

# The Role of Zooarchaeology in Archaeological Interpretation: A view from Australia

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**ABSTRACT:** The foundations of Australian zooarchaeology are to be found in early paleontological studies concerned with extinct fauna and their association with humans. It was not until the 1960s that interest in faunal research was rekindled. In this paper we explore the evolution of zooarchaeological research in Australia and Tasmania by reviewing the contents of over 350 papers, books and theses that, over the past 35 years, have been devoted in some way to the study of faunal remains. This study shows that most of this research has been in three categories, namely, taphonomy, subsistence and extinction studies. Some 20% of these studies reside in unpublished undergraduate theses while another 55% have been published in journals, both national and international. It is also evident that periods of highest output are often associated with individual researchers and that since 1992 there has occurred a steady decline in both the published and unpublished material.

**KEY WORDS:** AUSTRALIA, FAUNA, ARCHAEOLOGY, ZOOARCHAEOLOGY, BIBLIOGRAPHY, TRENDS

**RESUMEN:** Los orígenes de la arqueozoología australiana han de buscarse en estudios clásicos de paleontología referidos a faunas extinguidas y su asociación con el hombre. Desde entonces, no es sino hasta la década de los sesenta que resurge el interés por los análisis de fauna. En este trabajo se revisa la trayectoria de la investigación arqueozoológica en Australia y Tasmania a través de una revisión de contenidos de más de 350 artículos, libros y tesis universitarias dedicadas al tema a lo largo de los últimos 35 años. El estudio muestra como gran parte de estas investigaciones pueden encuadrarse dentro de tres categorías, a saber, tafonomía y análisis de extinciones y de subsistencia. Aproximadamente un 20% de esta producción científica está compuesta por tesis de licenciatura inéditas en tanto que un 55% ha sido publicada en revistas nacionales o internacionales. Resulta también evidente como los periodos de máxima productividad coinciden con la actividad de ciertos investigadores y como, desde 1992, se detecta una progresiva disminución en la producción científica en este campo, tanto en lo referente a trabajos inéditos como publicados.

**PALABRAS CLAVE:** AUSTRALIA, FAUNA, ARQUEOLOGÍA, ARQUEOZOLOGÍA, BIBLIOGRAFÍA, TENDENCIAS

## INTRODUCTION

The Australian continent has been isolated from the placental faunas of Eurasia for about 65 million years from the Late Palaeocene to the present. During the late Pleistocene New Guinea, Tas-

mania and Australia were connected by land bridges that had a combined area of well over 11 million square kilometres. Because of these earlier connections they share many endemic faunas that include monotremes, marsupials and reptiles. Humans reached the continent of Sahul at least

40,000 radiocarbon years ago from Southeast Asia. They made and used watercraft sophisticated enough to cross 100 km of ocean (Irwin, 1993). The only other placental mammals to make this crossing were rats and bats (Heatwole, 1987: 121). These people were anatomically modern, biologically viable (Webb, 1989; O'Connell & Allen, 1998) and their entry into Australia marked the beginning of one of the most successful long-term, continuous continental occupations by hunter-gatherers anywhere in the world. Fundamental questions concerning the earliest human occupation of Australia are still debated (e.g. Roberts *et al.*, 1990; Allen & Holdaway, 1995; O'Connell & Allen, 1998; Thorne *et al.*, 1999; Allen, 2000; Turney *et al.*, 2001) as is the role of humans in the demise of large marsupial fauna (megafauna) (Field & Dodson, 1999; Flannery & Roberts, 1999) and their effect on the Australian environment (Head, 2000). The interaction between animals and humans has a long history and specific studies have appeared that document these relationships over time and space (e.g. Tindale, 1955; Megaw, 1966, 1969b; Merrilees, 1968; Meehan, 1977a, 1982; Jones, 1978; Kimber, 1983; Marshall, 1992; Balme, 1995; Bryden *et al.*, 1999; Field, 1999a; Cosgrove & Allen, 2001).

In Australia human/animal interaction was unique because on passing through the biogeographical transitional zone of Wallacea that separates the Oriental and Australian Zoogeographic Regions, people entered a world of marsupials, monotremes, giant flightless birds and large reptiles (Heatwole, 1987). These were to become their companions and terrestrial prey, along with molluscs, birds, marine mammals, fish, insects, megafauna and later the dingo (Thomson *et al.*, 1987: 227-228). The endemic Australian fauna had never coexisted with hominids before nor had they shared their environment with large carnivorous pack animals like hyena or wolves. Large felids and bears were absent as were smaller carnivores like the fox, wolverine and lynx. Only three marsupial carnivores were present, the thylacine (*Thylacinus cynocephalus*), Tasmanian devil (*Sarcophilus harrisii*) and the marsupial lion (*Thylacoleo* sp.) (Murray, 1991), the former two surviving across the continent until about 3,000 BP and in Tasmania into modern times. Although it has been suggested that the introduction of the dingo about 3,000 BP to the Australian mainland drove the marsupial carnivores to extinction, Thomson *et al.* (1987: 228) argue that the effect was more subtle.

They believe environmental change played a more important part in their demise in the last 4,000 years. Animals also became part of the Aboriginal Dreamtime mythology and were both symbolically and realistically represented in paintings and petroglyphs (Brandl, 1973; Stanbury, 1987: 203-205). Aboriginal people depicted several extinct species in their art including the thylacine (*Thylacinus cynocephalus*), long beaked echidna (*Zaglossus* sp.), marsupial lion (*Thylacoleo* sp.) and marsupial tapir (*Palorchestes* sp.) (Chaloupka, 1984; Murray & Chaloupka, 1984). At least another 25-30 species of mammal, bird, reptile, fish, amphibians and invertebrates were also painted (Thomson *et al.*, 1987: 204).

## HISTORY

The foundations of zooarchaeology in Australia lie in vertebrate palaeontology (Wilkinson, 1885; Anderson, 1890a, b; Etheridge *et al.*, 1896; De Vis, 1899, 1900; Stirling, 1900a, b; Etheridge, 1905; Doak & Macaulay-Doyle, 1927; Anderson & Fletcher, 1934; Tedford, 1955; Wakefield, 1960a, b; Vickers-Rich & Archold, 1991). Early experimental studies by Spencer & Walcott (1911) showed that marks on extinct animal bones were made by marsupial carnivores not humans and the possibility of associations of humans and extinct fauna were discussed (Barrett, 1927). After initial attempts at discovering the antiquity of humans through their stratigraphic relationships with extinct fauna interest waned when it became apparent that many associations were equivocal in what they could reveal. Australia was not blessed by deep sedimentary sequences like those of the Somme River valley nor were there clear associations of extinct fauna and stone technology like those found in Brixham cave and Kent's Cavern (Trigger, 1989). Nearly 60 years were to pass before there was a renewed interest in fossil remains (Horton, 1982: 188). Nevertheless, issues of taphonomy, site formation processes and extinction as well as a determination of the antiquity of humans have provided on-going themes for the archaeological debate in Australia that intensified after the 1960s.

During this period archaeologists applied palaeontological concepts in zooarchaeological studies largely within an ethnographic milieu. Ethnography offered an effective method for deriving

explanations from the archaeological evidence of human/animal interaction because it provided highly detailed accounts of Aboriginal economic and social life (e.g. Brough-Smyth, 1878; Roth, 1901b; Spencer, 1928; Altman, 1987) that were, and still are woven into archaeological narratives. However, the inherent danger in its overuse is the creation of an Aboriginal culture that is ahistorical. In this case, the past becomes like the present characterised by 19<sup>th</sup> century ethnographic descriptions of Aboriginal hunting and gathering (Murray, 1992). This has been a common practice in Australian archaeology, some arguing that this is effectively ethnography with a shovel that denies Aborigines a varied history (Murray, 1992). Allen (1972) showed how seductive the use of ethnography becomes when interpreting the zooarchaeological record. The analyses of Aboriginal sites located on lakes and rivers in western New South Wales dating to between 30,000 and 13,000 BP showed exploitation of local resources. Allen's initial conclusions were that sites were occupied on a short-term seasonal basis because the terrestrial fauna was found to be almost identical to that documented for 19<sup>th</sup> century Aboriginal peoples from the same region. In this case, the historical behavioural observations and the archaeological evidence were seamlessly meshed to produce a descriptive narrative about life in the late Pleistocene. Later, a revision of this explanation was made, perhaps in response to the fact that it reflected a changeless society and Allen proposed a more dynamic scenario that took into account more recent evidence and the limitations of ethnographic analogy (Allen, 1990). Alternative views of this process, its consequences and the use of appropriate time scales to investigate the past, have also been advanced both in Australia and elsewhere (Bailey, 1983; Cosgrove & Allen, 1996: 24-25; Murray, 1997, 1999; McGlade, 1999).

Human behaviour during late Pleistocene was also seen as less complex and relatively homogeneous across the continent for at least the first 30,000 years or more and argued to represent an economic system characterised as an 'immediate-return type system' (White & O'Connell, 1982: 72; Lourandos, 1997: 252, 325). As early as 1928 Aborigines were pronounced as 'an unchanging people living in an unchanging environment' suggesting that Aboriginal society was static and that there was nothing that could be learnt from archaeological excavation (Mulvaney & Kamminga, 1999: 12). Even the influence of artefact collectors

and anthropologists as recently as the 1950's largely stifled the study of temporal change in Aboriginal culture (Griffiths, 1996: 76-85). Mulvaney has argued that early academic pioneers of anthropology in Australia thought that no useful insights would come from studies of the past and that it was better to promote the study of living Aboriginal societies instead (Mulvaney & Kamminga, 1999: 12-14). It was not until the establishment of academic archaeology departments in the late 1960's and early 1970's (Mulvaney, 1993; Spriggs & Jones, 1993), the advent of radiocarbon dating and systematic archaeological excavation that finally put the question of the human/animal interactions squarely back on the agenda. This time it was taken seriously within a temporal and spatial framework that has established Aboriginal culture as one of the oldest surviving in the world.

Over the past 35 years limestone cave sites with exceptionally rich faunal records covering the last 35,000 years have been found in various parts of the continent, particularly in southwest Tasmania and southwest Western Australia (eg. Balme *et al.*, 1978; Merrilees & Porter, 1979; Kiernan *et al.*, 1983; Lilley, 1993; Cosgrove, 1995; Dortch, 1996, 1997). In addition, coastal midden sites of the eastern seaboard, inland waterways and Tasmania's west coast provide some of the very best conditions for faunal preservation that have played an important role in the interpretation of archaeological sites (Jones, 1971; Meehan, 1977b; Sullivan, 1982a; Johnstone, 1993). Inland, open sites with good faunal preservation are rare, but megafaunal sites like Cuddie Springs in western New South Wales are offering up new and tantalising evidence of the extinction process in Australia (Furby *et al.*, 1993; Field & Boles, 1998; Field & Dodson, 1999). Systematic general archaeological research on these highly productive sites has taken place repeatedly over the last 30 years (Tindale, 1955; Horton, 1976; Gillespie *et al.*, 1978; Horton & Murray, 1980; Horton & Connah, 1981; Hope *et al.*, 1983; van Huet *et al.*, 1998). In the following discussion several trends in the Australian zooarchaeological literature are examined and are discussed below.

## ZOOARCHAEOLOGICAL LITERATURE

Although a range of specialised faunal studies have been undertaken since 1965, coverage has

been patchy because of the relatively small number of full time academic/research archaeologists specialising in zooarchaeology. Zooarchaeologists in Europe and America have centred their discussions on a wider range of topics, particularly those concerned with identifying the attributes of Middle and Upper Palaeolithic behaviour (Speth & Tchernov, 1998; Boyle, 2000; Burke, 2000; Stiner *et al.*, 2000), domestication (Clutton-Brock, 1989), the role of large carnivores in bone accumulation (Brain, 1981; Stiner, 1994), ageing/sexing (Wilson *et al.*, 1982) and seasonality (Legge & Rowley-Conwy, 1987; Lieberman *et al.*, 1990; Lieberman, 1994; Pike-Tay *et al.*, 1999).

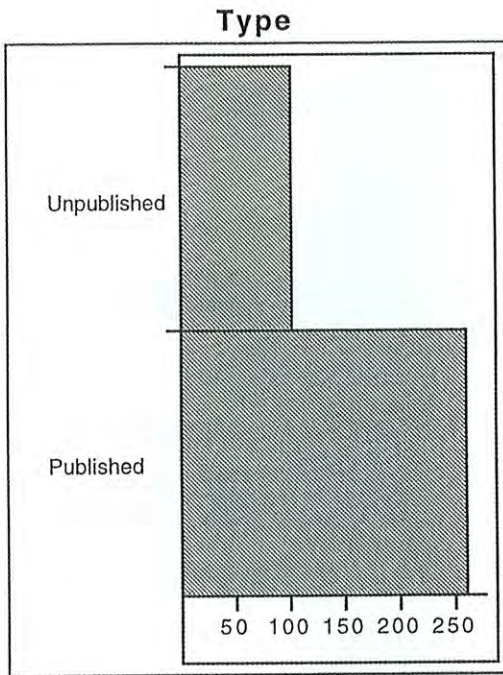
Australian archaeology has focussed on a narrower set of zooarchaeological topics and a review of the Australian literature of the past 35 years shows that over 350 papers, books and theses have been devoted in some way to the study of faunal remains. In compiling the database for this review, unpublished reports were excluded but the variety and scope of this 'grey literature' can be appreciated by an examination of the Australian Heritage Commission's bibliographic databases as well as other specific publications (eg Australian Heritage Commission, 1993). Many that are identified here are concerned with general archaeological studies where faunal analyses are of a secondary concern and include articles where faunal studies compose a small proportion of site reports. This has the effect of inflating to some extent the number of articles but allows an examination of the overall Australian trends. Although faunal studies have been carried out in New Guinea (Mountain, 1990, 1991; Marshall & Allen, 1991; Mountain, 1993) the focus of this paper will be on the Australian and Tasmanian literature.

The literature can be divided into (i) that data obtained from general archaeological excavations, (ii) those from palaeontological investigations with zooarchaeological application and (iii) those that address specific zooarchaeological practical, methodological and theoretical issues. This paper will firstly discuss the utilisation and adoption of zooarchaeological data in Australian archaeological research, and secondly how the data is disseminated in the literature. The bibliography contains examples of the range of zooarchaeological research in Australia over the past 35 years. This list is possibly incomplete although every care has been taken to survey the available literature that in some way discusses zooarchaeological practice, methods and/or theory. Some limitations also exist

especially where there is an overlap of categories within one article, particularly in doctoral theses, where papers or reports have been missed and/or incorrectly classified. Where there are joint and multiple authors the first is cited for database analysis. In this review where there are several faunal topics dealt with in one article, the major issue has been taken as the defining element for inclusion in the database and its classification.

### *Type and Status*

Figure 1 presents the frequency and proportion of published and unpublished work while Figure 2 displays the data on their status. Seventy-two percent are published and 28% are unpublished works. The latter are primarily made up of university theses, particularly Bachelor of Arts 4<sup>th</sup> year honours theses (20%) while the former are mainly distributed across a variety of national journals such as *Archaeology in Oceania* and *Australian Archaeology*. Fifty one (14%) are published in edited books usually as a collection of papers among other archaeological topics with a related interest (eg. Solomon *et al.*, 1990) while a number of zooarchaeological studies are embedded within larger archaeological reports. This is particularly true of doctoral theses where the data have been gathered initially with other questions and problems in mind (eg. Jones, 1971; Allen, 1972; Bowdler, 1979; Lourandos, 1980; Schrire, 1982; McNiven, 1990b; Cosgrove, 1991; Mountain, 1991; Sim, 1998). However relatively few doctoral dissertations have actually addressed specific zooarchaeological issues. Between 1975 and 1995 a total of 9 out of 53 doctoral dissertations (White, 1994) specifically addressed faunal analysis (Bailey, 1975b; Meehan, 1977c; Luebbers, 1978; Gollam, 1982; Sullivan, 1982a; Walters, 1986; Balme, 1990; Walshe, 1994a; Furby, 1995a). In addition, a relatively large number of unpublished undergraduate theses have been completed, many analyses based on material originally dug by archaeologists with broad zooarchaeological questions (eg. Geering, 1980; O'Connor, 1980; Goodwin, 1981; Johnstone, 1982; Zobel, 1982; David, 1983; Newland, 1984; Walshe, 1987; Izard, 1988; Mowart, 1989; Yap, 1992; Gale, 1994; Mebberson, 1998; Cockbill, 1999; Garvey, 1999). These are chiefly investigations of taphonomy, subsistence, seasonality, biogeography and/or climatic change although biochemical and isotope studies have been under-



**Frequencies**

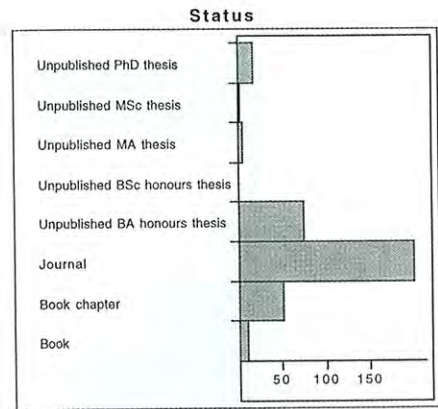
Type	Count	%
Published	261	71.7
Unpublished	103	28.3
Total	364	100.00

FIGURE 1

Frequency and proportion of published and unpublished zooarchaeological research.

taken more recently (Murphy, 1988; Garling, 1994; Anson, 1997; Jellinek, 1998; Roberts & Pate, 1999).

As argued above, the role of ethnography has been important in the interpretation of zooarchaeological data and the consequent characterisation of the archaeological record. It has played a significant part in setting the interpretive agenda and frameworks for zooarchaeological interpretation, particularly in midden analysis in Australia (eg. Bowdler, 1976; Meehan, 1982; Walters, 1984, 1988a; Gould, 1996). Others have argued however, that when dealing with the deep past, particularly when there is no known ethnographic analogue, archaeological interpretation needs to develop its own analytical and theoretical frameworks



**Frequencies**

Status	Count	%
Book	11	3.02
Book chapter	51	14.01
Journal	199	54.67
Unpublished BA honours thesis	76	20.88
Unpublished BSc honours thesis	1	0.28
Unpublished MA thesis	6	1.65
Unpublished MSc thesis	2	0.55
Unpublished PhD thesis	18	4.94
Total	364	100.00

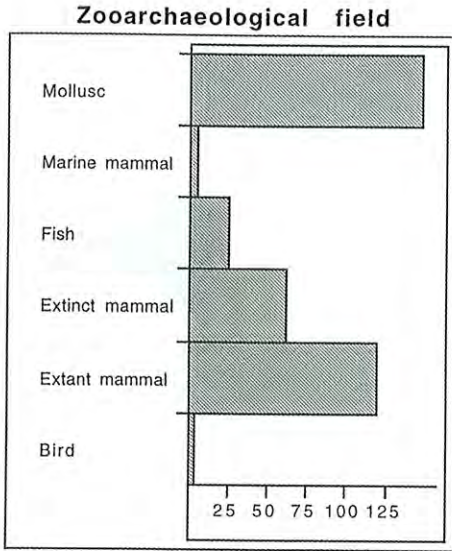
FIGURE 2

Frequency and proportion of status of zooarchaeological research.

(Murray, 1997). Issues of time scale and resolution are important but are rarely discussed in the archaeological, let alone the zooarchaeological literature in Australia (Frankel, 1993; Cosgrove & Allen, 1996: 27; Murray, 1999) although topics such as site formation and taphonomy have come closest to addressing these concerns. Where actualistic studies have established frameworks of analyses, conflation of deposits, over-printing and time averaging confound the identification of the one to one correlations of physical forces responsible for bone patterns and these problems need to be accounted for in the reconstructions of past human behaviours.

#### *Temporal change and zooarchaeological field*

The majority of studies have focussed on mollusc (40.66%, n=148), extant mammals (33%, n=120) and extinct mammals (17%, n=62) while fish, marine mammals and birds make up 7%, 1% and 1% respectively (Figure 3). Although limited, studies of marine mammals and birds have been



**Frequencies**

Zooarchaeological field	Count	%
Bird	4	1.10
Extant mammal	120	32.97
Extinct mammal	62	17.03
Fish	25	6.87
Marine mammal	5	1.37
Mollusc	148	40.66
Total	364	100.00

FIGURE 3

Frequency and proportion of zooarchaeological field by animal class.

undertaken that demonstrates the potential of these classes of animals for study (Jones, 1971: 525-554; Van Tets, 1978; Stockton, 1981; Minnegal, 1982, 1984; West & Sim, 1995; Bryden *et al.*, 1999).

In Figure 4 the profile of the zooarchaeology literature over time reveals an interesting pattern. This can be divided up into four periods; the 9 years covering 1966-1975, the 10 years covering 1976-1985, the 9 years covering 1986-1994 and 7 years between 1995-2001. During this time, a total of 364 articles with zooarchaeological content were identified and while faunal analyses were slow to appear before 1970s, the advent of new archaeology teaching and research departments gave research impetus after the 1970s.

During 1966 to 1975, 53 articles made up 14.5% of the total; during 1976 to 1985 150 articles make up 41.2% whereas between 1986 and

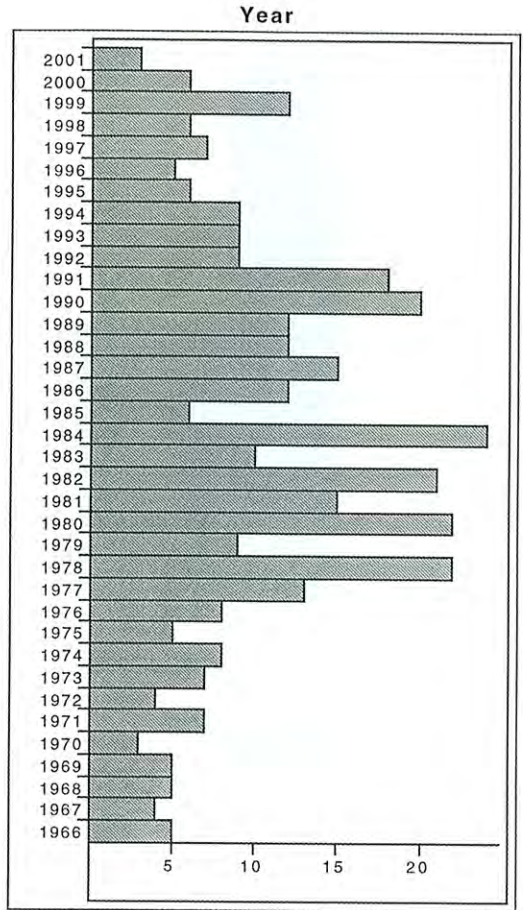


FIGURE 4

Frequency graph of zooarchaeological research output as measured by published and unpublished data by year.

1994 116 articles made up 31.8% of the total and between 1995-2001 45 or 12.3%.

There are a number of peak years, resulting from the flow-on effects of early research by individuals undertaking doctoral work and regional surveys focussing primarily on shell midden analysis (Luebbbers, 1978; Bowdler, 1979; Lourandos, 1980; McBryde, 1982; Meehan, 1984). More particularly 1977, 1978, 1980 and 1982 were years where midden analyses and the megafaunal extinction where a major point of debate (Bailey, 1977; Hope *et al.*, 1977; Meehan, 1977a, c; Balme, 1978, 1980a; Balme *et al.*, 1978; Gillespie *et al.*, 1978; Goede *et al.*, 1978; Hope, 1978; Horton, 1978a, b,

1980; Murray, 1978; Archer *et al.*, 1980; Murray *et al.*, 1980; Blackwell, 1982; Sullivan, 1982a). In 1982 conference proceedings and two books concerned with mollusc analysis and methodology were published (Bowdler, 1982; McBryde, 1982; Meehan, 1982) as well as two doctoral dissertations on the dingo and molluscs were completed (Gollam, 1982; Sullivan, 1982b).

After 1983 we see an increase in the diversity of topics, a move away from midden description to analyses of extant mammals and related topics (O'Connor, 1980; Horton, 1981, 1984a, b; David, 1983, 1984a, b, 1987; Geering, 1983, 1990; Allen & Guy, 1984; Newland, 1984; Walters, 1984, 1988a; Birkett, 1985; Marshall, 1985, 1986; Solomon, 1985, 1986; Barker, 1987; Stokes, 1987; Walshe, 1987; Webb, 1987; Allen *et al.*, 1988; Burke, 1988; Pocock, 1988; Mowart, 1989; Novello, 1989; O'Connell & Marshall, 1989; English, 1990; Hall & Jones, 1990; Marshall & Cosgrove, 1990; Northwood, 1990; Solomon & David, 1990; Webb & Allen, 1990), fish (Dyall, 1982; Balme, 1983, 1995; Owen, 1984; Walters, 1986, 1992; Colley, 1987; Colley & Jones, 1987; McJann, 1991) and a limited interest in marine mammals (Minnegal, 1984; Cribb & Minnegal, 1989). In 1984 two books were published that dealt in part with faunal analysis (Dortch, 1984; Vanderwal & Horton, 1984) along with the completion of several graduate theses and journal articles.

After 1991, diversity in zooarchaeological topics is relatively steady but there is a decrease in research publication until 1998 and 2000. In this period 17% were on taphonomy (Field, 1999b; Walshe, 1999; Walshe, 2000), 41% were on extinction (Field & Boles, 1998; van Huet *et al.*, 1998; Field, 1999a, 2000; Field & Dodson, 1999; Flannery & Roberts, 1999; Miller *et al.*, 1999; Horton, 2000) and the rest evenly divided between subsistence (Knuckely, 1999), biochemical analyses (Roberts & Pate, 1999), ageing/sexing (Bryden *et al.*, 1999), butchery and ethnoarchaeology (Piper, 1992; Pickering, 1995; Cosgrove, 1999a; Hall, 2000; Cosgrove & Allen, 2001). Explanations for this trend are: (1) aspects of larger programs of research being farmed off to undergraduates as thesis topics that remain unpublished, (2) fewer large research programs funded for Aboriginal archaeology, (3) the closure of the Department of Prehistory, Research School of Pacific Studies in Canberra, (4) a perception of the growing influence of Aboriginal politics on academic research and the need of funding institutions to have clear evidence of Aboriginal project support.

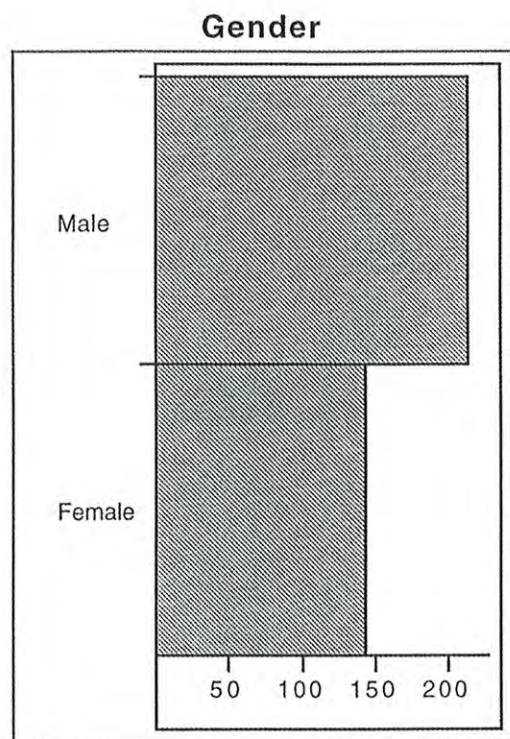
This last issue is of some importance. Clearly Aboriginal involvement in all archaeological research is crucial but this has led to some changes in research trends. Post-graduate researchers are less likely to start projects on their own because of the time spent in Aboriginal negotiation and consultation, sometimes taking up to a year out of their 3 year scholarship funded research. This unpredictability has led to post-graduate researchers moving under the umbrella of fewer, much larger research projects, involving multidisciplinary teams and Aboriginal communities (eg Allen, 1996; Field & Dodson, 1999; Lilley *et al.*, 1999) or into historical archaeology (eg English, 1990, 1991; Piper, 1992; Lawrence, 1998; Tucker, 1999; Lawrence & Tucker, in press).

### Gender

Males appear to dominate (59.7%) the total contributions made by archaeologists over the last 35 years (Figure 5). Females are under-represented in the first 10 years from 1966 to 1976 but they become more prominent contributors from this time on. In all categories apart from environment, contributions are similar or lower than males (Table 1). Forty-eight percent of males are published while 27% of females are published (Table 2). This is particularly true of contributions made to journals where females make up 15% and males make up nearly 40% of the published papers (Table 3). Conversely females write 12% of unpublished 4<sup>th</sup> honours theses whereas males write only 7% of these (Table 2). In all zooarchaeological fields except fish research, males outnumber females by up to 8%, for example in studies on extant mammals (Table 4). Explanations for these trends are not immediately apparent given the relatively equitable gender balance in Australian archaeology. Reviews of gender participation in Australian archaeology have put forward a number of explanations for similar patterns found elsewhere such as the influence of power structures in academic institutions, employment opportunities and family commitments (Beck & Head, 1990; du Cros & Smith, 1993; Balme & Beck, 1995).

### CATEGORIES OF RESEARCH

In Figure 6 categories of zooarchaeological research are shown. As discussed above, classification in each was determined by a number of fac-



### Frequencies

Gender	Count	%
Female	144	40.3
Male	213	59.7
Total	357	100.00

FIGURE 5

Frequency and proportion of male and female archaeologists as measured by published and unpublished data.

tors. Where the article discussed a specific faunal topic it was assigned a category. Where several faunal topics were discussed together or where it formed part of a larger section including general archaeological issues the most dominant faunal theme was chosen to classify the article. Although a further review of the articles by others may reveal different frequency distributions, it is felt that any variation is likely to be small.

### Taphonomy

Seventy-two articles, or 20%, were identified discussing the role of taphonomy in structuring the

Category name	Female	Male	Total
Ageing/sexing	1	0	1
Biochemical	1	5	6
Biodiversity	1	16	17
Bone modification	3	8	11
Butchery studies	2	3	5
Catchment	1	2	3
Economic analysis	8	8	16
Environment	4	1	5
Ethnoarchaeology	6	6	12
Extinction	13	33	46
Quantification	5	9	14
Seasonality	7	6	13
Social analysis	1	4	5
Subsistence	58	73	131
Taphonomy	33	39	72
	144	213	357

TABLE 1

Frequency of zooarchaeological categories by gender as measured by published and unpublished data.

Status	Female	Male	Total
Book	3	8	11
Book chapter	28	23	51
Journal	55	141	196
Unpublished BA honours thesis	45	27	72
Unpublished BSc honours thesis	0	1	1
Unpublished MA thesis	3	3	6
Unpublished MSc thesis	1	1	2
Unpublished PhD thesis	9	9	18
	144	213	357

TABLE 2

Frequency of zooarchaeological status by gender as measured by published and unpublished data.

Type	Female	Male	Total
Published	86	172	258
Unpublished	58	41	99
	144	213	357

TABLE 3

Frequency of zooarchaeological type by gender as measured by published and unpublished data.

archaeological record. The earliest taphonomic and site formation research centred on issues dealing with accumulating agents, identifying signature criteria for marsupial carnivores and their effect on bone properties (Wakefield, 1960a, b, 1982; Douglas *et al.*, 1966; Lundelius, 1966). These laid the foundations for later work that

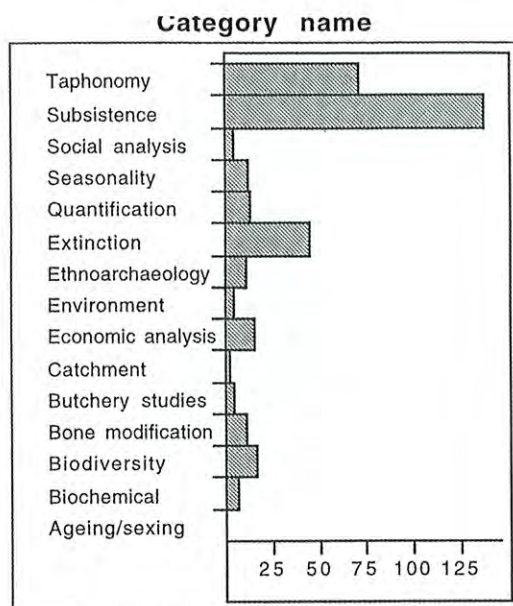


Zooarchaeological field	Female	Male	Total
Bird	1	3	4
Extant mammal	46	73	119
Extinct mammal	18	43	61
Fish	15	10	25
Marine mammal	2	3	5
Mollusc	62	81	143
	144	213	357

TABLE 4

Frequency of zooarchaeological field by gender as measured by published and unpublished data.

focused on taphonomic agents such as owls (eg Morton, 1975; Seebeck, 1976; Marshall, 1985; Geering, 1990; Garvey, 1999), carnivores (eg Ewer, 1969; Hope, 1973; Archer *et al.*, 1980; David, 1983; Bowdler, 1984; Walters, 1984; Hall & Jones, 1990; Marshall & Cosgrove, 1990; Northwood, 1990; Walshe, 1994b; Gould, 1996; Oakley, 2000; Walshe, 2000;), seals and sea birds (Horton, 1978b; Jones & Allen, 1978) and mega-fauna (Mebberson, 1998; Field, 1999b). The latter zooarchaeological studies have concerned themselves with identifying the role played by humans in the extinction process and establishing the direct association of people with megafauna. The debate continues on the length of that association and the human role in the extinction process and is further discussed below (Field, 1999a; Miller *et al.*, 1999). Shell midden research focussed mainly on identifying their origin and formation particularly along the Australian east and north coasts (Hughes & Sullivan, 1974; Jones & Allen, 1978; Stone, 1989; Bailey, 1991, 1993, 1994; Attenbrow, 1992; Bird, 1992; Bailey *et al.*, 1994; O'Connor & Sullivan, 1994; Rowland, 1994). As a proportion of the overall zooarchaeological literature, taphonomic analysis has increased steadily since the mid-1970s. It peaked at the beginning of the 1990s with the publication of a book (Solomon *et al.*, 1990), several articles (Balme & Hope, 1990; English, 1990; Huchet, 1990; McNiven, 1990a; Weaver, 1990; Cribb, 1991; David & Stanisic, 1991), a doctoral (Walshe, 1994a), a masters (van Huet, 1994) and four honours theses (Edwards, 1990; Northwood, 1990; English, 1991; McJann, 1991). Gould's (1996) work in central Australia attempted to link high levels of macropod bone fragmentation with the notion of human dietary stress using ethnoarchaeological comparisons. Recently this has been challenged by Walshe



Frequencies

Categories	Count	%
Ageing/sexing	1	0.28
Biochemical	7	1.92
Biodiversity	17	4.67
Bone modification	11	3.02
Butchery studies	5	1.37
Catchment	3	0.82
Economic analysis	16	4.40
Environment	5	1.37
Ethnoarchaeology	12	3.30
Extinction	46	12.64
Quantification	14	3.85
Seasonality	13	3.57
Social analysis	5	1.37
Subsistence	137	37.64
Taphonomy	72	19.78
Total	364	100.00

FIGURE 6

Frequency and proportion of zooarchaeological categories as measured by published and unpublished data.

(2000) who has argued that in fact Tasmanian devils and dingos were the primary agents for bone breakage and that the pattern does not represent human subsistence behaviour. The basis for these studies had been made earlier by a number of researchers (Baynes *et al.*, 1976b; Horton, 1976; Hope *et al.*, 1977; Balme, 1978, 1979, 1980a; Archer *et al.*, 1980; Horton & Wright, 1981).

### *Subsistence*

One hundred and thirty-seven articles or 38% are devoted to subsistence studies, in some cases using ethnographic observations to support interpretations of the zooarchaeological data. Sixty-one percent (n=84) of subsistence studies focus on the role of molluscs in the Aboriginal economy (eg. Jones, 1967, 1971; Lampert, 1971; Bailey, 1975a, b; Dortch *et al.*, 1984; Sullivan, 1982b, c; Sullivan, 1984b; Vanderwal & Horton, 1984; Sullivan, 1987; McNiven, 1989; Weaver, 1990; Balme, 1995; Morse, 1996). Some of the literature show clear links between the interpretative process and the use of early historical literature to provide a narrative (eg Coleman, 1982; Hall, 1982). These narratives have come out of and are based upon the ethnographic observations made during the contact period. While this is no bad thing, there are few explicit concerns with using zooarchaeological evidence from the deep past, early Holocene and more particularly the late Pleistocene, which are then pasted onto what is known in ethnographic descriptions. This is not to deny that ethnographically observed behaviours were present in past communities but demonstrating that the archaeological patterns reflect such behaviour is difficult. Although this may be the case, use of the historical records to provide an explanation for the changes in the zooarchaeological record have been attempted, particularly in social analyses (Jones, 1971, 1978; Bowdler, 1976; Satterthwait, 1987; Walters, 1988b; Hall, 2000).

Twenty-four percent of subsistence studies are based on terrestrial mammals. These studies have focussed on the faunal remains and associated technology used to interpret regional subsistence patterns (eg Lourandos, 1968; McBryde, 1976; Dortch, 1984). Other work has investigated the way in which extant animals were utilised in the food quest and how their modern behavioural ecology can be investigated to inform on palaeoecological structure and land use patterns (Cosgrove, 1995; Cosgrove & Allen, 2001). The presence of some terrestrial animals such as emu and macropod at late Pleistocene inland archaeological sites have also challenged earlier coastal models of continental colonisation (Kiernan *et al.*, 1983; Bowdler, 1990; Cosgrove *et al.*, 1990). The evidence would suggest adaptations to inland and upland areas much earlier than has been argued (Bowdler, 1981). The presence of people in the interior Tas-

manian mountain valleys between 35,000 to 13,000 BP is a good example where people were already hunting macropods in cold and rugged uplands 25,000 years earlier than suggested (Figure 7) (Cosgrove, 1995: 117; 1999a). Prey choice in these regions and at these times focussed primarily on Bennett's wallaby (*Macropus rufogriseus*). Body parts most commonly selected were the lower limb bones particularly the tibia and femur (Figure 8). Bone concentrations in most sites reach over 250,000 in less than a cubic metre of excavated deposit (Figure 9).

### *Social Analyses*

Considering the wealth of ethnography and its widespread use, it is interesting that so few social analyses have been attempted with faunal data. This trend may be explained by the fact that the theoretical frameworks needed in linking the zooarchaeological data to the past ideological realm are very underdeveloped. There is a far greater theoretical distance between the linking arguments of say, ideological and zooarchaeological data than with subsistence and faunal evidence. This is particularly true of the connection between gender roles seen in the ethnography and their correlates in the archaeological record. Bowdler's (1976) study on the changing role of women in Aboriginal society at Bass Point, New South Wales, was an attempt to tie the 19<sup>th</sup> century ethnographic observations to the appearance of fishhooks. The sexual division of labour had been observed ethnographically in Aboriginal societies where the women carried out much of the work and provisioning. Shellfish, the "low key dependable resources" were the economic mainstay. These animals were found in abundance along with fish hooks and bone points and Bowdler argued that a change from point to hook technology reflected the changing roles of men and women in the coastal economy of Aboriginal society. Shell fishhooks were obviously an important technological innovation appearing in the archaeological record less than 1,000 BP (Sullivan, 1987). Their role in a shift in women's subsistence activities has continued to be debated. MacKay and White have suggested that increases in mussel shellfish in middens along the south coast of New South Wales were due to ecological changes rather than changing gender roles (MacKay & White, 1987).



FIGURE 7

Bone Cave is located within a dolomite bluff in the Weld River valley, Southwest Tasmania. The tripod and bucket mark the entrance to this small cave. Large tree ferns (*Dicksonia antarctica*) grow on the moist soils while *poa* grass survive as refugia on the rocky cliff face. (Photo R. Cosgrove).

Jones (1971, 1978) also used the fact that no Tasmanian Aborigines were reported to have eaten scale fish at European contact although fish were found in archaeological deposits dated prior to ca. 3,500 BP but not after (Colley & Jones, 1987). This led to the question why the Tasmanians stopped eating fish and began a brief and feisty debate in the literature with no clear winners (Jones, 1978; Allen, 1979; Horton, 1979; Bowdler, 1980; Thomas, 1981; Vanderwal & Horton, 1984:108-113). More recently, a post-processual 'model' has been put forward as a way of explaining this archaeological pattern (Collett, 1994). In this 'model' discreet middens found on the Tasmanian coasts were interpreted as the result of women's gathering from the sea while nearby artefact scatters were the result of men's hunting on land. This is not surprising in itself and based mainly on observations recorded in the limited Tasmanian ethno-

graphy. This dichotomy was further assumed to reflect the 'ideological' domain of women to the sea and men to the land (Collett, 1994: 353). Two more assumptions were then made about the role of men and women in Tasmanian Aboriginal society (Collett, 1994: 353). The first was that because Aboriginal men at European contact caught scale fish elsewhere in Australia, the absence of scale fish in middens in Tasmania after 3,500 BP implied that role of men had changed in Tasmanian society. The second assumption was that the dropping of scale fish from the diet was a 'prohibition' following on from Jones' idea (1978). With this 'prohibition' in place 'men could no longer 'hunt' in the sea' and it was argued that the dropping of scale fish from the diet heralded changed 'exchange gender relationships' after 3, 500 BP. The archaeological evidence suggests that fish were not speared but caught in basket traps (Colley



FIGURE 8

Systematically broken tibia of Bennett's wallaby, the major prey animal of late Pleistocene humans in Southwest Tasmania. (Photo R. Frank).

& Jones, 1987), an activity that is 'low key' like possum 'gathering' and identified as women's 'work' where spears were said not to be used either (Collett, 1994: 353). Why women did not take up fishing themselves given their argued 'strengthened association' with 'marine resources after 3,500 BP' is not explained beyond the assumed 'prohibition'. The obvious answer to this question produces a rather circular argument.

In assessing the usefulness of any archaeological model to explain patterning, it must be testable and subject to refutation. A model without such conditions is flawed. The failure to provide any clear substantive archaeological correlates of the enigmatic 'new exchange relationships' between men and women in Tasmanian coastal society beyond the spatial relationships of middens and stone artefacts indicate that it is not a model but rather a narrative pasted onto the archaeology. Indeed, there is no clear evidence at present to indicate whether the midden/artefact dichotomy is related in time, a Tasmania wide coastal phenomenon or the result of taphonomic patterning. In the

end, the question of 'why the Tasmanians stopped eating fish' is perhaps the wrong question to ask, as there have been few ways to judge the veracity of competing explanations.

Nevertheless, one outcome of the debate was the question of how and to what extent the effect of 10,000 years of isolation had on a human community and how a society totally cut off from outside contact may eventually develop. In addition, bone points were dropped from the technological assemblage about 3,500 BP although Bowdler's (1984: 126) suggestion that they were used principally as needles to make fishing nets cannot be supported given their common occurrence in late Pleistocene inland sites. The first appearance of bone points in the uplands of Tasmania is dated to between  $31,610 \pm 370$  and  $27,160 \pm 250$  (Webb & Allen, 1990; Cosgrove, 1999a; Cosgrove & Allen, 2001).

Stylistic changes in fish hook manufacture were also used to argue for changing social make-up on the south east Queensland coast (Walters, 1989, 1992). In addition, Walters suggested that differen-



FIGURE 9

Excavated trench at Bone Cave revealing density of in situ faunal remains. (Photo R. Frank).

ces in fishhook styles reflected the different Aboriginal social affiliations along the Queensland coast.

### Seasonality

The majority of these studies occurred in the 1980s and 1990s mainly using fish (Kefous, 1977; Walters, 1992), shellfish (Feary, 1981; Godfrey, 1984), emu eggshell (Cosgrove, 1995: 76-77), marine mammals (O'Connor, 1980; Bryden *et al.*, 1999) and in a few cases, terrestrial mammals (Geering, 1982). Often, seasonal occupation has been assumed rather than demonstrated through detailed faunal analyses. Studies of terrestrial animals have focussed on wallaby jaw material obtained from excavations in Tasmania. Annuli in wallaby teeth are being investigated to determine season and age of death of modern wallaby populations as a way of assessing seasonal occupation and human landscape use during the late Pleisto-

cene (Pike-Tay *et al.*, 2001). Macropod teeth advance throughout their life, erupting from the ramus, pushing the in situ teeth forward (Figure 10). Macropods are limited to four molars and their eruption depends on rates of chewing, type of food and sexual dimorphism (Lentle *et al.*, 1998). Eruption is therefore not directly related to true age but zoological studies have refined the correlations between age, molar eruption and molar progression (Kirkpatrick, 1964; Dudzinski *et al.*, 1977; Newsome *et al.*, 1977). Molar progression and eruption studies of contemporary Bennett's wallaby populations have aided in identifying relationships between molar age and age class of archaeological specimens (Geering, 1983; Driesen, 1993; Hartzell *et al.*, 1999). Other studies have used oxygen isotope of shellfish as a means of determining seasonal occupation (Godfrey, 1988). These have been undertaken as specialist studies on mollusc material in south eastern Australia. Other studies on microfauna have been undertaken as undergraduate honours theses but remain unpublished (Cockbill, 1999).

### Quantification

Fourteen articles make up this category, or 4% of the total number of zooarchaeological literature. These studies are focussed on questions of faunal sampling (Baynes *et al.*, 1976a; Barz, 1977; Walters, 1979, 1981; Horton, 1984a), their characterisation (Horton, 1978b; Bowdler, 1983) and measurement (Allen & Guy, 1984). They deal mainly with the zooarchaeological fields of mollusc remains and modern mammals. It is interesting to note that such studies were popular in the early 1980s and late 1970s but have waned, particularly over the last 10 years. This may have occurred in response to, and the increased awareness of, the problems of taphonomic vectors, the desire to understand the attritional processes before dealing with the problems of counting. The papers also appear before and at a time of international debates about quantification in the zooarchaeological record, particularly the book publications of Binford (1981), Grayson (1984), Klein & Uribe (1984), Lyman (1994) and later Reitz & Wing (1999).

### Extinction

Forty-two articles, or 13% of the total, are devoted to issues of extinction. A number of very

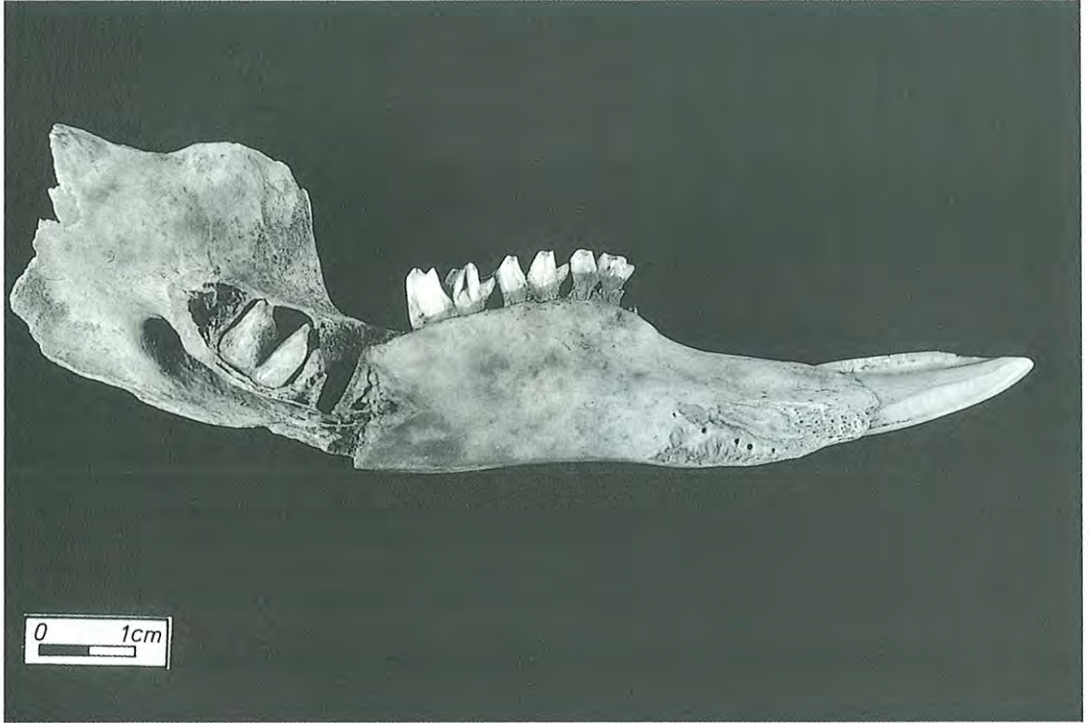


FIGURE 10

Bennett's wallaby mandible showing process of molar progression. Teeth erupt from the mandibular ramus pushing the teeth forward throughout the animal's life. The number of partly and fully erupted molars can determine relative age. (Photo R. Frank).

early papers going back to 19<sup>th</sup> and early 20<sup>th</sup> century were written by paleontologists (Wilkinson, 1885; De Vis, 1899, 1900; Stirling, 1900b; Spencer & Walcott, 1911). Some material was sent back to Richard Owen in England who was the first to describe the large *Diprotodon* and other extinct species (Horton, 1991). The zooarchaeological evidence for extinctions comes mainly from the fossil bearing cave and lake deposits of Western Australia, Victoria, New South Wales, and Tasmania. In many instances the initial research was carried out by paleontologists being followed by archaeologists. Principal among these are David Horton (Victoria, Tasmania, NSW) (Horton, 1976, 1977, 1978a, 1980; Horton & Samuel, 1978; Horton & Murray, 1980; Horton & Connah, 1981; Horton & Wright, 1981), Jeanette Hope (western New South Wales, Kangaroo Island) (Hope, 1973, 1978, 1980; Hope *et al.*, 1977; Hope *et al.*, 1983), Albert Goede and Peter Murray (Tasmania) (Goede & Murray, 1977, 1979; Goede *et al.*,

1978), Jane Balme, Alex Baynes, Duncan Merrilees (Western Australia) (Merrilees, 1968, 1973; Baynes *et al.*, 1976b; Balme, 1978, 1979, 1980a, b; Balme *et al.*, 1978; Merrilees & Porter, 1979) and Judith Field and John Dodson (northeastern NSW) (Dodson *et al.*, 1993; Furby, 1995b; Field, 1999a, 2000; Field & Dodson, 1999).

Many of the publications appear in the early 1980s with a hiatus from the mid-80s to the early 1990s. In the late 1990s, major research on the question of the role of climate, humans or a combination of variables was again undertaken. Many Australian dating specialists and zoologists have preferred to view humans as the primary cause of extinction (Flannery, 1990; Flannery & Roberts, 1999; Miller *et al.*, 1999) while many archaeologists see the extinction process as more complex involving climate, humans and regional differences (Goede & Murray, 1979; Goede & Bada, 1985; Dodson, 1989; Field & Dodson, 1999; Cosgrove & Allen, 2001: 424-425). The published evidence



FIGURE 11

Cuddie Springs, New South Wales during excavation. The site is located on the bed of an ephemeral lake that attracted humans and megafauna between 19,000 and 32,000 radiocarbon years ago. (Photo R. Cosgrove).

however has failed to identify any one prime mover nor is there unequivocal evidence about the overlap of humans and megafauna (Gillespie *et al.*, 1978; Gorecki *et al.*, 1984), although some more recent evidence does suggest an association (Dodson *et al.*, 1993; van Huet *et al.*, 1998). Important work by Judith Field, John Dodson and Richard Fullagar at Cuddie Springs has advanced our understanding of this association (Figure 11). It remains one of the best sites for untangling the question of the reasons for the demise of Australia's giant marsupials. Analysis on the range of taxa, body part distribution, the presence of cut marks and impact marks, as well as their association with flaked stone artefacts and 30,000 year old seed grinding technology demonstrates clear megafauna/human association (Field, 1999a, 2000). The orientations of bones in vertical, horizontal and semi-articulated positions in the lower levels suggest trampling and/or in situ deaths of the large flightless bird *Genyornis* (Figure 12).

One interesting feature of zooarchaeological data is that in sediments dated to before 35,000 BP radiocarbon years a wider, but steadily decreasing number of animal species is found before human presence at the site (Field & Dodson, 1999). After 30,000 BP, the range of taxa diminish further until some of the biggest animals disappear from the record entirely. Field and Dodson have argued that this steadily decreasing range of animals reflects a drying of the continent, particularly at the beginning of the Late Glacial Maximum. The earliest dated human occupation is about 32,000 BP radiocarbon years. With their arrival, it is suggested that the combination of deteriorating climatic regime and human predation tipped the balance for a range of both large and small animals. From about 19,000 to 14,000 BP almost all of the big animals have disappeared from the archaeological record. The largest marsupial to survive this process was the red kangaroo, still extant on the Australian continent (Horton, 1984b).



FIGURE 12

*Genyornis newtoni* long bones exposed at the base of Cuddie Springs excavations. Note their horizontal semi-articulated orientation. A tibiotarsus seen in the lower right of the figure is in a vertical orientation suggestive that this *Genyornis* became bogged. (Photo R. Cosgrove).

The picture has become more complex since Merrelies first suggested that 'man' was the prime reason for the disappearance of megafauna (1968). More sophisticated modelling of the interaction between Australian megafauna and humans has been attempted (Choquernot & Bowman, 1998) following the methods of Mithen for mammoth extinctions in Eurasia (1993). O'Connell has made the point that these approaches are likely to address more interesting questions about how people were involved in the extinction process rather than just whether there were involved (O'Connell, 2000).

#### *Ethnoarchaeology*

Eleven articles are devoted to ethnoarchaeology or 3% of the total. These studies come mainly

from Betty Meehan who in the late 70s and early 80s published the results of her year long field work with the Aboriginal people of the Blythe River region in northern Australia (Meehan, 1977a, b, c, 1982, 1983, 1988). She made extensive studies of the shellfish gathering carried out by the Aboriginal women over the seasonal cycle. This led to a reassessment of the contribution of women's activities in Aboriginal societies and highlighted the important role shellfish played in the coastal economy. Other work on subsistence strategies of Aboriginal groups of central and northern Australia were published in the 1980s and 1990s, with the view to collect data that could be used in optimal foraging studies, butchering and modelling human/megafauna interactions (Gould, 1967; O'Connell & Hawkes, 1984; Altman, 1987; O'Connell & Marshall, 1989; Pickering, 1995; O'Connell, 2000).

#### *Economic Analysis*

This category contains a majority of analyses focussed on molluscs and a small percentage on terrestrial fauna. Major trends in the 1970s were towards quantifying meat weight contributions from shellfish as an indicator of population numbers (Bailey, 1975a). Although these studies suffered from a relatively short half-life, they did demonstrate the many difficulties in this sort of approach. They also highlighted the problems of the equifinality in the interpretative and explanatory process.

#### *Bone Modification*

Eleven papers, or 3% of the total, have investigated the modification of bones by humans (Megaw, 1969a; Jones, 1971: 518-524; Dortch, 1979a; Dortch, 1979b; McIntyre, 1981; Webb, 1987; Vanderwal & Fullagar, 1989; Webb & Allen, 1990). Bone points have been described in various archaeological and ethnographic contexts (eg Roth, 1901a; Bird & Beck, 1980; Pickering, 1980; Mulvaney & Kamminga, 1999: 198, 212, 277, 288). Points found in coastal sites were argued to be for the manufacture of fishing nets (Bowdler & Lourandos, 1982) but Jones argued that there was no connection between the technology and the fish caught (Jones, 1971: 510). Later work (Colley & Jones, 1987, 1988) suggested the use of basket fish



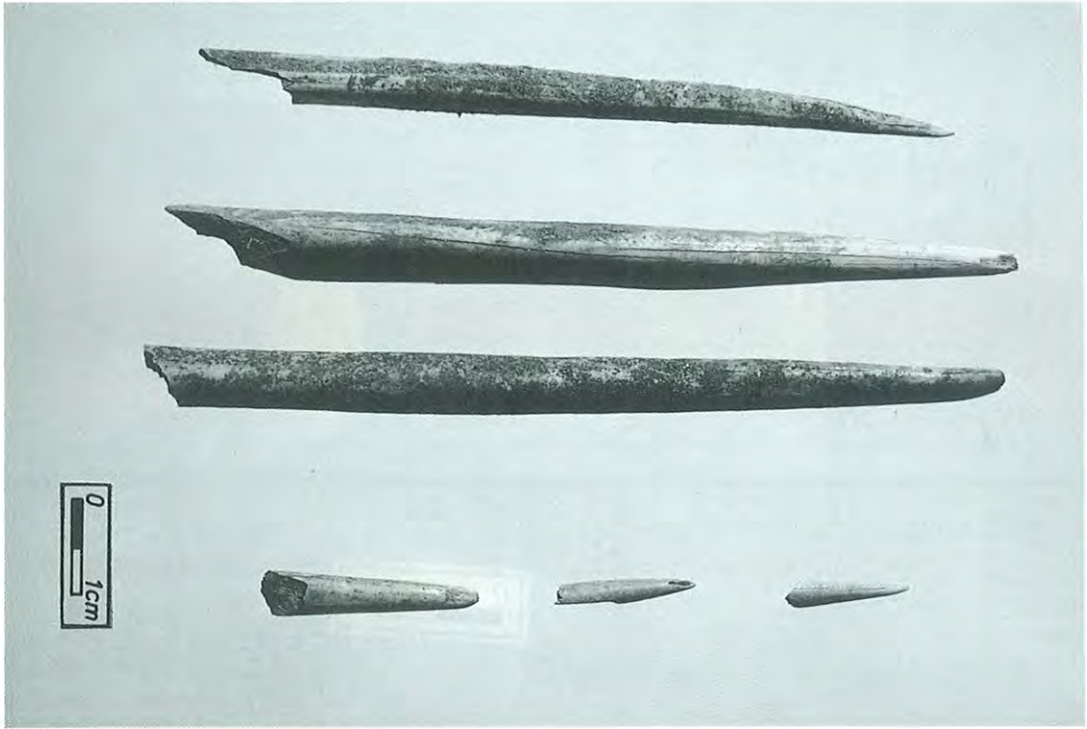


FIGURE 13  
Bone points from Bone Cave, Southwest Tasmania. (Photo R. Frank).

traps. The application of use wear analysis to bone tools has provided an insight into the functions of these implements. The recovery of over 20 bone points and spatulas from southwest Tasmanian cave sites dated to between 30,000 and 13,000 years old has indicated selection of favoured body parts for their manufacture. Almost exclusively these were made on the proximal ends of the fibula of the Bennett's wallaby, *Macropus rufogriseus*. Webb and Allen's use-wear study indicates that many functioned as awls for punching holes in wallaby skins presumably for clothing and some probably as spear tips (Figure 13). Other shorter, stouter varieties, has been suggested functioned as toggles for clothing. No engraved bone or mobiliary art has been discovered from the Southern Forests Archaeological Project's analysis of 636,351 bones (McWilliams *et al.*, 1999; Cosgrove & Allen, 2001: 411) although hand stencil art is present in the Tasmanian caves (Cosgrove & Jones, 1989).

Work by Dortch (1984) at the Western Australian site of Devil's Lair has provided evidence of body adornment in the form of hollowed and rounded beads made on the fibula of small macropods (Figure 14). These were attached by twine and probably served as a necklace of some sort. Descriptions of the use of various faunal remains for decoration has also been undertaken including those dating to the late Pleistocene (Morse, 1993; Akerman, 1995).

#### *Biodiversity*

These studies make up 6% of the total, or 19 articles. The interesting thing about this is that the survey revealed that all of these studies occurred in the early 70s and 80s; all but two were written by males and most concentrated on extinct marsupial faunas (Calaby, 1971; Archer & Baynes, 1972; Archer, 1974, 1977; Baynes *et al.*, 1976b; Hope *et*



FIGURE 14

Bone beads from Devil's Lair, Western Australia made on the fibula of a macropod. (Photo J. Allen).

*al.*, 1977; Archer & Brayshaw, 1978; Merrilees & Porter, 1979; Aplin, 1981a; Aplin, 1981b; Horton, 1981; Winter, 1981; Webster, 1982; Corbett, 1985). It may reflect the research opportunities of archaeologists during this period and the desire to describe the community ecology of these faunas.

The other categories play a minor role in the published and unpublished literature.

## CONCLUSION

Zooarchaeological studies have had an uneven history in Australia and a rather narrower range of study than elsewhere. The foundations of zooarchaeological research are to be found in early paleontological studies concerned with extinct fauna and their association with humans. It was not until the 1960s that interest in faunal research was rekindled. The majority of zooarchaeological literature

appeared between 1970s and 1990s with a steady decline in both the published and unpublished material since 1992. Several reasons were advanced to explain this along with the limited opportunity of formal training in zooarchaeology at a tertiary level that would have otherwise allowed an increase in output. Periods of highest activity are associated with individual researchers and their projects designed to address questions of faunal remains or related topics. These have, in many instances, been as an adjunct to larger research projects. Most of the faunal research has been in three categories; taphonomy, subsistence and extinction studies. A significant number (20%) of faunal studies reside in unpublished undergraduate theses while another 55% have been published in national and international journals. Ethnography and its use in explanations for patterns in the faunal record have remained a strong influence over the last 35 years. Unlike earlier periods where functionalist explanations were common, after the 1970s, and particularly into the 1980s, structuralist

explanations have been used in zooarchaeological explanations although they lack interpretative power because much of the theory used to underpin the interpretation remains underdeveloped. The main fields of zooarchaeological investigation are in studies of shellfish remains, extant and extinct mammals. Fruitful areas of future zooarchaeological research include the application of DNA profiling to unidentified archaeological bones to assist in their identification, seasonality studies and ageing/sexing of marsupials and the broader use of isotope studies to non-human remains as a way of investigating palaeoclimates and palaeodiets. There is also a need to develop more detailed archaeological reference collections of Australian animals either in electronic format (Cosgrove, 1999b; Chrisfield *et al.*, 2000) or as printed manuals like those produced for the Northern Hemisphere (eg. Hillson, 1995). The study of birds, reptiles, amphibians and marine mammals in Aboriginal and historic sites is also an area of high priority. These areas of research are common elsewhere but are only now being applied to Australia's unique archaeofauna.

## REFERENCES

- AKERMAN, K. 1995: The use of bone, shell, and teeth by Aboriginal Australians. In: Johnson, E. (ed.): *Ancient Peoples and Landscapes*: 173-183. Museum of Texas Tech Press, Lubbock.
- ALLEN, H. 1972: *Where the crow flies backwards: man and land in the Darling Basin*. Unpublished PhD thesis, Australian National University, Canberra.
- ALLEN, H. 1979: Left out in the cold: why the Tasmanians stopped eating fish. *Artefact* 4: 1-10.
- ALLEN, H. 1990: Environmental history in southwestern New South Wales during the Late Pleistocene. In: Gamble, C. & Soffer, O. (eds.): *The World at 18 000, Volume 2, Low Latitudes*: 296-321. Unwin Hyman, London.
- ALLEN, J. 1996: *Report of the Southern Forests Archaeological Project: Site Descriptions, Stratigraphies and Chronologies*. Archaeology Publications, School of Archaeology, La Trobe University, Melbourne.
- ALLEN, J. 2000: A matter of time. *Nature Australia* 26: 60-69.
- ALLEN, J.; COSGROVE, R. & BROWN, S. 1988: New archaeological data from the southern forests region, Tasmania: a preliminary statement. *Australian Archaeology* 27: 75-88.
- ALLEN, J. & GUY, J. B. M. 1984: Optimal estimations of individuals in archaeological faunal assemblages: how minimal is the MNI. *Archaeology in Oceania* 19(2): 41-47.
- ALLEN, J. & HOLDAWAY, S. 1995: The question of the contamination of older radiocarbon determinations in Australia. *Antiquity* 69: 101-112.
- ALTMAN, J. 1987: *Hunter-gatherer economy today*. Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra.
- ANDERSON, C. & FLETCHER, H. O. 1934: The Cuddie Springs bone bed. *Australian Museum Magazine* 5:152-158.
- ANDERSON, W. 1890a: Notes on the shell-heaps, or kitchen middens accumulated by the Aborigines of the southern coastal district. *Records of the Geological Survey of New South Wales* 2: 52-60.
- ANDERSON, W. 1890b: On the post-tertiary ossiferous clays, near Myall Creek, Bingara. *Records of the Geological Society of New South Wales* 1: 116-126.
- ANSON, T. J. 1997: *The effect of climate on bone collagen stable nitrogen enrichment in modern south Australian mammals*. Unpublished MA thesis, University of South Australia, School of Cultural Studies, Adelaide.
- APLIN, K. 1981a: *Faunal Remains from Archaeological Sites in Mangrove Creek Catchment, Appendix 4*. In: Attenbrow, V. (ed): *Mangrove Creek Dam Salvage Excavation Project, volume 2*. Report to the N.S.W. National Parks Service, Sydney.
- APLIN, K. 1981b: *The Kamapuk fauna*, Unpublished BA honours thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- ARCHER, M. 1974: Excavations in the Orchestra Shell Cave, Wanneroo, Western Australia. Part III. Fossil vertebrate remains. *Archaeology and Physical Anthropology in Oceania* IX(2):156-162.
- ARCHER, M. 1977: Faunal remains from the excavation at Puntutjarpa rockshelter. In: Gould, R.A. (ed.): *Puntutjarpa rockshelter and the Australian desert culture*. Anthropological Papers of the American Museum of Natural History, New York.
- ARCHER, M. & BAYNES, A. 1972: Prehistoric mammal faunas from two small caves in the extreme southwest of Western Australia. *Journal of the Royal Society of Western Australia* 55: 80-89.
- ARCHER, M. & BRAYSHAW, H. 1978: Recent local faunas from excavations at Herveys Range, Kennedy, Jourama, and Mount Roundback, North-eastern Queensland. *Memoirs of the Queensland Museum* 18(2): 165-177.
- ARCHER, M.; CRAWFORD, I. M. & MERRILEES, D. 1980: Incisions, breakages and charring, some probably

- man-made, in fossil bones from Mammoth Cave, Western Australia. *Alcheringa* 4: 115-131.
- ATTENBROW, V. 1992: Shell bed or shell midden. *Australian Archaeology* 34: 2-21.
- AUSTRALIAN HERITAGE COMMISSION 1993: *Australian Aboriginal middens*. Australian Government Publishing Service, Canberra.
- BAILEY, G. 1975a: The role of molluscs in coastal economies: The results of midden analyses in Australia. *Journal of Archaeological Science* 2: 45-62.
- BAILEY, G. 1975b: *The role of shell middens in prehistoric economies*. Unpublished PhD thesis. Cambridge University, Cambridge.
- BAILEY, G. 1977: Shell mounds, shell middens and raised beaches in Cape York Peninsula. *Mankind* 11(2): 132-143.
- BAILEY, G. 1983: Concepts of time in Quaternary Prehistory. *Annual Review of Anthropology* 12: 165-192.
- BAILEY, G. 1991: Hens eggs and cockle shells: Wepia shell mounds reconsidered. *Archaeology in Oceania* 26(1): 21-22.
- BAILEY, G. 1993: Shell mounds in 1972 and 1992: Reflections on recent controversies at Ballina and Wepia. *Australian Archaeology* 37: 1-18.
- BAILEY, G. 1994: The Wepia shell mounds: Natural or cultural? In: Sullivan, M.; Brockwell, S. & Webb, A. (eds.): *Archaeology in the North: Proceedings of the 1993 Australian Archaeological Association Conference*: 107-129. North Australia Research Unit. The Australian National University, Darwin.
- BAILEY, G.; CHAPPELL, J. & CRIBB, R. 1994: The origin of Anadara shell mounds at Weipa North Queensland, Australia. *Archaeology in Oceania* 29(2): 69-80.
- BALME, J. 1978: An apparent association of artifacts and extinct fauna at Devil's Lair, Western Australia. *The Artefact* 3(3): 111-116.
- BALME, J. 1979: Artificial bias in a sample of kangaroo incisors from Devil's Lair, Western Australia. *Records of the Western Australian Museum* 7: 229-244.
- BALME, J. 1980a: An analysis of charred bone from Devil's Lair, Western Australia. *Archaeology and Physical Anthropology in Oceania* 15(2): 81-85.
- BALME, J. 1980b: Some archaeological studies on a bone accumulation from Devil's Lair, Western Australia. 4.
- BALME, J. 1983: Prehistoric fishing in the lower Darling, western New South Wales. In: Clutton-Brock, J. & Grigson, C. (eds.): *Animals and Archaeology: Shell Middens, Fishes and Birds*: 19-32. B.A.R. (International Series) 183. Oxford.
- BALME, J. 1990: *A Pleistocene tradition: Aboriginal fishery on the Lower Darling River, Western N.S.W.*. Unpublished PhD thesis. Department of Prehistory, Australian National University.
- BALME, J. 1995: 30,000 years of fishery in western New South Wales. *Archaeology in Oceania* 30(1): 1-21.
- BALME, J. & BECK, W. (eds.) 1995: *Gendered archaeology: the second Australian Women in Archaeology Conference*. Archaeology and Natural History Publications, The Australian National University, Canberra.
- BALME, J. & HOPE, J. 1990: Radiocarbon dates from midden sites in the lower Darling River area of western New South Wales. *Archaeology in Oceania* 25(3): 85-101.
- BALME, J.; MERRILEES, D. & PORTER, J. K. 1978: Late Quaternary mammal remains, spanning about 30,000 years from excavations in Devil's Lair, WA. *Journal of the Royal Society of Western Australia* 61: 33-65.
- BARKER, B. 1987: *A faunal analysis from Narcurrer Shelter, south-east South Australia*. Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- BARRETT, C. 1927: The Puralka Flint. *Victorian Naturalist* xliii: 295-296.
- BARZ, K. R. 1977: *Some theoretical and practical aspects of midden sampling as applied to a site at St George's Basin, Jervis Bay, ACT.*. Unpublished BA honours thesis. Department of Prehistory and Anthropology, Australian National University, Canberra.
- BAYNES, A.; MERRILEES, D. & PORTER, J. K. 1976a: Investigation of degree of overestimation inherent in our methods of obtaining 'minimum numbers' of individuals. Appendix 3. In Mammal remains from the upper levels of a late Pleistocene deposit in Devil's Lair, WA. *Journal of the Royal Society of Western Australia* 58: 125-126.
- BAYNES, A.; MERRILEES, D. & PORTER, J. K. 1976b: Mammal remains from the upper levels of a late Pleistocene deposit in Devil's Lair, Western Australia. *Journal of the Royal Society of Western Australia* 58: 97-126.
- BECK, W. & HEAD, L. 1990: Women in Australian prehistory. *Australian Feminist Studies* 11: 29-48.
- BINFORD, L. 1981: *Bones: Ancient Men and Modern Myths*. Academic Press, New York.
- BIRD, C. & BECK, W. 1980: Bone points and spatulae: salvage ethnography in southwest Australia. *Archaeology in Oceania* 15: 168-171.
- BIRD, M. K. 1992: The impact of tropical cyclones on the archaeological record: an Australian example. *Archaeology in Oceania* 27.
- BIRKETT, C. 1985: A site catchment analysis: Walkunder Arch, near Chillagoe, North Queensland. *Archaeology in Oceania* 26(1): 1-16.
- BLACKWELL, A. 1982: Bowen Island: further evidence for economic change and intensification on the south coast of N.S.W. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*: 121-132.

- Department of Prehistory, Research School of Pacific Studies, Canberra.
- BOWDLER, S. 1976: Hook, line and dilly bag: an interpretation of an Australian coastal shell midden. *Mankind* 10: 248-258.
- BOWDLER, S. 1979: *Hunter Hill, Hunter Island*. Unpublished PhD thesis. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- BOWDLER, S. 1980: Fish and culture: a Tamenian polemic. *Mankind* 12: 334-340.
- BOWDLER, S. 1981: Hunters in the highlands: Aboriginal adaptations in the eastern Australian uplands. *Archaeology in Oceania* 16: 99-111.
- BOWDLER, S. (ed.) 1982: *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*. Department of Prehistory, Research School of Pacific Studies, Canberra.
- BOWDLER, S. 1983: Sieving sea shells: midden analysis in Australian archaeology. In: Connah, G. (ed.): *Australian field archaeology*. Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra.
- BOWDLER, S. 1984: *Hunter Hill, Hunter Island*. Terra Australis 8, Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- BOWDLER, S. 1990: The Silver Dollar site, Shark Bay: an interim report. *Australian Institute of Aboriginal Studies newsletter* 2: 60-63.
- BOWDLER, S. & LOURANDOS, H. 1982: Both sides of Bass Strait. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*: 121-132. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- BOYLE, K. V. 2000: Reconstructing Middle Palaeolithic Subsistence Strategies in the South of France. *International Journal of Osteoarchaeology* 10: 336-356.
- BRAIN, C. K. 1981: *The hunters or the hunted? An introduction to African cave taphonomy*. University of Chicago Press, Chicago.
- BRANDL, E. J. 1973: *Australian Aboriginal paintings in western and central Arnhem Land*. Australian Institute of Aboriginal Studies, Canberra.
- BROUGH-SMYTH, R. 1878: *The Aborigines of Victoria*. Government Printer, 2 volumes, Melbourne and London.
- BRYDEN, M. M.; O'CONNOR, S. & JONES, R. 1999: Archaeological Evidence for the Extinction of a Breeding Population of Elephant Seals in Tasmania in Prehistoric Times. *International Journal of Osteoarchaeology* 9: 430-437.
- BURKE, A. 2000: The Variability of Hunting Adaptations during the Middle Palaeolithic. *International Journal of Osteoarchaeology* 10: 281-285.
- BURKE, C. 1988: *Faunal reflections of change and diversity: monitoring the effects of natural and cultural site formation processes on the composition of archaeological faunal assemblages, a case study from Boonah, southeast Queensland*. Unpublished BA honours thesis. University of New England, Armadale.
- CALABY, J. H. 1971: Man, fauna and climate in Aboriginal Australia. In: Mulvaney, D.J. & Golson, J. (eds.): *Aboriginal man and environment in Australia*: 80-93. Australian National University Press, Canberra.
- CHALOUPKA, G. 1984: *From paleoart to casual paintings*. Northern Territory Museum of Arts and Sciences Monograph n° 1, Darwin.
- CHOQUERNOT, D. & BOWMAN, D. M. J. S. 1998: Marsupial megafauna, Aborigines and the overkill hypothesis: Application of predator prey models to the question of Pleistocene extinctions in Australia. *Global Ecology and Biogeography Letters* 7: 167-180.
- CHRISFIELD, T.; COSGROVE, R. & STINSON, J. 2000: Building scholarly online multimedia collections and services. *The Electronic Library* 18: 328-335.
- CLUTTON-BROCK, J. (ed.) 1989: *The walking larder: patterns of domestication, pastoralism, and predation*. Unwin Hyman, London.
- COCKBILL, J. 1999: *Bones of Contention: The potential of Owl Deposited Faunal Material from Two Tasmanian Cave Sites for the Investigation of Human Occupation Patterns*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.
- COLEMAN, J. 1982: A new look at the north coast: Fish trap and 'villages'. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*: 1-10. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- COLLETT, D. 1994: Engendered space and Aboriginal settlement on the coast of Tasmania: a preliminary model. In: Sullivan, M.; Brockwell, S. & Webb, A. (eds.): *Archaeology of the North: Proceedings of the 1993 Australian Archaeology Association Conference*: 341-357. North Australia Research Unit, Australian National University, Darwin.
- COLLEY, S. 1987: Fishing for facts: can we reconstruct fishing methods from archaeological evidence? *Australian Archaeology* 24: 16-26.
- COLLEY, S. & JONES, R. 1987: New fish bone data from Rocky Cape, north west Tasmania. *Archaeology in Oceania* 22(2): 67-71.
- COLLEY, S. & JONES, R. 1988: Rocky Cape revisited - new light on prehistoric Tasmanian fishing. In: Clutton-Brock, J. (ed.): *The Walking Larder*: 336-346. Allen & Unwin, London.

- CORBETT, L. K. 1985: Morphological comparisons of Australian and Thai dingoes: A reappraisal of dingo status, distribution and ancestry. *Proceedings of the Ecological Society of Australia* 13: 277-291.
- COSGROVE, R. 1991: *The Illusion of Riches: Issues of Scale, Resolution and Explanation of Pleistocene Human Behaviour*. Unpublished Ph.D. thesis. School of Archaeology, La Trobe University, Melbourne.
- COSGROVE, R. 1995: *The Illusion of Riches: Scale, resolution and explanation in Tasmanian Pleistocene human behaviour*. B.A.R. (International Series) 608, Oxford.
- COSGROVE, R. 1999a: Forty-Two Degrees South: The Archaeology of Late Pleistocene Tasmania. *Journal of World Prehistory* 13(4): 357-402.
- COSGROVE, R. 1999b: *Hands of Time: Introduction to Australian Zooarchaeology*. CD ROM, Bundoora, Archaeology Publications, Department of Archaeology, La Trobe University.
- COSGROVE, R. & ALLEN, J. 1996: Research strategies and theoretical perspectives. In: Allen, J. (ed.): *Report of the Southern Forests Archaeological Project*: 21-30. Archaeology Publications, La Trobe University, Melbourne.
- COSGROVE, R. & ALLEN, J. 2001: Prey choice and Hunting Strategies in the Late Pleistocene: Evidence from Southwest Tasmania. In: Anderson, A.; O'Connor, S. & Lilley, I. (eds.): *Histories of Old Ages: essays in honour of Rhys Jones*: 397-429. Coombs Academic Publishing, Australian National University, Canberra.
- COSGROVE, R.; ALLEN, J. & MARSHALL, B. 1990: Palaeoecology and Pleistocene Human Occupation in south central Tasmania. *Antiquity* 64: 59-78.
- COSGROVE, R. & JONES, R. 1989: Judds Cavern: a subterranean Aboriginal painting site, southern Tasmania. *Rock Art Research* 6: 96-104.
- CRIBB, R. 1991: Getting into a flap about shell mounds in northern Australia: a reply to Stone. *Archaeology in Oceania* 26(1): 23-25.
- CRIBB, R. & MINNEGAL, M. 1989: Spatial analysis on a dugong consumption site at Princess Charlotte Bay, North Queensland. *And material culture studies in anthropology* 4: 150-174.
- DAVID, B. 1983: *To pick a bone: Differentiating between cultural and dingo-accumulated bone debris, the case of Walkunder Arch*. Unpublished BA honours thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- DAVID, B. 1984a: *Man vs Dingo: the identification of bone remains from archaeological sites, with specific reference to Walkunder Arch Cave, Chillagoe, North-eastern Queensland*. Cultural Resource management monograph, 5. Department of Aboriginal and Torres Strait Affairs, Brisbane.
- DAVID, B. 1984b: Walkunder Arch Cave: a faunal report. *Australian Archaeology* 18: 40-54.
- DAVID, B. 1987: *Prehistoric economies. Aboriginal exploitation of fauna in an area of North Queensland*. Unpublished MA thesis, Department of Archaeology and Anthropology, Australian National University, Canberra.
- DAVID, B. & STANISIC, J. 1991: Land snails in Australian archaeology. *The Artefact* 14: 19-24.
- DE VIS, C. W. 1899: Remarks on a Fossil Implement and Bones of an Extinct Kangaroo. *Proceedings of the Royal Society of Victoria* xii: 85.
- DE VIS, C. W. 1900: Bones and diet of Thylacoleo. *Annals of the Queensland Museum Occasional Notes* 5: 7-11.
- DOAK, J. K. & MACAULAY-DOYLE, C. 1927: The white heart of Cronulla: an ethnological study of the Aboriginal middens at Cronulla. *Science Journal* 4.
- DODSON, J. 1989: Late Pleistocene vegetation and environmental shifts in Australia and their bearing on faunal extinctions. *Journal of Archaeological Science* 16: 207-217.
- DODSON, J. R.; FULLAGAR, R.; FURBY, J. H.; JONES, R. & PROSSER, I. 1993: Humans and megafauna in a Late Pleistocene environment from Cuddie Springs, north western New South Wales. *Archaeology in Oceania* 28: 94-99.
- DORTCH, C. 1979a: 33,000 year old stone and bone artifacts from Devil's Lair, Western Australia. *Journal of the Western Australian Museum* 7(4): 329-367.
- DORTCH, C. E. 1979b: Australia's oldest known ornaments. *Antiquity* 53: 39-43.
- DORTCH, C. 1984: *Devils Lair: a study in prehistory*. Western Australian Museum.
- DORTCH, C. 1997: Prehistory down under: Investigations of submerged Aboriginal sites at Lake Jasper, WA. *Antiquity* 71:116-123.
- DORTCH, C. E.; KENDRICK, G. W. & MORSE, K. 1984: Aboriginal mollusc exploitation in southwestern Australia. *Archaeology in Oceania* 19: 81-104.
- DORTCH, J. 1996: Late Pleistocene and recent Aboriginal occupation of Tunnel Cave and Witchcliff Rock Shelter, south-western Australia. *Australian Aboriginal Studies* 1996: 51-60.
- DOUGLAS, A. M.; KENDRICK, G.W. & MERRILEES, D. 1966: A fossil bone deposit near Perth, Western Australia, interpreted as a carnivore's den after feeding tests on living *Sarcophilus* (Marsupialia, Dasyuridae). *Journal and Proceedings of the Royal Society of Western Australia* 49: 88-90.
- DRIESSEN, M. 1993: *Effects of hunting and rainfall on Bennett's wallaby and Tasmanian pademelon populations*. Unpublished MSc thesis. Department of Zoology, University of Tasmania, Hobart.

- DU CROS, H. & SMITH, L. (ed.) 1993: *Women in Archaeology. A Feminist Critique*. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- DUDZINSKI, M. L.; NEWSOME, A. E.; MERCHANT, J. C. & BOLTON, B. L. 1977: Comparing the two usual methods for ageing Macropodidae on tooth-classes in the Agile Wallaby. *Australian Wildlife Research* 4: 219-221.
- DYALL, L. K. 1982: Aboriginal fishing stations on the Newcastle coastline, New South Wales. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*: 52-66. Department of Prehistory, Research School of Pacific Studies, Canberra.
- EDWARDS, S. 1990: *What's in a midden? Swansea Channel: a study of variability*. Unpublished BA honours thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- ENGLISH, A. J. 1990: Salted meats from the wreck of the William Salthouse: Archaeological analysis of nineteenth century butchery patterns. *Australian Historical Society* 8: 63-69.
- ENGLISH, A. J. 1991: *This muttonous diet. Aspects of faunal analysis and site comparison in Australian historical archaeology*. Unpublished BA honours thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- ETHERIDGE, R. 1905: The further discovery of Dugong bones on the coast of New South Wales. *Records of the Australian Museum* 6(1): 17-19.
- ETHERIDGE, R.; DAVID, T. W. E. & GRIMSHAW, J. W. 1896: On the occurrence of a submerged forest with remains of the dugong, at Sheas Creek, near Sydney. *Journal of the Royal Society of New South Wales* 30: 158-185.
- EWER, R. F. 1969: Some observations on the killing and eating of prey by two dasyurid marsupials: the mulgara, *Dasyercus cristicauda*, and the Tasmanian devil, *Sarcophilus harrisi*. *Zeitschrift fur Tierpsychologie* 26: 23-38.
- FEARY, S. 1981: *The potential of freshwater mussels as seasonal indicators in archaeology*. Unpublished BA honours thesis. Australian National University, Canberra.
- FIELD, J. 1999a: Investigating human/megafauna interactions in Australia: evidence from the Cuddie Springs site. *Records of the Western Australian Museum* 57: 398-399.
- FIELD, J. 1999b: The Role of Taphonomy in the Identification of Site Function at Cuddie Springs. In: Mountain, M.J. & Bowdery, D. (eds.): *Taphonomy: The Analysis of Processes from Phytoliths to Megafauna*: 51-54. Department of Archaeology and Natural History, Research School of Pacific and Asian Studies, Australian National University, Canberra.
- FIELD, J. 2000: The Pleistocene megafaunal locality of Cuddie Springs. *Riversleigh Notes* 45: 11-12.
- FIELD, J. & BOLES, W. 1998: *Genyornis newtoni* and *Dromaius novaehollandiae* at 30,000 b.p. from Cuddie Springs, southeastern Australia. *Alcheringa* 22: 177-188.
- FIELD, J. & DODSON, J. 1999: Late Pleistocene megafauna and human occupation at Cuddie Springs, southeastern Australia. *Proceedings of the Prehistoric Society* 65: 275-301.
- FLANNERY, T. 1990: Pleistocene faunal loss: Implications of the aftershock for Australia's past and future. *Archaeology in Oceania* 25: 45-67.
- FLANNERY, T. F. & ROBERTS, R. G. 1999: Late Quaternary extinctions in Australasia: an overview. In: MacPhee, R.D.E. (ed.): *Extinctions in Near Time: Causes, Contexts, and Consequences*: 239-255. Kluwer Academic/Plenum, New York.
- FRANKEL, D. 1993: Pleistocene chronological structures and explanations: a challenge. In: Smith, M.A.; Fankhauser, B. & Spriggs, M. (eds.): *Sahul in Review*: 24-33. Research School of Pacific Studies, The Australian National University, Canberra.
- FURBY, J. 1995a: *Megafauna under the microscope: archaeology and palaeoenvironment at Cuddie Springs*. Unpublished PhD thesis. University of New South Wales.
- FURBY, J. H. 1995b: *Megafauna under the microscope: Archaeology and palaeoenvironment at Cuddie Springs*. PhD thesis. University of New South Wales, Sydney.
- FURBY, J.; FULLAGAR, R.; DODSON, J. R. & PROSSER, I. 1993: The Cuddie Springs bone bed revisited, 1991. In: Smith, M.A.; Fankhauser, B. & Spriggs, M. (eds.): *Sahul in Review*: 204-210. Research School of Pacific Studies, The Australian National University, Canberra.
- GALE, K. 1994: *When Size Really Does Count: An Occupational History and Comparative Analysis of Stone Cave and Bone Cave from Southwest Tasmania*. Unpublished BA honours thesis. School of Archaeology, La Trobe University.
- GARLING, S. J. 1994: *What was the menu at Cuddie Springs? Haemoglobin crystallisation of blood residues on stone tools*. Unpublished BA honours thesis. Department of Archaeology, University of Sydney, Sydney.
- GARVEY, J. 1999: *Taphonomic Analysis of the Small Vertebrate Fauna from the Archaeological Site Derwent River Shelter 7 (DRS7), Tasmania*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University.
- GEERING, K. 1982: An attempt to establish the seasonality of occupation of the Stockyard Site, Hunter Island. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern*

- Australia: Proceedings of the 1980 Valla conference on Australian prehistory: 141-147. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- GEERING, K. 1990: A taphonomic analysis of recent Masked Owl (*Tyto novaehollandiae castanops*) pellets from Tasmania. In: Soloman, S.; Davidson, I. & Watson, D. (eds.): *Problem Solving in Taphonomy: Archaeological and Palaeontological Studies from Europe, Africa and Oceania*: 135-143. Anthropology Museum, University of Queensland, Brisbane.
- GEERING, K. E. 1980: *An attempt to establish the seasonality of occupation of the Stockyard Site, Hunter Island*. Unpublished BA honours thesis. University of New England, Armadale.
- GEERING, K. E. 1983: *Preliminary Analysis of the Faunal Remains from Kutikina Cave, Franklin River, 1981 Excavation*. Unpublished Report to the Tasmanian Parks and Wildlife Service, Hobart.
- GILLESPIE, R.; HORTON, D. R.; LADD, P.; MACUMBER, P. G.; RICH, T. H.; THORNE, R. & WRIGHT, R. V. S. 1978: Lancefield Swamp and the extinction of the Australian megafauna. *Science* 200: 1044-1048.
- GODFREY, M. 1984: *Seasonality and shellfishing at Discovery Bay*. Unpublished MA thesis. Department of Archaeology, La Trobe University, Melbourne.
- GODFREY, M. 1988: Oxygen isotope analysis: a means for determining the seasonal gathering of the pipi (*Donaxdeltoides*). *Archaeology in Oceania* 23(1): 17-21.
- GOEDE, A. & BADA, J. 1985: Electron spin resonance dating of Quaternary bone material from Tasmanian caves: a comparison with ages determined by aspartic acid racemization and C14. *Australian Journal of Earth Sciences* 32: 155-162.
- GOEDE, A. & MURRAY, P. 1977: Pleistocene man in south central Tasmania: evidence from a cave site in the Florentine valley. *Mankind* 11: 2-10.
- GOEDE, A. & MURRAY, P. 1979: Late Pleistocene bone deposits from a cave in the Florentine Valley, Tasmania. *Papers and Proceedings of the Royal Society of Tasmania* 113: 39-52.
- GOEDE, A.; MURRAY, P. & HARMON, R. 1978: Pleistocene man and megafauna in Tasmania: dated evidence from cave sites. *The Artefact* 3: 139-149.
- GOLLAM, K. 1982: *Prehistoric Dingo*. Unpublished PhD thesis. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- GOODWIN, L. 1981: *What can you do with 27,000 pieces of bone: a taphonomic study of the vertebrate fauna from the Bridgewater Caves South*. Unpublished BA honours thesis. University of New England, Armadale.
- GORECKI, P. P.; HORTON, D. R.; STERN, N. & WRIGHT, R. V. S. 1984: Coexistence of humans and megafauna in Australia: improved stratified evidence. *Archaeology in Oceania* 19: 117-120.
- GOULD, R. 1996: Faunal reduction at Puntutjarpa rockshelter, Warburton Ranges, Western Australia. *Archaeology in Oceania* 31: 72-86.
- GOULD, R. A. 1967: Notes on hunting, butchering and sharing of game among the Ngatatjara and their neighbours in the West Australian desert. *Papers of the Kroeber Anthropological Society* 36: 41-66.
- GRAYSON, D. 1984: *Quantitative zooarchaeology: Topics in the analysis of archaeological faunas*. Academic Press, Orlando.
- GRIFFITHS, T. 1996: *Hunters and Collectors: The Antiquarian Imagination in Australia*. Cambridge University Press, Cambridge.
- HALL, J. 1982: Sitting on the crop of the bay: An historical and archaeological sketch of Aboriginal settlement and subsistence in Moreton Bay, southeast Queensland. In: Bowdler, S. (ed.): *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla conference on Australian prehistory*: 79-95. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- HALL, J. 2000: Fishing for fish - no wallabies: An unusual marine intensification strategy for the late Holocene settlement of Moreton Island, southeast Queensland. In: Anderson, A. & Murray, T. (eds.): *Australian Archaeologist and Australian National University Collected Papers in Honour of Jim Allen*: 201-216. Coombs Academic Publishing, Canberra.
- HALL, J. & JONES, R. 1990: Paleoscatology and taphonomic implications at Rocky Cape, northwestern Tasmania. In: Solomon, S.; Davidson, I. & Watson, D. (eds.): *Problem Solving in Taphonomy: Archaeological and Palaeontological Studies from Europe, Africa and Oceania*: 219-232. Anthropology Museum, University of Queensland, Brisbane.
- HARTZELL, L.; GALE, K.; MEBBERSON, M. & WINES, D. 1999: Methodology for Determining the Age Structure of Pleistocene Archaeofaunal Remains of Bennett's Wallaby (*Macropus rufogriseus*) using tooth eruption, molar progression, and attrition in modern populations. In: Mountain, M. & Bowdery, D. (eds.): *Taphonomy: The Analysis of Processes from Phytoliths to Megafauna*. Research Papers in Archaeology and Natural History series. ANH Publications, The Australian National University, Canberra.
- HEAD, L. 2000: *Second nature: the history and implications of Australia as Aboriginal landscape*. Syracuse University Press, New York.
- HEATWOLE, H. 1987: Major Components and Distributions of the Terrestrial Fauna. In: Dyne, G.R. & Walton, D.W. (eds.): *Fauna of Australia. General Articles*: 101-135. Australian Government Publishing Service, Canberra.



- HILLSON, S. 1995: *Mammal Bones and their Teeth: An Introductory Guide to Methods of Identification*. Institute of Archaeology, University College, London.
- HOPE, J. H. 1973: Analysis of bone from Clogg's Cave, Buchan, NE Victoria. In: Flood, J. (ed.): *The Moth Hunters*. Appendix 14. Unpublished PhD thesis. Australian National University, Canberra.
- HOPE, J. H. 1978: Pleistocene mammal extinctions: the problem of Mungo and Menindee, western New South Wales. *Alcheringa* 2: 65-82.
- HOPE, J. H. 1980: What are we to do with the bones? In: Johnson, I. (ed.): *Holier than thou: Proceedings of the Kioloa conference on Australian prehistory*: 41-59. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- HOPE, J. H.; DARE-EDWARDS, A. & MCINTYRE, M. L. 1983: Middens and megafauna: Stratigraphy and dating of the Lake Tandou lunette, western New South Wales. *Archaeology in Oceania* 18: 45-53.
- HOPE, J. H.; LAMPERT, R. J.; EDMONDSON, E.; SMITH, M. J. & TETS, G. F. V. 1977: Late Pleistocene faunal remains from Seton rock shelter, Kangaroo Island, South Australia. *Journal of Biogeography* 4: 363-385.
- HORTON, D. R. 1976: Lancefield: the problem of proof in bone analysis. *The Artefact* 1: 129-143.
- HORTON, D. R. 1977: A 10,000 year old *Sarcophilus* from Cape York. *Search* 8(10): 374-375.
- HORTON, D. R. 1978a: Extinction of the Australian megafauna. *Australian Institute of Aboriginal Studies Newsletter n.s.* 9: 720-75.
- HORTON, D. R. 1978b: Preliminary notes on the analysis of Australian coastal middens. *Australian Institute of Aboriginal Studies Newsletter* 10: 30-33.
- HORTON, D. R. 1979: Tasmanian adaptation. *Mankind* 12: 28-34.
- HORTON, D. R. 1980: A review of the extinction question: man, climate and megafauna. *Anthropology and Physical Anthropology in Oceania* 15: 86-97.
- HORTON, D. R. 1981: Faunal remains from the Early Man Shelter. In: Rosenfeld, A.; Horton, D. & Winter, J. (eds.): *Early Man in North Queensland: art and archaeology in the Laura area*: 35-44. Terra Australis 6. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- HORTON, D. R. 1982: Vertebrate Palaeoecology in Australia: a review. In: Ambrose, W. & Duerden, P. (eds.): *Archaeometry: an Australasian perspective*: 187-196. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- HORTON, D. R. 1984a: Minimum numbers: A consideration. *Journal of Archaeological Science* 11: 255-271.
- HORTON, D. R. 1984b: Red kangaroos: Last of the Australian megafauna. In: Martin, P.S. & Klein, R.G. (eds.): *Quaternary Extinctions*: 639-680. University of Arizona Press, Tucson.
- HORTON, D. R. (ed.) 1991: *Recovering the tracks. The story of Australian archaeology*. Aboriginal Studies Press, Canberra.
- HORTON, D. R. 2000: *The Pure State of Nature*. Allen and Unwin, Sydney.
- HORTON, D. R. & CONNAH, G. E. 1981: Man and megafauna at Reddestone Creek, near Glen Innes, northern New South Wales. *Australian Archaeology* 13: 35-52.
- HORTON, D. R. & MURRAY, P. 1980: The extinct Toolach wallaby (*Macropus greyi*) from a spring mound in north western Tasmania. *Records of the Queen Victoria Museum* 71: 1-12.
- HORTON, D. R. & SAMUEL, J. 1978: Palaeopathology of a fossil macropod population. *Australian Journal of Zoology* 26: 279-292.
- HORTON, D. R. & WRIGHT, R. V. S. 1981: Cuts on Lancefield bones: Carnivorous Thylacoleo, not humans, the cause. *Archaeology in Oceania* 16.
- HUCHET, B. M. J. 1990: A taphonomic analysis of the faunal assemblages from Yam Camp rockshelter, S.E. Cape York Peninsula. *Queensland Archaeological Research* 7: 57-72.
- HUGHES, P. & SULLIVAN, M. E. 1974: The re-deposition of midden material by storm waves. *Journal and Proceedings of the Royal Society of New South Wales* 107: 6-10.
- IRWIN, G. 1993: Voyaging. In: Spriggs, M.; Yen, D.E.; Ambrose, W.; Jones, R.; Thorne, A. & Andrews, A. (eds.): *A Community of Culture: The people and prehistory of the Pacific*: 73-85. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- IZARD, K. 1988: *Holocene subsistence strategies: Koon-gine faunal analysis*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.
- JELLINEK, M. 1998: *The techniques and application of DNA interaction and amplification from hard tissue*. Unpublished BSc honours thesis. Departments of Genetics and Archaeology, La Trobe University, Melbourne.
- JOHNSTONE, H. 1982: *Testing a model: an analysis of the vertebrate faunal remains from Warragarra Rockshelter, central Tasmania*. Unpublished BA honours thesis. University of New England, Armadale.
- JOHNSTONE, H. 1993: Pleistocene shell middens of the Willandra Lakes. In: Smith, M.A.; Fankhauser, B. & Spriggs, M. (eds.): *Sahul in Review*: 197-203. Research School of Pacific Studies, The Australian National University, Canberra.

- JONES, R. 1967: Middens and man in Tasmania. *Australian Natural History* 18: 359-364.
- JONES, R. 1971: *Rocky Cape and the Problem of the Tasmanians*. Unpublished PhD thesis. University of Sydney, Sydney.
- JONES, R. 1978: Why did the Tasmanians stop eating fish? In: Gould, R. (ed.): *Exploration in Ethnoarchaeology*: 11-47. University of New Mexico Press, Albuquerque and School of American Research, Santa Fe.
- JONES, R. & ALLEN, J. 1978: Caveat excavator: a sea bird midden on Steep Head Island, northwest Tasmania. *Australian Archaeology* 8: 142-145.
- KEFOUS, K. 1977: *We have a fish with ears and wonder if it's valuable*. Unpublished BA honours thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- KIERNAN, K.; JONES, R. & RANSON, D. 1983: New evidence from Fraser cave for glacial age man in southwest Tasmania. *Nature* 301: 28-32.
- KIMBER, R. G. 1983: Black lightning: Aborigines and fire in central Australia and the Western Desert. *Archaeology in Oceania* 18: 38-45.
- KIRKPATRICK, T. 1964: Molar progression and macropod age. *Queensland Journal of Agricultural Science* 21: 163-165.
- KLEIN, R. G. & CRUZ-URIBE, K. 1984: *The analysis of bones from archaeological sites*. University of Chicago Press, Chicago.
- KNUCKELY, G. 1999: A shell midden at Clybucca near Kempsey. *Australian Archaeology* 48: 1-11.
- LAMPERT, R. 1971: *Burrill Lake and Currarong: coastal sites in southern New South Wales*. Department of Prehistory, Australian National University, Canberra.
- LAWRENCE, S. 1998: An integrated approach to the archaeology of whaling. In: Lawrence, S. & Staniforth, M. (eds.): *The archaeology of whaling in southern Australia and New Zealand*: 111-115. Broilga Press for the Australasian Society for Historical Archaeology and the Australian Institute for Maritime Archaeology, Special Publication 10, Gundaroo, NSW.
- LAWRENCE, S. & TUCKER, C. in press: Sources of meat in colonial diets: faunal evidence from two 19<sup>th</sup> century whaling stations. *Environmental Archaeology*.
- LEGGE, A. J. & ROWLEY-CONWY, P. A. 1987: Gazelle killing in Stone Age Syria. *Scientific American* 257: 88-95.
- LIEBERMAN, D. E. 1994: The biological basis for seasonal increments in dental cementum and their application to archaeological research. *Journal of Archaeological Science* 21: 525-529.
- LIEBERMAN, D. E.; DEACON, T. & MEADOW, R. 1990: Computer image enhancement and analysis of cementum increments as applied to the teeth of *Gazella gazella*. *Journal of Archaeological Science* 17: 519-533.
- LENTLE, R. G.; STAFFORD, K. J.; POTTER, M. A.; SPRINGETT, B. P. & HASLETT, S. 1998: Incisor and molar wear in the tamar wallaby (*Macropus eugenii* Desmarest). *Australian Journal of Zoology* 46: 509-527.
- LILLEY, I. 1993: Recent research in southwestern Western Australia: a summary of recent findings. *Australian Archaeology* 36: 34-41.
- LILLEY, I.; ULM, S. & WILLIAMS, M. (eds.) 1999: *The Gooreng Gooreng Cultural Heritage Project: Preliminary Results of Archaeological Research, 1993-1997*. Anthropology Museum, Department of Sociology, Anthropology and Archaeology, The University of Queensland, Brisbane.
- LOURANDOS, H. 1968: Dispersal of activities: the east Tasmanian Aboriginal sites. *Papers and Proceedings of the Royal Society of Tasmania* 102(2): 41-46.
- LOURANDOS, H. 1980: *Forces of change*. Unpublished PhD thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- LOURANDOS, H. 1997: *Continent of Hunters: New Perspectives in Australian Prehistory*. Cambridge University Press, Cambridge.
- LUEBBERS, R. 1978: *Meals and menus: a study of change in prehistoric coastal settlements in South Australia*. Unpublished PhD thesis. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- LUNDELIUS, E. L. 1966: Marsupial carnivore dens in Australian caves. *Studies in Speleology* 1: 113-127.
- LYMAN, L. 1994: *Vertebrate Taphonomy*. Cambridge University Press, Cambridge.
- MACKAY, R. & WHITE, J. P. 1987: Musselling in on the NSW coast. *Archaeology in Oceania* 22(3): 107-111.
- MARSHALL, B. 1985: *Taphonomic studies into owl-pellet bone and its implications for the archaeology of cave and rock-shelter sites*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.
- MARSHALL, B. 1986: An experimental evaluation of the criteria used to distinguish owl-deposited bone in archaeological cave deposits in Australia. *Australian Archaeology* 22: 104-121.
- MARSHALL, B. 1992: Late Pleistocene human exploitation of the platypus in southern Tasmania. In: Augee, M.L. (ed.): *Platypus and Echidna*: 268-276. The Royal Society of New South Wales, Sydney.
- MARSHALL, B. & ALLEN, J. 1991: Excavations at Panakiwuk Cave, New Ireland. In: Allen, J. & Gosden, C. (eds.): *Report of the Lapita Homeland Project Dept of Prehistory*: 59-91. Research School of Pacific and Asian Studies, Australian National University, Canberra.

- MARSHALL, B. & COSGROVE, R. 1990: Tasmanian Devil (*Sarcophilus harrisii*) scat bone: signature criteria and archaeological implications. *Archaeology in Oceania* 25: 102-113.
- MCBRYDE, I. 1976: *Subsistence patterns in New England prehistory*. University of New England, Occasional Papers in Anthropology n° 6, Armidale.
- MCBRYDE, I. 1982: *Coast and Estuary. Archaeological investigations on the north coast of New South Wales and Snapper Point*. Australian Institute of Aboriginal Studies, Canberra.
- MCINTYRE, S. 1981: *A tale of broken bones: the analysis of a bone tool assemblage from Tasmania*. Unpublished BA honours thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- MCJANN, S. 1991: *An analysis of the fish remains from two Shark Bay sites, Western Australia*. Unpublished BA honours thesis. Centre for Archaeology, Department of Anthropology, University of Western Australia, Perth.
- MCNIVEN, I. 1989: Aboriginal shell middens at the mouth of the Maroochy River, southeast Queensland. *Queensland Archaeological Research* 6: 28-52.
- MCNIVEN, I. 1990a: Blowout taphonomy: non-cultural associations between faunal and stone artefact assemblages along the Cooloola coast, southeast Queensland. *Australian Archaeology* 31: 67-74.
- MCNIVEN, I. 1990b: *Prehistoric Aboriginal settlement and subsistence in the Cooloola region, coastal southeast Queensland*. Unpublished PhD thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- MCWILLIAMS, R.; ALLEN, J.; COSGROVE, R. & HOLDAWAY, S. 1999: *Welcome to the Southern Forests Archaeological Project Data Base, Volume 3 of the SFAP*. CD-ROM, School of Archaeological and Historical Studies, La Trobe University, Melbourne.
- MEBBERSON, M. 1998: *A Taphonomic Analysis of the F10 Faunal Assemblage at Cuddie Springs, New South Wales*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University.
- MEEHAN, B. 1977a: Hunters by the seashore. *Journal of Human Evolution* 6(4): 363-370.
- MEEHAN, B. 1977b: Man does not live by calories alone: the role of shell-fish in a coastal cuisine. In: Allen, J.; Golson, J. & Jones, R. (eds.): *Sunda and Sahul*: 493-531. Academic Press, New York.
- MEEHAN, B. 1977c: *Shell Bed to Shell Midden*. Unpublished PhD thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- MEEHAN, B. 1982: *Shell Bed to Shell Midden*. Australian Institute of Aboriginal Studies, Canberra.
- MEEHAN, B. 1983: A matter of choice? Some thoughts on shell gathering strategies in northern Australia. In: Grigson, C. & Clutton-Brock, J. (eds.): *Animals and Archaeology 2: Shell Middens, Fishes and Birds*: 3-17. B.A.R. (International Series) 183. Oxford.
- MEEHAN, B. 1984: *Shell Bed to Shell Midden*. Australian Institute of Aboriginal Studies, Canberra.
- MEEHAN, B. 1988: The 'dinnertime camp'. In: Meehan, B. & Jones, R. (eds.): *Archaeology with ethnography: An Australian Perspective*: 171-181. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- MEGAW, J. V. S. 1966: The excavation of an Aboriginal rock-shelter on Gynea Bay, Port Hacking, NSW. *Archaeology and Physical Anthropology in Oceania* 1(1): 23-50.
- MEGAW, J. V. S. 1969a: Captain Cook and bone barbs at Botany Bay. *Antiquity* 43(171): 213-216.
- MEGAW, J. V. S. 1969b: Trial excavations in Captain Cook's landing place reserve, Kurnell NSW. *Artefact* 13: 3-6.
- MERRILEES, D. 1968: Man the destroyer: late Quaternary changes in the Australian marsupial fauna. *Journal of the proceedings of the Royal Society of Western Australia* 51(1): 1-24.
- MERRILEES, D. 1973: Fossiliferous deposits at Lake Tandou, New South Wales. *Memoirs of the National Museum of Victoria* 34: 177-182.
- MERRILEES, D. & PORTER, J. K. 1979: *Guide to the identification of teeth and some bones of native land mammals occurring in the extreme southwest of Western Australia*. Western Australian Museum, Perth.
- MCGLADE, J. (ed.) 1999: *Advanced ecological theory: principles and applications*. Blackwell Science, Malden, MA.
- MILLER, G. H.; MAGEE, W. J.; JOHNSON, B. J.; FOGEL, M. L.; SPOONER, N. J.; McCULLOCH, M. T. & AYLIFFE, L.K. 1999: Pleistocene extinction of *Genyornis newtoni*: human impact on Australian megafauna. *Science* 283: 205-208.
- MINNEGAL, M. 1982: *Dugong processing as an archaeological phenomenon: evidence from Princess Charlotte Bay, north Queensland*. Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane, Brisbane.
- MINNEGAL, M. 1984: A note on butchering dugong at Princess Charlotte Bay. *Australian Archaeology* 19: 15-20.
- MITHEN, S. 1993: Simulating mammoth hunting and extinction: Implications for the late Pleistocene of the central Russian plain. In: Peterkin, G.P.; Bricker, H. & Mellars, P. (eds.): *Hunting and Animal Exploitation in the Later Palaeolithic and Mesolithic of Eur-*

- sia. Archaeological Papers of the American Anthropological Association, n° 4, Washington DC.
- MORSE, K. 1993: Shell beads from Mandu Mandu Creek rockshelter, Cape Range Peninsula, Western Australia, dated before 30,000 b.p. *Antiquity* 67: 877-883.
- MORSE, K. 1996: Coastal shell middens, Cape Range peninsula, Western Australia: an appraisal of the Holocene evidence. In: Veth, P. & Hiscock, P. (eds.): *Archaeology of northern Australia: regional perspectives*: 9-25. University of Queensland, Brisbane.
- MORTON, S.R. 1975: The diet of the barn owl (*Tyto alba*) in southern Victoria. *Material culture studies in anthropology, archaeology and material culture studies in anthropology* 4: 9-25.
- MOUNTAIN, M. J. 1990: Taphonomic aspects of faunal analysis from Nombe Rockshelter, highlands of Papua and New Guinea. In: Solomon, S.; Davidson, I. & Watson, D. (eds.): *Problem solving in taphonomy: archaeological and palaeontological studies from Europe, Africa and Oceania*: 207-218. Anthropology Museum, University of Queensland, Brisbane.
- MOUNTAIN, M. J. 1991: *Nombe rockshelter, Simbu: Highland New Guinea hunter-gatherers from the Pleistocene*. Unpublished PhD thesis. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- MOUNTAIN, M. J. 1993: Bones, Hunting and Predation in the Pleistocene of Northern Sahul. In: Smith, M.A.; Spriggs, M. & Frankhauser, F. (eds.): *Sahul in Review: Pleistocene Archaeology in Australia, New Guinea and Island Melanesia*: 123-130. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- MOWAT, F. 1989: *Bushrangers cave: a faunal analysis*. Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- MULVANEY, D. J. 1993: From Cambridge to the bush. In: Spriggs, M.; Yen, D.E.; Ambrose, W.; Jones, R.; Thorne, A. & Andrews, A. (eds.): *A Community of Culture: The people and prehistory of the Pacific*: 18-26. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- MULVANEY, J. & KAMMINGA, J. 1999: *Prehistory of Australia*. Allen & Unwin, Sydney.
- MURPHY, A. 1988: *Some preliminary reports obtained in attempting the extraction of DNA from archaeological bone*. Unpublished BA honours thesis. Centre for Archaeology, Department of Anthropology, University of Western Australia, Perth.
- MURRAY, P. 1991: The Pleistocene Megafauna of Australia. In: Vickers-Rich, P.; Monaghan, J.M.; Baird, R.F. & Rich, T.H. (eds.): *Vertebrate Palaeontology of Australia*: 1071-1164. Monash University Publications, Melbourne.
- MURRAY, P. & CHALOUPKA, G. 1984: The Dreamtime animals: extinct megafauna in Arnhem Land rock art. *Archaeology in Oceania* 19:105-116.
- MURRAY, P. F. 1978: Australian megamammals, restorations of some late Pleistocene fossil marsupials and a monotreme. *The Artefact* 3(2): 77-99.
- MURRAY, P. F.; GOEDE, A. & BADA, J. L. 1980: Pleistocene human occupation at Beginners Luck Cave, Florentine Valley, Tasmania. *Archaeology and Physical Anthropology in Oceania* 15: 142-152.
- MURRAY, T. 1992: Aboriginal (Pre) History and Australian Archaeology: The Discourse of Australian Prehistoric Archaeology. In: Attwood, B. Arnold, J. (eds.): *Power, Knowledge and Aborigines*: 1-19. La Trobe University Press and National Centre for Australian Studies, Monash University, Melbourne.
- MURRAY, T. 1997: Dynamic modelling and new social theory of the mid- to long term. In: van der Leeuw, S. & McGlade, J. (eds.): *Time, process and structured transformation in archaeology*: 449-463. Routledge, London.
- MURRAY, T. 1999: A return to the 'Pompeii premise'. In: Murray, T. (ed.): *Time and Archaeology*: 8-27. Routledge, London.
- NEWLAND, G. 1984: *The Stockyard site: evidence from the shellfish*. Unpublished BA honours thesis. Centre for Archaeology, Department of Anthropology, University of Western Australia, Perth.
- NEWSOME, A. E.; MERCHANT, J. C.; BOLTON, B. L. & DUDZINSKI, M. L. 1977: Sexual dimorphism in molar progression and eruption in the agile wallaby. *Australian Wildlife Research* 4: 1-5.
- NORTHWOOD, C. 1990: *A taphonomic analysis of Sacrophilus harrisii in Australian archaeological sites*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.
- NOVELLO, M. 1989: *A taphonomic analysis of the faunal remains from Platypus shelter (Site KBA70), southeast Queensland*. Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- O'CONNELL, J. F. 2000: An emu hunt. In: Anderson, A. & Murray, T. (eds.): *Australian Archaeologist: Collected papers in honour of Jim Allen*: 172-181. Coombs Academic Publishing, The Australian National University, Canberra.
- O'CONNELL, J. F. & ALLEN, J. 1998: When Did Humans First Arrive in Greater Australia and Why Is It Important to Know? *Evolutionary Anthropology* 6: 132-146.
- O'CONNELL, J. F. & HAWKES, K. 1984: Food choice and foraging sites among the Alyawara. *Journal of Anthropological Research* 40: 504-535.
- O'CONNELL, J. F. & MARSHALL, B. 1989: Analysis of Kangaroo body part transport among the Alyawara of

- Central Australia. *Journal of Archaeological Science* 16: 393-405.
- O'CONNOR, S. 1980: *Bringing it all back home: an analysis of the vertebrate faunal remains from the Stockyard Site, Hunter Island, northwest Tasmania*. Unpublished BA honours thesis. University of New England, Armadale.
- O'CONNOR, S. & SULLIVAN, M. 1994: Distinguishing middens and cheniers: a case study from the southern Kimberley, WA. *Archaeology in Oceania* 29(1): 16-28.
- OAKLEY, K. 2000: *What the cat dragged in: the taphonomic analysis of an historic faunal assemblage*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University.
- OWEN, J. F. 1984: *Bones to scale: the interpretation of fish remains from New South Wales coastal middens*. Unpublished BA honours thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- PICKERING, M. 1980: A technique of bone tool manufacture: From photographs in the Donald F. Thompson Collection, National Museum of Victoria. *The Artefact* 5: 93-97.
- PICKERING, M. 1995: Notes on the Aboriginal hunting and butchering of cattle and buffalo. *Australian Archaeology* 40: 17-21.
- PIKE-TAY, A.; COSGROVE, R.; FRENCH, J. & REYES, A. 2001: *From Reindeer to Wallaby: Recovering Patterns of Seasonality, Mobility, and Prey Selection in the Paleolithic Old World*. Paper presented at Society of American Archaeology, New Orleans, 18-22 April 2001.
- PIKE-TAY, A.; VALDÉS, V. C. & QUIOS, F. B. D. 1999: Seasonal variations of the Middle-Upper Palaeolithic transition at El Castillo, Cueva Morin and El Pendo (Cantabria, Spain). *Journal of Human Evolution* 36: 283-317.
- PIPER, A. 1992: *Butchery analysis in Australian historical archaeology*. Unpublished BA honours thesis. University of New England, Armadale.
- POCOCK, C. 1988: *An analysis of the faunal remains from Miriwun rockshelter, Ord Basin, east Kimberley*. Unpublished BA honours thesis. Centre for Archaeology, Department of Anthropology, University of Western Australia, Perth.
- REITZ, E. J. & WING, E. S. 1999: *Zooarchaeology*. Cambridge University Press, Cambridge.
- ROBERTS, A. L. & PATE, D. F. 1999: Late Holocene climatic changes recorded in macropod bone collagen stable carbon and nitrogen isotopes at Fromms Landing, South Australia. *Australian Archaeology* 49: 48-49.
- ROBERTS, R. G.; JONES, R. & SMITH, M. 1990: Thermoluminescence dating of a 50,000-year old human occupation site in northern Australia. *Nature* 345: 153-156.
- ROTH, W. E. 1901a: *Decoration, deformation and clothing*. Queensland Government Printer, Brisbane.
- ROTH, W. E. 1901b: *Food; its search, capture and preparation*. Queensland Government Printer, Brisbane.
- ROWLAND, M. J. 1994: Size isn't everything. Shell mounds, middens and natural deposits. *Australian Archaeology* 39: 118-123.
- SATTERTHWAIT, L. D. 1987: Socioeconomic implications of Australian Aboriginal net hunting. *Man* 22: 613-636.
- SCHRIRE, C. 1982: *The Alligator Rivers. Prehistory and ecology in western Arnhem Land*. Terra Australis 7, Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- SEEBECK, J. H. 1976: The diet of the powerful owl *Ninox strenua* in western Victoria. *Emu* 76: 167-170.
- SIM, R. 1998: *The archaeology of isolation? Prehistoric occupation in the Furneaux Group of Islands, Bass Strait, Tasmania*. Unpublished PhD thesis. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- SOLOMON, S. 1985: *People and other aggravations: taphonomic research in Australia*. Unpublished BA honours thesis. University of New England, Armadale.
- SOLOMON, S. 1986: A taphonomic analysis of the fauna from Galton rockshelter (squares G4c and G4d). *Queensland Archaeological Research* 3: 125-126.
- SOLOMON, S. & DAVID, B. 1990: Middle range theory and actualistic studies: bones and dingoes in Australian archaeology. In: Solomon, S.; Davidson, I. & Watson, D. (eds.): *Problem solving in taphonomy: archaeological and palaeontological studies from Europe, Africa and Oceania*: 233-255. Anthropology Museum, University of Queensland, Brisbane.
- SOLOMON, S.; DAVIDSON, I. & WATSON, D. (eds.) 1990: *Problem Solving in Taphonomy: Archaeological and Palaeontological Studies from Europe, Africa and Oceania*. Anthropology Museum, University of Queensland, Brisbane.
- SPENCER, B. & WALCOTT, R. H. 1911: The Origin of Cuts on Bones of Australian Extinct Marsupials. *Proceedings of the Royal Society of Victoria* 24: 92-123.
- SPENCER, S. B. 1928: *Wanderings in Wild Australia*. McMillian, 2 volumes, London.
- SPETH, J. D. & TCHERNOV, E. 1998: The role of hunting and scavenging in Neanderthal procurement strategies: New evidence from Kebara cave (Israel). In: Akazawa, T.; Aoki, K. & Bar-Yosef, O. (eds.): *Neanderthals and Modern Humans in Western Asia*: 223-239. Kluwer Academic/Plenum, New York.
- SPRIGGS, M. & JONES, R. 1993: Professor. In: Spriggs, M.; Yen, D.E.; Ambrose, W.; Jones, R.; Thorne, A. & Andrews, A. (eds.): *A Community of Culture: The*

- people and prehistory of the Pacific: 27-31. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- STANBURY, P. J. 1987: The Discovery of the Australian Fauna and the Establishment of Collections. In: Dyne, G.R. & Walton, D.W. (eds.): *Fauna of Australia. General Articles*: 202-226. Australian Government Publishing Service, Canberra.
- STINER, M. 1994: *Honor Among Thieves: a zooarchaeological study of Neanderthal ecology*. Princeton University Press, Princeton, New Jersey.
- STINER, M.; MUNRO, N. D. & SUROVELL, T. A. 2000: The tortoise and the hare: small game use, the Broad Spectrum Revolution and Paleolithic demography. *Current Anthropology* 41: 39-73.
- STIRLING, E. C. 1900a: The physical features of Lake Callabonna. *Memoirs of the Royal Society of South Australia* 1: 1-15.
- STIRLING, E. C. 1900b: The physical features of Lake Callabonna. *Memoirs of the Royal Society of South Australia* 96: 125-137.
- STOCKTON, J. 1981: Seals in Tasmanian prehistory. *Proceedings of the Royal Society of Victoria* 12: 97-101.
- STOKES, C. 1987: *An analysis of the faunal remains from four east Kimberley rockshelter sites, Western Australia*. Unpublished BA honours thesis. Centre for Archaeology, Department of Anthropology, University of Western Australia, Perth.
- STONE, T. 1989: Origins and environmental significance of shell and earth mounds in Northern Australia. *Archaeology in Oceania* 24(2): 59-64.
- SULLIVAN, M. E. 1982a: *Aboriginal shell middens in the coastal landscape of New South Wales*. Unpublished PhD thesis. Department of Prehistory and Anthropology, Australian national University, Canberra.
- SULLIVAN, M. E. 1982b: Exploitation of offshore islands along the New South Wales coastline. *Australian Archaeology* 15: 8-19.
- SULLIVAN, M. E. 1982c: *Exploitation of offshore islands along the New South Wales coastline*. Unpublished PhD thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- SULLIVAN, H. 1984a: Mornington Peninsula archaeological survey: assessing significance in a local context. In: Sullivan, S. & Bowdler, S. (eds.): *Site surveys and significance assessment in Australian archaeology*. Department of Prehistory, Research School of Pacific Studies, Australian national University, Canberra.
- SULLIVAN, M. E. 1984b: A shell midden excavation at Pambula Lake on the far south coast of New South Wales. *Archaeology in Oceania* 19(1): 1-15.
- SULLIVAN, M. E. 1987: The recent prehistoric exploitation of edible mussel in Aboriginal shell middens in southern New South Wales. *Archaeology in Oceania* 22(3): 97-106.
- TEDFORD, R. H. 1955: Report on extinct mammalian remains at Lake Menindee, New South Wales. *Records of the South Australian Museum* 11: 298-305.
- THOMAS, N. 1981: Social Theory, Ecology and Epistemology: Theoretical Issues in Australian Prehistory. *Mankind* 13: 165-177.
- THOMSON, J. M.; LONG, J. L. & HORTON, D. R. 1987: Human Exploitation of and Introductions to the Australian Fauna. In: Dyne, G.R. & Walton, D.W. (eds.): *Fauna of Australia. General Articles*: 227-249. Australian Government Publishing Service, Canberra.
- THORNE, A. R.; MORTIMER, G.; SPOONER, N. A.; SIMPSON, J. J.; MCCULLOCH, M. T.; TAYLOR, L. & CURNOE, D. 1999: Australia's oldest human remains: age of the Lake Mungo 3 skeleton. *Journal of Human Evolution* 36: 591-612.
- TINDALE, N. B. 1955: Archaeological site at Lake Menindee, New South Wales. *Records of the South Australian Museum* 11: 269-298.
- TRIGGER, B. 1989: *A History of Archaeological Thought*. Cambridge University Press, Cambridge.
- TUCKER, C. 1999: *A whaler's ration: a comparison of the faunal remains from Adventure Bay and Lagoon Bay shore-based whaling stations in Tasmania*. Unpublished BA honours thesis. Department of Archaeology, School of Archaeological and Historical Studies, La Trobe University, Melbourne.
- TURNEY, C. S. M.; BIRD, M. I.; FIFIELD, L. K.; ROBERTS, R. G.; SMITH, M.; DORTCH, C. E.; GRÜN, R.; LAWSON, E.; AYLIFFE, L. K.; MILLER, G. H.; DORTCH, J. & CRESSWELL, R. G. 2001: Early Human Occupation at Devil's Lair, Southwestern Australia 50,000 Years Ago. *Quaternary Research* 55: 3-13.
- VAN HUET, S. 1994: *Taphonomy of a Late Quaternary Site: Lancefield Swamp, Victoria*. Unpublished MSC thesis. Monash University.
- VAN HUET, S.; GRÜN, R.; MURRAY-WALLACE, C. V.; REDVERS-NEWTON, N. & WHITE, J. P. 1998: Age of the Lancefield megafauna: A reappraisal. *Australian Archaeology* 46: 5-11.
- VAN TETS, G. 1978: Pleistocene cave material of Tasmanian native hen, *Tribonyx mortierii*, and Sooty shearwater, *Puffinus grisens*, in Tasmania. *Records of the Queen Victoria Museum* 59: 1-4.
- VANDERWAL, R. L. & FULLAGAR, R. 1989: Engraved *Diprotodon* tooth from the Spring Creek locality, Victoria. *Archaeology in Oceania* 24: 13-16.
- VANDERWAL, R. L. & HORTON, D. R. 1984: *Coastal South-west Tasmania: The Prehistory of Louisa Bay and Maatsuyker Island*. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- VICKERS-RICH, P. & ARCHOLD, N. W. 1991: Squatters, Priests and Professors: A brief history of vertebrate palaeontology in Terra Australis. In: Vickers-Rich, P;

- Monaghan, J.M.; Baird, R.F. & Rich, T.H. (eds.): *Vertebrate Palaeontology of Australasia*. Monash University Publications, Melbourne.
- WAKEFIELD, N. A. 1960a: Recent mammal bones in the Buchan district - 1. *Victorian Naturalist* 77: 164-178.
- WAKEFIELD, N. A. 1960b: Recent mammal bones in the Buchan district - 2. *Victorian Naturalist* 77: 227-240.
- WAKEFIELD, N. A. 1982: Mammal remains at Wombah midden. In: McBryde, I. (ed.): *Coast and Estuary*. Australian Institute of Aboriginal Studies, Canberra.
- WALSHE, K. A. 1987: *Faunal bone material from the Mungo B excavation*. Unpublished BA honours thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- WALSHE, K. A. 1994a: *A taphonomic analysis of the vertebrate material from Allen's Cave: Implications for Australian arid zone archaeology*. Unpublished PhD thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.
- WALSHE, K. A. 1994b: Tasmanian devils, *Sarcophilus harrisii*, and human occupation: Estimating the cultural component. In: Sullivan, M.; Brockwell, S. & Webb, A. (eds.): *Archaeology of the north, Proceedings of the 1993 Australian Archaeological Conference*: 375-380. North Australia Research Unit, The Australian National University, Darwin.
- WALSHE, K. A. 1999: A methodology for interpreting patterns of subsistence and occupation from non-cultural bone debris. In: Mountain, M.J. & Bowdery, D. (eds.): *Taphonomy: The Analysis of Processes from Phytoliths to Megafauna*: 63-67. ANH Publications, Department of Archaeology and Natural History, Research School of Pacific and Asian Studies, Australian National University, Canberra.
- WALSHE, K. A. 2000: Carnivores, taphonomy and dietary stress at Puntutjarpa, Serpent's Glen and Intitjikula. *Archaeology in Oceania* 35: 74-81.
- WALTERS, I. 1979: *Information loss in zooarchaeology: a study of vertebrate remains from two middens, Moreton Island, Queensland*. Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- WALTERS, I. 1981: How many faunal taxa are there in a well sampled site? *Australian Archaeology* 12: 91-95.
- WALTERS, I. 1984: Gone to the dogs: a study of bone attrition at a central Australian campsite. *Mankind* 14: 389-400.
- WALTERS, I. 1986: *Another kettle of fish: the prehistoric Moreton Bay fishery*. Unpublished PhD thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.
- WALTERS, I. 1988a: Fire and bones: patterns of discard. In: Meehan, B. & Jones, R. (ed.): *Archaeology with ethnography: an Australian Perspective*: 215-221. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- WALTERS, I. 1988b: Fish hooks: evidence for dual social systems in southeastern Australia. *Australian Archaeology* 27: 98-11.
- WALTERS, I. 1989: Intensified fishery production at Moreton Bay, southeast Queensland, in the late Holocene. *Antiquity* 63: 215-224.
- WALTERS, I. 1992: Seasonality of fishing in south-east Queensland. *Queensland Archaeological Research* 9: 29-34.
- WEAVER, F. 1990: Goanna Bay excavation, Top Lake, Mallacoota Inlet, north eastern Victoria. *Artefact* 13: 28-39.
- WEBB, C. 1987: *Use-wear on bone tools: an experimental program and three case studies from southeast Australia*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.
- WEBB, C. & ALLEN, J. 1990: A functional analysis of bone tools from two sites in south-west Tasmania. *Archaeology in Oceania* 25(2): 75-78.
- WEBB, S. 1989: *The Willandra lakes Hominids*. Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.
- WEBSTER, J. 1982: *Faunal analysis and the James Range East site*. Unpublished BA honours thesis. Department of Prehistoric and Historical Archaeology, University of Sydney, Sydney.
- WEST, D. & SIM, R. 1995: Aboriginal Mutton bird exploitation: an analysis of mutton bird (yolla) bones from the Beeton Rockshelter site, Badger Island Bass Strait. *Australian Aboriginal Studies* 2: 15-33.
- WHITE, J. P. 1994: Theses about prehistoric archaeology and associated disciplines in Australia, 1975-1993. *Archaeology in Oceania* 29: 95-106.
- WHITE, J. P. & O'CONNELL, J. 1982: *Sunda and Sahul. A prehistory of Australia, New Guinea and Sahul*. Academic Press, London.
- WILKINSON, C. S. 1885: President's Address, Annual General Meeting. *Proceedings of the Linnean Society of N.S.W.* 9: 1207-1241.
- WILSON, B.; GRIGSON, C. & PAYNE, S. 1982: *Ageing and sexing animal bones from archaeological sites*. B.A.R.(British Series) 109. Oxford.
- WINTER, J. 1981: Mammals of the Laura district. In: Rosenfeld, A.; Horton, D. & Winter, J. (eds.): *Early Man in North Queensland: art and archaeology in the Laura area*: 45-49. Terra Australis 6. Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra.
- YAP, L. 1992: *New tricks from a bag of old bones: a faunal and taphonomic analysis from an open shell midden site at Seal Point, Cape Otway, Western Victoria*.

Unpublished BA honours thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.

WALTERS, J. 1988a. Fish bones evidence for marine systems in southern Australia. *Australian Archaeology* 37: 98-111.

WALTERS, J. 1989. Identified faunal production at Minner Bay, southern Queensland, in the Holocene. *Australian Archaeology* 63: 213-224.

WALTERS, J. 1992. Seasonality of fishing in southern Queensland. *Queensland Archaeological Research* 9: 29-34.

WATERS, F. 1990. Ganna Bay excavation, Top Lake, Mallacoota lake north eastern Victoria. *Australian Archaeology* 38: 28-39.

WATSON, C. 1987. Car-bonee fish bone analysis: an experimental project and three case studies from southern Queensland. Unpublished BA honours thesis. Department of Anthropology, La Trobe University, Melbourne.

WATSON, C. & ALLEN, J. 1989. A faunal analysis of bone tools from two sites in south-west Tasmania. *Archaeology in Oceania* 23:28-38.

WATSON, S. 1989. The Willandra lakes. *Department of Fisheries, Research School of Pacific Studies, Australian National University, Canberra.*

WESTERLUND, L. 1982. Faunal analysis and the Amur Range. *Journal of Prehistoric and Historical Archaeology, University of Sydney, Sydney.*

WEST, D. & SUT, R. 1992. Aboriginal Mutton bird exploitation: an analysis of mutton bird (goats) bones from the Barton Rockshelter site. *Badger Island Bulletin* 2: 17-23.

WHITE, J. P. 1994. *Threats to prehistoric archaeology and associated disciplines in Australia, 1973-1993*. *Archaeology in Oceania* 29: 92-100.

WHITE, J. P. & O'CONNELL, J. 1982. *Zealandia and Zealandia: Prehistory of Southern New Guinea and Zealandia*. Academic Press, London.

WILKINSON, C. 1982. President's Address. *Annual General Meeting Proceedings of the Linnean Society of N.S.W.* 9: 1207-1241.

WILSON, B., GARDNER, C. & PERRY, S. 1982. Agency and activity: human bones from archaeological sites. *B.A.R. (British Series) 109*. Oxford.

WINTER, J. 1981. Mammals of the Cairns district. In: *Roosfield, A., Horton, D. & Winter, J. (eds.) Cairns: Man in North Queensland, Past and Present*. Cairns: The Cairns Area 42-49. Trent Australia, Department of Fisheries, Research School of Pacific Studies, Australian National University, Canberra.

YORK, L. 1992. *Archaeology from a boy's wild home: a human and faunal assemblage collected from an open shell midden on the coast of Queensland, Western Queensland*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.

ZOBEL, D. 1982. *Moonlight Head midden*. Unpublished BA honours thesis. Department of Archaeology, La Trobe University, Melbourne.

WAGGONER, N. A. 1980a. Recent mammal bones in the Barton district - 1. *Australian Archaeology* 17: 164-178.

WAGGONER, N. A. 1980b. Recent mammal bones in the Barton district - 2. *Australian Archaeology* 17: 227-240.

WAGGONER, N. A. 1982. Mammal remains at Woodshill midden. In: *Middleton, I. (ed.), Cairns and Environs*. Australian Institute of Aboriginal Studies, Canberra.

WAGGONER, N. A. 1987. Faunal bone material from the Waigwa B excavation. Unpublished BA honours thesis. Department of Anthropology and Archaeology, Australian National University, Canberra.

WAGGONER, N. A. 1991a. A taphonomic analysis of the vertebrate material from Waigwa B. Unpublished PhD thesis. Department of Anthropology and Archaeology, Australian National University, Canberra.

WAGGONER, N. A. 1991b. Taphonomic levels, zooarchaeology, and human occupation: Examining the method component. In: *Sullivan, M., Hockley, S. & Webb, A. (eds.) Archaeology of the North Coast Cairns of the 1990's*. Australian Archaeological Conference 373-380. North Australia Research Unit, The Australian National University, Darwin.

WAGGONER, N. A. 1999. A methodology for interpreting patterns of subsistence and occupation from non-culinary bone debris. In: *Mountain, M.J. & Bowdler, D. (eds.) Taphonomy: The Analysis of Processes from Excavations*. 63-67. ANU Publications, Department of Anthropology and Natural History, Research School of Pacific and Asian Studies, Australian National University, Canberra.

WAGGONER, N. A. 2000. *Climatic, taphonomic and dietary stress in Pamungpa, Sepren's Glen and Injigala*. *Archaeology in Oceania* 35: 74-81.

WALTERS, J. 1979. *Identification of vertebrate faunal remains of vertebrate remains from two middens*. Honours thesis. Queensland University of Education, Brisbane. Department of Anthropology and Sociology, University of Queensland, Brisbane.

WALTERS, J. 1981. How many faunal taxa are there in a well sampled site? *Australian Archaeology* 12: 91-97.

WALTERS, J. 1984. *Going to the dogs - a study of bone remains in a central Australian component*. *Manuscript* 14: 389-400.

WALTERS, J. 1986. *Quantitative analysis of the faunal remains from Waigwa B*. Unpublished PhD thesis. Department of Anthropology and Sociology, University of Queensland, Brisbane.

WALTERS, J. 1988a. Fish and bone patterns in fishing. In: *Waters, F. & Jones, R. (eds.) Archaeology and Environment in Queensland*. 215-221.