD thesis focussed on cultural heritage narratives and their role in archaeological education. She has worked as a researcher, teacher and cultural heritage consultant and has more than 25 years' experience as an instructional designer and project manager developing educational programs and resources. Her more recent interests include exploring the use of media technologies in cultural heritage communication and interpretation.

Richard Fullagar is an Honorary Professorial Fellow at the University of Wollongong and his research interests are use-wear and residue analysis, and plant food processing. Richard pioneered high magnification study of use-wear and residues in Australia, and set up dedicated laboratories, first at the Australian Museum, then at the University of Sydney and the University of Wollongong. He is a Director of Core Archaeology Research Pty Ltd. He works to integrate biomolecular, residue morphology and use-wear approaches in studying assemblages in Eastern Asia and northern Australia.

Robert Haworth is an Adjunct Academic in the Heritage Futures Research Centre at UNE and has lectured in environmental history and geomorphology at UNE since 1994, and taken part in many research projects piecing together the record of past environments, especially the impact of European settlement on Australian ecosystems and, conversely, the effects of the strange new landscape on the settlers. He is also interested in the European-Australian landscape heritage, and he hopes to promote an intelligent ecological and cultural tourism.

Elspeth (Ebbe) Hayes is an Honorary Research Fellow at the University of Wollongong and the Director of MicroTrace Archaeology. She completed her PhD on the function of Aboriginal grinding tools through

a detailed functional analysis of the use-wear and residue traces on tools from key archaeological sites in Australia. Her research focusses on stone tool function through use-wear and residue analysis and she has a special interest in Australian Aboriginal grinding tools. She has been involved in several collaborative projects to study stone tool function at early human sites in east Asia, Europe, North America and Australia.

Kevin Kiernan converted a youthful enthusiasm for nature conservation, caving, rivers, and mountaineering into a career as a geomorphologist, focussing primarily on mountain geomorphology and karst worldwide, but also publishing on various other topics including volcanoes, coasts and a little archaeology. After having initially worked for many years as a full-time advocate for the conservation of places remote and wild, such as Tasmania's Lake Pedder, he was employed as a national park planner for a couple of years; worked as a consultant geomorphologist and spent 15 years in the Tasmanian forestry system seeking to improve its environmental performance from within. His professional career was rounded off with 13 years as a university lecturer, after which he returned to his conservation roots in writing a book on the history of Tasmanian nature conservation, Eroding the Edges of Nature. He still dabbles just a little in geomorphology.

Lagoons Aboriginal Reference Group 2012-2016 consisted of the (then) CEOs of the four Local Aboriginal Land Councils where the research took place. These were: Armidale LALC (Colin Ahoy (Snr) and Michael Brogan); Guyra LALC (Jeffrey Ho); Anaiwan LALC (Greg Livermore) and Glen Innes LALC (Trevor Potter and Karen Potter). In addition, the following Aboriginal Elders were part of the field teams: Colin Ahoy (Snr), Armidale LALC; Esther Gardiner (BA) Tingha; Isabel Williams, Anaiwan LALC; Dick Blair, Anaiwan LALC; Lee Patterson, Guyra LALC; Eileen Livermore, Glen Innes LALC; Karen Potter, Glen Innes LALC and, Trevor Potter, Glen Innes LALC. These contributors guided the overall project through regular meetings and field-work.

Anne McConnell is a consultant archaeologist and cultural heritage management professional with over 40 years working experience, primarily in Australia. Anne also has a Quaternary geoscience background focussing on landscape change. Anne works across Indigenous (Aboriginal) and historic heritage from the site to regional landscape scale. Her work has explored cultural landscapes and forested, remote and protected areas and the management of their heritage values. Anne's work has also had a strong emphasis on understanding and including social values. Anne has been a long-term member of Australia ICOMOS, serving on the national executive committee twice, and has represented cultural heritage on various government boards, including the Tasmanian Wilderness World Heritage Consultative Committee.

Andry Sculthorpe currently works for the Tasmanian Aboriginal Centre in Hobart, in coordination and delivery of land management projects on returned Aboriginal Lands and in Aboriginal heritage training for the Aboriginal community. Andry obtained a BSc in Botany and Geography at the University of Tasmania and has training in Aboriginal heritage assessment and protection. Andry is interested in furthering the skills and knowledge of the Aboriginal community to manage and protect land and heritage and to enable them to be involved in natural area management.

Acknowledgements

Our first and foremost thanks go to all the Aboriginal participants–students, staff and Elders of the Field-Schools. Without their enthusiasm this book would not have happened. We hope this book is useful!

We acknowledge the Traditional Owners of Country for all lands in this book and for all lands across Australia. We recognise the continuing connection of Aboriginal and Torres Strait Islander peoples to Country and pay respect to Indigenous Elders past and present.

Aboriginal and Torres Strait Islander people should be aware that this book may contain images, words and names of deceased persons.

Special thanks, also, to the Landholders, including Land Services NSW, who facilitated access, site visits and hospitality. Due to privacy concerns we may not name you all, but we could not do this work without your help.

Unless otherwise stated, all figures and tables were completed by the chapter authors.

However, we would like to particularly acknowledge the assistance of John Appleton, Conan Haworth, and Kim Newman, all of UNE, for specialised help with the illustrations.

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Introduction

Wendy Beck and Robert Haworth

This book is about a study of the archaeology and geomorphology of ten lagoons located in two widely separated but analogous regions, namely the New England Tableland in north-eastern New South Wales (NSW) and the Tasmanian Midlands.

The project had its beginnings in the interests of team leader Wendy Beck in water use history and archaeology as a member of the Water Perspectives research group at University of New England, Australia and in discussions with human geographer Judith Burns who has a long history of working with Aboriginal people in New England. At the Australian Archaeological Association Conference in 2010, which had the themes of 'Challenges for archaeology in understanding cultural and natural landscapes: local national and global perspectives', Richard Fullagar and Anne McConnell joined our discussion of comparative landscapes in New England and Tasmania, all of us having been archaeological friends since the early 1980s. This was cemented by follow up discussions with physical geographer Kevin Kiernan in Tasmania in early 2011. A larger team of researchers was put together from this beginning [see Chapter 1 for the full team list]. Around the same time in 2010 a project led by Jamie Shulmeister at the University of Queensland was exploring the palaeoenvironment of lagoons such as Little Llangothlin in New England, and our teams overlapped with Bob Haworth and Kevin Keirnan both being joint team members. Our grant application was successful in 2011 and the field project began in early 2012, with preliminary discussions and field-work to narrow the choice of lagoons. Two fields-schools were held in New England in 2013 and in 2014 a Tasmanian field-school was held. In 2015 time was spent obtaining various field-work permits for the research excavations which took place in 2016 and 2017. The final Australian Research Council report was submitted in 2018, and this book was born.

It describes a community archaeology investigation of researchers working in partnership with the local Aboriginal people and corresponding work experience programs. The project was funded by a large Australian Research Council grant, Working Ancient Wetlands for Social Benefit and Cultural Understanding (DP120102316). This introduction describes the history and rationale of the project, its key outcomes and our general approach. It also gives a general outline of the background to the two study areas in NSW and Tasmania (See Figure I.1, map of Australia showing regions), as an introduction to the book sections which follow.

What is a lagoon?

Before going further, we need to define the meaning of lagoon as this is a central element of this book. 'Lagoon' is a local term used in the highlands of eastern Australia to refer to a series of shallow upland lakes and ponds. These wetlands are found in similar geomorphic locations world-wide on the drier inland side of the plateaus and tablelands of passive continental margins in all of the southern continents and many of the northern ones. In other parts of the world researchers have named these particular landforms as 'depressional wetlands', 'pans' or 'endorheic wetlands' (Goudie *et al.* 2016). They are typically located in saucer-shaped areas of negative relief with closed or semi-closed drainage, on flat or gently undulating landscapes which in New England are often associated with Tertiary basalt flows. Present vegetation ranges from sparse to a diversity of aquatic and semi-aquatic plants (especially sedges and reeds), depending on the type of substrate and range of water fluctuation (Bell *et al.* 2008; De klerk 2016). Even when full, these lagoons are rarely more than 1.5 m deep. Lagoons differ from other

Figure I.1 *Map of Australia showing study regions (K. Newman)*

wetlands of eastern Australia in morphology and location. Most are oval-shaped with distinct rocky margins, though with considerable recent siltation occurring on lagoon edges (Haworth 2006).

However, a distinguishing feature of many lagoons are the landforms known as lunettes. Some of the lagoons have either sand dunes or clay-rich mounds on their eastern (lee) side–called 'lunettes', because of their typical wind-formed crescent shape—probably products of deflation or wave action formed under different local climatic conditions during the glacial cycle (Bell *et al.* 2008). The lunettes provide a sedimentary and archaeological archive, and in some regions may have been a preferred campsite for Aboriginal people.

The lagoons in our study regions ranged from less than one hectare to over 20,000 hectares in size and about two thirds have lunettes, as well as other types of dunes. The New England water bodies are generally smaller than the Tasmanian sample. The accompanying lunettes have been subject to intense study in other world-wide locations, such as Khazakistan, South Africa, South Carolina and the Kansas High Plain (See Chapter 11). Recent studies using remote sensing have investigated large numbers of lunettes, which as in the eastern Australian highlands are often found in association with large flat plains at high altitude (Goudie *et al.* 2016). Of the wetlands we surveyed many had archaeological surface remains—more in Tasmania than in New England. Possibly this variation has to do with the nature of occupation and resource use, as well as wetland resource types. This variability is one of the foci of our investigation.

Goals of the project

This project has a number of concurrent aims including both investigating lagoon heritage and increasing opportunities for Aboriginal people to partner researchers in educational settings. The general goals were:

1. To establish whether archaeological research into ancient landscapes can contribute to the theory and practice of community heritage engagement and help 'close the gap' in Aboriginal higher education by using Fraser's ideas (2001) about the 'politics of recognition' as well as work integrated learning.

2. To undertake a comparative landscape archaeology of lagoons and lunettes in the Tasmanian Midlands region and the New England Tableland region—especially to determine whether the apparent sparsity of Aboriginal occupation in environmentally similar regions of the NSW New England Tablelands and the Tasmanian Midlands during and before the Mid-Holocene is due to the paucity of archaeological field-work or other factors. What was the mode of the occupation in these areas? Was it permanent, transitory or perhaps an alternating pattern of the two affected by climatic and social conditions?

Previous knowledge about ancient New England

The New England region for this project corresponds with the New England Bioregion which is a stepped plateau of hills and plains with elevations between 600 m and 1500 m on Permian sedimentary rocks, intrusive granites and extensive Tertiary basalts (NSW Department of Planning, Industry and Environment 2021) (See Figure I.2). The bioregion lies mainly in the temperate to cool temperate climate zone of NSW, which is characterised by moderate summer heat and cool winters, with relatively uniform rainfall but with summer maximums (Australian Government, Bureau of Meteorology 2021). Hunter-gatherers of the past have inhabited all of the New England for thousands of years but little is known of Pleistocene occupation as the previously oldest site on the Tableland (near Bendemeer on its southern margin) is only 4300 years old (Bowdler and Coleman 1981; McBryde 1974). Further to the west (180 k from Armidale) outside the New England bioregion, re-dating of the Graman rockshelter GB1 provided a basal date of 7840 BP (8642-8589 cal BP) (Boot 1990: 89). Our work has extended this date to c. 8000 BP at a lagoon site near Uralla 50 km north of Bendemeer. Archaeology and linguistics suggest that the Tableland has been most heavily occupied from about four thousand years ago (Beck 2006; McBryde 1974). At this time coastal peoples from the east and south east migrated to the Tableland and over time formed relationships with western peoples (Beck *et al.* 2015).

Radiocarbon ages from the lunette and basin floor sediments of Little Llangothlin Lagoon at Guyra in northern NSW (Ellerton *et al.* 2017) suggest formation around 19,000 years BP—broadly similar to the formation age of lunettes in other parts of the Murray Darling Basin. However, the one clay lunette we sampled (Barley Fields lunette at Uralla) suggested a formation date before 48,000 years BP. Whatever the ages, the processes involved suggest that unlike most lakes, these lagoon-lunette basins tend to be renewed by deflation (wind erosion) over periods of tens of thousands of years and, as their catchments are small, they are rarely completely infilled during their sedimentation stage. So, while even large and deep lakes have a limited lifespan from sedimentation, the upland lagoons could be some of the oldest wetlands on Earth because of their balancing processes of deflation and accumulation, despite their shallow and often ephemeral nature. Associated sediment sinks such as source bordering dunes could contain long term archaeological and environmental archives. However, the lagoon floor sediments are rarely more than several metres deep, and radiocarbon dating of the peat fraction of these sediments (Gale and Haworth 2005: 129; Woodward *et al.* 2014) indicates that the present cycle of sedimentation commenced ~15 000 years ago as climate became wetter and warmer after the last Glacial Maximum.

A dominant theme in New England archaeology is climate. The whole of the Australian south-eastern highlands between thirty and ten thousand years ago, including the New England Tableland, was a cold, tundra-like environment. On the tableland, the zone would have consisted of cold steppe grassland, with some shrubs and eucalypt woodland in protected locations (Woodward *et al.* 2014). This was a fairly harsh environment with few food resources, quite unlike the present environment, so it is difficult to say exactly what the plant food resources were, although our research indicates that some lagoons had formed before 30,000 years ago so wetland foods would have been probably available some of the time. By ten thousand years ago the tree cover was increasing and temperatures were slightly warmer than present (Ellerton *et al.* 2017; Shulmeister *et al.* 2016). From five thousand years ago the record

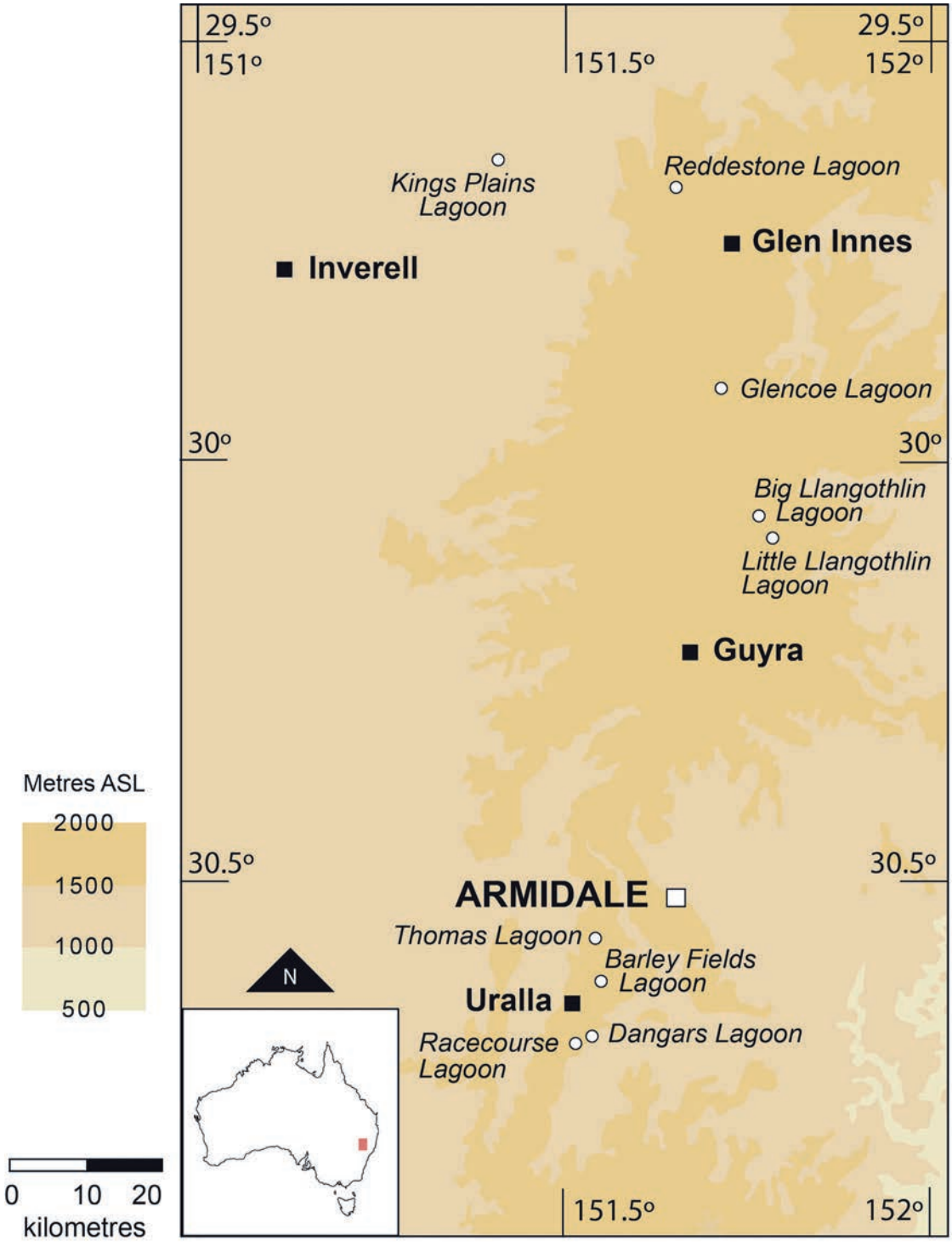

Figure I.2 *Lagoon sites in New England under study. Note: Big Llangothlin Lagoon also known as Lake Llangothlin (K. Newman)*

suggests that the tree cover opened out and grasslands began to develop along with the onset of climatic uncertainty and intensification of El Nino-Southern Oscillation (ENSO) conditions (Beck 2006; Beck *et al.* 2015; Gagan *et al.* 2004).

McBryde (1974) stressed the probable harsh environment of the Tableland which was seen as a major obstacle to year-round occupation, resulting in an archaeological perception of sparsely distributed sites in this zone, compared with other regions. This is still a common understanding, although Godwin (1990) argued differently. He concluded that the Tableland was not abandoned in winter at all, but occupied all year round by small mobile groups. Altogether this evidence seems to prove that the cold climate of the Tableland was not a barrier to year-round settlement. Comparison with Tasmania is useful here. Hunter-gatherers elsewhere successfully lived year-round in very cold climates such as glacial Tasmania and Pleistocene Europe. In Tasmania for example, Parmepar Meethaner rock shelter was inhabited from 34,000 years ago, including times when the Cradle Mountain glaciers were only three kilometres distant (See Chapter 9). Evidence from other parts of the world also suggests that cold climates were not necessarily a barrier to hunter-gatherers (Beck 2006).

Another theme in New England archaeology is that of group movement, that is, scheduled large scale movements by most of the population of an area. Godwin (1997) concluded that group movement was directed both onto and away from the Tableland during winter and summer and not just dictated by environment. Sub-coastal groups moved on and off the Tableland through the gorges. On the Tableland small groups lived all year round and in summer travelled to the west for ceremonies. From linguistic studies, the language spoken by Tableland people was more closely related to the coastal languages than to western slopes languages, yet the recent social groupings do not seem to correspond with this (Beck 2006; Godwin 1997).

Previous knowledge of the ancient Tasmanian midlands

The Tasmanian component was undertaken mostly in the Northern Midlands bioregion of Tasmania. The area includes a number of plains with former wetlands, primarily the Ellinthorpe Plains on the headwaters of the Isis River (a tributary of the Macquarie River which flows to the Tamar River, all part of the main north-flowing drainage system terminating in Bass Strait), now one lake and some seasonal marshes; and the Eastern Marshes at the headwaters of the Little Swanport River, which flows to the east coast of Tasmania, an area of seasonal marshes, some of which have been drained. There are also some intermediate former wetland areas. The most central town is Tunbridge on the Midlands Highway. The area is effectively a plain at c. 200-400 m asl. To the east there are low hills which drop steeply to a narrow coastal escarpment (a similar relationship as for the New England Tablelands and its coastal hinterland). On the western side is the steep escarpment of the east rim of the Central Plateau (which is at c. 900-1,100 m asl). This area is the highest part of the Midlands and is at the divide of drainage to the north, south and east, which possibly explains the presence of former extensive wetlands in the area. The lagoons study sites in Tasmania are shown in Figure I.3.

The Pleistocene environments and Holocene landscape changes for this area are very poorly understood as there has been little specific investigation in this region. Based on Macphail (1979a and b) it is likely that the Midlands was quite a different environment in the Pleistocene with the alpine vegetation/eucalypt forest boundary at c. 400 m (that is, at the higher levels of the central Midlands region), with conditions ameliorating in the Holocene. The relationship of wetting and drying and the formation and drying of the lagoons and marshes is not established, and there are questions from existing research about the agency of change, in particular whether all Holocene source-bordering dune formation was climatic or whether it was in part due to human agency, especially firing (Kee 1990).

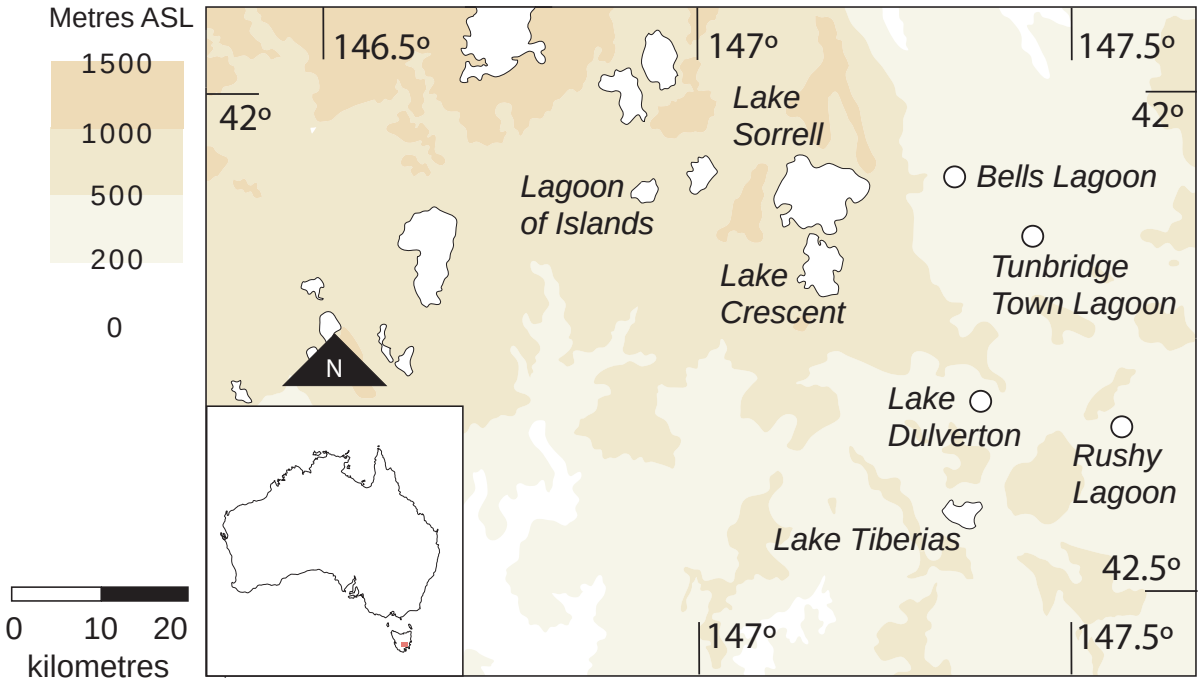

Figure I.3 *Lagoon sites in Tasmania under study (K. Newman)*

The area is at the junction of the historical territories of three tribes—the North Midlands, Big River and Oyster Bay Tasmanian Aboriginal tribes. Although the area is known to have been travelled through and used on a regular basis historically, it is not known to have been the core territory of any of the known bands (Ryan 1996). The area was the central part of a major historical Aboriginal travel route from the Central Plateau to the east coast, probably in part due to the rich resources of the wetland areas of this region. It would seem that the study area was historically largely a crossroads and seasonally the lower lying grassland plains with their watercourses, lakes and marshlands were significant food resource areas.

Few archaeological studies have been undertaken in the central Midlands area. The area is covered by the government regional overview studies undertaken in the 1980s-1990s, specifically Kee's (1990) Midlands region study, and Brown's (1991) East Coast study. The only systematic archaeological survey work undertaken in the area is a block survey in the Ellinthorpe Plains area (Kee 1990) and a recent survey of a proposed water irrigation pipeline by Hydro Tasmania Consulting in 2010. These two surveys confirm the historical use of the area, including intense use of the Ellinthorpe Plains area, the York Plains, and the Salt Pan Plains (the Eastern Marshes have not been surveyed but are expected to have similar evidence of intensive use).

The only other substantive archaeological work to have been undertaken in the area was as part of a study of stone quarries in southeast Tasmania by Painter in 2001, which found a number of quarries in the area immediately south of Ellinthorpe Plains. Strategic forestry surveys by Cosgrove (1990) on the eastern edge of the central Midlands located numerous stone quarries and associated sites to the southeast of the Eastern Marshes. Only three studies: by Lourandos in 1972, Sigleo in 1978, and Kee in 1990, have attempted to investigate the archaeology and human/land relationships over time. Lourandos dated the commencement of Aboriginal occupation as dispersed, nomadic and non-sedentary and independent of the coastal region and Central Plateau region. Kee's results indicate Aboriginal

occupation of the area from the mid-Holocene (c. 4,500 BP) to present, although the basal deposits are considered of probable late Pleistocene/early Holocene age within the lunette. She also interprets the site as being a short-term terrestrial site associated with the marsh/lake system with occasional hunting forays into the hinterland (Kee 1990).

Comparison of the two regions

Most of the human occupation of the New England and Tasmanian regions is thought to be relatively recent, as most of the dated sites in both regions fall within the last five thousand years, despite the fact that the occupation of eastern Australia is much older. The lack of older sites may be due to a lack of archaeological work in suitable preservational environments, and also to the smaller human population in the Pleistocene (before twelve thousand years ago). So, the oldest hunter gatherer Indigenous habitation of these regions remains unknown at the present time, although it is likely that scattered remains of earlier settlement and social networks have yet to be found. A lack of dated sites at present precludes a detailed understanding of changes over time, so speculative models are all we have. There are gaps in the data, especially in terms of dated sites with continuous deposits, and sustained field-work is still required to fill in these gaps. The specific methods used are detailed in later chapters, but the overall approach was one of reconnaissance, setting up Aboriginal steering groups and then targeting specific lagoons with field-schools of generally two weeks duration with various aspects of heritage field-work then carried out.

Historical use of lagoons by Europeans

The use of lagoons exhibits cultural continuity as successive inhabitants used them for different purposes–lagoons were shared by Aboriginal and early European inhabitants, and then there was a sequential use of wetlands for food and water by farmers and stockmen as well as local recreational and sporting activities, and eventually protection for natural conservation values.

In both New England and Tasmania the use of lagoons by Europeans in the nineteenth century and afterwards included their use as water sources, for industrial purposes such as flour mills and gold mining, as well as stock-watering dams, irrigation and recreational uses (See Figures I.4-7). The prevailing attitude was to 'dam or drain them' in order to fundamentally regulate the natural variability of these wetlands (Brock *et al.* 1999; Tyler 1976). As well as intentional water regime changes many unintentional changes occurred as a consequence of land-use in the wetland catchments.

Ecological significance of the eastern Australian lagoons

Both Tasmanian and New England lagoons have been recognized in the last thirty years as important places for conservation of wetland vegetation and fauna. Both Little Llangothlin Lagoon and Interlaken (parts of Lakes Sorrell and Crescent) were declared RAMSAR wetlands in 1996 and 1982. This listing recognises the international ecological significance of these lagoons. Their recognition is based on being high altitude freshwater wetlands in near-natural condition. Both are rare examples as the majority of the wetlands have been degraded or destroyed through hydrological modification, grazing and cropping.

Local, regional, national and international awareness of the ecological value of lagoon wetlands has increased from the 1970s onwards. This is evidenced by recent Federal and NSW legislation which protects the very similar Monaro Plateau lagoons in southern NSW (See Figure I.8). National legislation from the Australian Federal Parliament recognises 'Upland wetlands of the New England Tablelands and

Figure I.4 *Boating on Mother of Ducks Lagoon, New England, 1880s (HRCP1534) New England Archives*

Figure I.5 *Outing on Mother of Ducks Lagoon, New England, 1882 (HRCP1533) New England Archives*

Figure I.6 *An angling party, Great Lake, Weekly Courier, 11th January, 1905, Photo by S. Spurling. Courtesy Tim Jetson.*

Figure I.7 *Oatlands Lagoon (Lake Dulverton) Tasmania. Sketch (1853) - Bishop Nixon (TAHO-PH30-1-360) Tasmanian Archives*

Figure I.8 *Lagoon on Monaro Plateau near Jindabyne, NSW*

the Monaro Plateau' as nationally threatened ecological communities (EPBC 2005) and these have been also listed by the NSW State Parliament in 2002 and 2011.

Project Overview

In both Tasmania and New England this project was successful in forming partnerships with the local Aboriginal communities in an educational setting, and in furthering our understanding of the lagoon landscape archaeology of the Tasmanian Midlands and New England Tablelands, by providing new evidence for the degree of antiquity and type of occupation.

New discoveries were made which contribute to our understanding of the archaeology and geomorphology of the Tasmanian Midlands and New England Tableland. New ages for lunette formation and Aboriginal occupation allow a finer-grained understanding of the landscapes and set the scene for future research in these bioregions. Our research was the first substantial project to be carried out in these bioregions since the early 1990s. As Holmes *et al.* (2008) have also suggested, supposedly arid conditions do not routinely lead to lunette formation. Instead, very local conditions of sediment production and availability may be important. This seems to be the case in our project.

This project contributes to addressing the complex interplay of social, economic, educational, and cultural factors that create obstacles to Indigenous communities playing a greater role in the cultural, economic and social life of the regions. This was an opportunity to redefine a contemporary, practical vision of heritage education which can be linked to caring for the land, joining the future of heritage

management to the future social and economic health of the region while simultaneously contributing to strong archaeological research and outcomes. Both regions have active Aboriginal heritage workers, but are disadvantaged in terms of Indigenous higher educational participation.

To date Pleistocene human land use studies in ancient wetland areas have concentrated on presently dry, semi-arid interior parts of Australia (such as Lake Mungo). This project compares people-land relationships in cold, 'harsh' climates with coastal connections. The New England Tableland of New South Wales and the Northern Midlands of Tasmania are ideal for exploring these themes because they have similar cool and sub-humid climates, with open woodland environments and nationally important wetlands (Directory of Important Wetlands of Australia). The ancient wetlands provide very good opportunities for good Pleistocene records of Aboriginal occupation and climate change to be preserved in periglacial settings (Colhoun *et al.* 2010; Haworth 2006). While the Aboriginal history of New England has been the subject of detailed studies in the 1960s (McBryde 1974), little systematic research has been carried out since Godwin in 1990 (Beck 2006; Godwin 1997). Similarly, the Aboriginal history and archaeology of this part of Tasmania has also been outlined in the 1980s (Kee 1990) with little work done since.

Wetlands were chosen for study because water is an essential for human occupation. Wetlands are also cultural landscapes. Indigenous Australians in the past imprinted a range of cultural features on them, such as fish traps, ditches, mounds, myths and stories (Smith and Wobst 2005) and these interactions are likely to be ancient, but linked with climatic changes that affect all water bodies. Wetlands which persist to the present are useful starting points for study because they preserve long-term geomorphological and archaeological evidence over thousands of years, which enables comparative studies of human interactions.

Structure of the book

The book is divided into four parts. The first chapters deal with Indigenous participation during the project, with Chapter 1 (Beck *et al.*) and Chapter 2 (Lagoons Reference Group *et al.*) covering the Indigenous views and engagement and the educational programs developed for the project. The research contributed to the existing field of research into community engagement and education in Aboriginal contexts in NSW. Unlike most projects where Aboriginal people are involved in commercial archaeology, this project focussed on archaeological research not management. Elders from the community participated fully in the project as they were equal partners in the research team during field-work and training. Knowledge holders and scientists were both valued. This is Fraser's 'politics of recognition', which, together with the concept of Work Integrated Learning, allowed for a more sustained, long-term and meaningful engagement. Work integrated learning was very successful as an active site of learning and by including training (partly at University sites, classrooms, college accommodation etc.) and work on country, it provided specific skills and encouragement towards Higher Education. Several students did enrol in higher education, partly as a result of the project. We collected a number of testimonies from the students which demonstrated their enjoyment, learning and satisfaction. Continuing partnerships with the New England Aboriginal Land Councils led to a joint grant application to NSW Land Services for heritage education in 2017. Unfortunately, we were not successful, but the LALCS are keen to re-apply. In late 2018 a further successful application for a large grant was made with the Armidale community.

The second group of chapters is about field-work, dating and chronology. Chapter 3 (Beck *et al.*) describes field sample locations and the overall field methods used for sampling archaeology and geomorphology. Our studies focussed on wetland lagoon sites, as depositional environments which had not been previously studied. Chapter 4 (Hayes *et al.*) describes the dating and chronology, including OSL and radiocarbon from geomorphological and archaeological contexts. Thirty-seven OSL ages in all were

obtained from lunettes in Tasmania and New England in order to ascertain the formation ages of these depositional bodies. The ages are diverse, ranging from LGM dates (~20 ka) in Tasmania to a much wider range in New England, where some lunette formation was dated to as early as 48 ka and one non-lunette dune was dated to before 70 000 ka BP. Previously, no dated sites in New England had extended beyond the late Holocene, and we were able to date occupation, using OSL dating, in six lagoon dunes (lunettes).

The third group of chapters presents the results from the lagoons of the New England Tablelands, including their evolution, and past Aboriginal use. Chapter 5 (Haworth *et al.*) describes the nature and evolution of lagoons and associated aeolian deposits on the New England Tablelands. Lagoon formation is multi-causal, but tectonic and climatic disruption of pre-existing drainage systems are probably the major contributors. Lunettes consist of sediments that are usually derived from the lake-bed and lake edge and may be sand, silt or clay. Records of lunette initiation and development may indicate incidents of climatic disruption which provide sediments for successive cycles of accumulation and deflation. Chapter 6 (Appleton and Beck) describes the surface archaeology of the lagoons and their environs, and a range of new stone artefact scatters recorded adjacent to the lagoons. However, large sites were not found to cluster at lagoon locations. Chapter 7 (Appleton and Beck), describes the excavation archaeology of the lagoons. At Barley Field Lagoon this archaeology extends to the early Holocene, and at other lagoons, including axe grinding groove sites, to the mid to late Holocene. Chapter 8 (Fullagar *et al.*) describes the grinding grooves and residue analysis in locally abundant silcrete, a regionally distinctive archaeological site type.

The fourth group of chapters presents the results from the lagoons of the Tasmanian Midlands and Central Plateau. Chapter 9 (Kiernan *et al.*) outlines the nature and evolution of the Central Plateau and Midlands lagoons and associated aeolian deposits. Variations in the character of lakes along a west-east transect across the Tasmanian Central Plateau and into the Midlands graben reflect a combination of forcing processes over time, including the effects of altitude, climate and tectonics working on the local lithology and landscape. The inferred glacial age of some of the stone tools at Lagoon of Islands contrasts with other sites, where artefacts were recorded only within the uppermost Holocene deposits, that is, dating to the last 5000 years. Chapter 10 (McConnell *et al.*) records the archaeology of the Tasmanian lagoons. The findings of this study indicate that the larger lakes and lagoons, as well as lakes/lagoons on established travel routes, generally have the higher densities of sites and larger sites. The data suggest that the north-east end and west-southwest-south margin of lakes and lagoons were preferentially used historically, but they are not the only parts of a lake or lagoon edge with site evidence.

The conclusion is in Chapter 11 where Beck and Haworth present the results in a global context. Unexpectedly, the lunette and other dune OSL ages (from 11 sites) were not clustered around the Last Glacial Maximum at ~ 20 k, but ranged from 72 k to 2.2 k at Big Llangothlin and from 48.5 k to 7.2 k at Lake Tiberias in Tasmania. The sediment particle sizes suggest both wind and water deposition. This suggests quite individual depositional histories for the lunettes and other dunes, perhaps not so closely related to the major turning points of global climate changes. One hypothesis we suggest from the archaeological results is that in both regions lagoon resources may have been associated with supporting ceremonial activities in the late Holocene with only sparser occupation in earlier phases.

An Appendix section contains primary data for age results, and detailed section diagrams.

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