

CHAPTER 1

INTRODUCTION & CONTEXTS

Introduction

Australia's arid interior contains many salt lakes, which for the most part are dry and desolate wastes. Yet the lakes are paradoxical. Following floods they become significant wetlands for lengthy periods. There follows a prodigiously productive cycle, as the biota of the lake system respond to the exceptional abundance of water. Micro-organisms, small crustacea and algae, which have lain dormant in the desiccated clays of the lakebed, rapidly emerge and multiply. Soon the shallow brackish waters are teeming with life and large flocks of waterbirds appear to feed on this rare abundance. Some species are adapted to these irregular events and use the opportunity to breed.

Conditions on the lake margin are equally as good. The ground is saturated and this provides optimal conditions for many plants. The stocks of seed germinate and new growth is everywhere. Established plants respond by flowering prolifically and in subsequent months produce heavy crops of fruits or seeds. The abundance of water and feed benefits the fauna of the region too. In short, this is as good as it gets. Clearly these infrequent but spectacular lake-full events offered opportunities for Aborigines as well.

A chance to study Aboriginal occupation and activity at an intermittent salt lake arose in the mid-1990s, when archaeological site surveys were commissioned at Lake Carey, near Laverton, in the Eastern Goldfields of southeast Western Australia (Figures 1.1 & 1.2). The lake has maximum dimensions of 77 km NW/SE by 22 km NE/SW and is the fourth or fifth largest salt lake in the state. It lies close to the western edge of the Great Victoria Desert, in a region with essentially non-seasonal rainfall and an annual average of 225 mm. The lake is in the centre of the traditional lands of the *Waljen*, a people of the Western Desert bloc about whom there are few historical accounts (Stanton 1984).

Very little was known about Lake Carey or the other 20 or so sizeable salt lakes in southeast Western Australia. These features are also called saline lakes, saline playas or salinas. In the absence of information, initial archaeological, biological and environmental studies at Lake Carey have been data-collecting exercises, by necessity and design. They have made some interesting discoveries. One of these has been the abundance of Aboriginal archaeological sites at some places around the lake and the presence of sites on islands several kilometres from the shore.

The presence of many sites beside Lake Carey was surprising only because next to nothing is known about Aboriginal use of salt lakes. They hardly rate a mention in the major research studies of arid Australia and receive no mention in the numerous papers derived from those studies. Nor are salt lakes considered in the general theoretical models of Aboriginal colonization, adaptation or settlement of the arid zone.

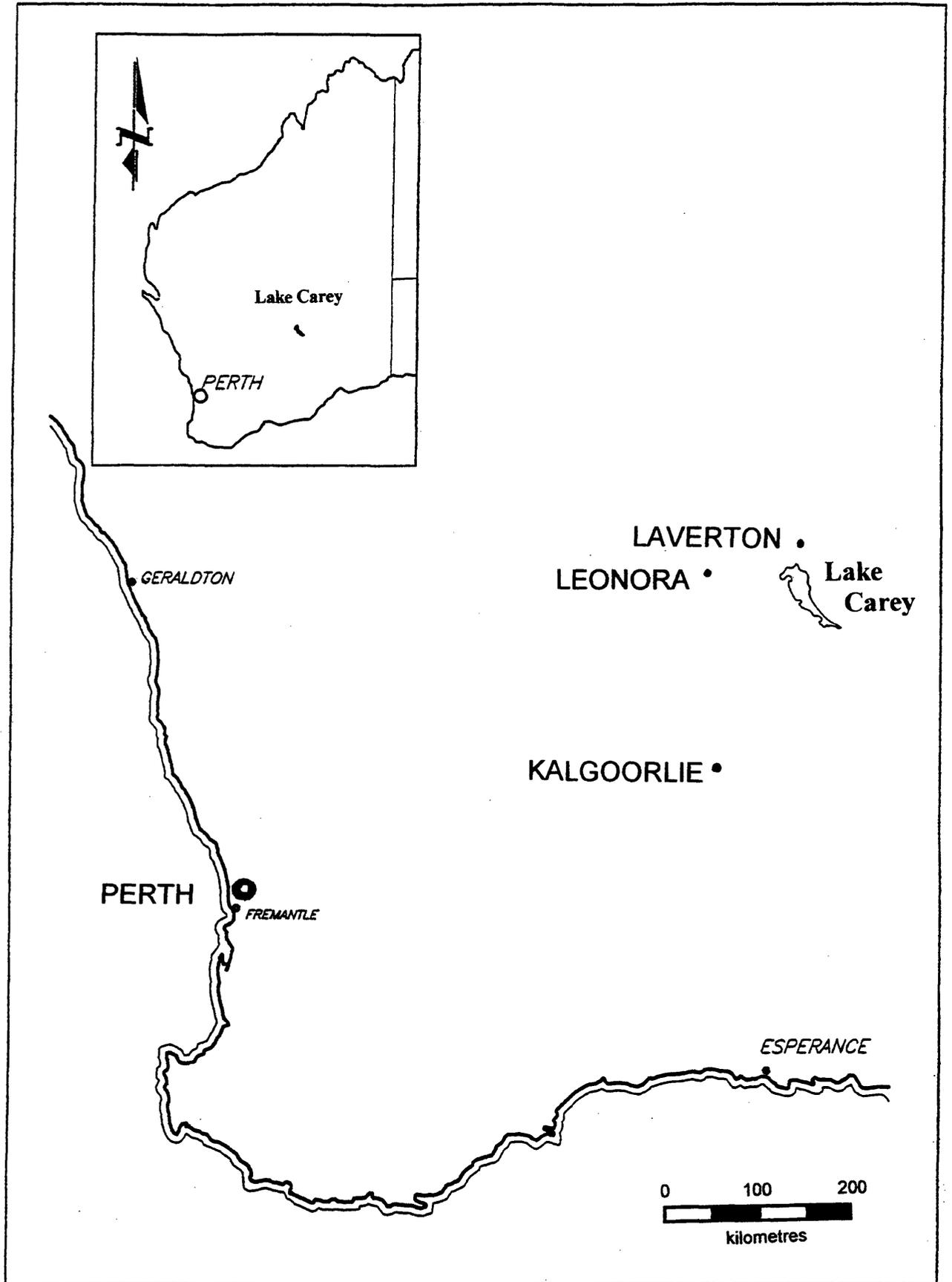


Figure 1.1: Location Map

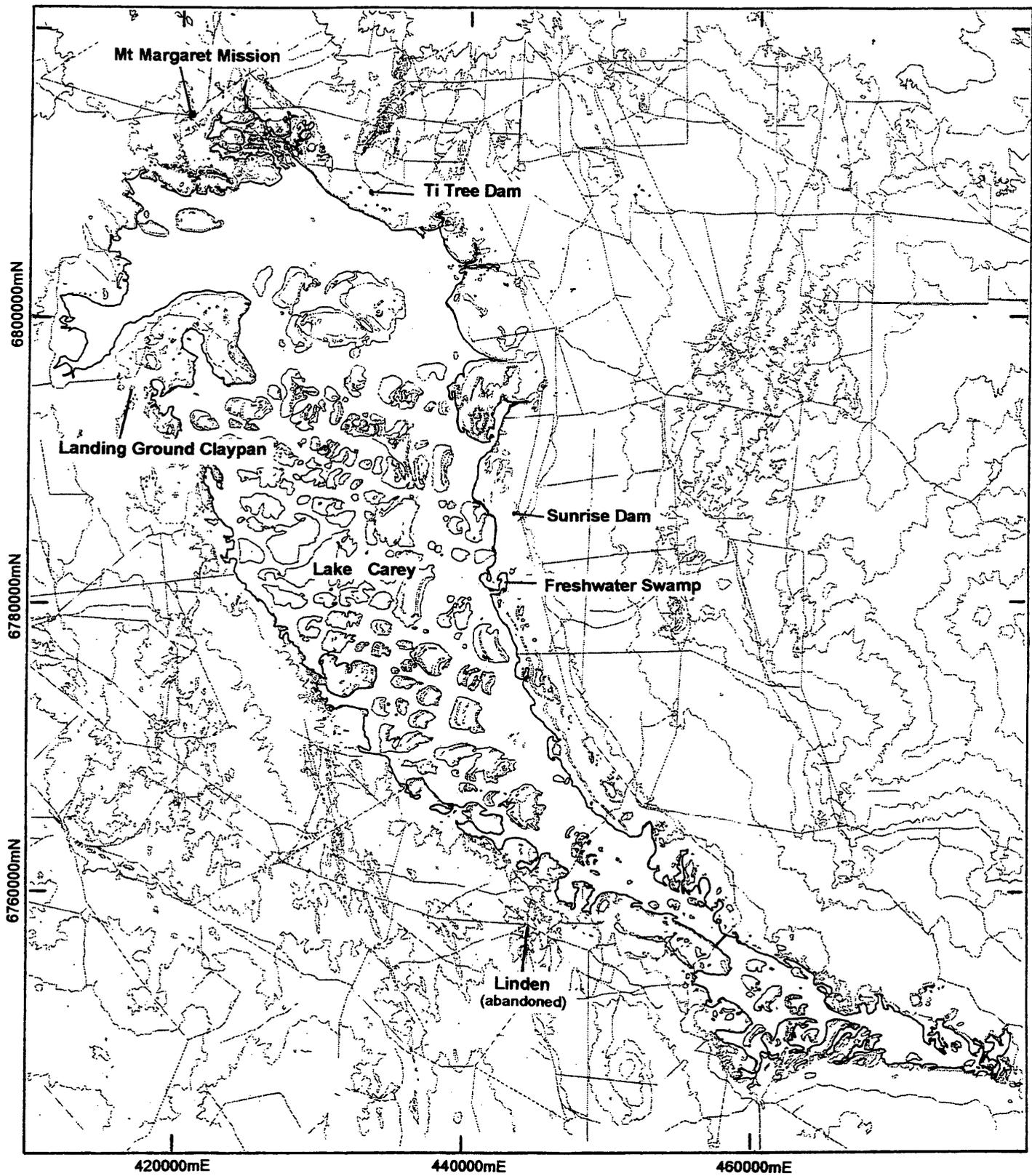


Figure 1.2: Lake Carey district

This paucity of information extends to the ethnographic record. There are very few recorded accounts of Aborigines using or exploiting the resources of these environments. This dearth has been noted by other researchers (Williams 1998:78). Certainly there are no ethnographic or ethnohistorical accounts for Lake Carey or the other salt lakes of southeast Western Australia. Nor have ethnobotanical studies in arid areas revealed any reliance by Aboriginal groups on the plants endemic to salt lakes (as discussed in detail in Chapter 6). This may indicate avoidance of the lakes by those Aborigines studied but equally may just reflect patterns of fieldwork. The floods that fill and transform the lakes are infrequent and unlikely to happen during the short periods when researchers are in the field. The shortage of written evidence highlights the need for archaeological research to determine the role of salt lakes in past settlement patterns.

Background

The many sites at Lake Carey attest that the lake was integrated into the local Aboriginal economy in some way, irrespective of what the archaeological, ethnographic and ethnohistorical literature suggests. This thesis documents that archaeological evidence and then attempts to explain the observed patterns. Essentially, it seeks to answer the fundamental questions: what is the archaeological pattern at Lake Carey and why is it so?

The answers are essential for management of the archaeological resource. Archaeological sites at Lake Carey are under threat from increasing exploration on and around the lake and the development of several mines. A basic requirement for heritage management is documentation of the sites and development of a classificatory scheme that simplifies or reduces their diversity for purposes of cataloguing, comparison and the identification of unusual, perhaps unique sites. This in turn permits the assessment of site significance and the necessary planning to ensure the protection of a representative sample of sites as well as important individual sites (Bowdler 1981; 1984; Raab & Klinger 1977).

The answers have a bearing too on some recurrent research questions in Australian arid zone archaeology. They provide a test of theoretical models of settlement and subsistence; the so-called 'arid zone adaptation' (e.g. Cane 1984; 1990; Gould 1973; 1977a; 1991; Smith 1988; 1993; Veth 1993).

An ecosystem or landuse approach was chosen to interpret and explain past Aboriginal activity and occupation at the lake. This approach sought to 'define the characteristics and processes of the biophysical environment that provide a matrix for and interact with socioeconomic systems, as reflected ... in subsistence activities and settlement patterns' (Butzer 1982:6). It recognizes many of the factors that structured the distribution of sites; the factors that made places suitable for or conducive to certain Aboriginal activities (see Lilley 1985), but also those that contribute to the preservation and exposure of the archaeological remains (Ross 1993). The approach relies on there being little environmental change over the period of Aboriginal occupation and several lines of evidence will be adduced to support this assumption.

Human choice and decision-making, as mediated by culture and technology, were important in the ways that Aborigines individually and as a society interacted with the environment. But in the absence of ethnographic information, these aspects of past behaviour are difficult to reconstruct and so are only considered here as incidental. Instead, this thesis aims to describe the biophysical world in which the past inhabitants operated, as a basis for understanding both the constraints and opportunities which influenced and partially determined their choices and actions in regards to settlement and subsistence (Butzer 1982:32).

The Study

Five areas at Lake Carey were chosen to sample the diversity in landforms, biology and archaeology of the lake system. These five study areas comprised two groups of islands on the lake and portions of the eastern, southern and western lake margins. Within the study areas, the distribution of archaeological sites and material was analysed in terms of the landscapes typical of the lake system. The potential resources that might have attracted Aboriginal settlement were also determined and the patterning of sites around the lake system compared with the distribution of those resources. The lake system is defined here as the salt lake, the islands and the lake margin; that is, land which is affected directly by the salinity, hydrology and sedimentation processes of the lake and which typically is less than 2 km from the shore.

The major aim of the thesis was to collate data from numerous sources and describe the archaeological signature of Lake Carey in terms of the distribution of sites and site assemblages across the various landforms of the lake system. This provides baseline data for future work at Lake Carey. As there have been no large-scale studies of intermittent salt lakes in Australia, the material collected here also provides data for future salt lake researchers, albeit specific to one lake in one region of the continent.

Identifying the patterning of sites across the lake system is a major step towards heritage management and is important for assessing the significance sites and the heritage implications of development. This was the outcome most sought by the three companies which funded the project; Acacia Resources Limited, Placer (Granny Smith) Pty Ltd and Sons of Gwalia Limited.

Explaining the observed patterns in archaeological sites and artefacts was a major goal and challenge. If this could be done it would go part way to understanding the human behaviour behind the distribution of the archaeological material. In the absence of ethnographic accounts of Aboriginal activities at the lake, the thesis sought to relate the distribution of archaeological material to the resources and opportunities available to people visiting the lake. This required the potential resources of the lake system, including food, stone, water and medicinal plants, to be documented. From this it was possible to determine their potential contribution to the patterning of archaeological sites. In addition, stone used for tools was analysed as a marker of Aboriginal movement across the landscape and around the lake system.

From these various lines of inquiry I sought to develop models of past Aboriginal subsistence and settlement. These models have an explanatory power that makes them a useful tool for predicting the distribution of archaeological sites about the entire lake system. They also have a general applicability to other salt lakes in the region and possibly further afield.

One resource of particular interest in understanding past occupation and subsistence patterns was the waterbirds that visit the lake when it is full. This resource might have offered opportunities for considerable congregations of people. Evidence for such aggregations was sought both from the archaeological remains and from considering if any other resources of importance were available. The importance of waterbirds was noted in other regions (Jones 1979; McNiven 1998) but there is negligible ethnohistorical or ethnographic information for the Laverton region to indicate if these were an important resource for people at intermittent salt lakes.

People & History

Ethnohistory

The first European known to reach the Laverton district did so in 1869, when John Forrest and an Aboriginal companion, Tommy Windich, reached and climbed Mt Margaret on the northern edge of Lake Carey. In his diary Forrest succinctly commented on the view. 'There was a large dry salt lake to the southward, as far as the eye could reach' (Forrest 1875:51). The pair travelled another 30 km to the east without finding water or feed for their horses. Daunted by the sight of the Great Victoria Desert, Forrest decided to return to the main party and call to an end the expedition that had set out two and a half months earlier in search of the remains of Leichardt's party.

Forrest records very few encounters with local Aborigines, and these were mainly initiated to find water. They were not especially successful. On the margins of (salt) Lake Barlee, west of Leonora, several of the party tried to catch up with a band of Aborigines seen the previous day but gave up 'after following the tracks for five miles across the lake' (Forrest 1875:34). Further east, in the vicinity of Leonora, Forrest spotted an Aboriginal camp fire and ran down a 'middle-aged native', who realizing he was cornered, 'dropped his two dowaks and wooden dish, and climbed up a small tree' (Forrest 1875:49), where he remained despite efforts to scare him, plead with him or entice him with damper (in that order). East of Leonora and in the vicinity of Lake Carey, Forrest did not remark on the presence of Aboriginal camps or 'smokes', despite climbing most of the large hills to check the route ahead.

These two recorded encounters, over the course of five weeks, give intriguing glimpses but negligible information about the local Aborigines. The band that walked across Lake Barlee 'appeared to be making off at a great rate' (Forrest 1875:34). They might have been travelling onwards and found the mostly dry lake no barrier to movement. Or knowing that they were pursued, the group might have been fleeing and using the lake as a hindrance to pursuit. It is noteworthy that the expedition's pack horses subsequently were bogged in an attempt to cross the lake and were only extracted from the mud with great difficulty.

Ethnography

The people that Forrest and his party encountered would have been related to the *Waljen* group around Lake Carey. According to Tindale's map, Lake Carey falls near the centre of the *Waljen* lands. These were situated: 'East of Lake Raeside from Malcolm, Morgans, Laverton, and Burtville, southeast to Edjudina Soaks ...; at Lake Carey; east to beyond Lake Minigwal' (Tindale 1974:258). An alternative name for the group was *Koara*. Tindale also claims that the people moved south to Kalgoorlie in the 1890s.

The long southwestern boundary of the *Waljen* was formed by the elongated Lake Raeside and the Raeside palaeodrainage (Tindale 1974:map). This is the only case where such a feature marks a tribal boundary in southeast Western Australia. The centrality of salt lakes to tribal areas is also uncommon. From Tindale's map, only the *Ngurlu*, with Lake Ballard, the *Wongga* with Lake Way and the *Waljen* with Lake Carey might be considered to have territory surrounding a salt lake. Most other lakes are irregularly positioned in regard to tribal boundaries.

The anthropologist Rory O'Connor agreed with Tindale's identification of the tribal group but preferred the name *Koara*. He interviewed several elders, including a woman claiming descent from the original people, who said "'the Laverton, Mt Weld and Linden mob were all the same" (i.e. spoke the same dialect)' (R. O'Connor & Veth 1983:9). O'Connor also points out that

territorial borders were not fixed. Intertribal relationships that were flexible and permitted residential mobility between groups were a feature of the Western Desert cultural and social bloc, of which the *Waljen* (or *Koara*) are part.

The Western Desert 'bloc' of tribal groups extends in a broad sweep from Oodnadatta in South Australia to the Great Victoria and Gibson deserts to the southern Kimberley; in effect covering the southern and western portion of the arid interior. These peoples share a common language but were distinguished by different dialects. From a cultural and social viewpoint, the Western Desert peoples were very similar and exhibited 'a high degree of cultural homogeneity' (O'Connor & Veth 1983:7).

After a century of dispossession and deliberate cultural suppression and displacement by people from the deserts to the east and northeast, the Laverton community has limited knowledge of the local situation prior to contact (Stanton 1984). This is highlighted in the case of sacred sites. People in the Laverton district generally concede authority for their sites of significance to initiated men from the Warburton Ranges who are living in the district (pers. obs.).

Although ethnographic inquiry was not a major part of this study, I spoke with several of the main families in Laverton concerning my interests in Lake Carey (after consulting all the land claimants about the research project). People's stories were mixed but it was clear that there is very little extant knowledge of the role of salt lakes in traditional life.

Mrs Dimple Sullivan, a matriarch in her late eighties, recalls walking around the lake with her family when she was a young child on summer holidays from Mt Margaret Mission. The family travelled slowly between claypans and 'soaks' on the eastern margin of the lake, including Sunrise Dam claypan, hunting and gathering as they went. They also visited ration stations at Laverton and Linden. To reach the (abandoned) town of Linden they had to cross the lake, which they did using the old cart track that had been made by prospectors. Other people recall visiting particular places near the lake, and in particular hunting kangaroos or goannas on the alluvial plains adjacent to it.

The general perception of those I spoke to was that traditionally people moved around the lake, travelling beside it and exploiting the resources of the plains. No-one, initially, talked of people travelling across the lake or of visiting the islands. Later, as sites were recorded on the islands and I spoke further with people, one informant said that traditionally people had travelled across the lake, using the islands as stepping stones. Another much younger man told me that the dead were taken to the islands for burial. He was the only person to suggest this and it seems most unlikely.

Some years prior to this, Mrs Julitha Dongoo, an elderly *Yamatji* woman, told me of when she and her family had visited Lake Annean after it flooded. The lake is a large salt lake over 300 km northwest of Lake Carey. On the first visit they raided the numerous duck nests collecting a bounty of eggs. Some weeks later the family returned and took the hatchling ducks. This was particularly easy for the children as the ducklings were unable to fly, and Mrs Dongoo made much of how easy it was to collect this good food.

These few accounts provide only a glimpse of the role of salt lakes in traditional subsistence activities. They suggest that in certain seasons the intermittent lakes were preferred places to forage. This is not, however, a comprehensive account of ethnographic knowledge of the traditional role of salt lakes and it raises more questions than it answers.

Layout of Thesis

The salt lakes of arid Australia are an impressive and unusual sight, whether dry and desolate or full and fertile (Plate 1.1). They are also uncommon environments. In Chapter 2 the geology, ecology and hydrology of Lake Carey is described at some length, along with a short geological and climatic history. This provides a context in which to interpret the archaeology.

In Chapter 3, the archaeological context for this study is set out. A description of the research at other salt lakes in Australia is followed by a discussion of some general models of Aboriginal settlement and subsistence in the arid interior. These are considered and assessed for their relevance to my study area then the limited research in the Laverton-Lake Carey district is summarized

This study involved analyses of samples of sites and site assemblages drawn from a sample of the land around Lake Carey and the islands on the lake. The sample areas and the methods employed in the analyses are described in Chapter 4, including an explanation of a simple statistical method used to identify correlations between sites, assemblage attributes and landscape units. The role of taphonomic processes in the patterning and survival of archaeological material is also discussed.

In Chapter 5, the results of analysing the distribution of archaeological sites and certain implements and lithological types are described, along with a discussion of the results. In Chapter 6, the potential resources of the lake system are identified to determine what resources were available and what might have been attracting Aboriginal occupation of the lake system. Some of the ecological constraints on settlement, particularly potable water, are also considered.

An attempt is made in Chapter 7 to explain the results. This involves proposing models or working hypotheses of Aboriginal subsistence and settlement at the lake. The models provide a basis for predicting the distribution of archaeological sites at Lake Carey as well as similar lakes in southeast Western Australia. The heritage implications of the models are discussed and issues of site significance and protection highlighted. The chapter concludes by considering the position of Lake Carey in the regional settlement pattern and speculating on the role salt lakes played in the initial settlement of the arid zone.



Lake Carey

Sunrise Dam

Lake Carey

Plate 1.1: Eastern shore of Lake Carey during lake-full event (1995)