

The Archaeology of Subsistence on the Maritime Frontier: Faunal Analysis of the Cheyne Beach Whaling Station 1845–1877

MARTIN GIBBS

The mid-nineteenth-century shore-based whaling stations scattered along the western and southern Western Australian coasts were often at the extreme edge of the frontier of European settlement. This paper explores the archaeological evidence for food supply at the Cheyne Beach whaling station, northeast of Albany. It establishes that, despite the difficulties of supply, the occupants of the station retained a heavy reliance on sheep in preference to either salted meats or readily accessible native fauna. It is suggested that this may have been a result of dietary preference, but could also result from whaling requiring a state of constant preparedness that kept the workers in the immediate vicinity of the site and unable to undertake hunting or farming activities.

INTRODUCTION

In the mid-1830s the European settlers of Western Australia attempted to revive their ailing economy by developing a whaling industry along the southern and western coasts, hunting the winter migrations of Right whales (*Eubalaena glacialis*) and Humpback whales (*Megaptera novaeangliae*). Over the following decades until the late 1870s, small shore-based whaling stations (fisheries) were established in bays and on islands from Dampier Archipelago in the north, to Cape Arid in the far east. These camps were usually occupied for four to five months between May and November by between one and two dozen men, and sometimes by their wives and children. In many cases the stations represented an industrial maritime frontier that operated far from other European settlements and pre-dated more enduring colonization efforts. The remote location and almost complete lack of documentation on either the industrial operation of these whaling stations, the lifeways of those who worked there, or the role of these sites as loci for some of the first sustained contact with coastal Aboriginal communities, makes these camps and their surrounds a fascinating subject for archaeological investigation (Gibbs 1996).

This paper focuses on the diet at the Cheyne Beach whaling station (1846–1877), based on an analysis of faunal materials and associated foodway items recovered during excavations in 1989–91. Although the deposits are most likely associated with the station manager and his family rather than the whaling workforce, factors associated with isolation, seasonality and the maritime industrial nature of the settlement are considered, as is evidence for adaptation and the evolving relationship between European colonists and the Australian environment. Note that the site should not be confused with the operations of the twentieth-century Cheyne Beach Whaling Company whose former processing plant near Albany is now the ‘Whaleworld’ museum.

BACKGROUND

Albany merchant Captain John Thomas first formed a small shore whaling party in 1846, establishing his station at Cheyne Beach, situated 50 km directly northeast of Albany. The station itself was located at the southernmost end of Hassell Beach, a long, sandy bay typical of the south coast of Western Australia (Fig. 1). This end of Hassell Beach is protected from

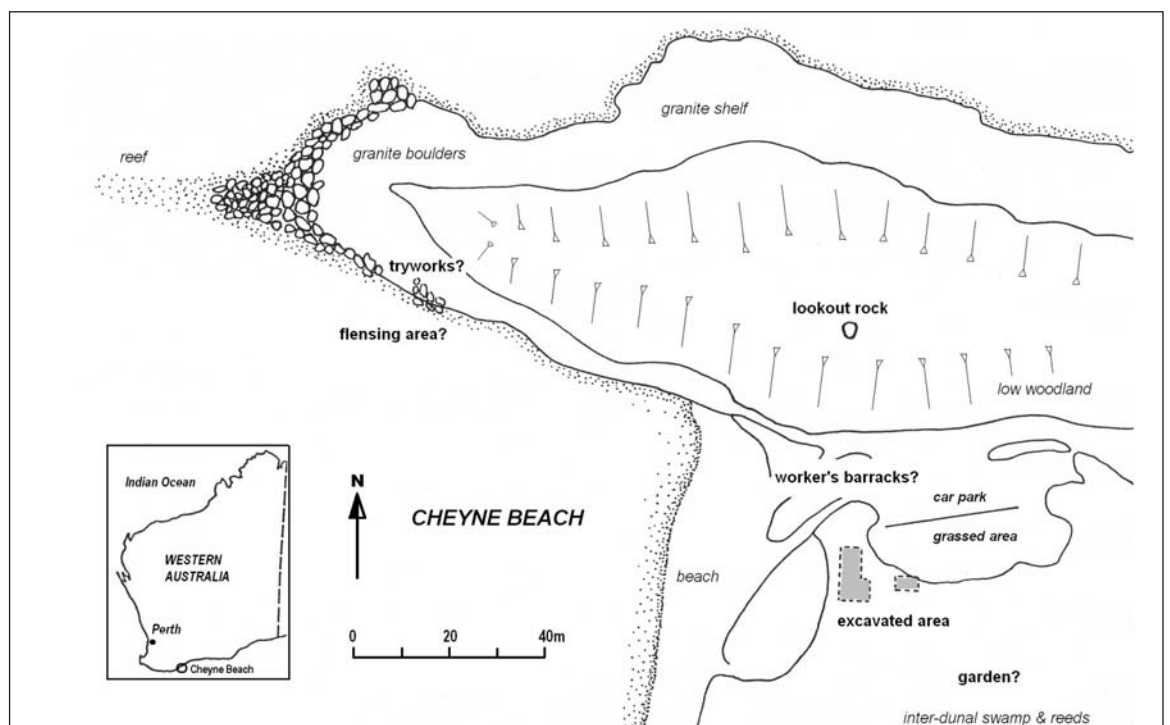


Fig. 1:
Location map.

the worst of the Southern Ocean weather and swells by a range of granite hills that extend south and east behind the bay, while the headland that forms the south-eastern point of Cheyne Beach, creates a small, sheltered harbour. Bald Island, a drowned granite headland, also lies immediately to the southeast. Although in later years a sandy track stretched from Albany to the station, a distance of 70 km or more overland, it is likely that access was mostly from the sea through the rough south coastal waters.

Thomas's whaling parties were typical of the small-scale Western Australian operations, with two whale boats and 12 to 14 men registered as whalers, although there may have been several more assisting around the station. Thomas was also known for hiring Aboriginal whalers, who in some years comprised as much as a third of his crew (Gibbs 2003). The whalers at Cheyne Beach were housed in several stone huts (Anon 1889) and there is evidence that John Thomas's wife Fanny and their three daughters were also living on site (Gibbs 1995). This small group should be contrasted to contemporary whaling stations in Tasmania, eastern Australia and New Zealand, which ranged from 30 men and four boats to 80 men and ten boats, with the camps becoming small communities in their own right (Lawrence 2001; Morton 1982:228).

Like other shore whaling parties Cheyne Beach operated over the winter months, with the men on constant stand-by should the lookout on the adjacent headland sight whales within the bay. Once the call was given, the boats would push off from the beach and pursue their quarry. The actual process of whaling is not relevant here; although once the whale had been killed, the carcass would be towed back for processing in the shallows next to the station. Here the blubber was sliced (flensed) away and the strips diced and taken to the iron cauldrons set into stone hearths (tryworks) situated above the high-tide mark, and the oil rendered out. Finally, the flexible baleen plates would be removed from the mouth. The rest of the carcass had no economic use, other than Thomas making the meat available for the Aboriginal community which would spend the season camped nearby (Gibbs 1996, 2003). The Cheyne Beach station was moderately successful throughout Thomas's tenure, which lasted until 1869. After this time, several other whaling parties used the site until its abandonment in 1877.

The 31 years during which Cheyne Beach was in use made it the longest consistently occupied whaling station in Western Australia. However, throughout this period it remained an isolated outpost of European settlement. In the 1840s the European population of the south coast, inclusive of Albany town, numbered only 300 people, rising to less than 2000 by the 1870s. The next nearest settlements were on the west coast, 400 km by land along a rough track, or as much as a week's sail around the treacherous coastline. Consequently, Albany remained effectively on the frontier of European settlement and the British trade and supply system throughout its occupation, with Cheyne Beach an even more remote outlier.

ARCHAEOLOGICAL RESEARCH

The archaeological investigations at Cheyne Beach between 1989 and 1991 formed part of the author's PhD research into shore-based whaling in Western Australia. This primarily took the form of an open area excavation of what was eventually revealed to be the foundations of a small stone and timber cottage and associated outbuilding, both built atop a low fore

dune. The deposits from within and immediately surrounding these structures tended to be less than 20 cm in depth and contained a variety of domestic ceramics, glass, metal items and some faunal materials mixed within a matrix of loose white-grey beach sands. However, systematic test pitting to the east of the main site uncovered deposits up to 70 cm in depth, largely composed of faunal material within a matrix of darker organic-rich sands and ash layers. These deposits are interpreted as being the main domestic refuse from the cottage, discarded into the natural depression behind the fore dune. The soil matrix, when compared to surrounding areas, suggested that this area was originally a swampy depression.

The site was excavated in metre squares using arbitrary spits of 5 cm depth unless distinct stratigraphy was encountered. All material was sieved through 3 and 5 mm meshes, with samples checked for smaller materials. The varying depth, matrix and complex stratigraphy within each of the different test pits made relating the various layers within each almost impossible, and consequently the faunal assemblage was characterised as a whole.

It is important to note that although the excavated structures were associated with the whaling station, the range of domestic and personal items indicated that this was almost certainly the dwelling of the station owner John Thomas and his family. As such, the results of the faunal analysis are not necessarily indicative of the diet of an industrial workforce, but instead provide insight into foodways on the frontier.

Faunal analysis

The aims of the analysis of the Cheyne Beach faunal assemblage were the same as those expressed by Coutts and Aplin for the investigation of Captain Mills' cottage in Victoria (Coutts 1984:391).

- a. Identify the principal taxa.
- b. Determine the relative abundance of the taxa and where possible their contribution to the diet.
- c. Define some aspects of the butchering, culinary and disposal processes.

The highly alkaline soil conditions (8.0 or higher) made for excellent preservation, with 28.64 kg of bone and 18.41 kg of shell recovered. To reduce classificatory work to manageable proportions, a general sorting procedure was applied to the assemblage as a whole, identifying bone to family and in selected cases to species, based on comparative collections at the University of Western Australia and relevant literature including Schmid (1972) and Merrilees and Porter (1979). All shells were identified to species using Wells and Bryce's (1985) guide.

Detailed species classification of bone and analysis of butchery or processing was limited to eight pits, mostly from the eastern portion of the site, selected because of their high concentrations of bone or shell. Together, they contained 45.5 per cent (13.03 kg) of the total excavated bone and 40.6 per cent (7.48 kg) of the total excavated shell, comprising a good sample of both.

A combination of standard measures was used on the assemblage (Brewer 1992; Lyman 1994; Reitz and Scarry 1985). Although NISP counts did not form part of the original analysis, bone and shell weight by species was sufficient to determine basic distributions and address the first two aims of the analysis. MNI (minimum number of individuals) was calculated for each of the eight sample squares, but there was no attempt to determine meat weights (Table 1).

Table 1: Summary of faunal weights for entire site.

		Weight (kg)	% of Total	% ID'd bone
BONE				
<i>Domestic</i>	Sheep, Pig, (med-sized mammal)	13.621	47.56	76.38
	Cow	0.385	1.34	2.16
	Rabbit	0.006	0.02	0.03
<i>Wild</i>	Quokka	0.878	3.07	4.92
	Seal	0.391	1.36	2.19
	Dolphin	0.054	0.19	0.30
	Fish	2.265	7.91	12.70
	Bird	0.235	0.82	1.32
Total Identified Bone		17.835	100.00	100.00
UnID	mammal bone fragments	6.483	22.64	
	bone fragments	4.321	15.09	
Total Bone Weight		28.639	100.00	
SHELL	abalone	1.301	7.07	
	periwinkles	10.544	57.27	
	helmet	0.838	4.55	
	limpet	1.006	5.46	
	olive	0.235	1.28	
	thaid	0.869	4.72	
	turbo	0.329	1.79	
	other (cone, moon & mussel)	0.203	1.10	
	Undiagnostic	3.086	16.76	
Total Shell Weight		18.411	100.00	
Crustacean (present but not weighed)				

Domestic species

Analysis of the eight intensively analysed squares shows that the identified faunal assemblage is dominated by sheep (*Ovis aries*), providing 5.46 kg of the bone by weight, or 76 per cent of the identified total for these pits. An MNI count within the eight sample squares suggests the presence of at least 12 animals. For historical reasons that will be described below, there is only a limited chance that the sheep bone includes the osteologically similar bones of goats (*Capra hircus*).

The other domesticates identified include pig (*Sus scrofa*), although this only comprised 0.24 kg or 3.4 per cent of the total identified bone weight. The available body elements do not allow a count of more than one individual, except the teeth, which clearly show at least one juvenile and one (possibly two) adults. Several short sections of Cattle (*Bos taurus*) rib provided 0.18 kg or 2.5 per cent of the identified bone weight.

The small number of rabbit (*Oryctolagus cuniculus*) bones does not necessarily indicate economic use. The presence of rabbit burrows through various parts of the site, particularly in the immediate area of the two foundations, may indicate that the rabbit bones recovered during excavation were later intrusions into the matrix, rather than dietary components. Rabbits were successfully released and bred on Mistaken Island (frequently referred to as Rabbit Island) near Albany by George Cheyne as early as the mid-1830s (Garden 1977). A mainland release is known to have occurred in the Albany area in 1866, with positive sightings of burrows at Cheyne Beach from at least 1890 (Stodart and Parer 1988). A small quantity of bird bone was recovered from all of the sample squares, although most of this was highly fragmented and difficult to identify to species (see below). While no domesticates were identified from the eight analysed pits, skeletal elements from several other squares were consistent in form to those from domestic chicken (*Gallus gallus*).

Wild species

It appears that the only native terrestrial fauna consumed with any regularity at Cheyne Beach was quokka (*Setonix brachyurus*), a type of small wallaby usually weighing less than 4 kg. In the selected squares, quokka provided 0.235 kg or 3.3 per cent of the total identified bone, with a minimum number of two individuals in the sample squares (although there are higher numbers elsewhere on the site). Postcranial bones were fragmented and often not represented, although this is likely to be a result of carnivore scavenging. While quokka were once available in low coastal scrublands throughout the southwest of Western Australia, in the modern period their range has become restricted to relict populations including Bald Island (4 km southeast of Cheyne Beach) and several small mainland sites including the Waychinicup Valley (8 km south west overland of Cheyne Beach) (Storr 1965). Although it is possible that quokka were once available closer to Cheyne Beach, Bald Island and Waychinicup were still likely to have been the closest habitats where they were available in any number. The larger kangaroos (*Macropus sp.*) are represented only by a single incisor. Modern faunal surveys suggest that while several species of large macropod, including brush wallabies (*M. irma*) and grey kangaroos (*M. fuliginosus*), are available in the general area, they are uncommon in the sandplains and heath vegetation immediately behind Cheyne Beach (Storr 1965).

Skeletal elements from marine mammals are also represented in the midden deposits which, given the context, suggests that they result from dietary preparation. Fragments of a lower right mandible of a dolphin were recovered. Although the jaw is incomplete, the number of tooth sockets and the tooth size of 3 mm or less in diameter suggests that it may be from a common dolphin (*Delphinus delphis*) which is found throughout Australasian waters (Baker 1990). Fragments of four large tympanic bullae, part of the auditory structure of marine mammals, were also recovered. Although a firm identification has not been made, these probably originate from hair seals (*Neophoca cinerea*), which are commonly seen on Bald Island as well as occasionally coming ashore on the mainland around Cheyne Beach (Storr 1965; Charles Westerberg, pers. comm. 1990).

While a single whale could provide vast quantities of meat, the extent to which it formed part of the regular diet on the station is unknown. Although whale meat is reputed to be tough and fibrous, there were recipes and preparations to overcome this problem, and various tender body parts such as the brains, lips and tongue were readily accessible for consumption (Cousteau & Paccalet 1988:46; Mawer 1999:174). As substantial portions of meat can be recovered from a whale without any need to extract bone, the fragments of whalebone recovered from across the site are almost certainly structural rather than dietary remains. Both of the buildings excavated at Cheyne Beach had floor surfaces made from whale vertebrae, either placed with the circular face upwards, or split with the rectangular cross-section upwards to give a 'tiled' effect. Consequently, while consumption of whale appears likely, there is no archaeological means of determining contribution to the diet.

The bird bones recovered were highly fragmented, accounting for 0.110 kg or 1.53 per cent of bone within the sample squares. The lack of readily diagnostic items makes for difficulty in identification, although this may be resolved by further specialist study. Faunal surveys within the immediate area suggest a variety of potentially edible species (Smith 1977), although the most likely candidates are the several nesting and burrowing species on Bald Island. These include brown quail (*Synoicus ypsilophora*), great-winged petrel (*Pterodroma macroptera*), and little penguin (*Eudyptula*

Table 2: Summary of faunal weights for selected squares.

	WEIGHT (grams)								Total	% of ID'd
	E87	F0	P93	T99	TP3	U87	U93	Z93		
BONE										
<i>Domestic</i>										
sheep	904.7	215.2	724.9	701.6	949.7	88.7	1551.0	329.3	5465.1	75.88
pig	0	0	0	27.6	12.8	16.4	163.8	25.0	245.6	3.41
cow	134.2	0	48.2	0	0	0	0	0	182.6	2.54
rabbit	0	0	0	0	1.4	0	0	0	1.4	0.02
<i>Wild</i>										
quokka	29.6	1.7	20.3	62.6	13.8	0	51.6	55.7	235.3	3.27
hair seal	0	0	0	135.1	0	0	0	0	135.1	1.88
dolphin	0	0	0	0	0	0	54.2	0	54.2	0.75
fish	230.7	8.4	212.1	56.5	22.4	7.2	165.4	69.5	772.2	10.72
bird	59.2	2.7	14.4	10.0	2.8	1.9	13.3	6.2	110.5	1.53
Total ID'd Bone	1358.4	228.0	1020.0	993.4	1002.9	114.2	1999.3	485.7	7202.0	100.00
UnID Bone	1400.2	95.6	1850.8	401.7	273.7	273.0	1312.2	220.4	5827.6	
TOTAL BONE	2758.6	323.6	2870.8	1395.1	1276.6	387.2	3311.5	706.1	13029.6	
TOTAL SHELL	1105.9	1007.3	386.0	2774.1	819.7	228.6	752.2	407.8	7481.6	
TOTAL FAUNAL	3864.5	1330.9	3256.8	4169.2	2096.3	615.8	4063.7	1113.9	20511.2	
Crustacean (presence in pits)	-	-	-	yes	yes	-	yes	-		

minor). The remains of fleshy-footed shearwater (*Puffinus carneipes*), commonly referred to in Western Australia as the muttonbird, have also been found on Bald Island, but no burrows have been identified.

The faunal evidence suggests that the most commonly consumed native fauna at Cheyne Beach was fish. The 0.772 kg of bone recovered from the eight sample squares provided 10.72 per cent of the identified total for those pits. The extent to which these smaller bones have been removed or eaten by scavengers is unknown. A number of otoliths were recovered, and have been identified as most probably King George Whiting (*Sillaginodes punctatus*), an inshore species. However, further analysis is required to identify the range of species present. Local professional anglers indicated that the immediate environment of the site was a good fishing spot, with the reefs and granite ledges at the headland yielding a wide variety of highly edible species on a year-round basis. This included Herring (*Arripis georgianus*), Leatherjackets (*Monacanthidae*), Queenfish (*Nemadactylus valenciennesi*), Southern Aust. Salmon (*Arripis esper*), Trevally (*Pseudocaranx*) and Western Blue Groper (*Achoerodus gouldii dentex*) (Hutchins and Thompson 1983; Hutchins 1994).

Several large shark teeth were recovered but could not be identified to species level. Small quantities of crab shell were evident throughout the sample squares, although this comprised negligible weight. This evidence is limited to the tips of claws (dactyls), insufficient to make any identification to family or species level.

Shellfish

Shellfish comprise a major component of the faunal remains from Cheyne Beach and were intermixed with other faunal remains, rather than forming in distinct middens. During the general sorting *Nerita atramentosa* and *Austrocochlea constricta* were grouped and weighed together, being of similar size, form, and environment, and generally being commonly identified as 'periwinkles' (Table 3). However, for Tables 4 and 5, representing the sample squares, these two species have been counted and weighed separately. In addition to the species listed, single specimens or low numbers of several other shell species with possibly dietary use were also recovered, including tritons (*Charonia lampas*), tun shells

Table 3: Total weight of shells recovered from Cheyne Beach, including known environments.

Common Name	Family/Species	Environment	Tot. Wt (gms)	% Tot.
abalone	Haliotis (roei?)	rocks and reefs	1301.5	7.07
helmet shell	Phalium paucirugae	-	837.7	4.55
limpet	Patella laticostata	rocks and reefs	1006.3	5.47
moon snail	Naticidae	inter-tidal sands	146.7	0.80
periwinkles	<i>Nerita atramentosa</i> + <i>Austrocochlea constricta</i>	rocks and reefs	10544.0	57.27
olive shell	<i>Oliva australis</i>	shallow sands	235.1	1.28
thaid	<i>Thais orbita</i>	rocks	867.7	4.71
turbo	<i>Turbo torquatus</i>	shallow waters	329.3	1.79
Other and UnID	-	-	3143.6	17.06
Total			18411.9	100.00

(*Tonna variegata*), and *Camapanile symbolicum*, which apparently has no local common name.

While it was not possible to undertake a minimum numbers count for the whole site, Tables 4 and 5 present a comparison of shell weights and numbers for the sample pits. Although no attempt has been made to calculate meat weights, *Nerita* – even without the *Austrocochlea* component – clearly comprises the bulk of the shell, followed by abalone and limpet. Most, if not all, of the shellfish are readily accessible from the rocky platforms and boulders adjacent to the station site.

Butchery, preparation and disposal

To determine whether domestic species had been kept live on or near the site or brought in pre-prepared (probably as salted meats), an analysis of butchery marks and skeletal element representation was undertaken. Native terrestrial and marine fauna remains were not examined for butchery. Virtually all body elements of sheep are present in varying quantities, although phalanges are slightly under-represented, possibly indicating discard of non-edible portions in an early stage of butchering, presumably away from the immediate domestic

Table 4: Shell weights (grams) in sample squares.

Species	WEIGHT (grams)								Total	%
	E87	F0	P93	T99	TP3	U87	U93	Z93		
abalone	47.0	194.1	12.1	185.5	323.2	4.9	27.3	33.7	827.8	11.1
Austrocochlea	231.0	41.9	38.8	830.6	41.2	24.2	165.2	65.3	1438.2	19.2
helmet	419.1	125.0	15.6	0	0	26.4	46.7	0	632.8	8.5
limpet	35.1	410.8	73.9	115.4	43.2	32.5	76.0	30.0	816.9	10.9
moon snail	10.5	3.3	0	13.9	7.0	0	4.7	2.4	41.8	0.6
Nerita	338.9	74.5	107.0	1464.1	156.4	132.8	335.8	192.5	2802.0	37.4
olive shell	3.9	0	5.7	16.9	9.3	1.1	0.4	4.8	42.1	0.6
thaid	17.9	12.7	0	98.6	5.8	0	2.3	15.5	152.8	2.0
turbo	0	0	0	0	0	0	3.5	0	3.5	0.1
unID/undiag	2.5	145.0	132.9	49.1	233.6	6.7	90.3	63.6	723.7	9.6
Total	1105.9	1007.3	386.0	2774.1	819.7	228.6	752.2	407.8	7481.6	100.0

Table 5: Minimum numbers of shells in sample squares.

Species	Number of individuals								Total	%
	E87	F0	P93	T99	TP3	U87	U93	Z93		
abalone	6	14	2	14	3	1	5	6	51	2.9
Austrocochlea	87	10	10	119	14	7	47	33	327	18.3
helmet	10	4	2	0	0	2	2	0	20	1.1
limpet	2	13	3	8	3	1	11	8	49	2.7
moon snail	3	1	0	3	3	0	2	1	13	0.7
Nerita	158	33	27	621	75	52	222	92	1280	71.8
olive shell	2	0	4	8	1	1	3	4	23	1.3
thaid	2	1	0	13	1	0	1	1	19	1.1
turbo	0	0	0	0	0	0	1	0	1	0.1
Total	270	76	48	786	100	64	294	145	1783	100.0

site (a detailed breakdown is available in Gibbs 1995: Appendix C). The position of the meat cuts, represented by saw marks and other breakages of the skeletal elements are consistent with Anglo-Australian preparation (McVicar 1993). While no attempt was made to determine the ages of the sheep represented in the deposit, many of the bones had unfused epiphyses, suggesting that both lambs and older animals were consumed. Overall, the indication appeared to be that sheep were kept 'on the hoof' near the site and butchered as required, with almost all body parts used.

In contrast, there was limited quantity and variety of bones from pig; mostly upper body and cranial elements, with the exception of a single fragment of pelvis. Cattle bones were even more limited, and comprised predominantly of short sections of rib. This butchery pattern possibly indicated that these elements had been cut to fit into a barrel, which was the normal means for transporting prepared and salted meats (English 1990).

The smaller quantities of smaller bones in the assemblage, such as fish, bird and quokka, were likely the result of scavenger activities. The over-representation of quokka cranial remains provides further evidence of scavenging behaviour. Walters' (1984) study of bone attrition from canine activity indicates the massive level of potential reduction, particularly from an open midden, as was likely to have been the case for Cheyne Beach. While there was no specific historical or archaeological evidence that domesticated dogs were kept at Cheyne Beach, their presence was not unlikely, although dingoes were still reported in the immediate area as late as the mid-1960s (Storr 1965). With the combination of a substantial midden of animal bones, together with whale carcasses beached in the shallows, the whaling station must have been an attractive focus for local scavengers. Despite Piper's (1990) suggestion that removal and reduction of bones by scavengers can be identifiable by the presence of gnawing

marks (not seen on the Cheyne Beach assemblage), Walters' (1984) work makes it appear likely that canines would remove bones to the periphery of the site or beyond, away from the human presence, before consumption.

Less than 20 of the bones and fragments from the Cheynes Beach excavations were burnt or charred, which may have been post-depositional burning rather than a product of cooking. Given the close proximity of the midden to the cottage and kitchen, disposal of hot ashes onto the bones, or even a periodic deliberate fire to reduce the smell or volume of rubbish, may have been possible.

Change over time

Examination of the deposits in several of the deeper pits indicates little or no change on proportions of wild to domestic faunal material over time, with sheep bones dominating the sequences throughout.

Non-faunal evidence

No direct archaeological or documentary evidence of vegetables, flour or non-faunal diet materials was identified, although there is indirect evidence of their use on the Cheyne Beach site. While archaeological survey and excavation did not reveal any evidence of garden landscaping or remnant vegetation attributable to the whaling period, there is a single allusion to a garden in an 1889 account of a visit to the site. Although written a decade after the station's last use, the author describes the ground near the fishery being 'covered in clovers and grasses, doubtless the result of the whalers' cultivation' (Anon 1889). Oral history passed on to a local farmer by the son of a former whaler, also indicates that there were gardens, possibly in the swampy areas adjacent to the domestic area of the site (C. Westerberg pers. comm.).

Most of the archaeological evidence of the non-faunal dietary component was in the form of glass bottles. A total of 20.64 kg of highly fragmented bottle glass was recovered which, apart from a small proportion associated with medicinal purposes, was linked to condiments and alcohol. Detailed descriptions and identifications are provided elsewhere (Gibbs 1996).

Alcohol bottles included the common cylindrical 'black', light green and clear glass, both hand-blown and three-piece moulded with applied lips, normally associated with beer and wine. In addition there were numbers of the black, flat-sided 'case gin' bottles, as well as at least one dark-brown 'bitters' bottle. Sauce, vinegar, pickle and chutney bottles were readily identified by their characteristic octagonal profiles and indicate the usual preference for various seasonings and flavours for food. A single base of a four inch diameter salt-glazed stoneware bottle was also recovered. It is possible that the bottle may have contained ginger beer, as did later examples of a similar kind (Roycroft and Roycroft 1976). However, there was no evidence of larger stoneware storage vessels.

A minimum number count based on bases and/or lips is presented in Figure 2, although this is a surprisingly limited number of bottles to represent the 30 years of seasonal occupation of the site. While it is possible a more extensive cache of glass remains unexcavated, alternative explanations include John Thomas and his wife being temperate drinkers, the recycling of bottles as a scarce resource, or storage of most foodstuffs and liquids within bulk containers such as barrels and casks. In particular, flour would have been required in large quantities for baking bread and biscuit. As noted by Staniforth (1987), the wooden cask was the most common form of bulk container for transport and storage used during the nineteenth century. A total of 5.68 kg of highly fragmented curved iron strapping was recovered from the Cheynes Beach excavations, varying in width from 31 mm to 52 mm, although no evidence of the wooden staves survived. The need to barrel the whale oil produced from the station would also increase the presence of barrel hoop iron on the site.

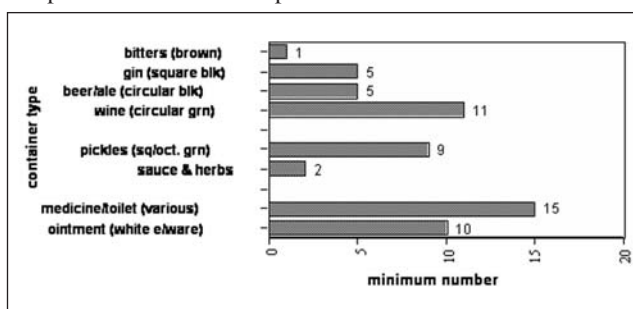


Fig. 2: Summary of glass and ceramic containers.

INTERPRETATION

As noted, it is almost certain that the faunal deposits recovered from Cheyne Beach were associated with manager John Thomas' family rather than the whaling crew. The sparse documentary record for the station indicates a cook registered as part of the crew in most years, with a fleeting anecdotal reference to a cookhouse or common kitchen producing food for the men (Gibbs 1996:428; McKail 1927). However, while Thomas and his family may have shared some elements of supply with the workers, Fanny Thomas would undoubtedly have taken charge of cooking for her husband and three daughters within her own kitchen, probably the smaller of the two excavated structures, which was in close association with

the densest deposits of food remains. Status difference between manager and worker may also have been expressed in separate stores of special foodstuffs, beverages and ceramic service wares, although the latter's habitations have not been excavated to allow comparison.

Although not directly comparable, Lawrence's (2001) analysis of the Adventure Bay and Lagoon Bay whaling station assemblages shows a diet clearly dominated by beef, three times more by weight than sheep bones, with the latter probably killed on site. Lawrence links the diet at these stations to provisioning agreements between owners and crews, probably broadly comparable to shipboard agreements between owners and crews:

Surviving agreements among Kelly's papers record that each week he was to supply each man with twelve pounds of flour or bread, twelve pounds of beef or mutton, or ten pounds of pork, two pounds of sugar and 1/3 pound of tea. (Lawrence 2001:214).

Other documents suggest bread as a major dietary staple and provide indirect reference to potatoes, onions, pickles, but make no mention of vegetables other than allusions to gardens. A far wider range of wild mammals, fish and birds than seen at Cheyne Beach is represented archaeologically, but in small quantities (see also Lawrence and Tucker 2002). No shellfish remains are described. Condiment and spice bottles are also present in quantity at these sites, which Lawrence suggests indicates attempts to 'enliven the otherwise bland diet of meat and bread' (Lawrence 2001:219).

Similar provisioning arrangements probably held in Western Australia, although there is little or no documentary evidence. William Seymour's diary from Castle Rock whaling station makes frequent mention of the slaughter of cattle ('bullocks') for the station (Seymour n.d.), as well as fleeting references to flour, tea, sugar and alcohol. A call for tenders to supply the Carnac Island whaling station at the opening of the 1837 season lists amongst requirements: 100 bushels of wheat, 10 lbs of pepper, 10 gallons of vinegar, 1.5 cwt of sugar, one bag of rice, two casks of beef, two casks of salt pork, one ton of salt and one chest of tea. Furthermore, there was fishing equipment including a seine, 24 fishing lines and 20 shark hooks, clearly indicating the intention to exploit marine resources. It is interesting that both accounts emphasise beef, both salted and fresh, but mention neither sheep nor vegetables. However, as both stations were located on the more populous west coast this meant that supply arrangements with local farms were possible.

Although the archaeological and documentary records of other whaling stations illuminate aspects of the Cheyne Beach assemblage, other features, such as the dominance of sheep and the relationship between station and hinterland, requires examination.

Perhaps the most relevant observation on the supply situation at Cheyne Beach is that throughout the period of its operation, the site was at the frontier of a small and isolated outpost of the British Empire. Despite this, and allowing for the uncertain status of whale meat consumption, the Cheyne Beach faunal assemblage shows a diet apparently dominated by domestic animals. In particular, sheep bones greatly outnumber those of pig or cattle. While this may have been a function of personal taste or preference, historical data on stock numbers in the Albany region suggests it may simply have been a matter of availability. Census data (presented in Table 6 in five-year intervals) shows that throughout the study period sheep were by far the most numerous and successful of the livestock and therefore the cheapest of the available domestic meats. In 1845, a sheep cost 8 shillings while a cow cost £10, although Cameron (1981) states that prices could vary wildly as settlers either conserved their stock for

breeding, or sold them to solve liquidity problems. Accounts of Albany during the 1840s and 1850s repeatedly describe the shortage of meat in the settlement (Burton 1954; Hassell n.d.). One of these memoirs (Hassell n.d.) recalled that in the late 1850s, beef was only available once a month. Further, this supply consisted only of the surplus from what was required by the regular P & O steamer. At all other times only mutton was obtainable.

Table 6: Albany District Stock Returns and Acres in Crop: five-yearly sample (Blue Books).

YEAR	LIVESTOCK				CROPS* (acres)
	cattle	sheep	goats	swine	
1845	513	6980	0	67	89
1850	626	12618		126	250
1855	757	24000	5	277	414
1860	820	36168	48	505	841
1865	1331	61639	32	813	1186
1870	1139	88707	32	480	1978
1875	1538	124005	42	272	473

* 'Crops' includes wheat, barley, oats, rye, potatoes, maize, vineyards, kitchen gardens, beans and pulses, and artificial pastures.

Given the high representation of all skeletal elements of sheep at the site, it appears probable that animals were brought in live and slaughtered by demand. Keeping meat on the hoof would have negated many of the difficulties of storage, even in the cold winter climate of the southern coast during the whaling season. It is possible that the tillage lease of nearby Bald Island allowed John Thomas to run his sheep there, a practice that continued during the late 19th and early 20th centuries (*West Australian* 17/5/1950; C. Westerberg pers. comm.). A further advantage of sheep over cattle was simply ease of transport, as it is considerably less difficult to transport a live sheep, particularly on a small boat. The small quantities of beef and cattle bones, and the butchery marks exhibited suggest occasional inclusion of salted meats in the diet. This presence possibly reflected trade from passing vessels such as the American whalerships that sometimes took on wood and water in the bay.

Despite a potentially tedious diet of mutton, the presence of only a single tooth of a larger macropod suggests a very limited attempt to introduce variety by exploiting native terrestrial fauna. Quokka appears to be the only regularly hunted terrestrial animal, although given its small size and limited meat content they must have provided an occasional break, rather than a staple dietary item. While there may have been a mainland quokka population in the immediate vicinity of Cheyne Beach during the early settlement period, it appears most likely that the animals consumed at the whaling station were taken from Bald Island. A possible scenario is that the whalers snared or chased down the small marsupials while visiting the island to round up sheep. If this was the case, their exploitation should be seen as the harvesting of a captive resource, rather than hunting *per se*.

Another possibility for the provision of quokka and seal is that sealers were still resident on Bald Island during the early occupation of the whaling station and that these animals formed part of a trade relationship between the two groups. A report on sealing activity along the south coast during the early 1840s (Nairn-Clarke 1842), stated that Bald Island was frequently occupied by sealers on account of the 'wallabies' on it, although there is no firm evidence of sealers being present during the whaling period. Another alternative explanation is that the Aboriginal population camped at Cheyne Beach may have traded native fauna in return for access to the whale meat, although this begs the question of

why only quokka rather than larger macropods.

Of the marine resources represented in the assemblage, dolphins, seals and sharks would have been encountered regularly during the course of whaling activities. These species may have been slaughtered on an opportunistic basis using the harpoons, lances and other implements normally carried in the whaleboats. The relatively unquantifiable contribution of whale meat has been discussed previously. The fish, crab and shellfish species recovered from the excavations reflect collection from the beach and reef within the immediate vicinity of Cheyne Beach. It is also worth noting that the meat of shellfish can be dipped or soaked in vinegar, a point that recalls the presence of vinegar bottles on the site.

The relatively small proportion (by weight) of bird bones suggests that these also provided variety to the diet, rather than acting as a major component of subsistence. While chicken was present in small quantities, the majority of the bone was probably from native species that might also have been collected on occasional forays to Bald Island.

Despite the lack of archaeological evidence and only fragmentary oral and documentary data, there is a strong likelihood that Fanny Thomas kept a cottage garden to provide fresh vegetables for her family as part of her normal round of domestic activities. The station cook may also have maintained a garden on site, although larger quantities of staple foods, such as potatoes and flour, must have come from elsewhere. Although Thomas' lease of Bald Island was for 'tillage', the distance, the exposed setting, lack of fresh water and vulnerability to the rapacious quokka would have prevented any form of cultivation. One possibility for supply was a farm at Cape Riche, situated 45 km northeast of Cheyne Beach at the far end of Hassell Bay, but even then the next nearest European settlement to the whaling station. In 1842 George Cheyne, an Albany merchant, had established his homestead at the Cape. Operating as an independent supply base for foreign whaling vessels, Cheyne provided 'water, fuel, vegetables and fresh meat, and other necessities...at moderate prices' (PG 18/11/1843). However, the presence of vessels competing with the Cheyne Beach whalers made for an awkward relationship, so Thomas may well have been loathe to support the venture, preferring to transport supplies from Albany, despite it being a somewhat more difficult 70 km by sea.

CONCLUSION – LIFE ON THE MARITIME INDUSTRIAL FRONTIER

Although the faunal assemblage from the Cheyne Beach whaling station is probably not that of the workforce, it is still representative of the nature of life on a remote maritime industrial frontier. The striking characteristic is that it represents a significant lack of engagement with all but the immediate marine environment surrounding the station. Despite expense and shortages in supply, the emphasis remained on introduced domesticates. The preponderance of sheep to the apparent exclusion of cattle and pig, which otherwise figured significantly in comparable diets elsewhere, is probably a reflection of the Albany regional supply situation but could also represent a taste preference or dietary choice for fresh over salted meats. Nonetheless, there appears to have been no attempt to alleviate the monotony of the mutton-based regime by hunting terrestrial fauna other than harvesting the quokka population captive on Bald Island.

Two possible explanations arise and need further consideration in light of results from other sites. The first is that it underscores the conservatism in the diet of the European colonists. This second is that it is an artefact of the

industrial nature of the site. To leave the immediate vicinity of the site to hunt or undertake extensive farming activities would have taken too much effort away from the primary activities of the site and compromised the constant readiness required by whalers. In contrast, fish, seal, shark, dolphin and shellfish were available to whalers waiting along the shore next to the station, or out in the boats prepared to respond to a call from the lookout.

ACKNOWLEDGEMENTS

Thanks to both Susan Lawrence for making many useful suggestions and Eleanor Casella wielding the editorial red pen.

BIBLIOGRAPHY

Abbreviations

INQ *The Inquirer* (1840–1890), Perth.

PG *Perth Gazette and Western Australian Journal* (1833–1874), Perth.

Personal communications

S. Wallis: Stan Wallis, professional angler, Cheyne Beach.

C. Westerberg: Charles ‘Snapper’ Westerberg, farmer, Cheyne Beach.

Published and unpublished sources

BAKER, A.N. 1990. *Whales and Dolphins of Australia and New Zealand, An Identification Guide*. Allen and Unwin, Sydney.

BEETON, I. 1861. *Mrs Beeton's Book of Household Management*. Reprinted 1982 by Chancellor Press, London.

BREWER, D.J. 1992. ‘Zooarchaeology; Method, Theory, Goals’, in M. Schiffer (ed.) *Advances in Archaeological Method and Theory: Volume 4*. Academic Press, NY, pp. 195–244.

CAMERON, J.M.R. 1981. *Ambition's Fire; The Agricultural Colonization of Pre-Convict Western Australia*. University of Western Australia Press, Nedlands, Western Australia.

COUSTEAU, J. and Y. PACCALET 1988. *Whales*. Harry N. Abrams Inc. Publishers, New York.

COUTTS, P. 1984. *Captain Mills Cottage, Port Fairy, Victoria*. Records of the Victorian Archaeological Survey Number 17, Ministry of Planning and Environment, Victoria.

ENGLISH, A. 1990. ‘Salted meats from the wreck of the *William Salthouse*: archaeological analysis of 19th century butchering patterns’, *Australasian Journal of Historical Archaeology* 8:63–69.

GARDEN, D.S. 1977. *Albany; A Panorama of the Sound from 1827*. Thomas Nelson, Melbourne.

GIBBS, M. 1996. *The Historical Archaeology of Shore-Based Whaling in Western Australia, 1836–79*. Unpublished PhD Thesis, University of Western Australia.

GIBBS, M. 2003. ‘Nebinyan's Songs: an Aboriginal whaler of south-west Western Australia’, *Aboriginal History* 27:1–15.

HASSELL, A.Y. n.d. *Early Memories of Albany*. Advertiser Print, Albany.

HUTCHINS, B. 1994. *A Survey of the Nearshore Reef Fish Fauna of Western Australia's West and South Coasts – The Leeuwin Province*. Records of the Western Australian

Museum, Supplement No. 46. Western Australian Museum, Perth.

HUTCHINS, B. and M. THOMPSON 1983. *The Marine and Estuarine Fishes of South-western Australia; A Field Guide for Anglers and Divers*. Western Australian Museum, Perth.

LAWRENCE, S. 2001. ‘Foodways on a Colonial Whaling Station: Archaeological and Historical Evidence for Diet in Nineteenth Century Tasmania’, *Journal of the Royal Australian Historical Society* 87(2):209–229.

LAWRENCE, S. and C. TUCKER 2002 ‘Sources of meat in colonial diets: faunal evidence from two Nineteenth Century Tasmanian whaling stations’, *Environmental Archaeology* 7:23–34.

LYMAN, R. 1977. ‘Analysis of historic faunal remains’, *Historical Archaeology* 11:67–83.

LYMAN, R. 1994. ‘Quantitative units and terminology in zooarchaeology’, *American Antiquity* 59(1):36–71.

MAWER, A. 1999. *Ahab's Trade: The Saga of South Seas Whaling*. Allen & Unwin, Sydney.

McKAIL, N.W. 1927. Walks with Yesterday: Albany Reminiscences No. 1–16. *Western Mail*, 27 January to 21 April, 1927. Manuscript version with some minor additions at BL 1393A (c. 1923).

McVICAR, A. 1993. *Home Butchery in Australia: A guide to butchering, processing and preserving*. Gary Allen Pty Ltd, Smithfield, N.S.W.

MERRILEES, D. and J.K. PORTER 1979. *Guide to the Identification of Teeth and Some Bones of Native Land Mammals Occurring in the Extreme South West of Western Australia*. Western Australia, Perth.

NAIRN-CLARKE, W. 1842. Remarks respecting the islands on the coast of S.W. Australia. *Inquirer* 10/9/1842, 8/10/1842.

PIPER, A. 1990. ‘Can taphonomy aid in the analysis of faunal material from historic archaeological sites?’, in Solomon, S., Davidson, I. and D. Watson (eds) 1990, *Problem Solving in Taphonomy: Tempus Volume 2*. University of New England, Armidale, N.S.W., pp. 149–157.

REITZ, E. and C.M. SCARRY 1985. *Reconstructing Historic Subsistence With An Example From Sixteenth-Century Spanish Florida*. Special Publication Series Number 3, Society for Historical Archaeology.

SCHMID, E. 1972. *Atlas of Animal Bones*. Elsevier Publishing Company, London.

SEYMOUR, F.W. n.d. Castle Rock diary of Frederick William Seymour. Unpublished m.s., Battye Library Acc. 2838A/2.

SMITH, G.T. 1977. ‘The Birds of Bald Island’, *Western Australian Naturalist* 14(1):17–19.

SOLOMON, S., DAVIDSON, I. and D. WATSON (eds) 1990 *Problem Solving in Taphonomy: Tempus Volume 2*. University of New England, Armidale, N.S.W.

STANIFORTH, M. 1987. ‘The casks from the wreck of the *William Salthouse*’, *The Australian Journal of Historical Archaeology* 5:21–28.

STODART, E. and I. PARER 1988. *Colonisation of Australia by the Rabbit*. Project Report No. 6. C.S.I.R.O. Australia, Canberra.

STORR, G.M. 1965. ‘Notes on Bald Island and the adjacent Mainland’, *Western Australian Naturalist* 9(3):187–196.

WALTERS, I. 1984. ‘Gone to the Dogs: A study of bone attrition at a central Australian campsite’, *Mankind* 14(5):389–400.

WELLS, F. and C. BRYCE 1985. *Seashells of Western Australia*. Western Australian Museum, Perth.