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An ethnohistorical study of the Swan-Canning Fishery in Western Australia, 1697-1837

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**AN ETNOHISTORICAL STUDY
OF THE SWAN-CANNING FISHERY
IN WESTERN AUSTRALIA:
1697-1837**

By Paul Richard Weaver

A dissertation submitted as partial fulfilment of the
requirements for the degree of

Bachelor of Arts with First Class Honours

Edith Cowan University
1991

Principal supervisor: Dr. Sherry Sagers

Submitted on 27 May, 1991

AN ETHNOHISTORICAL STUDY OF THE SWAN-CANNING FISHERY IN
WESTERN AUSTRALIA: 1697-1837

Abstract

A dissertation submitted by Paul Richard Weaver as partial fulfilment of the requirements for the degree of *Bachelor of Arts with Honours* at Edith Cowan University, Western Australia, 27 May, 1991. The study takes a multidisciplinary approach by examining historical and contemporary scientific literature in order to determine the degree of intercultural competition which took place between Aborigines and Europeans for the native food resources which were associated with the the Swan-Canning estuarine system, which is located in the south west of Western Australia, at approximately longitude 116° E. and latitude 32° S. The 1697-1827 time frame of the study, covers all the documented pre-colonial European visits to the fishery environs and also incorporates the first decade of the British colonisation process at the Swan River, which can be said to have begun in 1827 when a comprehensive British survey was carried out. The study draws on historical data from settlers' diaries, official correspondence, old newspapers and early cartographic material. Under separate headings it examines: The archaeological evidence for human involvement with the region; the potential food resources, including anadromous fish; European accounts of Aboriginal exploitation of the fishery resource and the associated environment; the historical accounts of European visitations to the fishery and environs; the colonial exploitation of the fishery resource and associated environment and finally, Aboriginal-European conflict issues which involved the

fishery resource and environs. The appendices contain maps, charts, tables and photographs of some species which are discussed. The conclusion of the study is that there was no direct intercultural competition for the fish resources of the estuary, but that European settlers had an impact on other faunal species such waterfowl and kangaroos. Aborigines made certain modifications to their foraging strategies as the colonisation process enveloped them, but based on theoretical calculations, intercultural violence appears to have played a major role in reducing the Aboriginal population by between 17% and 25% during the period 1829 to 1837.

Declaration

I certify that this dissertation does not incorporate without acknowledgement any matter previously submitted for a degree or diploma in any institution of higher education; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Paul, R. Weaver
May 27, 1991

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Table of Contents

	Page
Statement of copyright	1
Title page	2
Abstract	3
Declaration	5
Acknowledgements	6
Table of Contents	7
 Introduction	 11
The research question	12
Methodology	12
 I The Food Resources of the Estuary	 16
 II The Archaeological Evidence for Human Involvement with the Fishery and Environs	 30
Summary of the archaeological evidence	37
 III Aboriginal Exploitation of the Fishery Resource and the Associated Environment	 39
Aboriginal populations of the region	44
The wetlands	47
Aboriginal cooking methods	49
Aboriginal fishing technology	50
 IV The Historical Accounts of European Visitations to the Fishery and Environs	 54
The Dutch, 1697	54
The French, 1801 and 1803	61
The British, 1827	63

Summary of early European visits	65
V Colonial Exploitation of the Fishery Resources and the Associated Environment	67
VI Aboriginal-European Conflict, and Conflict Avoidance Involving the Fishery Resources	78
Soldiers and police	98
Avoidance of intercultural conflict by George Fletcher Moore	99
The Tasmanian connection	109
VII Discussion of Research	112
Conclusion	124
Bibliography	127
Abbreviations of Swan River Colony newspapers	127
Appendices	137
A A Sketch Map of the Tributary System and Wetlands Associated with the Swan-Canning and Peel-Harvey Estuaries	139
B The Perth Bony Herring (<i>Nematalosa vlaminghi</i>)	140
C Some fish spawning times in the Swan-Canning estuary	141
D A list of local faunal species pursued or killed by G.F Moore and associates: 1830-1837	142
E A list of local species sighted or killed by Captain Fremantle and his crew in the vicinity of the Swan-Canning Rivers in the year 1829	145

F	A Sketch Map Showing the Sandbanks and the Aquatic Divisions of the Swan-Canning Estuary	147
G	The "sunset shell" (<i>Sanguinolaria [Soletellina] biradiata</i>)	148
H	A List of some Aboriginal placenames in the Swan and Canning Rivers' region	149
I	A Sketch Map Showing Some Aboriginal Place Names Associated With the Environs of the Swan-Canning Estuary	151
J	A Sketch Map of the Aboriginal Crossing Points of the Lower and Middle Portions of the Swan-Canning Estuary	152
K	A Sketch Map Showing Some Places Mentioned in the Text	153
L	Some Aboriginal names of fish and fauna, collected by George Fletcher Moore at Swan River Colony	154
M	A list of local species sampled, killed or captured by the Vlamingh expedition in the region of the Swan River, 1696-1697	156
N	A comparison of the timings of visits to the Swan-Canning Rivers by European Explorers	157
O	Market prices at Swan River Colony	158

Tables

1	Distribution of Archaeological Sites Near Wetlands on the Swan Coastal Plain	32
2	Aboriginal Populations on the Swan Coastal Plain in 1837	45
3	Frequency of Successful Hunting Days Recorded by George Fletcher Moore: 1831-1837	83
4	Frequency of Intercultural Violence in the Swan-Canning Murray Region	83
5	Variation in the Faunal Species Taken by George Fletcher Moore	85
6	Swan River Colony Livestock Populations in 1834	105

AN ETHNOHISTORICAL STUDY OF THE SWAN-CANNING FISHERY IN WESTERN AUSTRALIA: 1697-1837

Introduction

The purpose of this ethnohistorical study is to provide an overview of intercultural exploitation of, and competition for the fishery associated with the Swan-Canning estuarine system of south-western Australia by Aborigines and Europeans prior to 1837. This date has been chosen in order to maintain a manageable time frame. It encompasses the first recorded landing of Europeans at the Swan River in 1697 and the first decade of the British colonisation process. It also marks the beginning of the Victorian age.

The term, fishery, in this instance is defined as including the vertebrate and invertebrate species within the waters, and those natural species which exploit the entire aquatic and shoreline environment of the region, such as birds and aquatic mammals and macropods.

The term, estuary refers to the entrance and enclosed estuarine waters of the Swan and Canning Rivers, which lie on the Swan Coastal Plain, west of the Darling Escarpment, in the vicinity of latitude 32°00' south, and longitude 115°50' east.

The intention has been to examine the importance of the fishery as it related to Aborigines, and to early Europeans, and attempt to construct from the available evidence an understanding of the frontier cultural interaction which took place, including competition, cooperation and altered usage of the estuary brought about by technological change. The study draws on published literature in the historical, archaeological, anthropological and natural history

disciplines, and has also drawn upon unpublished archival material, including theses and early literature which are lodged in various archives in Western Australia.

The Research Question

The research question for the study was: To what extent was there intercultural competition for the Swan-Canning fishery in the early years of European involvement with the region, prior to 1837? The question was approached by addressing the following specific areas:

- (i) What was the harvest potential of the fishery resources in the period under review?
- (ii) How dependent were Aboriginal people on the fishery resources?
- (iii) How dependent were European people on the fishery resources?
- (iv) What evidence exists of intercultural competition for the fishery resources?
- (v) Is there evidence of increasing intercultural competition for the fishery resource through time?

Methodology

The term ethnohistory is used to describe multidisciplinary studies which incorporate data from the fields of ethnology (the study of human interaction when there are perceptions of racial difference), and from history. Axtel (1979) states that history and anthropology have both tended to concentrate mainly on single culture studies. Ethnohistorical studies have also examined single cultures, but in recent years there has been a tendency

towards dual culture focus, particularly in frontier studies, it is in this area of study that ethnohistory has made a distinctive contribution. Ethnohistory therefore can be viewed as a disciplinary hybridisation by which researchers have been able to present a broader perspective of frontier studies than have the narrower focussed separate disciplines of history and ethnology. Ethnohistory is characterised by the emphasis on sociocultural change.

A diachronic approach is undertaken by uniting a wide range of information sources including maps, photographs, enduring social customs, language, place names, as well as the richer variety of written sources such as diaries, official edicts and newspapers. In utilising all these types of information, the researcher must keep in mind that they have largely originated from non-native observers and they therefore may contain bias which is determined by the sociocultural background of the author.

Some researchers have viewed ethnohistory with suspicion. For instance Denning (1966) glibly described it as being conducted either by historians with an amateur anthropological approach, or anthropologists with an amateur historical approach. Ethnohistory was for him, "...a no man's land." (Denning, 1966, p. 23). Such trepidation was not apparent in Australia, and Corris (1969) felt that this had much to do with the fact that of the vast bulk of material written about Aborigines which could be described as ethnohistorical.

Since the 1960's there has been an increasing number of ethnohistorical studies in Australia. Reynolds (1978) took a ethnohistorical approach to examine initial European contact with inland Aboriginal groups in Queensland and

developed a hypothesis that intergroup communication between Aboriginal groups was developed to the extent that there may have been almost no first contact Aborigines observed in a "pristine" state by Europeans.

Another study, by McBryde (1979) has examined the extent and means of object exchange in South Australia. McBryde is wary of pan-Australia generalisations which are found in much of the literature, but notes that her research has revealed remarkable similarities between south eastern Australian Aborigines and those who lived in the south west.

In Western Australia there have been several ethnohistorical studies undertaken, including one by Meagher (1973) which deals with resource exploration by Southwest Aborigines, and more recently by Gibbs (1987) which examines Aboriginal gatherings in the southwest, particularly in relationship to the fishing resource at Barragup on the Serpentine River.

My study utilises historical as well as some contemporary material, mainly relating to scientific studies of the natural resources of the fishery and environs, and in using this I have kept in mind that there have been physical changes to the estuary as a result of post colonial development. The question of historical validity has been addressed by consulting the earliest available documentary sources, and where more than one account of an event exists, a process of triangulation has been undertaken in order to formulate a conclusion. An example of this deductive process is described in chapter IV, and was undertaken after I became aware that numerous contemporary writers had produced differing reports about the number of black swans (*Cygnus atratus*) captured on the Swan River and exported by Dutch

explorers in 1697.

Because of the absence of Aboriginal historical literature, the study has had to rely on European accounts and I have therefore rigorously attempted to compensate for cultural bias. This threat to validity has been recognised and a process of triangulation involving the correlation of observations from different disciplines has been attempted in order to arrive at conclusions when there are omissions.

In examining historical documents I have utilised typescript copies, microfilms and facsimile copies, and as in the case of the early Dutch and French explorers, translations which have been reprinted in scholarly works. The original documents in many cases are not located in Western Australia, or are too rare or fragile to allow general access unless there are special circumstances.

Some data which I had hoped to use in my analysis of the food resources associated with the estuarine system is unavailable. For instance official climatic records for the region do not extend back in time beyond 1876. In attempting to overcome this problem I compared solar anomaly data provided to me by the Solar Observatory at Exmouth (WA) with the available rainfall records, but in keeping with a study in Britain by Ellison (1955) I was unable to draw any firm conclusions about past meteorological sequences at Swan River. I believe however that a future researcher may be able to construct a fair record of climatic conditions from the historical literature, and that the information can provide a valuable contribution to further developing some of the themes which are explored in this dissertation.

Human interaction with available food species can be complex, and it will be shown that it can be determined by many variables. Some species are more desirable than others and yet may not be prolific. Some are more nutritious, and some may only frequent certain areas of the estuary. Seasonal factors have a part to play, as does social control of access to a resource, and it is appropriate to consider related aspects in detail.

During the history of human involvement with the Swan Coastal Plain, global warming has caused a sea level rise which dramatically altered the landscape of the region under discussion. At about 17,000 years ago the sea level was 150 m. lower than today, and the ocean coastline lay much further to the west, beyond what is now known as Rottnest Island, which lies 18 km from the present mouth of the river system. It is thought that the present sea levels were reached between 5,000 and 6,000 years ago and resulted in the creation of the Swan-Canning estuary (Pearce, 1977, Collins, 1987) By this reckoning, the distribution of estuarine food species which are discussed in this study must be no older than that time.

Prior to Fremantle Harbour developments in 1892 the entrance to the Swan River was obstructed by a natural sandbar overlying solid Tamala limestone and had the potential to collect silt (Collins, 1987) and restrict or even stop tidal interchange of water, and as a result, the availability of the estuary to pelagic (ocean going) fish species. Replenishment of the estuary was largely dependent on the bar being kept open by winter storms, and by

floodwaters resulting from inland rainfall. Appendix A is a map showing the extensive form of the tributary system of the Swan-Canning estuary. The Swan coastal plain however also contains large rain-fed aquifers and there was and still is a subterranean flow of fresh water into the river system from this source, although modern exploitation of the aquifer has lowered the levels somewhat and many surface springs are now non-existent. The Swan-Canning estuary has a surface area of approximately 53 km². (Loneragan, Potter and Lenanton, 1989), and in all 137 species of fish have been recorded within its waters (Loneragan, Potter and Lenanton, 1987). The associated wetlands in recent time still support a greater diversity of bird species than any other wetland in Western Australia (Jaensch, 1987) despite the massive destruction of natural habitats along the river shorelines as a result of the urbanisation process.

Some 55% of fish species found in the estuary have been categorised as marine stragglers, that is to say they have entered the waterway by chance rather than by a migratory spawning run, but 38 other marine species use the estuary as a nursery area. The four principal commercial species in 1987 were: *Nematalosa vlaminghi* (Perth herring); *Mugil cephalus* (sea mullet); *Aldrichetta forsteri* (yellow eyed mullet) and *Cnidogobius macrocephalus* (cobble) (Loneragan et al. 1987). Seasonal spawning accounts for peak availability of species and not all species penetrate the same distance upstream. Mature Perth herring for instance move upstream from the ocean in August and September, to eventually spawn in the upper reaches of the river between November and January (Loneragan et al. 1987). Cobble are frequently mentioned by 19th century observers as a species

much pursued by Aborigines, and while these fish are ocean going, they can spend long periods in the estuary and spawn between late spring and mid-summer (October-December). The penetration upstream by young cobbler and other species is determined by the salinity levels (Moore, 1884; Loneragan et al. 1987). Mullet were also favoured by Aborigines (Moore, 1884) and the peak spawning time for both species is in the cooler months, between March and September (Loneragan et al. 1987).

As with fish species, the most favourable time for taking of birds by both Europeans and Aborigines can be linked to seasonal opportunity facilitated by aggregation. For instance the black swan (*Cygnus atratus*) was most vulnerable during the breeding and moulting period. (Meagher, 1973; Bates, 1985) although with the aid of a gun, a hunter had access to the species at other times.

One of the mullet species, *Mugil cephalus* is distributed widely, being found in most temperate waters of Australia (Hutchins and Thompson, 1983), and in Hawaii (Goto, 1986). Goto has compared the dietary value of fish and molluscs, and concluded that molluscs are an inefficient source of protein in comparison to this type of mullet, which was the most nutritious for weight. The total daily nutritional requirement for an adult human can be satisfied with 2.19 kg of sea mullet, whereas it is necessary to consume 4.16 kg of molluscs for the same benefit (Goto, 1986). It has however been observed by Yesner (1987) that molluscs can have a "spring peak" when their nutritional value is higher than at other seasons, and that they then can become more favoured by collectors. Within the Swan-Canning estuary waters 97 mollusc species have been

recognised (Hodgkin, 1987), but none appear to have been an Aboriginal food resource at time of colonisation. Europeans however did exploit some of them (Grey, 1841; Moore, 1884).

There is possibly no better historically graphic illustration of the European appreciation of the lesser nutritional value of molluscs than "The Thin Kitchen" and "The Fat Kitchen" engravings done by Pieter Brueghel in 1563, which are reproduced in Revelle, (1974, p. 118). In "The Thin Kitchen", gaunt, apparently undernourished people are clamouring over a bowl of molluscs while in "The Fat Kitchen" a group of obese subjects are gorging themselves on pork.

In Western Australia, Hutchins and Thompson (1983) have rated the fish of the south-west region according to their own culturally subjective values of eating quality. Both species of mullet, and the cobbler are rated as being of "good eating quality" while Perth herring *Nematalosa vlaminghi*, now the most prolific fish in the Swan River (Loneragan and Potter, 1990) on other hand is rated with the lowest possible score and described as "poor eating", no doubt due in part to its small size, (28 cm) and its other common name of "bony herring". (Hutchins and Thompson, 1983, pp. 73-87)

A specimen was carefully dissected specifically in the interests of verification (see Appendix B), and after cooking the filleted flesh, it was found contain so many fine bones that eating became a tedious matter for myself and was abandoned, however my 13 year old son enjoyed it, and despite the bones and oily flavour, he thought the species delicious and that he would eat it again. The difference in our opinions serves to illustrate the

subjective nature of judgments about the eating quality of fish. A species which is mentioned by as having been netted by early 19th century settlers in vast numbers is the trumpeter (Moore, 1884). This fish (*Amniataba caudavittatus*), while rating slightly better to eat than the "very" bony Perth herring, does not compare well with the cobbler and mullet by European tastes.

Differing cultural taste preferences for fish were observed by Neill (1845, in Meagher, 1973), who wrote that the ocean species *Kyphosus cornelii* (western buffalo bream) has a strong disagreeable smell and was rejected by Europeans, but is much relished by south west Aborigines. Hutchins and Thompson (1983) also rate it as being of poor eating quality. The protein content of fish varies greatly between species, and certain types such as flounder can have a high protein yield which is comparable to whale meat (Yesner, 1987).

Appendix C contains a chart showing spawning times of some fish species in the estuary. Neither Aborigines nor Europeans relied on a single species for sustenance. Nor could each season be totally depended on to be bountiful. The degree of salinity of the waters depended on winter precipitation and there were of course wet and dry years. The penetration of fish species into the estuary system, and in turn availability as a human or avian food resource was dependent on the state of the waters, and heavy flooding in a wet winter could delay aggregation.

All pre-colonial European expeditions killed and ate native species of fish and fauna, and colonists also exploited many species. Two lists extracted from diary accounts show that the range of species could be diverse.

Both Captain Fremantle RN on his brief visit in 1829 (Cottesloe, 1928), and a pioneer settler, George Fletcher Moore (Moore, 1884) each recorded the taking of over twenty different native species of fish and fauna to supplement their rations, these lists appear in Appendix D and Appendix E.

Meagher (1973) has shown that Aborigines of the region exploited a great many species of wildlife and certainly far more than did the Europeans, but the fauna, and in particular bird life enjoyed a degree of greater security from capture due to the differing technologies available to the two peoples. Many Europeans possessed firearms and sometimes boats, which enabled them to take game almost whenever it was sighted, and with relatively little skill, and there were few, if any culturally imposed restrictions (Powell, 1831). Europeans' horses with a speed and height advantage, and specialised hunting dogs also played a significant role in exploitation of native animal species. (Powell, 1831; Moore 1884)

Aborigines' hunting methods relied upon an intimate knowledge of the habits of their quarry and success often required considerable stealth and patience. Early European observers admired the skill of Aborigines in spearing fish, and noted that they rarely missed a target (Stirling, 1827 in Historical Records of Australia. III. VI; Fremantle, 1829; Moore, 1884). It appears that in the Swan Canning river system that spearing was one of the most favoured fishing techniques. The boomerang-like kylie was also used on flocks of birds and schools of fish, and stones could have been used on small birds, as they are by Aborigines today. Trap arrangements such as stone and woven stick fish

weirs were used, but were generally found further to the south, the closest in operation being at Barragup on the Murray River, where Aborigines from Swan River and elsewhere had cultural interaction at times of fish species movement (Hammond, 1933; Bates, 1944; Gibbs, 1987).

Control of such a resource can influence complex cultural activity (Yesner, 1987), but may also enable the custodians to acquire a physical advantage over surrounding and relatively close groups. George Fletcher Moore wrote in 1835 that Murray River (Pinjarra) men, living 65 km to the south were larger in stature and carried more fat than Swan River Aborigines and he hypothesised that it was because of a better fish resource in their area (Moore, 1884, p. 286). He and others of his time also felt that those people exerted considerable regional influence in customary matters.

In the Swan river at Como there is an accumulation of stone material which is thought to possibly be the remains of an old Aboriginal fish trap (Strawbridge, 1988), but the evidence for this is inconclusive and it appears to have no confirmed use since European arrival. There is also an Aboriginal oral account of a fish weir having once been on the upper reaches of the Swan River (O'Connor, Bodney and Little, 1984; Gibbs, 1987), but any evidence in the form of 19th century European descriptions seem not to have been written. There are many submerged sandbanks in the wider reaches the Swan-Canning estuary and they were attractive to fish.

Two early colonists, William Ruell and Fred Caporn operated 35 ft. (10.7 m.) sailing gigs on the waterway between Fremantle and Perth, utilising a channel which had

been cut through the Point Walter Spit, but which has since vanished under the silt. Marchant-James (1977, P. 11) states, "...this was in days when great schools of sea mullet spawned in the bays, and natives swarmed to collect stranded fish made high and dry by the tide." Numerous nineteenth century observers remarked on the quantity of fish to be had from the river, but it seems clear that not all areas of the river system are as productive as others. Moore (1884) for instance took very few fish from the vicinity of his farm in the upper reaches of the Swan. Initially he lamented that this was due to his lack of access to suitable technology, in the form of a sein net, but when he acquired a net he did not appear to experience any more success. His diary accounts indicate that what fish he enjoyed were generally caught elsewhere: "Our having taken 10,000 at one draught of the sein;..." (Moore, 1884. P. 136) is one example which took place before he acquired his own net. "Our" is used in the sense of belonging to the community, much the same as when people identify with "our" winning football team, and appears in many other historical accounts. While he discusses the habits and peculiarities of several fish species there is the suspicion that much of this was based on hearsay evidence rather than personal experience, if for no other reason than that he did not record many fish, in comparison to the many birds and other wildlife he killed.

The estuary system cannot be viewed as an environment which experiences regular and identical annual cycles of ecological fluctuation, which in turn maintain the biota in a totally predictable manner. Hodgkin (1987) has described salinity of the waterway as the ecological master factor

controlling life and that this is largely determined by extremities of meteorological variation, and that there is great difference in estuary salinity between summer and winter. In addition there has been a cyclic phenomena of very wet winters approximately every ten years and this has in the past had a marked effect on the hydrology and in turn, on the decline of benthic (bottom dwelling) species. Occasional massive mortality of Swan River fish has been attributed to sudden change in salinity and associated lowering of oxygenation (Hodgkin, 1987). Such a trauma would probably have had considerable impact on surviving fish and in turn the avian species, and people who exploited them. The adapting by them of alternative survival strategies would be mandatory.

The Swan-Canning estuary has been divided by scientific researchers into three zones, lower, middle and upper (Chalmer, Hodgkin and Kendrick, 1976). These reflect distinctive aquatic conditions, and in turn the distribution of teleost (boned) fish species. (See map in Appendix F) Some teleosts may occupy different regions according to their stage of life and seasonally influenced aquatic conditions. Perth herring for instance spend much of their life in the middle estuary, but in summer they aggregate in the upper reaches of the rivers where they spawn. Some fish species such as cobbler tend also to move upstream only when salinity levels are sufficiently high, while yellow eyed mullet rarely progress upstream beyond the middle estuary. Sea mullet on the other hand can be found in the uppermost extremes of the estuary (Loneragan et al. 1987). The availability of estuary species to humans was, and still is subject in part to seasonal fluctuations. Sometimes dry

winters occurred and sometimes wet, with a resultant effect on the ecology and biota of the waterway. Such climatic fluctuations may lead to human attempts at control of a resource, and this can emerge in the form of ritualised "increase" ceremonies. The intensity or participation in increase ceremonies may well have a relationship to the desirability, reliability and availability of a food resource accessible to a cultural group, and may more be influenced at the sub-conscious level by a much longer cyclic phenomena such as drought, than the more obvious annual anticipations.

Yesner (1987) states that a greater degree of cultural complexity can develop when anadromous fish (pelagic fish which ascend from the ocean to fresh water streams to spawn) are a significant part of the diet of coastal peoples due to the predictability of location and time. Aboriginal gatherings to harvest fish from a constructed weir at Barragup on the Serpentine River located 55 km. south of the Canning River, seem to be congruent with this hypothesis. At that place people from the Swan-Canning River area and from other locations participated in the fish catch at the discretionary invitation of the Murray-Serpentine River custodians, whom 19th century Europeans perceived as being able to wield considerable customary authority and influence over the surrounding groups. (Moore, 1884; Bates, 1944; Gibbs, 1987)

Of the many fish species found in the Swan-Canning system, the only one which can be described as anadromous is the small (28 cm) Perth bony herring, (*Nematalosa vlaminghi*) and it is also the most numerous species there (Loneragan, Potter and Lenanton, 1989). In comparison, the

species exploited at Barragup was (*Arripis esper*) the Australia salmon (Bates, 1944). It can be a large fish, (96.1 cm) and weighing up to 9.4 kg. (Hutchins and Thomson, 1983) and does not appear on the lists of fish surveyed in the Swan/Canning over an extended period by Loneragan et al. (1989). In the period after 1837, fish coming upstream at Barragup were subjected to very heavy exploitation to the extent that Aborigines sold them by the cartload to settlers for use as fertiliser. The species *A. esper* has not been recorded in recent surveys of the estuary (I. Potter, personal communication, April 1991).

The reason why *A. esper* did not come into the the Swan in the nineteenth century may be because of the distance upstream to the tributary sections of the Swan and Canning are approximately 25 and 20 km respectively, and in the Peel Harvey estuary the distance is about 10 km. (Loneragan and Potter, 1990). The associated variations in the salinity gradient appear to be highly important in determining which and where species dominate.

Many early European observers have commented on the abundance of fish in the Swan-Canning estuary but seemingly there were few people prepared to exploit them commercially in the first years of the colony. A newspaper report in 1831 said:

The natives of Perth are becoming more useful to the inhabitants, fetching water, lighting their fires, and occasionally catching Fish, they perform these services for bread...if presented with a penny, they know the way to the baker's shop. (WACPG. 16/4/1831 p.2)

The revelation that some Perth Aborigines had come to terms with money and were occasionally earning coin in exchange for fish is interesting considering Perth had been

founded only 21 months earlier on 12 August 1829, and seems to suggest that catching the most desirable fish species was indeed the work of experts, and beyond the capability of at least some settlers. A notice appeared in the *Perth Gazette* (2/3/1833) urging settlers not to pay Aborigines in coin lest "plunder and violence" follow, when they eventually realised its value in buying food.

Salt beef and pork, preserved in casks were a common item in settlers' diets, but some domestic livestock was being slaughtered by settlers fairly soon after the foundation of Perth. Even so the most prominent of the colony's citizens were serving fauna to their guests. Eliza Currie recorded on 22 July, 1829 that she ate black cockatoo at the Governor's abode and that two days later on the 24th she in turn served kangaroo to Governor Stirling and others. The next month Mrs. Stirling again dined with them and they ate a "kangaroo dinner" (Currie, 1829 p. 3). In 1831 a proposal was announced for the establishment of official market days at Fremantle, (Wednesday) Perth, (Saturday) and Guildford, (Friday) (W.A.C.P.G. 26/2/1831). Plans were also drawn up for markets at Guildford and included a fish market to be located on the bank approximately opposite Success Hill but that never materialised.

Salt was being harvested and sold from Rottnest by May 1831 (P.G. W.A.J. 23/5/1831) and was advertised as suitable for curing. In addition dried fish in "any quantity" was available at 6d per lb. (W.A. 12 Nov. 1831). Moore (1884) stated in September 1832 that many people in the colony were experimenting with the salting of fish, which he wrote were numerous in the river on the downstream side of Perth which is the middle aquatic zone.

Until the establishment of a whale fishery at Fremantle in 1837 (PGWAJ, 10/6/1837) whales and presumably other cetaceans were only an occasional delicacy for Aborigines, facilitated by the beaching of a dead or dying animal. Earlier that year a settler, Thomas Peel, while travelling by boat from Mandurah to Fremantle had sighted many Aborigines feasting on a beached whale and he later returned along the beach with suitable equipment and rendered down into oil what remained (P.G. 14/1/1837, Hasluck, 1965). Such beachings were not unusual according to the paper, and there seems no doubt that Aborigines in the region considered them as favourably for their food value as for the oily blubber, which they rubbed into their skin. In mid-summer January the daytime temperatures in the region can often exceed 40° C, in which case the daily developing olfactory qualities of a dead whale would have indeed been remarkable, and in the case of Peel, his effort suggests he had a certain dedication to profit.

While much of this discussion has so far dealt with protein resources, carbohydrates also had an important place in the diets of both Aborigines and Europeans. Yams (*Dioscorea spp.*) were a seasonal staple for Aborigines and could be gathered by both men and women from known warran patches (Grey, 1841). Several of these patches were noted on early plans of the upper reaches of the Swan, and the plants were particularly susceptible to having their green foliage eaten by sheep (Hallam, 1991). Perhaps of greater threat to the yams however were the settlers' pigs of which from various accounts (Moore, 1884; Currie, 1829) there seemed to be a great many animals. They were allowed to forage and with their rooting out ability would have exploited any

nearby yam patches and eliminated any chance of major regeneration. Apart from occasional experimentation the settlers do not appear to have eaten yams, preferring bread and potatoes instead. Despite some vegetable gardens being productive within the first six months of the colony, extra supplies of flour and potatoes were being imported from Tasmania by 9th October, 1829 (Currie, 1829), and by 1830 the Government was letting tenders for the supply of Tasmanian potatoes in 20 ton (1 ton = 2,240 lb = 1016 kg) lots (CSR 4/21). Both Aborigines and impoverished Europeans felt the need to help themselves to colonial vegetable gardens as potatoes remained at a premium. In July 1831 a male Aborigine was shot dead while entering a garden allegedly to raid a potato patch (PGWAJ, 25/5/1833, p. 83), and in 1834 a 12 year old European boy was sentenced to six months hard labour for stealing potatoes (PGWAJ, 15/2/1834). There are many other such examples of severe punishment for stealing food in the records.

There were numerous native plant food resources associated with the Swan-Canning estuary environs which were exploited by humans, and by no means can it be said that they have all been discussed. The selection available, especially for Aborigines with their well developed local knowledge was probably vast to say the least, and the subject offers much scope for further development by future ethnohistorical researchers.

II The archaeological evidence for human involvement with the fishery and environs

A series of archaeological excavations in Quarternary sediments at Upper Swan, located on the western slopes of the Darling Escarpment near where the Avon River flows from the hills, have revealed a mean C14 date of 38,000 BP for charcoal samples which were found in association with human artifacts (Pearce and Barbetti, 1981). Other nearby alluvial deposits have also produced ancient dates in association with stone artifacts, and 29,000 BP was determined from material obtained at Helena Pool, south of the Upper Swan location (Strawbridge, 1988). Both the Avon and Helena Rivers are thought to have been convenient Aboriginal trade and communication routes connecting to the hinterland (Gibbs, 1987; O'Connor, Quartermaine and Bodney, 1989). A few kilometres upstream from the Upper Swan site and beyond the western slopes, at Walyunga National Park, a date of about 8,000 BP was obtained from an excavation below a large exposed Aboriginal artifact working area (Pearce, 1978). Another excavation near the present mouth of the Swan River has produced a date of approximately 9,930 BP. (Clarke and Dortch, 1977).

Since the most ancient artifacts at Upper Swan were deposited, there has been considerable, and dramatic geological and physical alteration to the Swan coastal plain, mainly due to changes in the mean sea level (Dortch, Kendrick and Morse, 1984). Geological and hydrographic evidence suggests that the sea level 17,000 years ago was about 150 metres lower than the present level, which was established about 6,000 years ago (Collins, 1987). These

sea level changes have been attributed to global warming, which has induced a partial melting of polar ice, and thermal expansion of the oceans, although the exact mechanisms are complex and not fully understood (Thom, 1978).

It is not known if the people who left the artifacts at Upper Swan 38,000 years ago are the direct ancestors of contemporary Aborigines in the region. There are for instance substantial gaps in the archaeological chronology, with the difference between the two oldest dates obtained from Upper Swan and Helena Pool being 9,000 years, and gaps of thousands of years exist elsewhere in the region's archaeological chronology. Some of these inconsistencies may be due to the inundation of Aboriginal habitats by the rising ocean level, or because insufficient excavations have been undertaken. However the sudden cessation of fossiliferous Bryozoan chert artifacts in the archaeological record during the mid-Holocene has led to suggestions, initially by Glover (1975) that the original quarry sites were now beyond the present coast line (Pearce, 1977), and this in turn supports the argument that other types of Aboriginal sites were covered by rising ocean waters (Dortch et al. 1984). Subsequent excavations by Pearce and Barbetti (1981) in the vicinity of the 38,000 BP Upper Swan site have shown that about 5% of recovered artifacts were manufactured from Bryozoan chert and that this type of stone does not appear in local excavations more recently than 4,600 BP.

In the light of such dramatic environmental change, people living in the region would have had to revise their survival strategies. Hallam (1981) states that the rise in water level could probably have been measured horizontally

in meters per day and territorial disruption would have occurred on a major scale, possibly within the span of one generation. Hallam (1987) states that mid-Holocene archaeological excavations in the Swan River area have not so far revealed evidence of food remains, and that archaeologists have relied heavily on European accounts about Aborigines to interpret any finds, therefore it has not been possible to corroborate speculation about survival strategies at the time of displacement in the mid-Holocene.

Since the beginning of the colonial invasion in 1829 there has been relatively rapid urban development of the Perth metropolitan area and many potential archaeological sites have unwittingly been disturbed (Dortch, 1984, Hallam, 1987). Despite many sites having had their scientific value lessened, Strawbridge (1988) reported that some 563 Aboriginal archaeological sites have been examined in the metropolitan area of Perth, and that the majority of them are located less than 350 metres from a fresh water source. The distribution of these sites is set out in Table 1:

Table 1

Distribution of Archaeological Sites Near
Wetlands on the Swan Coastal Plain

Swamps	227	Creeks	134
Rivers	99	Lakes	66
Surface groundwater	22	Springs	10
Rockholes	3	Soaks	2

Source: Strawbridge (1988 p. 53)

From the figures in Table 1 it would appear that camps alongside swamps and lakes, rather than by rivers and creeks were more favoured by Aborigines. Of the total number of sites, 243, or 43% are near water sources which at some time of a year could be expected to eventually flow into the Swan-Canning drainage system. It should not however be concluded that the figures relating to archaeological sites are representative of all Aboriginal occupation sites which were in the Swan-Canning region at the beginning of colonisation, because many must surely have vanished under the impact of urban development. It was a priority order for Captain Fremantle RN in 1827 to seek out such fresh water sources for the use of settlers (Cottesloe, 1928).

Dortch, Kendrick, and Morse (1984) point out the difficulty in archaeologically examining Aboriginal fishing activity because European fishermen have subsequently camped at the same favoured locations, usually disturbing any archaeological evidence which existed. Riverside evidence which has been recovered by archaeologists suggests that Aborigines in the region did not exploit the numerous species of gastropods and molluscs as a food resource (Dortch, 1980), and the absence of shell middens in the immediate region of the estuary would seem to confirm this, however the destruction of evidence by post colonial activity cannot be discounted (Dortch et al. 1984). Middens are common in many other parts of Australia at similar latitudes, including Tasmania (Jones, 1978), but Rose (1987) states that they are not usually older than the recent Holocene, due to the higher ocean levels.

Neither may the shell of all species lend itself to lasting very long after collection. One type of large

"sunset shell" (*Sanguinolaria [Soletellina] biradiata*) which is presently abundant beneath the sand banks of the Swan Canning estuary has a particularly thin and fragile shell, apparently resulting from highly accelerated growth after it enters the estuary in a larval stage after cessation of the main winter fresh water flow. (S. Slack-Smith. personal communication, April 1991). If this species was exploited by humans in the past, it may be that such fragility was not conducive to survival of large quantities of shell material in midden situations. A photograph of samples of *S. biradiata* which were collected at Como in late 1990 can be seen in Appendix G.

The south-west Aboriginal aversion to the eating of molluscs was noted by colonists (Moore, 1884; Grey, 1841), but Aborigines did use some mollusc shell as tools (Grey, 1841; Dortch et al. 1984), and numerous other nineteenth century European observers recorded that Aborigines had no qualms about using crushed molluscs to lure fish within spearing range (Nind, 1831; Armstrong 1836; Bates 1985). Just as firm evidence is lacking at the Swan-Canning rivers for the large scale exploitation of molluscs for food, so too is any evidence of the use of fish hooks. This form of fishing was certainly known to Aboriginal people on the east coast of the continent (Rose, 1987. Turbit, 1989), and to many other aboriginal peoples elsewhere who had not developed metal technology (Travers, 1968). Fish hooks which have been recovered from archaeological sites on the Australian mainland have all been taken from levels less than 700 years old (Turbet, 1989), and are not found at all in the Tasmanian prehistoric record (Travers, 1968; Flood, 1983).

Indigenous peoples living in the Pacific region had a developed and diverse range of fish hook designs and Goto (1986) states that while their parallels are found throughout the region, because a particular fishing method has not been recorded in an area, it does not necessarily mean that fish have not been caught there by that method in the past. Similarly the presence of stone "fish-hook files" in levels up to 2000 BP on the eastern seaboard cannot be taken to indicate that fish-hooks were once present, but have now decayed (Flood, 1983).

Evidence of sudden dietary change can be shown in the archaeological record of Tasmania, where the exploitation of all scale fish by Aborigines was non-existent at time of colonisation (Travers, 1968; Flood, 1983). *Pseudolabrus* sp. (Wrass) appeared to cease in the archaeological record about 3,800 BP (Jones, 1978), and an island wide taboo on that and other scale fish species appears to have existed since that time, but Aborigines continued to exploit molluscs as food in Tasmania (Travers, 1968, Jones, 1978). *Pseudolabrus* sp. were also exploited in Western Australia, but apparently suffered no apparent lessening in popularity over time. The Swan estuary appears to have undergone a major hydrological change at about 4,000 BP and the mollusc fauna seems to have suffered severe impoverishment. This may have had a significant effect on subsistence strategies of Aborigines of the time (Dortch et al. 1984).

Hutchins and Thompson (1983) rate the eating quality of *Pseudolabrus* spp., (wrass) as lower than *Mugil cephalus*, (sea mullet) which is a more prolific species in the Swan estuarine system than wrass (Lonegran, Potter and Lenanton, 1987), but such a judgment on eating quality could well be

culturally biased and is not necessarily an indicator of Aboriginal preferences in the past. Discrimination against, or favour for a particular food undoubtedly involves strong cultural considerations which have been influenced by former generations, and it is reasonable to suppose that discrimination or taboos by an entire human group may well have originated from some long ago instruction or experience. Orthodox Jews for instance do not eat molluscs, or fish without scales, and their long time prohibition is based on an instruction found in the Old Testament's third book of Moses (Leviticus 11.9-12). British explorer, Sir George Grey was told by an Aboriginal guide that that a very long time ago in the south-west region some Aboriginal people had eaten fresh water mussels, possibly *Velesunio carterii*, and then died. Aborigines subsequently believed the deaths had been induced by *boylyas*, or sorcerers, and that the threat still existed in 1848 in the south west region (Grey, 1841).

With a 38,000 year human history in the Swan River region most edible species probably would have been exploited at some time or another. Archaeological work at Lake Mungo in New South Wales has shown that Aborigines consumed large quantities of the fresh water mussel, *Velesunio ambiguus* between 25,000 and 30,000 BP. (Jones, 1979). Lake Mungo is on a parallel slightly south of Swan River and it is not unreasonable to suppose that Aborigines on the west coast may have also at one time exploited similar species.

Molluscs however are generally not as nutritious as fish, particularly the mullet, *Mugil cephalus* according to Goto (1986). The prolific availability of this and so many

other estuary visiting species in the Swan-Canning system may have been sufficient cause in itself for molluscs not to be collected as a food. Aborigines in King George's Sound, to the south apparently started eating marine molluscs soon after witnessing the Europeans' enjoyment of them, and that they were so readily converted suggests that perhaps their dietary prohibition may not have had strong religious significance.

Summary of the archaeological evidence

Human involvement with the Swan-Canning region has been shown by archaeologists to have taken place over a time span of at least 38,000 years. During this period the global mean temperature has increased and this has resulted in a dramatic rising of the sea level to the extent that a large part of the original Swan coastal plain has been inundated, forming the Swan-Canning estuary about 6,000 Years ago according to Collins (1987, p. 9). Geological formations further seaward which had provided a source of Bryozoan chert for Aboriginal artifact manufacture were also inundated, causing a cessation of this material in the archaeological record at about 4,560 BP. (Pearce, 1977). The disparity between the two dates serves to demonstrate the difficulty in correlating such estimates from different disciplines, and therefore determining the timing of when humans in the region experienced major environmental, and possibly cultural disruption can only be approximate.

Since colonisation many Aboriginal fishing camp sites have been taken over by Europeans, and much archaeological evidence is presumed to have been destroyed. Nevertheless

some information has been forthcoming and the absence of evidence for mollusc exploitation tends to confirm colonists' ethnographic observations of an avoidance of that resource as a food, despite there being some 97 mollusc species now available from the estuary waters (Hodgkin, 1987). Salt water dependent molluscs did however have other uses by Aborigines such as for bait and for cutting tools (Bates, 1944), but any contact with fresh water mussels was greatly feared (Grey, 1841).

Fishing technology in south-western Australia, unlike on the eastern seaboard and the Pacific Islands seems to have been restricted to spears, kylies (boomerangs) and fish-traps, and this may have been for no other reason than because the proliferation of fish and fauna species precluded the necessity of using any other methods. However it should be remembered that because there is no apparent evidence of alternative fishing technology being used in the Swan Canning region, this should not be seen as conclusive evidence that it was not used in the past, nor should similar assumptions be made about the exploitation of particular food species. Indeed due to large chronological gaps in the archaeological record it would appear at present to be difficult to state categorically that the dwellers of the Swan-Canning coastal plain in 1837 were the direct descendants of those people inhabiting the area 38,000 years ago. Gibbs (1987) has discussed regularly used routes of trade which facilitated the passage of objects to distant groups and it seems probable that genetic exchange also occurred with people elsewhere through the passage of time.

III Aboriginal Exploitation of the Fishery Resource and Associated Environment

The written evidence for Aboriginal exploitation of the fishery is somewhat fragmentary and is based almost entirely on European observations. The Dutch in 1697 had taken a keen interest in determining the Aboriginal diet and deduced that while fish were involved, because of fish remains found in camps, Aborigines had a diet that was mainly vegetable in origin. The evidence for this was from the human faeces which they found and dissected (Witsen, 1705). Of course the few specimens they inspected cannot be taken as representative of the entire population of people, nor of any particular age group or gender, but nevertheless can be considered as in keeping with observations by later explorers. Grey (1841) wrote that Aborigines "...subsist entirely by hunting and fishing, and on the wild roots they find in certain localities...." (Grey, 1841. p. 233).

It is possible to ascertain that the south western Australian region was an important food resource area for Aboriginal people. Meagher (1973) has shown by an extensive analysis of early European literature that a vast range of aquatic and terrestrial species, both animal and vegetable were exploited.

The earliest recorded observation of Aboriginal exploitation of fish at Swan River was made indirectly in 1697 when Dutch explorers under the command of Willem de Vlamingh discovered spears and an abandoned fish by a campfire (Witsen, 1705; Marchant, 1977). They also described saw many other signs of Aboriginal activity, including shelters, other fires and footprints (Robert,

1972; Hallam, 1987). The next European evidence of Aboriginal fishing activity was recorded on 18th April, 1827, when James Stirling R.N. and his party were returning downstream at night, after a reconnaissance of the river system. "On our course we observed several Natives on the banks fishing by torchlight..." (Stirling to Darling. ~~HRA~~, Series III. Vol. VI. p. 561). He had previously noted that fish could be seen in abundance during daylight, and his observation of night fishing activity suggests that specific species were being sought. These might have been *Cnidogobius macrocephalus*, (cobble) or *Pseudorhombus jenynsii* (small toothed flounder), both of which are found in the estuary, and are rated "good eating." by Hutchins and Thompson (1983). Both species are particularly susceptible to being speared in calm, shallow water, with the aid of artificial light. Survey catch data in Loneragan et al. (1989) indicates they are amongst the eight largest species in the river, but by no means the most prolific. Cobblers rank 28th and flounder rank 39th, therefore fish species selectivity was probably important in relation to the dietary strategy adopted by Swan River Aborigines.

Through kinship and mythological associations, Aborigines living on the Swan coastal plain maintained a totemic relationship with many of the species of flora and fauna found thereabouts. Fauna species included fish, crows, pelicans, mopokes, eaglehawks, robins, wagtails, possums, emus and cockatoos, to name a few; and observing some form of dietary custom in respect to them was obligatory (Bates, 1985). Europeans however took most of these species without hesitation, as can be seen from the lists extracted from the diaries of Fremantle (1928), and

Moore (1884) which are in Appendices B and C. There is little, if any evidence of regard or respect for Aboriginal cultural beliefs when they took these species. In addition there existed intricate Aboriginal belief system woven about ancestral creation heroes such as Waugle (Woggle, Waugle, Woggal, Whaughal, Waugal), and which for many Aborigines still exists in association with parts of the fresh and estuarine water environment of the Swan coastal plain (Moore, 1884; Bourke, 1987). Waugle is directly associated with the creation of the environment which is enjoyed by people, and demands customary and ritualised respect. One location where Aboriginal ritual activity with respect to Waugal took place was near the foot of Mount Eliza and it there that in 1836 the colony's first recorded intentional desecration of an Aboriginal site took place, when symbolic stone Waugle eggs were stolen (Vinnecombe, 1989, p. 25). In the post-colonial period the area has been subjected to several European directed initiatives which included a boatyard, an Aboriginal depot, a flour mill, a convict depot, pensioners lodgings, an ice works and eventually a brewery. Future use of the area is currently the subject of a vigorous dispute between the European dominated State Government and Aborigines.

All significant geographical features located on the shores of the estuary and parts of the waterway itself appear to have been named by Aborigines and some of these names were recorded in 1834 by Robert Menli Lyon (PGWAJ 6/4/1833, 13/4/1833, 20/4/1833) and his list is reproduced in Appendix H. A map incorporating some of these names is located in Appendix I.

Aborigines hunted fish on some, if not all of the

submerged sandbanks of the middle and lower estuary. In 1833, ferry operator, John Weavell was transporting groups of Aborigines from across the river so that they could fish on the *Nierganup* sand banks at Preston Point, apparently in the vicinity of where the public boat ramp at East Fremantle is now located (*Perth Gazette and Western Australian Journal* 13/4/1833). Aborigines also fished on sandbanks on the north side of the river at Fremantle in the approximate area where North Wharf is now established. According to Hammond (1933) the principal summer species caught was the cobbler, but in the winter, when the river flooded, very little in the way of fish could be caught. Based on European historical observations, the main fishing season appears to have coincided with the late summer burning season (Hassell, 1936; Hallam, 1975), but contemporary studies of fish spawning times and their associated aggregations show that fishing could have been undertaken for a longer period, and that not all species were available at the same time. (See Appendix C).

The river mouth and entrance in the 1830's was very different in appearance to the present. A shallow limestone bar prevented large ships from entering and passage was restricted to small boats. Sometimes they had to be dragged across the bar, calling for considerable physical effort by the European occupants. A chart compiled from data collected by HMS Beagle in 1841 shows the depth of the bar to have been about a quarter of a fathom, or about 60 cm. This chart also shows two projecting sand banks about a quarter, and a half mile upstream from the bar, and they might also have at times afforded a crossing (*Swan River Western Australia from HMS Beagle 1841*. Chart Collection,

Batty Archive, 766C). Aborigines in the region did not utilise boats. A sketch map of layout of the river mouth and nearby sandbars can be seen in Appendix J, and the bar at the river mouth was a crossing point for Aborigines if the water level was calm or low enough for wading, but sometimes, if it was too high or too swift, only the men might cross and the women and children would walk upstream to the safer crossings at the "flats", which are in the vicinity of the present traffic causeway near Perth. According to early reports the river beyond the bar was deep enough to accommodate large craft (Lockyer, 1829. HRA. 3. VI, p. 604). There were actually two crossings near the causeway, one down from the present Ozone Hotel in South Perth and the other below the site of the East Perth Cemetery (Hammond, 1933). An 1835 map by Thomas Watson shows one of these and is reproduced in the appendices. It was also in the vicinity of this crossing that the Vlamingh expedition in 1697 saw many footprints on the submerged sandbanks. Herrison Island was originally three islands but dredging of boat channels has subsequently formed one island (Bourke, 1987). A reproduction of a portion of the map by Thomas Watson (1835) showing the original islands and the Aboriginal crossing can be seen in Appendix J, and it was near here that the 63rd Regiment set up an ambush in 1833 in an attempt to capture or kill Yagan (PGWAJ 4/5/1833, p. 72.). A similar ambush was set up at Drummond's Ford (PGWAJ 18/5/1833, p. 78). Another possible Aboriginal river crossing point was where Canning Bridge is now located and even today the water is relatively shallow beneath the bridge structure, although I have not come across specific European historical references about Aborigines using this

place as a crossing.

Hammond (1933:19) mentions Aboriginal "pads" or footways which interconnected favoured locations and that a group of women and children leaving the men at Fremantle could walk from Fremantle to the Causeway, thence onward to the fresh water Bibra Lake. (See Appendix A). This probably involved a walk of 32-35 kilometres for the women and children and about 9 for the men. Sir George Grey made extensive use of long Aboriginal paths during his explorations in Western Australia and such paths could frequently be found following the shorelines of estuaries (Grey, 1841). In the 1950's, when the western shore of Bibra Lake had not been converted to grassy "parkland", a well worn foot track still ran parallel with the western shore.

Aboriginal populations of the region

Aborigines apparently were able to freely access either side of the Swan Canning rivers and certainly after colonisation did so with apparently few cultural restrictions being observed by Europeans. For example Yagan, a well known Aborigine was mentioned in sightings at Fremantle, Canning River, Upper Swan and Perth at different times and he was captured at Point Belcher (Mill Point) by boatmen while he and others were fishing on the Swan River (PGWAJ 9/3/1833; Neville, 1936; Hasluck, 1961). After eventually escaping he was murdered by a settler's employee at Upper Swan, where he had been in the company of other Aborigines.

According to Tonkinson (1978) bands were the basic Aboriginal social grouping everywhere in Australia.

Identifiable family groups, or bands existed on the Swan coastal plain in 1837, and data from a census of Aboriginal people taken by Francis. F. Armstrong and is reproduced from his 1837 report in Table 2. It should be kept in mind however that a pencilled notation on the original documents states that these figures are not complete (Hallam, 1977).

Table 2

Aboriginal Populations on the Swan Coastal Plain in 1837

	Men	Women	Children	Total
Pinjarra people (Marangal)	4	7	9	22
Canning people (Booyalkalla)	-	-	-	19
Mangles Bay (Booyalkalla)	-	-	-	39
1st North group (Djeeralkala)	-	-	-	70
Yallowogonga's group (Oordalkalla)	-	-	-	28
Monday's group (Djeeralkalla)	-	-	-	32
2nd group past Kelmscott (Mulgang)	-	-	-	23+
South side of Murray (Kanneengbooyang)	-	-	-	<u>56</u>
				289

(Source: CSR 58/158-164)

Unfortunately there are no reliable figures about the Aboriginal population which existed in 1829, when the first colonists arrived, and deductive estimates have had to be made using the slightest clues. For instance Mrs. Currie's diary (Western Australian State Archives 329A/1) on the 27 March 1830 cryptically reads, "40 native men women and children." and from this it would appear that an entire Aboriginal band came by her way. If the number was typical of the group size of the time, and Tilbrook, in Hallam & Tilbrook (1990, p. xiv) has concluded that concentrations of Aborigines in the region mostly averaged around 40 people in 1829, it is interesting to then compare the approximated

size of that group to the mean figure extracted from Armstrong's 1837 census (Table 2). The mean population of all eight groups listed in that year is 36, but if the group "South side of Murray" is discounted, as has been done by Hallam (1977) in her attempts to calculate the number of Aborigines per km², the mean figure is reduced to 33.

If the hypothetical 1829 population of 280 persons (7 groups multiplied by 40) is compared to Armstrong's 1837 regional total of 233 (280 minus 56) persons the difference suggests that a population drop of about 47 persons or 16.7 per cent may have taken place. This overall drop may have largely been due to intercultural violence because data compiled in Green (1984) which lists deaths of Aborigines resulting from intercultural confrontation indicates that perhaps 50 Aborigines were killed on the Swan coastal plain between 1829 and 1837. This equates to about 17 per cent of the hypothetical population. The 1837 figure however would have to be adjusted for deaths by natural attrition, inter-group reciprocity and for births. Green (1984) lists 22 local Aboriginal deaths in the Perth coastal region up to 1837 which resulted from inter-group Aboriginal violence. If the approximate total number of violent Aboriginal deaths (50 plus 22 equals 72) in the Swan-Canning Murray region are applied to the hypothetical 1829 figure of 280 then the population drop could have been 25%. In addition it appears that about 30% of violent Aboriginal deaths can be attributed to the actions of other Aborigines.

The total Aboriginal population may not at any time have exceeded a few hundred persons except in times of species aggregation or ceremonial occasion when many people came in from other regions. The European population in

comparison was considerably larger from the first year of colonisation. In 1829 for example there were 788 military and civilian personal (Cameron & Jaggard, 1977, p. 113), and they easily outnumbered the local Aboriginal groups.

The wetlands

The many freshwater lakes and swamps which were located on the Swan coastal plain were possibly as equally if not more important food resources as were the fish resources of the estuary. Most archaeological sites are found near them, (Strawbridge, 1988) which is an indication of their importance. Approximately 80% of these wetlands have subsequently been destroyed since colonisation, according to the Western Australian Conservation Foundation (*Canning Melville Times*. 9/4/1991, p. 13).

There was a great variation of species available from the wetlands, which included frogs, turtles, crustaceans and birds, as well as a variety of edible plant life, both in the waters and nearby. Many early European descriptions of south west Aboriginal usage of these type of resources are reproduced in Meagher (1973). Hallam (1991) states that gathering of basic carbohydrate staples in the region was the task of women and that rights to resources such as yam patches (*warran*) were passed from mothers to daughters.

Englishman, Scott Nind wrote a paper in 1831 about south-west Aborigines for The Royal Geographical Society of London. He mentions that in the vicinity of King George's Sound, to the south of Swan River, the native peoples there, who also had interaction at times with Swan River people, derived a large proportion of their food from fish. The

only weapon used by them for that purpose being the spear. Large quantities of fish were taken in the south west from weirs made of sticks and bushes, such as at Barragup on the Serpentine River, but the most common method was to pursue them into shoal water then spear them. Fish spearing was also undertaken at night by the light of burning torches, but this method is restricted to flat calm water. Nind also wrote that another common fishing method was to throw crushed shellfish (molluscs) into the water in order to encourage fish to come within the spearing range of a hunter. In autumn, fish would also be chased into shoals where they would become stranded by the falling tide, sometimes bushes were used to effect a barrier and prevent them escaping. Because of occasional cultural interaction, Swan River Aborigines probably had knowledge of such techniques, but retained the *gidgee* (spear) and *kylie* (boomerang) as the principal method of taking fish. Sharks and rays were occasionally killed for sport, but as with molluscs, they were not eaten in the southwest when Europeans first arrived. Nind (1831) reported however that Aborigines at King Georges Sound ate marine molluscs readily after being encouraged to do so by colonists.

A British explorer, Sir George Grey wrote that north of the Swan River in 1838, fresh water mussels (*maraylya*) were still taboo for his Murray River Aboriginal guide, Kaiber, who told him that a very long time ago some Aboriginal people had eaten them, and then immediately been killed, presumably by *boylyas*, or sorcerers (Grey, 1841). The story is interesting because it says that at one time some Aboriginal people in the region were prepared to eat mussels, and suggests that the deaths were totally

unexpected. In other words the taboo on eating molluscs had not always been in place for all people in the region. Sorcery is a valid explanation from the Aboriginal perspective but from the scientific perspective, the deaths may have been due to a natural poisoning rather than the work of a sorcerer. Poisoning of humans after consumption of apparently healthy mussels has been reported in North America and the cause was attributed to dinoflagellate plankton which produce a thermostable alkaloid without harm to the species which directly eats them, and that species then becomes highly toxic (Ferrando, 1981).

Ocean mammals such as sick whales and seals which were sometimes cast ashore were also a valued food resource of Aborigines (Nind, 1831; Grey, 1841). European accounts of Aboriginal whale eating are generally derogatory and tended to regard the presence of a dead cetacean as an excuse for obscene gluttony by Aborigines. The observation was clearly culturally biased because Aborigines from distant groups, attracted by the smoke of large fires quickly came to help consume the meat and rub themselves thoroughly with chunks of oily blubber. For Aborigines, cast up whales were an excuse for friendly and generous social interaction with other groups as well as a dietary bonus (Grey, 1841).

Aboriginal cooking methods

All meats were cooked, to a greater or lesser degree depending on the state of appetite and tainted decomposing meat was not utilised (Grey, 1841). Birds were cooked in a variety of ways and large birds such as swans were always cut up prior to cooking (Hammond 1933:30). Cooking could be

done in stages, first the feathers were singed then rubbed off, or the feathers soaked and thrown on the fire, thus having a steaming effect so the feathers could easily be plucked, final cooking was then carried out. "Small fish" up to about 5 lbs were wrapped whole in paper bark (*Melaleuca sp.*) and covered with hot ashes. When cooked the entrails would be removed in one lump and discarded. Aborigines never ate the entrails of fish, nor did they eat any raw flesh, according to Hammond (1933). Larger fish would be cut up prior to cooking and have their entrails removed. Any fat was carefully recovered and somewhat contradicting the statement about entrails, the liver, bowels and certain other organs would also be cooked and eaten. The meat of large fish was sometimes wrapped in bark after cooking, and could be kept edible for several days.

Grey (1841) states that Aborigines might cook a fish merely by tossing it on the coals, but that the more sophisticated and delicious method known as *yudarn dookoon*, of wrapping fish in paper bark and baking it under hot sand and ashes was preferred. This cooking method was adopted by many Europeans and continues today with the use of aluminium foil instead of paper bark. Whale meat was often cooked as kabobs on wood skewers (Grey, 1841).

Aboriginal fishing technology

Aborigines utilised different types of spears but the principal one for fishing was the *gidgee* (Hammond 1933:30), and this terminology for a fish spear is still in common use by both Aborigines and Europeans in the south west region. Fishing *gidgees* were usually barbless, and sometimes used in

conjunction with a second which had been baited. Aborigines might also chase fish over the shallows and according to Grey (1841) they rarely missed a piscine target with their spears. Their skill at this was recognised from the earliest days of the colony as evidenced by the following newspaper report:

The accuracy with which they throw their spears is scarcely credible. Their mode of spearing fish has in it something by no means ungraceful, and the certainty with which they can strike even a small fish at a considerable distance in the water with a spear from fourteen to sixteen feet long, is astonishing, even the women use the spear with some address... (*The Western Australian*, 12/11/1831. No. 4.)

Spears could also be propelled for long distances with the use of a *Mirru* or hooked throwing board, which settler Jane Dodds in 1832 wrote, "...the natives never part with but with life." (Heal, 1988, p. 60).

The *Koilee*, or boomerang, was also used for cutting into schools of fleeing fish, in which case it was thrown with the long end in the hand and the flat side down. For flocks of birds on the wing it was thrown differently (Hammond 1933:36). This terminology and technology was still in common use by European children on the southern shores of the Swan River in the 1950's but now appears to have faded. Then the kylies were made from scrap sheet metal rather than wood.

Fishing was a much enjoyed pastime of Aborigines, and women, men and children took part in chasing shoals of fish across the shallows and spearing them, sometimes getting two fish at a time because they were so prolific. The fishing season concluded with the winter floodwaters and the next

season was always anticipated with eagerness (Hammond 1933:42).

Hundreds of Aborigines, including people from the Swan-Canning region congregated annually at Barragup on the Serpentine River in Autumn. The Murray River Aborigines there annually re-constructed a fish weir, and thus controlled the resource. Custom dictated that they try to catch every fish that came by, lest those escaping informed other fish of the danger. After a few days the surplus dead fish were thrown back in the water. Settler farmers in later years purchased cartloads of dead fish from the Aborigines to use as agricultural fertiliser (Hammond 1933:46). Large quantities of fish had also been used by settlers as fertiliser at King Georges sound in 1827 (HRA. 3. VII, 513).

In talking of the Barragup fish trap on the Serpentine River, Hammond stated that fish bones would be thrown on the fire to be destroyed. Such action may have been necessary to protect scavenging camp dogs, or young children from choking but it will be recalled that Witsen (1705) reported that the Dutch in 1697 found discarded fish bones in Swan river shelters, so such practices, as with human behaviour in all societies, obviously varied.

There is the potential for variability in all aspects relating to human interaction with food species in the estuary. While a general taboo existed for most if not all Aborigines in regard to molluscs, there were also restrictions in place for other species and these could be determined by age, gender and moiety designation within the kinship structure (Bates, 1944). Access to certain sites such as at Barragup were controlled by custodial "owners"

and other food resources such as yam patches elsewhere appear to have been subject to similar authority (Hallam, 1990). Aboriginal exploitation of fish and faunal species associated with the Swan-Canning Rivers appears to have taken place according to season when the aggregation of species provided suitable opportunities. Flushing of the estuary after winter rains effects the populations of many estuarine species and this in turn would influence the need for humans to turn to other resources.

A list of south west Australian Aboriginal names for some fish species is in Appendix L.

IV The Historical Accounts of European Visitations to the Fishery and Environs

The Dutch, 1697

The 1697 visit of Willem de Vlamingh to the Swan River has provided the first authenticated documentation associated with Aboriginal people and the fauna of the region, but it should be recognised that Europeans were exploring the west coast of New Holland (Australia) at earlier dates. *Waeckende Boey*, under the command of Samuel Volkerson visited Rottnest on March 19th 1658 during a search for another Dutch Ship, *Vergulde Draeck* (Gilt Dragon) which was lost in the region two years previously. When Volkerson anchored the ship for careening, the first mate, an Englishman by the name of Abraham Leeman explored and charted the island on which he noted the existence of seals and other fauna (Henderson, 1983). *Waeckende Boey* and another galliot (ship) taking part in the search, the *Emeloort*, sailed as close to coast as they dared, and fired cannon in the hope of attracting survivors. *Waeckende Boey* lost 14 men during the search along the coast and *Emeloort* apparently sighted from a distance five Aborigines at different places on the coastline (Collingridge, 1895), thus 1658 could well have been the year that the Aborigines of the Swan River region obtained their first, if somewhat fleeting glimpse of Europeans, although there has been a suggestion that the Portuguese were exploring the west and east coasts of the continent, possibly as early as 1529 (Wallis, 1988). This hypothesis is founded on a series of charts apparently based on Portuguese intelligence, and which were drawn between 1540 and 1587 by French

cartographers. They depict a land mass named *Java-la-Grande*, and one has a drawing of an apparent black swan located on the western coast (Wallis, 1988). Many other Portuguese charts also show the existence of a land mass in the region but the information contained in them is vague and would appear to be based on hearsay reports from early Asian sources (McIntyre, 1977). Further speculation about Portuguese visits has been fuelled by a recent announcement that archaeologists have found a fishnet weight made from lead of a similar composition to that in Franco/Spanish ore deposits was left at Fraser Island, on the east coast of Australia between 1230 and 1400 A.D. (*The West Australian* 9/2/91 p. 3).

Nathaniel Ogle (1839) in his book about the economic state of the Swan River Colony, wrote that a 1542 Portuguese hydrological manuscript, written in English by John Rotz delineated Australia well prior to similar seventeenth century charts. Ogle was in no doubt that the Portuguese deserved the recognition of being the first Europeans to encounter Australia.

The argument that the Portuguese were the first Europeans to visit Swan River is far from proven however, and so the distinction for this honour currently rests with a Dutchman, Commodore Willem de Vlamingh, who commanded a flotilla of three ships to the Swan River region in 1697 (Robert, 1972). The expedition comprised of, *De Geelvinck* under his direct command, *De Nijptangh* under Captain Gerrit Collaert and *Weseltje* under Captain Cornelius de Vlamingh, the Commodore's son, who attained his captaincy after the original skipper, Zeeman, died (Sigmond and Zuiderbaan, 1976). The expedition had a strong fishing background, and

both the hooker *De Nijptangh* and the galliot *Weseltje* were of designs which had evolved from the Dutch fishing fleet (Robert, 1972). The crews on all three ships totalled about 194 officers and men, and the 57 year old Willem de Vlamingh had formerly been a whaler (Sigmond and Zuiderbaan, 1976; Robert, 1972), and a North Sea herring fisherman in his younger years (Williams, 1979). Many of the crew would probably also have had fishing experience because Holland had led the European world in the export of preserved fish since 1384, when the technology for pickling fish was developed. Vlamingh appears to have been chosen by his employers for both his long maritime experience as well as for his commercial acumen and based on his experience, it is reasonable to suppose that the potential of the fishery at Swan River would have been evaluated.

There is considerable historical information available about the Vlamingh visit but anomalies have appeared in some contemporary historical accounts. For instance the number of men who came ashore at Swan River on 8th January varies from 80 (Downey, 1972); 86 (Sigmond and Zuiderbaan, 1976); and Williams (1979) states 88. The translated journal of the *Geelvinck* shows that the number was 86 (Robert, 1977), and that the size of the party resulted from a common decision by the Ships' Council the previous day. The figure seems to have been settled upon in order to put the explorers in a position of indisputable armed strength when the anticipated meeting of native peoples took place. Indeed they had a specific aim of capturing or purchasing individuals, who then would be taught the Dutch language and later reveal in detail any commercial information of interest to the Dutch (Witsen, 1705).

Vlamingh's men saw many signs of Aborigines, including fresh foot and hand prints, water wells, abandoned camps, lighted fires, and both eaten and uneaten fish in the camps. They drank from the wells, nervously occupied at least one Aboriginal camp overnight, and to the great personal discomfort of several men, ate the untreated toxic nuts of *Macrozamia reidleyi*, which they had recognised were part of the diet of the local people. One young sailor died on board *Geelvinck* four days later but it is uncertain if this was a result of eating the nuts.

The Dutchmen found and closely examined Aboriginal faeces during their visit, and concluded that the Aboriginal diet was mainly comprised of plant material (Witsen, 1705). During their explorations of the river system, they travelled some 24 km. upstream to the vicinity of what is now known as the Causeway, where they were ultimately confounded by shallow mud flats. On these they observed many human footprints. The journal of *Geelvinck* reveals a positive sighting by the crew of *Nijptangh's* sloop, of two Aborigines on 11th January, who fled their riverside camp at the approach of the sailors, but the journal of *Nijptangh* states that on the same date the crew of their sloop "thought" they had seen a crowd of men, who had vanished when the sailors reached shore (*Nijptangh Journal*, in Robert, 1972). At about two o'clock the next morning, and the final day of explorations, the Dutchmen quietly set up an ambush near freshly abandoned campfires in the hope of catching some people, but without success (*Geelvinck journal*, in Robert, 1972).

During their visit the Dutch took whatever fauna came within reach, and sampled whatever they thought was edible

or drinkable. They remarked on the shyness of estuary birds, and of the profusion of fish. A list of their faunal catch which was recorded in the ships' journals can be seen in Appendix M. They saw only one kangaroo on the mainland, but shot several quokkas (*Setonix brachyurus*) on Rottnest.

There is considerable information in Witsen's (1705) writings which does not appear in the two surviving ships' journals, although it should be noted that the journal of *Weseltje* now appears to be lost (Robert 1972), but that may have been one of Witsen's sources. Witsen had been one of the main sponsors of the expedition and by his own account he had taken possession of all the charts which had been drawn, and had interviewed crew members to obtain further details about the Swan River, or as he assumed it had been named, the Witsen River. Witsen wrote:

In the river which has been named after me are many kinds of fishes....In the year 1697 they found some fish bones in some of the huts and a leather bag fastened together with straw or dried reed....They saw huts with a fire near it, (*sic*) or burning wood with some fish on it or near it, ready to be cooked, also some fish which were already eaten, only the bones were left so that the natives must have left in a hurry....There are a great number of oysters and crabs here. (Witsen, 1705 in Robert, 1972, pp. 173-178)

Much shell of the large oyster species, *Ostrea angasi* can be seen in certain parts of the river such as at Herrison Island, where the Dutchmen turned back from their river explorations, and living examples, albeit in now in small numbers are still to be found within the estuary (S. Slack-Smith, personal communication, April, 1991).

The crab species *Portunus pelagicus* is still prolific in

south west estuaries in mid summer, which is when Vlamingh's men were at Swan River (29 Dec. 1696-13 Jan. 1697).

The Dutchmen were more excited by the black swans, (*Cygnus atratus*) and they captured some live specimens for transport to Batavia. Variation exists amongst contemporary historians over the number of Swans actually taken away by Vlamingh's men, Downey (1972) and Jenkins (1990) claim two birds while Williams (1979) says four. The two ships' journals show a total of four were captured, without mention of sex. An eighteenth century writer says that only two birds survived the trip to Batavia (Valentijn, in Robert 1972), but contradicting this, Major (1859) published a 1701 narrative of the voyage stating three birds survived the voyage, but died soon after arrival in Batavia. Members of the French expedition of 1801 were under the impression that two had been taken to Batavia (Peron, 1809). Despite the ambiguities, the taking of the birds apparently triggered great interest throughout Europe, so much so that over a century afterwards the story was relatively intact and is mentioned by Peron (1809) as if it were common knowledge.

Over time there have been a number of other anomalies which have crept into accounts about the Vlamingh visit. Although Vlamingh the elder is credited with the European discovery of the Swan River, the approximately 86 men who first sighted and undertook exploration of the river on 5th January 1697 were led by Collaert, the skipper of *De Nijptangh* (Sigmond and Zuiderbaan 1976, Williams 1979).

There was a very strong interest in horticultural specimens by Vlamingh's men and there is numerous mentions of various plants in the journals, especially in regard to their aroma. The potential for distillation into aromatic

oils was an important consideration for the trade conscious Dutchmen. They, and perhaps the Englishmen who were in the crews of that 1697 voyage sought to explore the Swan River region with only the commercial welfare of themselves and their employers in mind.

They were prepared to, and indeed made concerted efforts to capture some Aborigines in order to turn them into interpreter slaves. That they did not succeed was only because of the fear that their alien presence had created, causing Aboriginal people to hide. Nineteenth century British observers noted that at time of initial colonial contact, Aborigines had a belief that the pale skinned strangers were dead ancestors returning from across the sea (Moore, 1884; Bates, 1944), but whether that belief was actually in place in 1697 is a moot point. It could be that the belief subsequently arose because of the visit of the Dutchmen, who were discretely observed by Aborigines. For both cultures the memories of the bizarre experience were retained and recounted. For the Europeans it was the black swans and poisonings from *Macrozamia reidleyi*, and the perhaps for the Aborigines, the unannounced visits of strange beings which required a logical explanation within a culturally understood context.

Apart from the swans and a few botanical specimens, the Dutch sailors found nothing which they considered would mildly excite their profit minded employers, and so they left; and a century elapsed before another recorded visit by Europeans would take place, allowing several generations of Aborigines the time to incorporate the visits of the pale strangers into their own world view.

The French, 1801 and 1803

In revolutionary France, when it came to natural history collections, scientists felt themselves disadvantaged in comparison to their peers in other countries. It was recognised that Australia was the last great relatively unexplored area of the Southern Hemisphere and as such it presented an outstanding opportunity for improving French scientific collections and at the same time adding to the honour of France, and the Revolution (Marchant, 1982).

In June 1801 a French scientific expedition arrived at Swan River on board *Naturaliste* and carried out an extensive survey of the environs of the Swan River, including the fishery. They attested to the quality of oil rendered from slaughtered Rottnest Island seals and particularly on its suitability for frying the local fish: "We often made use of it to fry our fish &c. and never found it had any disagreeable taste or smell." (Peron, 1809. p. 149). Fresh fish therefore were an important part of the shipboard diet when available, and indeed the first act on arrival had been to dispatch a dinghy to Rottnest with a fishing net to try for fresh supplies (Marchant, 1982), and they took many fish during their stay, especially on rough days (Peron, 1809). Peron noted also that a rich cargo might easily be had by future visitors, from the skins of the local seals which they had sighted.

A primary aim of the expedition was to make a comprehensive anthropological study of the native peoples of the western part of the continent (Marchant, 1982), but other aspects of natural history would also be covered. Heirlsson was selected to undertake the main survey of the Swan River and was instructed to seek out native people then

determine their diet, and what other food and water resources were available. Despite proceeding upstream well beyond where the Dutch had turned back, his party did not meet any people, nor see any signs of them, apart from a single footprint of extraordinary size (Peron, 1809), which has subsequently puzzled many historians. Another party led by Millius, found a hastily abandoned Aboriginal camp, complete with spears and some fish, and like the Dutchmen previously, they too experimented with eating untreated *Macrozamia reidleyi* seeds, and experienced similar traumatic consequences (Marchant, 1982). In mid-winter June they did not see the many signs of Aboriginal activity which the Dutchmen had observed in the mid-Summer of 1697, but they did observe "... an amazing number of pelicans." (Peron 1809 p. 142). It perhaps could be concluded from this observation that the birds were aggregated because of the presence an equally amazing number of fish which are the staple food of the species *Pelicanus conspicillatus*.

1803 may have been a dry year at Swan River because the French explorers did not consider that there were adequate supplies of fresh water for supplying future visiting ships, and their judgment may slightly have postponed the inevitable clash of cultures which took place in 1829, when the British colonists arrived.

On 13 March 1803 another French expedition consisting of the ships *Geographe* and *Casuarina* made a rendezvous at Rottnest. The *Geographe* and its crew, under Thomas Nicolas Baudin had experienced a disastrous voyage on the east coast of Australia, with many injuries and much incidence of diet related scurvy (Travers, 1968), and Baudin felt there was little more to be gained by another excursion into the

river. The visit was brief, for one day only, but based on recalled 1801 observations the potential for exploiting whales in the region was expressed by Baudin in his log (Baudin, in Cornell, 1974).

The British. 1827

Major Lockyer (1829) writing from King George's Sound mentioned that he had heard reports that sealers were familiar with the Swan River prior to British explorations, and had obtained a description from the crew of a visiting sealing boat (Lockyer to MacLeay, HRA. III, VI. p.472). However the sealers' story as recorded by Lockyer appears vague, and the mention of plenty of fine pine and cedar on the banks of the Swan suggests that a degree of inaccurate hearsay may have been involved in the development of their opinions. Nevertheless Stirling on his 1827 exploration noticed with surprise that eastern Australian Aboriginal words were already in the Swan River Aboriginal vocabulary, these words included "kangaroo" and "walleble" (sic) (Stirling to Darling. HRA. III. VI, p. 571), and it seems probable that they had been introduced by earlier visitors.

The decision of the British Government to allow the establishment of a colony at Swan River came after an exploratory survey of the Swan estuary, commanded by Captain James Stirling in April 1827. In his enthusiastic report about the region he wrote:

I had the good fortune to kill three of those magnificent Birds, which give a name to the stream we were embarked upon.... Swans and ducks, which at Frazer's Point were numerous, now became still more so, and of the first kind we killed with ease as many as we wanted. Fish we saw in abundance, but had no time

to spare for their capture. (Stirling to Darling. HRA. III. VI, pp. 553-557)

Stirling readily appreciated that the local Aboriginal people had a dependence on the estuary fish species and remarked that he had seen Aborigines fishing on the sand banks by the light of burning torches while the expedition returned downstream. While noting that the coastal waters offered good opportunities for fishing he remarked on his uncertainty of how suitable the available species would be for curing and subsequent export (Stirling to Darling. HRA. III. VI, p. 577). Stirling's impressions of the region appeared in many British publications such as *The Annual Register* and enthusiastic editorial embellishment took place which would have encouraged enthusiasm:

...the elegant black swan was seen in the greatest abundance on the river....Equally abundant were numerous species of the gosse and duck family....Seals were plentiful on all the islands....it is not too much to look forward to the time when a valuable fishery may be established on these shores. Even now, a boat with one, or two men might be filled in a few hours. (*The Annual Register*, (1828). P. 515)

Aborigines were mentioned too and, it was noted that: "...their skill in spearing fish is described as quite wonderful." (*The Annual Register*, (1828) P. 515). Despite this admiration it was recognised that the Aborigines would be attracted to settlers' livestock. Major Lockyer, who had commanded at King Georges Sound from 1826 made the following recommendation:

At Swan River, the settlers will be left entirely on their own resources; they will find little time or

opportunity at first for cultivation; the few Cattle and Sheep that will be introduced there will employ the settlers to watch them from the Natives, who are very numerous and fierce; no reliance can be placed upon them and force will have to be used to drive them away and quit that part of the coast (Lockyer, [1829]. HRA. III. VI, p. 604).

Summary of early European visits

The motivation for visiting the Swan River was different for the three nationalities involved. The Dutch in 1697 were primarily on a search and rescue operation of a missing ship and to note possible opportunities for future commercial exploitation. They have provided several valuable ethnographic glimpses of Aboriginal lifestyle on the Swan River even though they were unable to meet any people face to face. The 1801 French expedition to Australia was carried out to enhance the scientific collections and reputation of France and they too provide glimpses of Aboriginal lifestyle. The claim that sealers visited the river system sometime between 1803 and 1827 requires further research. Stirling's British survey in 1827 was carried out with the specific aim of gathering sufficient data to support the establishment a colony, and this took place in a remarkably short time later, in 1829.

Without exception all early European exploratory expeditions took game from the Swan estuary system and adjacent islands as the opportunities presented themselves. A lists of species taken by the Dutch at Swan River in 1697 is located in the Appendix M and Appendix C contains a seasonal chart which compares the timing of the visits by

early European explorers.

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V Colonial Exploitation of the Fishery Resource
 and Associated Environment

There's good wood and good water, good flesh and
good fish,
Good soil and good clime, and what more could you
wish.

From: *Western Australia for me*. Sung at the 1831 Governor's Ball by George Fletcher Moore. (Moore, 1884, p. 65)

Fauna was taken by all early explorers, both for the cooking pot and out of zoological curiosity, and the words of Moore's song reflect the general attitude of the time towards animals, but the British also shot game for sport, although admittedly that catch usually found its way into the pot. Some of the most detailed descriptions on the taking of local marine and estuary fauna come from the diaries of Captain Fremantle RN, who arrived on HMS Challenger on May 2nd 1827, preceding the first colonists by a month. His orders were to firstly claim the region, including the entire western coastline for the British Crown, then engage his crew in making preparations for the settlers. In addition he was to locate potable water supplies, "as close to the river as possible." and in undertaking this he was particularly warned, to prevent any liaison between his crew and "native women" (Cottesloe 1928. p.21). The reason for this was that if it took place it was felt there would inevitably be trouble later for the settlers from the Aboriginal menfolk. The British had experienced such "liaisons" in the eastern part of Australia since 1788. The warning was unnecessary because only parties of Aboriginal men were met by the sailors, the women

and children apparently keeping well out of sight.

From his diary entries it would appear that few estuary bird species of edible size escaped once in the sights of Fremantle's gun, and fish were taken regularly, and in large quantities by his crew, using line and hook, and seine net. In addition they also took seals at every opportunity from nearby Carnac and Garden Islands with tomahawks and guns. A chart of faunal exploitation by Fremantle and his crew is shown in Appendix E.

The main purpose for their hunting fauna was to supplement the ship's rations, but from comments in his diary it seems clear that Fremantle also enjoyed shooting for the sport, and that a competition existed between him and his purser as to the numbers bagged when each individual ventured ashore. The various birds and animals shot by Fremantle were frequently cooked for him on board by his manservant, but he lamented that everything was usually turned into a pie. On at least one occasion he presented a collection of "little birds" to some tribesmen, and ensured that they realised it was his gun which had brought the birds down (Cottesloe, 1928. p. 54). It seems as if he intended to imply a warning to Aborigines about his power, and that of the settlers and soldiers who were following.

On his first trip upstream into the river system on 3rd May, he had met a party of Aboriginal men about two miles from the river mouth and after deciding that their spears were designed for fishing, he presented them with a fish hook and line, but observed that they had no understanding of the technology. A fortnight later (May 16) he recorded that he saw three Aborigines apparently fishing in the ocean at Woodman's Point. Some crew of the *Challenger*, ate

Macrozamia reidleyi seeds on at least two occasions (Appleyard and Manford, 1979) and experienced the same gut wrenching symptoms which befell the Frenchmen in 1801 and the Dutchmen in 1697.

On the 2nd June the *Parmelia* arrived at Swan River carrying Governor Stirling and the first settlers, and Captain Fremantle made no further detailed mention of his and his crews' exploitation of the fauna of the region, apart from a diary entry describing the accidental shooting in the head of Captain Currie by an unnamed party who was taking aim at a bird (Fremantle, in Cottessloe, 1928). However Currie's wife, Eliza Currie wrote in her diary on 19th August 1829 "An extraordinary haul of kingfish by the *Challenger*, 2 or 3000." (Currie, 1829. p. 3).

The initial settlement was on Garden Island but by August some 300 persons had come ashore on the mainland (Cottessloe, 1927), and although they brought with them a supply of food, it seems probable that from almost the first day of landing many people endeavoured to exploit the natural food resources. Certainly this had been the case in 1827 at King George's Sound to the south, where an official recommendation was made that local fish replace issued meat on two days per week (Lockyer to MacLeay. HRA. III, VI. p.482). A church minister, the Reverend G.J. Powell wrote a guide book for prospective emigrants to the Swan River in 1831 and in it described how fish and game had been caught:

Fish is caught here in great plenty - they use a large net of nearly 100 yards (91.44 m.) in length, and this they draw across the river, and take a large quantity at a haul; you may purchase a great lot of them for a shilling. We have a variety of birds, and some kinds are very numerous, such as the pelican, parrot, cockatoo, the black swans and the wild duck, which is a great

delicacy. But both ducks and swans are shy, and it is difficult to shoot them without a long duck gun, or a rifle, with which a good marksman may have plenty of sport. (Powell, 1831, p. 26)

Captain Fremantle RN and the crew of *HMS Challenger*, whose task had been to establish a beach head in 1829 for following settlers also supplemented their rations with fish and fauna, and the list of species taken by them and printed in Appendix E shows the extent to which this occurred. At the end of August 1829 Fremantle and his ship departed the colony for other duties but he was to briefly return in September 1832, and found the colony in a lamentable state: "I fear some of the poor people were very badly off & had not tasted a piece of even (sic) salt meat for many weeks." (Fremantle, 1832; in Cottesloe, 1927. p. 89). He observed that kangaroo meat was 1/8 lb and mutton 2/-, but there was no shortage of vegetables, including potatoes. The salaries of some government officers however "were so low that it is quite impossible they can live on them." (Fremantle, 1832, in Cottesloe, 1928. p. 90).

There is a tendency in contemporary times to overlook the fact that the first settlers at Swan River arrived as the British industrial revolution was gaining momentum. The first public railway in Britain had been opened in 1825, and at the time Captain Fremantle was enjoying his sport on the Swan, the massive effort to construct over 6,000 miles of railway in Britain had well and truly begun (Lane 1972).

In reality the settlers were coming from an industrialised nation which was generating massive slum areas. The poverty and increasing crime within its major industrial cities had risen to the extent that the Metropolitan Police Force was formed in 1829 in an effort to

cope (Wroughton 1973). The passengers with land allocations who arrived on the *Parmelia* were people who saw an opportunity to escape the decay in their standard of living and make a fresh start, and they brought with them their servants and farm labourers, their livestock and their pianos. They also brought sporting guns, fishing tackle and fishing nets. One George Dunnage for instance arrived with the following items:

- 1 fishing seine, 30 fathoms long, (180 feet) 10 feet deep,
with tunnel fixed.
- 1 trammel net
- 1 casting net
- 2 hoop nets (CSR 4/9)

Dunnage was well equipped and the seine net in particular was capable of taking an enormous number of fish. For instance George Fletcher Moore wrote in 1832 that 10,000 trumpeters (probably *Amniataba caudavittatus*) had been taken in a single draught of a sein net and said that many settlers were experimenting with salting fish. Inspired by this Moore finally obtained his own net in 1833 but was disappointed with the results, sein nets being unsuitable for narrow snag prone upper reaches of the Swan River where he lived (Moore, 1884). Another settler, Tom Turner, with his family and employees had arrived in 1830 with a quantity of fishing tackle, sundry guns, pistols and arms including 3 rifles, 1 double and 2 single barrel shotguns, 1 cwt. (50.8 kg.) of gunpowder and a half a ton (508 kg.) of lead shot.

Not being able to acquire a land grant at Swan River, Turner took his large group (30) south to settle on the estuary at Augusta (Turner, 1956). Henry Tanner, yet another settler brought with him in 1831 fishing tackle and nets to the value of £9/16/4, and arms to the value of

£24/8/0 (Statham, 1981).

Reports sent back to England frequently mentioned the prospects regarding the edibility of native species, and not only were the more obvious waterfowl tested by Europeans, but with the assistance of Aboriginal guides, so too were the more unusual items which were eaten by Aborigines, such as the developing eggs from inside of reptiles (Nind 1831). Within the first two years of colonisation a great deal of information about the food resources of south west Aborigines had been communicated back to England via the pens of people such as Nind and were read by prospective settlers.

In 1833, one captain Pace, emulating the Vlamingh expedition 136 years earlier also took some black swans to Java and the two birds which survived his voyage were received with such excitement that he returned to Fremantle to amass as large a shipment as possible. In order to acquire sufficient numbers he had to enlist Mr. J. Hall to capture them from the Peel-Harvey estuary, rather than from the more settled Swan and Canning Rivers, where they apparently were becoming less numerous. This enterprise was reported enthusiastically in the press of the time and the writer commented how the harmonious sound of the captured birds' voices sounded not unlike the reedy tone of the clarinet, and how they were easily caught when young or moulting, by running them down in a well manned boat (Perth Gazette 25/1/1834).

Global trade in manufactured consumer items was a reality of the times and some of the earliest Western Australian newspapers, for instance *The Western Australian Chronicle* and *Perth Gazette*, 16/4/1831, carried

advertisements for a vast range of staple and gourmet food items sourced from across the British Empire and Europe: Sugar from Mauritius, rice from Patna, cheese and gin from Holland and vermicelli from Italy. In addition a wealthy gourmet in the infant colony could readily purchase such things as Havana cigars, Boulogne sausages, Spanish capers, anchovy sauce, Yorkshire hams and smoked herrings. Despite the lack of ready cash for many settlers, these items obviously had a market because the advertisements continued through the years, and the number of merchants increased.

In examining the written record it is found that much of the materials which survived have been penned by the wealthy ruling class. Very little was recorded by the majority group of immigrants, the indentured servants and their families, the reason simply being that most of them were illiterate (Aveling 1979). Masters were obliged to provide food and shelter for their servants and their families as stipulated by government, and in March 1830 Lieutenant Governor Stirling issued a proclamation relating to rations. Fresh meat and vegetables were a priority, but salt meat or fish could be substituted. The following are the weekly allowances for one adult, male or female:

Fresh meat 7 lbs (3.1 kg.)
or Salt meat 5.25 lbs (2.38 kg.) (Pork and beef
alternatively)
or Fish 2 lbs (.9 kg.) (Fresh or salt)

For most of the colonial period discussed in this study, retail meat prices, while expensive in comparison to England, were relatively stable, although there were some fluctuations. The cheapest available fresh domestic meat was pork and this could be had for about 1/6 per pound

weight in the early years of the colony, so whether the master purchased or slaughtered his own there was involved a value involved of about 10/6 (ten shillings and sixpence) per week for one adult. Kangaroo was initially quite expensive but the price declined, presumably because of settlers catching their own and because of increasing numbers of livestock suitable for slaughter. The ability of settlers to be more successful at taking kangaroo could well be linked to an increasing domestic dog population. Dogs were considered essential for kangaroo hunting and appropriate breeds had a ready market (Moore 1884). By 1833 kangaroo was the cheapest fresh red meat available and appears regularly in market quotations with a retail price of 1/- per lb, or about 7/- per adult per week for those adhering to the rules. Salt meat was much cheaper and based on 1833 prices the weekly allowance set in 1830 would have cost a master about 4/- per week for beef, and 5/3 or less for pork, when it was available. Undoubtedly the cheapest form of meat protein came in the form of fish and the market price in May 1833 was three pence per pound, equating to 6d per adult per week (*Perth Gazette and Western Australian Journal* 18/5/1833).

It is reasonable to suppose that the employers found that an expenditure of 6d per week for fish was infinitely more attractive than 10/6 for fresh mutton. By various accounts however, the servant class were not so easy to please and employers frequently grumbled about servants' dissatisfaction with rations and conditions (Moore, 1884; Aveling, 1979).

Stirling's proclamation relating to rations was repealed after less than two years because of pressure from

employers, who either begrudged or were unable to maintain the ration schedule without hardship (Aveling 1979). It seems probable also that the cheap fish was not acceptable as a ration by the working classes of the Swan River Colony. Years later, in the latter half of the nineteenth century, because of cheapness, concerted attempts were made to introduce fish as a substitute for red meat to the workhouses of Britain, and the poor to whom it was presented, also strongly objected (Priestland 1972).

The predicament of the employers at Swan River can be understood if the official red meat ration is calculated on an annual basis and compared to the salaries of public servants. If the ration schedule for red meat was adhered to then the cost to an employer would be in the region £18 per person if kangaroo meat was used, and more for other red meats. The 1934 annual salary for jail constables was £20 and 24 of the 27 lowest ranked mounted police received £25, with the other three receiving £30. Even the Surveyor General J.S. Roe only received £50 per annum (Johnston 1984).

Therefore policemen on the lowest rate would have had to expend almost their entire annual salary if they were to provide themselves with purchased meat at the ration rate which had been set for indentured servants, plus acquire all the other necessities of life. If any of the more lower paid civil servants had a spouse and family it is obvious that the consumption of purchased meat would fall to much lower levels than for one individual. Indeed a directive had been issued in 1828 to include as many married men and their families as possible with the first detachment of 63rd Regiment to the colony (Lord Hill to Sir George Murray,

(HRA. III. VI. p.592), and the names of 21 wives appear on the regimental departure document of 31st December 1828 (Lands Department File, Swan River. Vol. 1).

Unlike the civil servants, the military families were to be issued army rations, but fresh meat would still be at a premium. The logical and somewhat obvious solution would be to turn to the local game as much as possible. It was free for the taking and there were no restrictions as was the case with game in Britain (Moore, 1884). The police had a personal need, and were in a particularly ideal position to supplement their diet because they were mounted, well armed, and they often patrolled the favourite haunts of Aborigines, either routinely or in search of fugitives. It would not be surprising if they took every opportunity to provide themselves and their families with fresh meat. Economic necessity would have applied to many people in the colony and indeed hard cash was in such short supply in the early years that a barter system became entrenched.

Fish apparently were plentiful for the residents of Fremantle, but were not so for the settlers living in Perth. In June 1833 a Fremantle fisherman, Mr. Willey was supplying visiting ships with fish and was disinclined to bother transporting any of his catch to Perth. The editor of the *Perth Gazette and Western Journal* suggested that it might be possible for one or two boatmen to secure sufficient firm orders from Perth families to make the trip from Fremantle worth their while (PGWAJ, 15/6/1833). Ironically the visiting ships were also importing fish into the colony, as evidenced by an advertisement for "2 drums of cod-fish" (PGWAJ, 22/6/1833).

Appendix O is a list of market prices at the Swan River

Colony. It can be seen that there was a drop in, the prices of kangaroo and beef after 1832. Waterfowl however maintained a steady price, and from the price of six to eight shillings each, a considerable sum for the time, swans appear to have been a luxury item.

VI Aboriginal-European Conflict, and Conflict Avoidance Involving the Fishery Resources

After the first settlers and soldiers had established themselves in 1829 Captain Fremantle, RN and *HMS Challenger* departed for other duties, but they eventually returned in 1832, and Fremantle recorded in his diary that the intercultural situation between settlers and Aborigines was deteriorating:

....there was a very bad understanding with the Natives, who were most troublesome & did much damage, spearing the sheep, pigs, &c. in great abundance. Many deaths have also been occasioned by them & in return many of them have been killed. I am induced to believe that amongst the lower Classes it has almost amounted to a war of extermination & they (Aborigines) are shot whenever they are fallen in with;...It is to be hoped in time that a better understanding may be established with them, and that means may be taken to remove them to some Island or distant part of the Country not settled, where they may be allowed to hunt & if necessary be supported. There is not much to be said & allowed for the poor Savages. We take possession of their Country, occupy the most fertile parts, where they are in the habit of resorting to for nourishment, destroy their fishing & Kangaroo, & almost drive them to starvation, & they naturally consider themselves entitled to our Sheep & Stock whenever they can get hold of them;...
(Fremantle, 1832; in Cottesloe, 1928. pp. 91-92)

Several years after Fremantle noted the destruction of Aborigines' hunting and fishing prospects Nathaniel Ogle wrote in a guide to the Swan River Colony: "...the natives are gradually deprived of their hunting and fishing grounds, and are consequently forced,

unprepared, into new modes of life and new conditions of society." (Ogle, 1839, p. 46).

The "lower classes" to whom Fremantle had referred included the indentured servants who in many cases had been hired on the recommendation of parish officers. According to Lieutenant Governor Stirling most of these turned out to be, "... the outcasts of parishes....whose habits were of the loosest description." (Stirling to Murray. [January, 1830] HRA. III. VI, pp. 616-617).

In 1832 a settler, William Shenton, observed that Aborigines had been "driven from their usual haunts and fisheries" and he suggested that all Aborigines in the region be transported to Rottnest. For Shenton it was an obvious way to solve the escalating intercultural problems (CSR 22/171; Hallam and Tilbrook, 1990, p. 209).

The same year Captain Fremantle recounted an anecdote involving intercultural violence over livestock:

...one tribe was nearly exterminated in a bayonet attack by two or three Soldiers who followed them after they had stolen some sheep....This is really a most awful warfare, but I am sorry to think at present necessary. (Fremantle, 1832; in Cottesloe, 1927. p. 92.)

The bayonet attack may relate to a 29 June, 1832 incident tabled by Green (1984, p. 205), "Unknown number of Aborigines mistaken for raiders- 'Grave found where men killed'." The typescript of Mrs. Currie's diary, which is the source cited for Green's information, however does not actually say that the men killed by mistake were Aborigines, and the grave which was found contained a man, not men. Also the diary entry, which is located between the 23rd and 25th June 1832 appears to be an addition to an earlier date,

probably the 19th, when she held a dinner party for several colonists, rather than the 29th:

* 9th. Natives speared pigs in swamp About this time troublesome elsewhere Speared Mr. Walcott's bullock Party out up the Swan, men killed by mistake. Previous to this a native killed in the act of stopping Bland's cart going over to York Grave found where man killed. (Currie, 1832, p. 23)

George Fletcher Moore's diary entry for 15th June (Moore, 1884) helps to clarify the matter. According to him, ten settler vigilantes carried out a night time attack on a riverside camp containing sleeping Aborigines suspected of having driven off some cattle. During the attack they accidentally killed one of their own men, and also shot one Aborigine. Moore, who was not one of the vigilantes despite calling them "our party" (Moore, 1884, p. 119), took part in the inquest into the death of the settler on the following day and supported the vigilantes' version of events by writing, "Principals of humanity prevented the slaughter of all the natives there;..." (Moore, 1884, p. 119). Perhaps the Aborigines' swift departure into the darkened bush when the vigilantes charged into their camp also helped?

Bearing in mind that Captain Fremantle was the man who under British law took possession of the region on behalf of the Crown in 1829 there is however considerable irony in his recognition of injustice being meted out to Aborigines just three years later, but which he justified in his own mind as an inevitable process of colonisation. In talking of moving Swan River Aborigines to an island, he seemed to be echoing sentiment about treatment of Aborigines in Van Diemen's Land, which as a colony had its beginnings in 1803 but by

January 1832 the British there had commenced moving Aborigines to Flinders Island (Travers, 1968) just nine months previously, although it should be said that he had brought the *Challenger* from India and was en-route to Tasmania (Moore, 1884, p. 131).

The people with the most potential for engaging in conflict with Aborigines over food resources were those whose income was not commensurate with the cost of living, and those who were obliged to provide for others when requirements outstripped productivity and assets. The more affluent was an individual, the less likely it seems was the risk of becoming involved in intercultural conflict, although not always, as can be seen by the example of Governor Stirling initiating the Pinjarra massacre of Aborigines in 1834.

George Fletcher Moore (1884) was reasonably affluent, both from his position as a magistrate, his accrued savings, and eventually income from his farming properties. While he took wild game as the opportunity presented he was also in possession of sufficient resources that starvation did not become a reality. Analysis of fauna taken by him, and which listed in Appendix D, shows that less than 10% of his days in the period 1831-1837 were marked by the pursuit or killing of some sort of game.

During my consideration of intercultural violence which took place at Swan River I developed three experimental tables (Tables 3,4 & 5). Table 3 shows Moore's most successful hunting months and years, and as already stated is extracted from information compiled in Appendix D. Table 4 has been developed from a list of violent intercultural incidents, which was compiled by Green, (1984). In

developing this only events which occurred in the Swan-Canning-Murray region were extracted, and not all incidents involved deaths. Table 5 provides an indication of species variability amongst the animals hunted by Moore (1884), and that table, like Table 3 has also been derived from data in Appendix D.

Table 3 indicates that much of Moore's hunting activity took place during the winter months of May and June, and also in September (Spring), and that most hunting activity took place during his first two years in the colony, when his farm was being brought into production.

Table 3

Frequency of Successful Hunting Days Recorded by
George Fletcher Moore: 1831-1837

	Jan	Feb	Mar	Apr	May	Jan	Jul	Aug	Sep	Oct	Nov	Dec	Total
1831			1		3	5	1	2	9	2	3		26
1832				2	4		1	3		1	2	1	14
1833	3			1		1							5
1834			1			3			1				5
1835		2			1	1		2		3			9
1836													
1837				1									1
Total	3	2	2	4	8	10	2	7	10	6	5	1	60

Data extracted from Appendix D

Table 4

Frequency of Intercultural Violence in the Swan-Canning
Murray Region

	Jan	Feb	Mar	Apr	May	Jan	Jul	Aug	Sep	Oct	Nov	Dec	Total
1827													-
1828													-
1829													-
1830		1?			2						2		5
1831	1	1	1		2		2	3					10
1832		3		1		5	2	1			1		13
1833	1	1	1	3	4	2							12
1834	1	1		4	1	2	2		2	1		1	15
1835	1	2			1					1			5
1836	1					1				1			5
1837		1		1								3	3
Total	5	10	2	9	10	9	6	4	2	3	3	4	75

Source: Green , (1984)

Table 4 indicates a considerable rise in intercultural violence in 1834, and also that there was a marked decline in the following years. The massacre of Aboriginal elders at Pinjarra took place in late 1834 and that action appears to have been a watershed for Aboriginal resistance.

It is tempting to compare the apparent peaks of activity for May and June in Tables 3 and 4 however it must be remembered that the hunting sample represents the activity of one settler only, and confirmation needs to be obtained to show that other settlers' hunting activities also followed a similar pattern before the correlation can be considered significant. Moore does however indicate that some of his neighbours exploited kangaroos more heavily than he did.

There were probably several occasions when Moore did not itemise his catches, and there are some gaps in his diary accounts. Nevertheless there are 60 successful hunting days recorded out of the approximately 1,881 covered by the data period, which in percentage terms is a little over 3%. Allowing for omissions, and for the shelf life of a catch to be extended over a few days in the cooler months, it is probably safe to state that Moore did not have native game on his table for 90% of the period 1831 through to 1837.

Table 5 is also generated from the Moore (1884) data in Appendix D and suggests a correlation with the other tables for the months of May and June, inasmuch as those two months provided the highest rate of variation in the faunal species which he exploited. There is a marked drop off in the variety of species represented in his overall annual kill after 1834. The totals are aggregate numbers and therefore some species will be repeated within them. The potential

exists for more detailed analysis of data in Appendix D in relation to species exploitation.

Table 5

<u>Variation in the Faunal Species Taken by George Fletcher Moore</u>													Total
	Jan	Feb	Mar	Apr	May	Jan	Jul	Aug	Sep	Oct	Nov	Dec	
1831			4		4	6	1	2	7	1	3		28
1832				3	7		1	3		1	3	4	22
1833	7			3		1							11
1834			1		1	3			1				6
1835		3			1	1		2		2			9
1836													
1837				2									2
Total	7	3	5	8	13	11	2	7	8	4	6	4	78
(Data extracted from Appendix D)													

Moore appears to have had a reasonably amicable relationship with Aborigines and took care not to give offence to them. Like many other settlers, he did not want a dispute or incident on his land allocation and made gifts of bread when they arrived to admire his pigs. Certainly he recognised that the colonisation process had dealt an unfair blow to the Aborigines by taking over their lands and exploiting their game resources, but like so many others of his time, he saw this as an inevitable consequence of the British Empire expanding to civilise the undeveloped world.

Early newspaper reports in Western Australia provide a useful source of commentary from colonial Europeans about attitudes towards Aborigines, and to a lesser degree about fishing activity involving the estuarine system. The pages abound with reports of intercultural conflict and retribution, often bloody, and often initiated by the

appropriation of food by one side or the other. Not infrequently they sometimes now appear to be the only source of information about such events. Many were hand written and quickly founded, but the weekly *Perth Gazette and Western Australian Journal*, obtained a printing press and evolved to be the most successful. Published and edited by Charles MacFaul, the paper printed advertisements, official notices and letters from settlers, as well as anything the editor considered was news. As such it has provided many historians with a wealth of information about the more emotive colonial attitudes and aspirations, which are largely absent in official documentation. Like others of his time, MacFaul recognised how catastrophic the colonisation process was which had overtaken Aboriginal people, and while his reporting was usually biased in favour of the colonial achievements, he also criticised settlers' deliberate interference with Aborigines who were engaged in traditional activities. The following summary of newspaper reports involves the fishing resources of the region, the environment and some intercultural clashes which can be identified with food.

On 9/3/1832 the *Perth Gazette and Western Australian Journal* (PGWAJ), published a letter dated 26/11/1832 from Robert Menli Lyon to the Lieutenant Governor, James Stirling. Lyon, under executive direction (SWP 18/78) had spent a month on nearby Carnac Island (*Ngooloomayup*) with the Aboriginal, Yagan and another man who had been captured while they were fishing at Point Belcher, (*Gareenup*) which is where the southern end of the Narrows Bridge is now situated. In anticipation of a government reward for Yagan two boatmen had originally lured three Aborigines into their

boat with bread but one had escaped (Hasluck, 1961). George Fletcher Moore wrote at the time that the Aborigines had been sent to Carnac Island where they were to be taught English (Moore 1884, p. 144). The Carnac interrogations ended prematurely when the Aborigines escaped back to the mainland in a small boat, but as a result of Lyon's effort an Aboriginal "vocabulary" was prepared for presentation to Stirling and his Legislative Council. This work was later published by the newspaper in serial form in April 1833 (PGWAJ, 13/4/1833; 20/4/1833; 13/4/1833 and has subsequently been a valuable resource for researchers ever since. For example, most of the Aboriginal place names used in this thesis have been obtained from his newspaper listing. Many have subsequently been further Anglicised and used for the names of urban developments, often distant from the original location.

Robert Menli Lyon, alias Robert Milne (Hasluck, 1961) was apparently a man with strong humanitarian values. He concluded that Swan River Aborigines possessed all the best qualities admired by Europeans, and that these could be developed if the people were given the chance. He sought to contradict the racist sentiment which was being generated by other observers in their reports flowing back to Britain (Hasluck, 1961). He also informed Lieutenant Governor Stirling that he was in a unique position to assist the authorities to make peace with Aborigines on Melville Water and the Canning. Lyon was outraged at the mistreatment of Aborigines:

...I earnestly intreat (sic) that a stop be put either by proclamation, or otherwise to the wanton and unprovoked attacks at all opportunities by our own people. The tribe of the quiet and inoffensive Yellowgonga, was lately fired upon while fishing

on the river, driven into the bush and plundered of their fish.
(PGWAJ 9/3/1833, p39)

Such incidents were apparently not a rarity because Lyon reiterated that Stirling should issue a proclamation to protect Aborigines undertaking traditional hunting activities. "I would suggest that the proclamation strictly forbid them to be molested; while peaceably encamping, travelling, fishing or hunting." (PGWAJ 9/3/1833, p. 39).

The same edition of this paper also carried a report from a Fremantle correspondent alleging that Aborigines who had crossed the Swan River from the northern bank, on Weavell's ferry at Preston Point, (*Niergarup*) had fired a house three kilometres away at Point Walter (*Dyoondalup*). The correspondent also complained of Aborigines having earlier broken into a house at Fremantle, (*Walyalup*) where they, "...took away all the provisions they could find." (PGWAJ 9/3/1833, p. 39). A little over one month later the paper carried a letter from the Preston Point ferryman John Weavell refuting a rumour that he and his wife had been attacked and killed by "200 natives." Weavell explained that the incident sparking the rumour had in fact involved some 80 Aborigines who had been amicably transported across the river by him to fish on the point, and they had lit cooking fires which then set the bush alight. The resulting smoke had led nervous Fremantle residents to speculate that the Weavells had been attacked, and a near tragedy occurred when "nearly every male inhabitant arrived.." armed with whatever weapons they could find (PGWAJ,13/4/1833, p. 39). If the Fremantle residents were perturbed about the Aboriginal presence, John Weavell clearly was not, and he criticised the paper for printing extravagant and absurd statements.

In May the same year the paper recounted a tragic chain of events which generated further intercultural hostility. An Aborigine, Domjum, had been shot in the head when he was allegedly breaking into a Fremantle stores building, and while he survived for three more days (PGWAJ 4/5/1833), there occurred the next day the fatal spearing of two settlers, the Velvick brothers, at Bull's Creek on the Canning River. Four Aborigines, including Midgegoroo and Yagan were alleged to be responsible and a proclamation was subsequently issued, offering a reward for the capture of Yagan, dead or alive (PGWAJ 4/5/1833). Several parties of armed men searched for him south of the river, while a group of soldiers set up an ambush overlooking the traditional Aboriginal river crossing on the flats (*Mattagerrup*) near Herrison Island, in anticipation of Yagan trying to rejoin the women and children who were still on the northern side of the river (PGWAJ 4/5/1833, p. 72). The previous month, prior to the Velvicks' spearing the paper had carried a short report that a permanent station was being contemplated at the crossing, "...in order to command the native pass." (PGWAJ, 13/4/1833, p. 59). The circumstances surrounding the deaths of Domjum and the Velvick brothers are discussed in greater detail under the heading, "The Tasmanian Connection".

Midgegooroo, Yagan's father (Hallam & Tilbrook, 1990) was also being sought and was captured on the banks of the Helena River (*Mandoon*) a couple of weeks later by a party led by the Superintendent of Native Tribes. Midgegooroo was in the company of a young Aboriginal boy, his "son", who was about five years old, and the old man's hunting and fishing spears were symbolically broken by his British captors as he

was taken into custody. The practice of spear breaking appears in other accounts of intercultural confrontation, for example in *Perth Gazette and Western Journal* (7/9/1833 p. 142), Moore (1884) and Grey (1842), and while intended to diminish their offensive, and possibly defensive capability, the act also effectively destroyed Aborigines' primary hunting tools.

In the continuing search for Yagan, another European party received information that a large group of Aborigines had been sighted fishing near the Canning River and set off in hot pursuit, but failed to find them despite a rigorous all night search (PGWAJ 18/5/1833, p. 78). The next edition of the paper announced that two armed, six man parties of soldiers had begun patrolling the banks of the Swan and Canning Rivers, "For the protection of the remote settlers." (PGWAJ 25/5/1833, p. 83). In effect it meant that favoured Aboriginal fishing spots would be closely monitored by the soldiers and thus further lessen the freedom of Aborigines to undertake their traditional activities along the river without interference.

The same edition of the paper also printed a selection of statements made to Lieutenant Governor Stirling from settlers who felt they had suffered outrage at the hands of Midgegooroo. The Aborigine was alleged to have been involved in a retaliatory spearing of a white servant after another Aborigine had been shot dead while entering a potato garden. Potatoes were an important staple for the settlers and had been imported from Van Dieman's Land (Tasmania) in large quantities since the earliest days of the settlement. (CSR 4/21).

Two complainants also said Midgegooroo was too insistent

in demanding food, while another complained that the old man had confronted him with a spear while he was shooting birds near the Aborigine's camp at Monger's Lake (*Calup*).

Captain Irving, in the absence of Governor Stirling, issued a warrant for the execution of Midgegooroo and soon afterwards he was executed by a 63rd Regiment firing squad in front of an enthusiastic and cheering Perth crowd (PGWAJ 25/5/1833, p. 83). This incident was later reported outside the colony and in Van Diemens Land (Tasmania) the *Hobart Town Review* (20/8/1833) described the execution as "a cruel murder without palliation." In other words, it would do nothing to solve the intercultural problems which existed in the colony. The Perth paper reprinted the Tasmanian criticism on 4/1/1834, and later on 18/1/1834 a hostile letter from a person using the pen name of "Veritas" appeared, attacking the editor for giving the colony bad publicity. The identity of Veritas has not been confirmed but it appears to have been written by someone in high office attempting to justify their own actions in the killing of Midgegooroo. Veritas is a derivative of the Latin, *vereor*, (to fear) however the editor, Charles MacFaull was not intimidated and inserted his thinly disguised response in an article beginning immediately after the criticism: "Manure - The manure generally used for most kinds of land, is horse and cow dung mixed together; but the dung of hogs is much better, and will go further than either of them..." (PGWAJ, 18/1/34, p. 220).

On 11th July 1834 George Fletcher Moore (1884) wrote that the soldiers had "unfortunately" begun a system of patrolling in the Guildford area and had so alarmed the Aborigines that they had all disappeared. However the

unfortunate aspect as far as Moore was concerned, was that he wanted Aborigines to help rescue any survivors of a rumoured shipwreck to the north of the colony (Moore 1884, pp. 225-226).

Public attention had been drawn to the injustice being meted out to Aborigines in 1833 in an anonymous newspaper article (PGWAJ, 4/6/1833) which is almost identical to the 27 May, 1833 entry in George Fletcher Moore's diary. The writer described a meeting with Yagan where communication took place with a mixture of gestures and broken English and Aboriginal words. By the writer's (Moore) own admission, his understanding was far from perfect, but he placed the following interpretation upon Yagan's words:

You came to our country - You have driven us from our haunts, and disturbed us in our occupations. As we walk in our own country we are fired upon by the white men, why should the white men treat us so. (PGWAJ, 4/6/1833, p. 87; Moore, 1884, pp. 190-192)

The quotation is not a true translation as such, but is based on Moore's connotative judgment and reflects his intuitive feelings. By his own admission he was moved primarily from his observations of the intensity of Yagan's speech tone, gestures and facial expressions, and a preconception by Moore that Aborigines had fallen on hard times since the arrival of colonists would have been an essential factor. On the 11th July, 1833 Yagan was murdered by William Keats, in company with his brother James, after they had engaged Yagan and other Aborigines in discussion near the river in Upper Swan. William Keats paid for the murder by being speared by the other Aborigines almost immediately after the incident (PGWAJ, 13/7/1833), and his brother who escaped, wisely left the colony soon after.

On the 4th September 1833 a formal meeting took place

between two Aborigines, Migo and Munday, and Lieutenant Governor Stirling, with Francis Armstrong serving as interpreter. The object of the meeting, which was proposed by the Aborigines, was to discuss the increasing degree of intercultural violence which had been taking place, and to propose an amnesty. The paper said: "...they described that we had taken possession of their hunting and fishing grounds - and that our dogs had driven the kangaroo far away." They allegedly later told Armstrong in private that "...mutton was a very good substitute." Stirling reportedly told the petitioning Aborigines that if "...at anytime they were distressed for food, from casual circumstances, their kangaroo or other resources failing them, they might come into the town, and they would be supplied with provisions." (PGWAJ 7/9/1833. p. 142; Ogle, 1839). It suggests that Stirling did not think they were in immediate danger of starvation.

Francis Fraser Armstrong, in his capacity as official "native interpreter" was to become an intermediary for doling out food and old blankets to Aborigines as the settlement developed (CSR 58/152). Flour for example, would be occasionally given to groups as large as 100 persons (CSR 58/150) and such acts were intended to stimulate peace between Aborigines and the settlers, and in turn, the government. Distribution was primarily undertaken at ration depots, established in 1833 at Lake Monger and at Upper Swan.

Just as settlers had identified natural fauna species to supplement their diet, so too had Aborigines acquired a taste for settlers' food and there are numerous European accounts about Aborigines scrounging from settlers or

raiding farms and storehouses. When Aborigines were caught and prosecuted for stealing they were usually dealt with harshly. Floggings and shootings took place with impunity in retaliation for the taking of relatively small quantities of grain and flour, and according to Captain Fremantle in 1832, group extermination for quantities of livestock had taken place (Cottesloe, 1928).

Perhaps the most successful and daring Aboriginal raid for flour in the Swan-Canning area was carried out in 1834 at Shentons' Mill, located on what was known as Point Belches (*Gareenup*). The mill now preserved on the site at South Perth was built after the incident (Firkins, 1979). George Shenton, the operator at the time, alleged he had been bailed up and alleged that some 980 lbs (444.5 kg) of flour had been carried off by 20-30 Aborigines. Local Swan River Aborigines allegedly confirmed that the footprints at the scene were made by Murray River people. Despite two experienced military detachments crossing the river and setting out immediately after the alarm was raised, the Aborigines and the large quantity of flour had vanished without trace. (PGWAJ 26/4/1834, 2/5/1834).

In considering this fact, if 30 men took part in the raid then on average each person took about 31.6 lb (14.3 kg) of flour, plus according to Shenton, pots, pans, blankets and baskets, which served to hold the booty, then the because they appear to have escaped in a hurry without trace suggests that a very well planned operation took place; or perhaps the incident did not happen when, or in the way Shenton alleged it did?

No one appears to have considered that George Shenton may have fabricated the incident in an attempt to gain

increased attention by patrols on his side of the river where he was somewhat isolated, and yet it is a distinct possibility. The business had been unprofitable from the outset due to this isolation and because of competition from other mills (Firkins, 1979). George Shenton's cousin, William Shenton had built the mill (Firkins, 1979), and it should be recalled that it was the same William who had proposed transporting all Aborigines to Rottneest Island the previous year (CSR 22/171). It would seem that the Shentons felt that the continuing Aboriginal presence was not conducive to their success. In a statement about the alleged raid George Shenton said he had been visited by some of the Aborigines a few days earlier and they had told him that they were from the Murray River. Within a week Captain Ellis led a detachment to the Murray River and despite Perth Aborigines having apparently passed a warning, the troopers captured four Murray River men and shot another. The captives were brought back to Perth where three of them were publicly flogged. A newspaper report said that watching Swan River Aborigines openly wept as one of the Murray men was given 60 lashes with a knotted rope (PGWAJ 3/5/1834).

A massacre was later carried out on the Murray river people (*Marangal*) at Pinjarra by Governor Stirling and others on 28th October 1834 (PGWAJ 1/11/1834), and has since become known by Europeans as the "Battle of Pinjarra" although for the Aborigines who survived, it was a massacre. It also had a severe and irreparable impact on their culture (Bates, 1944).

Conflict and intercultural bloodshed continued in the region over food, and the next edition of the paper carried a report that 7 bushels (254.8 litres) of wheat had been

taken from a farm at Upper Swan. The alleged Aboriginal leader was later captured by the farmer and taken to army barracks on the Swan River, where he was shot a few days later while trying to escape (PGWAJ 8/11/1834).

In mid winter of 1834 the paper had suggested that a link existed between the season and "...the marauding disposition of the natives..." (PGWAJ 5/7/1834, p. 34), and reported that a band of some 30 Aborigines had molested a trader with a wagon load of stores en-route for York, and speared one of his employees. The same edition also reported an incident at the head of the Canning, where a soldier had taken a possum from a group of Aborigines and given it to his dog. Later a colt belonging to a nearby farmer was speared. The paper said that it had no doubt that many examples of such Aboriginal retaliation for injury could be cited and that the behaviour of the soldier "deserved the severest censure." (PGWAJ 5/7/1834, P. 34). The concern not being so much for the plight of the Aborigine as for the later retaliation against settlers and their property. This type of sentiment was certainly voiced several times by Moore, (1884).

Three years later, a letter to the Colonial Secretary from a settler in the Canning area in 1837 described how a wandering mare and foal had obligingly been reported by Aborigines (CSR 58/144), and serves to demonstrate that unattended livestock was not automatically speared. While such acts by Aborigines may have contained elements of intercultural goodwill, probably a greater motivation for them was the fear of suffering indiscriminate reprisals, especially if the animals had a chance of being slaughtered by someone else wandering by. Most likely a reward of food

would be expected for providing such information. Official retribution against Aborigines for stock offences was inevitable and unless there was resistance or attempted escape, whereby people got shot, jail and floggings would result. Some Aborigines also reported other Aborigines by name for pig spearing in Upper Swan (CSR 58/151).

By June 1837 there was a real fear amongst the Aborigines of the Perth region that they were to be subjected to a planned official extermination programme. This fear was propagated by several settlers who told Aborigines that they were to be put to death. R.M. Lyon repeatedly tried to assure them this was not going to happen (CSR 58/49), but despite this settlers continued to spread the rumour, and in August the same year Aborigines were still extremely anxious for their safety (CSR 58/152). It is not difficult to imagine as a result of this belief that Aborigines became very cautious about frequenting locations where they would be vulnerable, such as the exposed fishing sand banks of the estuary.

Soldiers and police

The soldiers, upon whom the settlers relied for maintaining their safety were transient visitors to the colony and from time to time regiments were likely to be moved to other outposts of the British Empire. A contingent of the 63rd Regiment, who had pitched their tents on Yellowgonga's camp near Mount Eliza in 1829 (Bates, 1944) found themselves transferred to India in 1833. The 21st Regiment of Foot (Royal North British Fusiliers) relieved them on 21 September 1833 (Dennison, 1979). According to the data compiled by Green (1984) the following year was one of unprecedented intercultural violence at Swan River Colony. The influence of the 63rd remained however, because several soldiers retired and took up land or re-enlisted with the 21st, and the police force set up in 1834 was comprised mainly of ex-members of the 63rd.

In India the 63rd experienced massive losses (709 men) from cholera (Dennison, 1979), and one soldier writing to a friend who had stayed behind, extolled the healthy benefits of Swan River in comparison to his new posting. He said he would gladly give fifty pounds, which was the discharge purchase price for a non commissioned officer, to return, even if he had to catch crabs for a living, an occupation apparently regarded by him as one of last resort (PGWAJ 1/11/1834, p. 383). Perhaps he also had the same experience as George Fletcher Moore, who wrote that "...the crabs were very daring, and frequently seized feet as boats were being pushed over mud flats." (Moore 1884, p. 137).

Apart from the crabs (*Portunus pelagicus*), the river system offered a relatively safe means of transport for those who had access to a boat, including soldiers, and with

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an increasing bureaucratic infrastructure the government advertised for tenders from boatmen to operate a service exclusively for the use of the public service. It was to operate a variety of defined routes which took in all the areas occupied by settlers, and extended to the Murray River estuary (Gilba), where Mandurah is now situated (PGWAJ 3/5/1834). Water bound peddlers also traversed the river selling their wares to settlers (Moore, 1884).

Avoidance of intercultural conflict by George Fletcher Moore

George Fletcher Moore was born in 1798 and died in 1863. His published letters and diary have provided many indications of how he and other settlers exploited the natural resources of the Swan River, and also provide an insight into how he avoided intercultural conflict.

Moore arrived in 1830 with the sufficient financial means to live relatively comfortably, and between December 1830 and April 1837 he supplemented his and his servants' diets almost every species of wildlife which opportunity allowed. He lived on the upper reaches of the Swan River and found that fish were not as available to him as they were to those settlers living in the lower, more saline parts. Waterfowl and macropods instead presented him with more opportunities. Birds were shot, but kangaroos were generally hunted down with dogs, and a list of species taken by Moore is located in the Appendices. An analysis of the number of days that he supplemented his and his employees' diet with game indicates that they occurred less than 10% of the total period between 1830 and 1837, with a greater concentration in the earlier years. Nevertheless if other

settlers exploited the game to the extent that he did then it seems reasonable that their combined efforts must have had a severe impact on the species which had been exploited by Aborigines. Indeed Moore states that other settlers whom he knew were taking kangaroos on a far greater scale than he was.

At a relatively early stage of the colony, in November 1931 Moore's farm became productive and he had been able to send potatoes and green vegetables to market, and he thought he had become self sufficient for flour. His livestock were multiplying to the extent that he had 22 pigs, not counting six he had sold. All except one animal were the offspring of a sow he had brought with him from England one year previously and the numbers demonstrate the remarkable capacity of the species to multiply in a short time. Pigs were allowed to forage for themselves and this must have had a profound impact on tuberous native plant species such as yams. The wandering pigs rooting about the swamps must have been an irresistible temptation for hunter gatherers. In the earliest years of the colony, Moore's accounts suggest that pigs appeared to be the most vulnerable domestic species to Aboriginal spears.

Moore's indentured servants were not working as he had hoped and much of the burden of farming became his, leaving him insufficient time to attend to everything he wanted to, including fishing. By the 10th November another sow had farrowed, followed by another a few days later bringing the total to 32, a number he admitted was almost at the limit of his capacity to manage. Despite the seeming abundance of livestock, Moore continued to supplement his larder with native fauna and also continued to purchase casks of

imported pickled pork. By March 4th the following year he remarked that prices of food in the Colony were very high and causing "...a great outcry..." (Moore, 1884, p. 103) despite his confidence in the productive capacity of the colony a few months earlier.

Moore did not have his own fishing nets, and lamented that some which a friend had sent him had not arrived,

Fished a long time today without success; yet I saw fish in plenty, but they would not take the bait; and I have no nets. Went out with my gun to look for cockatoos, being particularly anxious for fresh meat; but the birds were most wary, and I could not get near them. (Moore, 1884, p. 106)

On the 23rd April, two days after he had purchased a cask of pickled pork, Moore took what he considered an extravagant step and for the first time killed a pig for his own consumption. (p. 109) In addition he exchanged three other young pigs for eight bushels of seed wheat which had a value of 15/- per bushel. From that time his hunting endeavours increased somewhat, no doubt to avoid the necessity of using his own reserves of preserved meat too quickly. By the 10th May he estimated that there were only 15 casks of pork remaining for sale in the entire colony, and only at an exorbitant price. This fact would have placed further pressure on game resources.

On 15th June 1832 a serious conflict took place on the Swan between settlers and Aborigines, whom it was alleged had driven off some bullocks. A party of colonists raided an Aboriginal camp upstream and in the excitement shot dead one of their own men. The Aborigines, who had scattered, lost all their spears, cloaks, knives and bags as trophies to the colonists (Moore, 1884, p. 119) Bearing in mind that this took place during a cold wet winter (Moore, 1884,

pp.121; 130), it is reasonable to suppose that the group of Aborigines found themselves in a serious predicament with such losses. The following day all of Moore's pigs were missing and he attributed this to an action by Aborigines, whom it was alleged had killed another sixteen elsewhere in the district. Coincidental to the conflict at Upper swan, a settler had been fatally speared on the Canning River (Moore, 1884, pp. 118-119).

The mood of settlers, including that of Moore became somewhat more heated over the loss of further livestock rather than settlers, and he wrote in his letters that he was, "...preparing to watch and attack the natives, and kill, burn, blow up, or otherwise destroy the enemy, as may be most practicable." (Moore, 1884, p. 120). His words however seem to be written tongue in cheek, because he lamented, "...but after all, perhaps these uninformed creatures think that they have as good a right to our swine as we have to their kangaroos." (Moore, 1884, p. 120). Moore confirms the significance of native game to the Europeans with the following words:

Really this kangaroo-hunting is very important to the settlers in their present circumstances. Some of my friends have had fresh meat of this animal for three months together, when it would have required three casks of pork, at £10 each, to have supplied their establishment during the same period. Thus their dogs have saved them £30. (Moore, 1884, p. 127)

On the 7th July Moore reported that the Governor's pigs had been speared and that the total lost by settlers would have been enough to have supported the entire colony over the winter months. His missing pigs were replaced as new litters were born, but they continued to be of interest to Aborigines. On 1 August Moore slaughtered another pig for

himself and described it as "...one which I saved from the natives" (Moore, 1884, p. 124), and wished "...they were convinced of the evil of their pig killing ways;" (Moore, 1884, p. 124). Fresh domestic meat was generally scarce, and was difficult to keep, particularly in spring and autumn due to the prevalence of blowflies. Of necessity much meat was pickled in brine, although in winter fresh meat could be kept over for a time.

Moore exploited the fauna of the Swan due to the opportunities they presented. Fish were more readily available to settlers on the lower open reaches of the river where it was possible to take 10,000 fish with a seine net. In the upper reaches where more lived they became abundant only in the summer when the salinity of the water increased. "the people on one occasion were actually astonished at the noise of the fish leaping and rushing up the river in multitudes." (Moore, 1884, p. 151). The factors which determine the distribution of fish in the estuary system are discussed in greater detail in the section of this dissertation which deals with food resources.

In April 1833 Moore received his long awaited fishing nets, but wrote that a trammel net, which he evidently did not receive, "...is the only killing one in this part of the river." (Moore, 1884, p. 175). A trammel net actually consisted of three nets suspended side by side from a common set of rope and floats. The centre net was of a small mesh and the outer ones on either side of a mesh about six inches square (38.7 cm^2), the whole apparatus being of no specific length, but about six feet (1.82 m.) deep. Fish became entangled as they tried to push through the small mesh (Moore 1884, p. 224). Despite his annoyance about the loss

of pigs and the continuing Aboriginal interest in them he managed to see some humour in the situation and wrote the following on 27th April 1833:

I had sent James to borrow a seed riddle, and was on the lookout for some pigs that were trying to *circumvent* the garden, when I heard a jabbering, and lo! ten natives were in the act of admiring them at the river-side. As I thought they might carry their admiration to the inconvenient extent of carrying them off, I slipped into the house and got my guns in readiness, and in a convenient situation for instant use. I then went out and engaged the unwelcome visitors in most edifying conversation, walking them up through the gate, and past the house, on to the high plain above; and sending Johnny for bread, which I cut and distributed amongst them in due proportion, praying (*sic*) proper regard to old Yello-gonga, their chief. (Moore, 1884, p. 181)

By mid 1834 Moore and some Aborigines were cooperating to the extent that he allowed some to use his gun to shoot crows (Moore, 1884, pp. 222 & 260), and by September that year Aborigines were being engaged in clearing and burning land in exchange for wheat (Moore, 1884, p. 231). An estimated 1,036 acres of land had been cleared in the colony for cultivation according to an Agricultural Society report (In Moore, 1884, p. 244). Settlers chose what they considered the most fertile land for clearing and this certainly included yam patches in Upper Swan (Hallam and Tilbrook, 1990: p. 245).

In August 1837 Moore recorded that he observed two children digging up his potatoes and chastised their mothers, who then beat the children, but he felt this was more for being caught than for stealing. Nevertheless the cooperation involving limited employment of and the loan of firearms to Upper Swan Aborigines by a settler as early as

1834 stands out in stark contrast to the massacre of the then still resisting Murray River Aborigines by Governor Stirling a little later, on 28th October, 1834 (PGWAJ, 1/11/1834).

On 12 September 1834 Moore's dog caught a 60 lb (27.2 kg) kangaroo which was described as a "relief in the article of housekeeping....Many persons have supported their establishments as far as meat is concerned upon kangaroo this season. Some have killed several thousand pounds weight." (Moore, 1884, p. 231).

In 1834 the settlers' livestock population was surveyed and the results are reproduced in Table 6:

Table 6

Swan River Colony Livestock Populations in 1834

Horses	84	Mares	78
Cows	307	Working cattle	96
Bulls and steers	97	Sheep	3,545
Goats	492	Pigs	374

Source: 1834 Agricultural Society report, in Moore, (1884, p. 244).

By 1837 the sheep population had grown to 12,000 (Ogle, 1839, p. 106).

On 11 April 1835 a bullock belonging to a Mr. Ridley of Upper Swan died and "The news has spread among the natives, and they were hurrying off this morning to share the feast." wrote George Fletcher Moore (1884, p. 261), which indicates that the such opportunistic events were important, and that a degree of restraint in killing live domestic animals existed amongst some Aborigines, however this restraint may well have been inspired by fear of retaliation rather than

by goodwill. Aborigines also ate other unwanted European animals and such was the fate of a cat which Moore had drowned in the river for "misbehaving". The Aborigines likened cats to possums, a species which Moore had eaten himself during the harder times of 1832, but now regarded them as "vile eating". Moore wrote on October 11, 1835 that he thought then that Aborigines near him lived "...pretty well..." (Moore, 1884, p. 285) on a staple diet of grubs, frogs, reptiles, mice and small roots. When local Aborigines killed larger wild animals such as kangaroo, emu, possum and bandicoots it appeared to Moore to be "...quite an event..." (Moore, 1884, p. 286) for them. Murray River Aborigines were in contrast "...much larger and fatter men than any others we have seen; perhaps from the greater quantity of fish got there." (Moore, 1884, p. 286).

Export of live flora and fauna was not unknown, and Moore received a request from a ship's captain to provide a quantity of live cockatoos in October 1835 (Moore, 1884, p. 288). Despite the quantity of game which Moore had taken from the wild, the situation was not as bountiful as he would have preferred and wrote that it did not compare to the situation enjoyed by an acquaintance in Canada, particularly in regard to meat and fish. At Swan River in November 1835 the market price of fresh meat had fallen considerably since two years previously. Using his figures there had been a drop of almost 24% since 1832 and he forecast that by 1839 it might be available for as low as 6d per lb. This can be calculated as an anticipated drop of 68.5% from the 1832 prices.

November 1836 was harvest time and Aborigines had become accustomed to seeking permission to "speck" for spilled

grains of wheat for their own consumption. They appear to have camped on a semi-permanent basis in the vicinity of Moore's land allocation and from his point of view there were obvious risks in this because more wheat would be lost than by normal harvesting circumstances. Moore had a domestic wheat grinder and complained that he found himself being "plagued" by Aborigines wanting to grind wheat (Moore, 1884, p. 300). However by 1837 Moore was hiring Aborigines to walk about the wheat fields shooing off crows (Moore, 1884, p. 354).

In 1837 Moore remarked that he had a barrel of pickled herrings, but despite it having been open for some time he had lacked the enthusiasm to eat them regularly. Preserved fish apparently took second place to preserved pigs and instead of buying casks of imported pickled pork he was now salting away his own butchered animals (Moore, 1884, p. 311).

There seems to have been an increasing degree of intercultural cooperation developing some Aborigines and settlers. For instance people such as Moore had persuaded Aborigines to do odd jobs and running messages to friends (Moore, 1884, p. 268) in exchange for favours such as being allowed to catch mice in the barn, although this may also indicate that there had been a serious decline in native fauna for Aborigines to need to incorporate such food gathering into their survival strategy. In June 1837 Moore's British employees fared better however and were regularly eating fresh mutton, two animals per week, totalling about 66 lbs. (30 kg) (Moore, 1884, p. 315). Ogle (1839) states that Aborigines were being employed as postmen and several Aborigines had "enrolled" with the police force

and were proving themselves to be "trustworthy, persevering and acute." (Ogle, 1839, p. 54).

Less "cooperative" Aborigines were still spearing pigs, sheep and horses for food, and raising the ire of settlers. Those who were caught were subjected to severe penalties which included transportation to other places. One such man was Coordap, who managed to escape from Fremantle prison in June 1837, while awaiting transportation for livestock spearing (Hallam and Tilbrook, 1990), but was recaptured because of the collaborative efforts of three other Aborigines whom Moore rewarded with 36 lbs (16.32 kg) of flour (Moore 1884, p. 318). Having been witness to brutal punishments by authorities and vigilantes, by 1836 Aborigines appear to have become their own worst enemies when it came to individuals evading capture or prosecution. Magistrate Moore stated that, "In ninety cases out of a hundred we know the offenders only through themselves." (Moore, 1884, p. 320). There were however only 10 Aborigines indicted for offences between April 1836 and July 1838, with the majority of offences being committed by Europeans, including women (Ogle, 1839. p. 149).

As the fresh meat situation eased, Moore's recording of the taking of wild food lessens considerably, although it seems clear that he has not recorded all captures, or if he did then the detailed accounts have not survived. He stated that there were gaps in his work and that he usually only made journal entries while at home. For instance he briefly mentions catching many cobblers in the company of Aborigines at *Jainabingup* a year previously but the specific account of this is absent at that time in his journal.

A statistical report drawn up for all of Western

Australia in 1837 shows that there were 65 persons involved with fisheries and boating (Green, 1961). This sector comprised approximately 7% of the working population with agriculturalists and graziers in the majority with 49%.

The Tasmanian connection

Initial responsibility for protecting settlers at Swan River fell to a detachment of soldiers known as the 63rd Regiment of Foot, and 67 officers and men arrived in 1829 at Swan River, the majority travelling on board *HMS Sulphur*, sailing in company with the *Parmelia*, which carried the first settlers. The 63rd was no stranger to postings in foreign lands, or for that matter, Australia. Its members had previously been acting as guards on ships transporting convicts to New South Wales, but perhaps more ominously for Aborigines of Western Australia, the regiment had established its headquarters in Van Dieman's Land (Tasmania) and in 1830 had been given the infamous task of organising the rounding up of all Tasmanian Aborigines (Dennison, 1979). Tasmania was strategically important for the new colony and besides supplying replacements for the 63rd as required, also was a place from which to import extra food, particularly in the form of potatoes.

As early as 1832, the same year that Tasmanian Aborigines were finally being rounded up and transported to offshore islands, there were informal proposals that Swan River Aborigines should be dealt with in a similar manner (Fremantle, 1832, in Cottessloe, 1928). Settlers also came from Tasmania with apparently already formed attitudes of hostility towards Aborigines and the April 1833 spearing of

the Velvick brothers on the Canning River, who had in their own way also exhibited hostility towards Aborigines, is thought to have been precipitated by the shooting of an Aborigine by a Tasmanian emigre (Dennison, 1979).

George Fletcher Moore wrote that the Tasmanian had been in the company of the Velvicks allegedly had said, "Damm the rascals, I'll show you how we treat them in Van Dieman's Land." before opening fire (Moore, 1884, p. 183). Moore also wrote that the incident had occurred some time prior to the eventual spearing of the Velvicks (PGWAJ, 4/5/1883 and 7/9/1833).

In a separate incident, Domjun, an Aborigine of possible classificatory kin significance to Yagan, had received what turned out to be a fatal gunshot wound on Monday night, 29 April 1833 at Fremantle (PGWAJ, 4/5/1833, p. 71), while allegedly raiding a store for flour. It was this incident which seems to have provoked a reciprocal spearing of the Velvick brothers the following day when an Aboriginal group, including Yagan had crossed from the north side of the river via the Preston Point horse ferry and allegedly told a ferry employee that they were on their way to the Canning River to obtain revenge for the Fremantle shooting (PGWAJ, 4/5/1833, p. 72). Domjun did not finally expire until three days after the shooting. Despite the precipitateness of revenge being taken for the death of Domjun prior to his actual death, the trigger for the spearing of the Velviks, like so many in the historical records seems undoubtedly to have involved yet another intercultural dispute about food. However it also seems inseparably related to the earlier apparently unprovoked shooting of an Aborigine near the Canning River by the Tasmanian emigre. Significantly, the

retaliation also serves to demonstrate that Aboriginal men were not particularly intimidated by the European presence in 1833. They were it seems, prepared to co-exist provided that they had some access to European food resources, and not necessarily in an equitable manner. Mortal injury to kinfolk however was for Aborigines of the time, as it was for Europeans, unforgivable, and demanded revenge.

The research question for this dissertation was:

To what extent was there intercultural competition for the Swan-Canning fishery in the early years of European involvement with the region, prior to 1837?

Schiffer (1979) has pointed out that historical data can be used to study rates of technological adaptations and then formulate additional hypotheses when a broader data base is available. I have extended this concept by compiling an overview of data from different disciplines, both historical and contemporary-scientific, in order to establish a broad data base with which to examine the human competition and exploitation of a resource, plus any human dietary adaptations which may have taken place.

The research question was approached by separately examining data which related to the potential food resources of the Swan Canning estuary, and they involved the following: The archaeological evidence for human involvement with the region; European accounts of Aboriginal exploitation of the fishery resource and the associated environment; the historical accounts of European visitations to the fishery and environs; the colonial exploitation of the fishery resource and associated environment; and finally Aboriginal-European conflict issues which involved the fishery resource. Because this dissertation is essentially about the exploitation of a resource, I have felt justified in discussing at length some of the factors which may or may not make some resources attractive to humans, and comparing the situation at the Swan-Canning estuary to other places.

The archeological evidence I have examined has been of

minor use in addressing the research question, however it does raise some interesting, and perhaps controversial questions. Until some of the substantial time gaps in the archaeological record are filled it cannot be said with certainty that human occupation in the region has been continuous. It is a modern and popular assumption that it has.

It has been determined that the Swan-Canning estuary and its wetland environs supported a large and diverse range of species which could be exploited by humans for food, and that Aboriginal people have been living in the region for millennia. It has also been shown that the present coastal estuarine environment had its origins about 6,000 years ago, after the ocean levels rose, and that therefore the environment, and the species available for human exploitation would have been different before that time. The phenomena of global warming appears to have played a major role in such changes, and while it may have begun about 17,000 years ago, the beginning of the Holocene epoch is distinguished by the palaeontological evidence which shows global proliferation of flowering plant species from about 10,700 years ago (Fleming, 1976). Any Aboriginal people living in the Swan River region would have experienced these changes through the hundreds of generations, making adaptations to their survival strategy accordingly. Aboriginal foraging strategies in the region therefore appear to have always been dynamic, that is to say there has been a continuing process of adaptation and adjustment as various food species became more prolific, or as they have diminished.

Most exploitable native food species seem to have

periods of peak availability, as for instance the aggregation of fish at spawning time, or seasonal vulnerability, as was the case of waterfowl nesting or moulting, and people were obliged to schedule their exploitation accordingly. For instance Aborigines and Europeans took advantage of black swans in the pre-winter moulting period, and the increased pressure on this species after colonisation apparently reduced the Swan-Canning estuary population to the extent that settlers at the Peel-Harvey estuary to the south of Perth became engaged in the supply of birds to the Perth market, including for live export. Such intensive commercial exploitation could have reduced swan numbers, although the species was still regularly appearing in newspaper market reports in 1835, albeit at an expensive price.

In carrying out research for this study it became apparent that I could not exclude discussion about the influence on Swan River Aborigines by those people living slightly further south, and who frequented the Murray-Serpentine River area. One of the tributaries of the Serpentine River is only 17 km. from the middle portion of the Swan Canning estuary, and within the escarpment to the east the headwaters of the Swan and Canning Rivers are located only 10 km. apart. River tributaries provided a natural link by which social interaction took place between groups of peoples (Gibbs, 1987), and writers including Moore (1884) and Bates (1944) have pointed out that the Murray-Serpentine people maintained a degree of dominant authority over Swan River Aborigines. Some aspects of the geographical differences between the two environments, and in turn the significant differences in the anadromous and

other fish resources which were available to the two peoples have been discussed in relation to the apparent cultural domination.

Numerous fish and bird species in the region were migratory, and according to Yesner (1987) some of the most predictable fish species for humans are anadromous species, that is those which are pelagic but pass through the estuary and upstream towards the narrow fresh water tributaries to spawn. The only anadromous species which visits the Swan Canning estuary is the small, (28 cm.) bony, Perth Herring, and it is also the most prolific (Loneragan and Potter, 1990). Experimentation by myself has confirmed that it is a difficult fish to eat, mainly because of the many fine bones which thoroughly permeate the flesh, (Appendix B) and which would hardly be conducive to human celebration unless in times of severe dietary stress, in contrast to the much larger Australian salmon and the opportunist sea mullet, which according to historical accounts were species which were seasonally harvested by Aborigines at Barragup. Despite custodial authority being maintained over Barragup by another group, the Swan-Canning people were allowed restricted access to the fish by invitation. Ritual and social interaction with many other Aboriginal groups took place at the same time as the fish run at Barragup and was probably more important than the food (Gibbs, 1987). The large predictable fish were the key factor which inspired the intensive cultural activities.

Because the coastal estuaries were formed only about 6,000 years ago, human association with the fish aggregation at Barragup is unlikely to be older than that time, although it may be possible to argue that such a facility was in use

further downstream before the ocean levels rose. Indeed such exploitation may well be much younger than 6,000 years. No salmon (*Arripis esper*) have been recorded in two recent scientific studies of the fish species in Peel-Harvey estuary (I. Potter, personal communication, May, 1991). The distribution of the salmon appears to have altered since the nineteenth century.

This example is mentioned in order to demonstrate that human exploitation of the region has not been a continuous unchanging strategy. Rather it has been one of adaptation and revision, and just as Aborigines coped with the climatic change and the dramatic rising of ocean levels, so too did they make adaptations in order to survive the onslaught of the European invasion which commenced in 1829.

While systematic exploitation by Aborigines of the fish resource took place at Barragup on the Serpentine River, I have not found any convincing evidence of systematic exploitation of fish in the Swan-Canning Rivers by either Aborigines or Europeans, during the study period 1697-1837. There is no denying however that fish were seasonally taken from the estuary many times by both peoples, and sometimes in considerable quantities, and the lack of evidence regarding systematic exploitation by Aborigines may simply be that Europeans did not witness such activity. In addition, even if such activity did not take place after colonisation, when most ethnographic accounts occurred, it may well have taken place before.

Aboriginal fishing methods on the Swan and Canning Rivers appear to have been basic. Hunters relied on their agility and their skill with the spear and kylie to obtain their needs, and men, women and children participated. The

absence of Aboriginal nets and fish hooks suggests that fish were available in sufficient quantity to preclude the necessity for more sophisticated technology.

Other larger teleost (bony) species also use the Swan-Canning estuary, but they belong in categories such as marine stragglers, or as in the case of mullet and cobbler, opportunists. There was a degree of annual predictability with these species and Aborigines did exploit them, but the predictability was less than for the anadromous species.

Larger fish species were sought by both Europeans and Aborigines, and some varieties were particularly vulnerable to being speared on shallow sand banks by night, something which Aborigines did with the aid of burning torches. The sandbanks also supported populations of molluscs, which were eaten by Europeans but not Aborigines, who had a culturally imposed taboo in place, although they did use some species as bait in order to lure fish within spearing range. There is a nutritional disadvantage in eating molluscs when compared against fish but even in cases of near starvation Aborigines still maintained the taboo, such as was the case with an Aboriginal man accompanying the 1837 Grey expeditions (Grey, 1841). His refusal to eat mussels at a time of severe stress suggests that culturally imposed directives were a stronger influence than the need to optimise caloric intake. Neither were Aborigines attracted to European foods which were preserved by salting, and certainly Europeans felt that Aboriginal cooking times for some species might have been better if extended. Nevertheless Aborigines and Europeans apparently experienced few problems in coming to terms with many of the new tastes which had formerly been in the domain of the other culture.

The pre-settlement European expeditions to the region had little contact with Aborigines, but all of them supplemented their rations with local fish, fowl and fauna. Their reports were well known to the British, who ultimately made the move to establish a colony there. The strategy for developing the Estuary environs had been carefully planned by the British and Stirling on behalf of the British Government had surveyed the region in 1827 with the express aim of overseeing the establishment of a colony. The subsequent appropriation of Aboriginal land in 1829 was not a new experience for the British. The eastern seaboard of the continent had after all been subjected to a similar process which began in 1788, with a devastating impact upon Aborigines there, and the infamous treatment of Aborigines in Van Diemens Land, (Tasmania) appears to have played a role in shaping the direction of intercultural relations in Western Australia. Not only did the 63rd Regiment of Foot have its headquarters located in Tasmania, but there was a considerable movement of supplies, news and settlers between the two colonies. The subject is probably worthy of greater exploration by a future researcher to determine whether the Tasmanian factor had a detrimental, or a tempering influence on shaping European-Aboriginal relationships at Swan River Colony.

The settlers at Upper Swan occupied what they considered was the best agricultural land in the colony, and their land grants contained valuable Aboriginal food resources such as yams, which were not directly exploited by settlers but were exploited by settlers' livestock. Any food species were likely to be subjected to experimentation by Europeans and those which were acceptable to the European

palate suffered heavy exploitation. Kangaroos and waterfowl were the most desirable species and these too became exploited commercially to the extent that they regularly appeared in newspaper market quotations. Kangaroo was not cheap, and prices were maintained slightly below those quoted for beef, mutton and pork. The game, including kangaroo, which appeared at the marketplace would have been too expensive to be a regular part of the diet of the "lower" classes, and by this reckoning must have been mostly consumed by the elites.

Just as Europeans were keen to try native fauna, Aborigines were quite willing to try European foodstuffs, and the concentration of settlers at Fremantle, Perth and Upper Swan offered opportunities for this to occur. Aborigines wandering through the settlements begging for handouts were a source of annoyance to settlers. The Aboriginal taste for European food appears to have been a major contributing factor to intercultural violence during the early years of the colony. The spearing of livestock caused outrage, and often brutal, indiscriminate retribution.

Between 1832 and 1833 Europeans perceived that they were having a serious impact on the traditional food sources of Aborigines, and the opinion is reflected in the diaries of Fremantle (Cottesloe, 1927) and Moore (1884) plus numerous official documents and newspaper accounts (CSR 22/171; PGWAJ, 7/9/1833). The record of intercultural violence compiled by Green (1984) indicates that an increase in the annual frequency of intercultural confrontations was also taking place, and that they peaked in 1834. The massacre of the male elders at Pinjarra by Stirling and his cohorts in

the latter part of 1834 appears to contributed to a significant drop in the number of recorded violent confrontations in the region the following year, and thence to 1837.

Despite recognition of Aboriginal needs, the fauna at Swan River continued to experience considerable exploitation by settlers. European hunting technology in the form of guns and boats, plus specialised hunting dogs appear to have given many settlers an advantage over Aborigines in the hunting of game, especially kangaroos and waterfowl, both which were considered as delicacies by settlers. Some colonists acknowledged that Aboriginal actions against livestock was somewhat justified because of the European assault on the local game.

After his Pinjarra massacre of Aborigine, Stirling initiated a "Native Depot" at the foot of Mount Eliza in a half hearted attempt to alleviate the concerns of Aborigines. The intention that they should feed themselves from the fish in the estuary was presumptuous of their dietary wants, and the Aborigines soon tired of the arrangement. The surplus fish which the settlers hoped would become available to them from the efforts of Aboriginal fishermen was an ad-hoc arrangement at the best. European fishermen operated out of Fremantle but apparently did not regularly fish in the estuary during the period of this study. The citizens of Perth wanted to buy fish but the commercial prospects were insufficient to generate interest.

No evidence has been found to show that Swan-Canning estuary fish populations were depleted by European activity, even though various nineteenth century writers reported very

large catches being taken with nets. However Aborigines justifiably complained that their access to old camping places had become severely restricted by European occupation, and that European hunters had made a marked detrimental impact on game such as kangaroos. An important part of Aboriginal culture is reciprocity, whereby favours given are expected to be repaid. A delegation of Aborigines pointed out to Stirling in 1833 that Europeans were not fulfilling the obligations which Aborigines believed had been incurred by their taking of game. (PGWAJ, 7/9/1833, p. 143)

The European invasion divided the Aborigines into two categories (McNair and Rumley, 1981). Those who by their traditional ties to the land were obliged to live in close proximity to the European settlement, and those who lived further away, such as the Pinjarra Aborigines and who put up the strongest resistance.

Swan River Aborigines to a degree became collaborators with the Europeans in order to maximise their survival strategies. At an early stage individuals fell in league with the police and others became willing informants against their countrymen (Moore, 1884). Those who did so won approval and reward from the administration, but then became obliged for their own safety to live in a semi-sedentary lifestyle near the settlers. Those who maintained their resistance were probably able to do so because their access to traditional food resources had not been so restricted. By 1837, Aborigines in Upper Swan were performing agricultural and other tasks for settlers, and European foodstuffs such as grain, and vermin were becoming an important part of their diet.

The sandbanks of the middle and lower portions of the river which had formerly provided favourable fishing opportunities for large groups of Aborigines were not well regarded by Europeans, who were frequently obliged to drag their boats across them. Despite this, the rivers were from the commencement of colonisation important communication routes for settlers and officials, and eventually six man patrols of soldiers were established. They could from the safety of their boats could observe and if they thought it necessary, act on sightings of Aboriginal activity on the sandbanks or on the shores (PGWAJ, 25/5/1833). As hostility towards Aborigines increased the sandbanks became dangerous places where people could be trapped or ambushed, and the capture of Yagan, Dommera and Ningana (Hallam and Tilbrook, 1990) while they were fishing on the sand banks near Shenton's Mill at Belcher's Point is an example.

In considering all these matters it should be kept in mind that there is no indication that Aboriginal fishing on the Swan totally ceased during the period under examination, and in the period after 1837, where this study ceases, there are many historical accounts, and several paintings which show such traditional activities continued for generations. Some of this material can be seen in McNair and Rumley (1981).

It had originally been intended by myself to examine the concept of an optimal foraging strategy whereby humans living in the region prioritised which species were exploited on the basis of their caloric return for the energy required to obtain them. It is tempting to attribute the Aboriginal attraction to pork within the concept of an optimal foraging strategy. I believe that it is a somewhat

simplistic view more suited to a laboratory environment, or a totally isolated community, rather than the complex situation which existed in the frontier situation at Swan River Colony. There were many factors which could have provided an input to the decision making process to exploit a particular species. These included such obscure things as taste, smell, perceptions of personal safety and even the novelty value of a newly discovered species. The spearing of livestock could bring about fearful retribution by Europeans, but it continued nevertheless, and appears to have contributed to the lowering of the Aboriginal population. Perhaps the intended tactic was to spear pigs well away from one's own abode, in the hope that blame would be levelled at someone else? There are examples of local Aborigines informing settlers about wandering livestock and this action in itself may have been a survival strategy. A similar action may have involved the alleged Aboriginal raid on Shenton's Mill, as may the allegations of the footprints belonging to Murray River Aborigines been a way of diverting blame from others. In considering these matters I do not totally reject the concept of an optimal foraging strategy influencing the diets of settlers and Aborigines after 1829, but a complex situation existed, and I have not accumulated sufficient data to arrive at a valid conclusion about it.

Livestock were a symbol of the European settlement and were carefully maintained so that their numbers would increase. It is not difficult to imagine the satisfaction of Aboriginal hunters feasting on the coveted symbol of the arrogant invaders. It can be thought of as an ultimate expression of resistance with caloric benefits.

Conclusion

It has been shown that all peoples who came to the Swan-Canning estuary exploited the fish and fauna resources according to their their own sociocultural values and needs. As to what species were exploited depended to a degree on favourable geographic factors and the ease and safety by which people could exploit desired species.

There is no doubt that the colonisation process had a profound impact on Aboriginal lifestyles after 1829 and that many traumatic examples of intercultural violence exist in the historical records to prove this. Estimates of Aboriginal population numbers which existed when the first settlers arrived in 1829 are inexact, and any assumptions about their size must be regarded with caution. It does appear however that on the Swan coastal plain in 1829 the basic social grouping was in bands, each averaging about 40 persons, and based on an 1837 census (Table 2) there were about seven of these bands who shared by customary right the natural resources of the Swan-Canning estuary and its surrounding wetland environs. During the period 1829-1837 the overall Aboriginal population in the region appears to have experienced a considerable decline. Based on hypothetical estimates this decline may have ranged between 17% and 25%, and can be attributed mainly to violence. It seems probable that there were unrecorded incidents, but using available data it does appear that approximately 30% of violent Aboriginal deaths between 1829 and 1837 in the Swan-Canning-Murray region were Aboriginal caused, with the remaining 70% due to actions by colonists. Many of the intercultural incidents appear to have involved settlers' food resources at some initial stage, and violent

retribution seems often to have been initiated by Europeans because of purloined food or livestock. On the other hand retribution by Aborigines against settlers seems in many cases to have been linked to the violent death of another Aborigine by a European's actions.

It is certain that people from both European and Aboriginal cultures ate fish when the opportunity, or perhaps more importantly, the inclination arose. If there was any reduction in Aboriginal fishing activity on the Swan-Canning estuary after colonisation it was not due to actual competition for the fish. More probably it was due to harassment by Europeans in retaliation for other matters.

Human exploitation of the estuary associated food resources could be influenced by fluctuations of season, the availability of species, and the technology which was available, however no evidence has been found to confirm that regular large scale systematic exploitation of the estuarine fish resources of the Swan-Canning Rivers by either Aborigines or Europeans took place between 1697 and 1837. Neither has evidence been found to confirm that Aborigines and Europeans directly competed against each other to catch the fish resources of the Swan-Canning estuary, although documentation exists that Aborigines at times had catches of fish stolen from them by Europeans.

There was intercultural competition for other fauna which lived in the region of the estuary, such as waterfowl and kangaroos. These were regarded as gourmet items and as valuable dietary supplements by Europeans. Importantly for some Europeans native game species were also a source of income, and fish had a much lower monetary value than red meat. The European demand on native species of fauna

appears to have lessened considerably as settlers' farms became more productive by 1837. Aborigines living closest to settlers optimised their survival strategies by falling in with settlers and this was most apparent in the Upper Swan region. Agricultural grains and introduced animals had become an important part of their diet by 1837.

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The Perth Gazette (PG)

Swan River Guardian (SRG)

The Western Australia Gazette (WAG)

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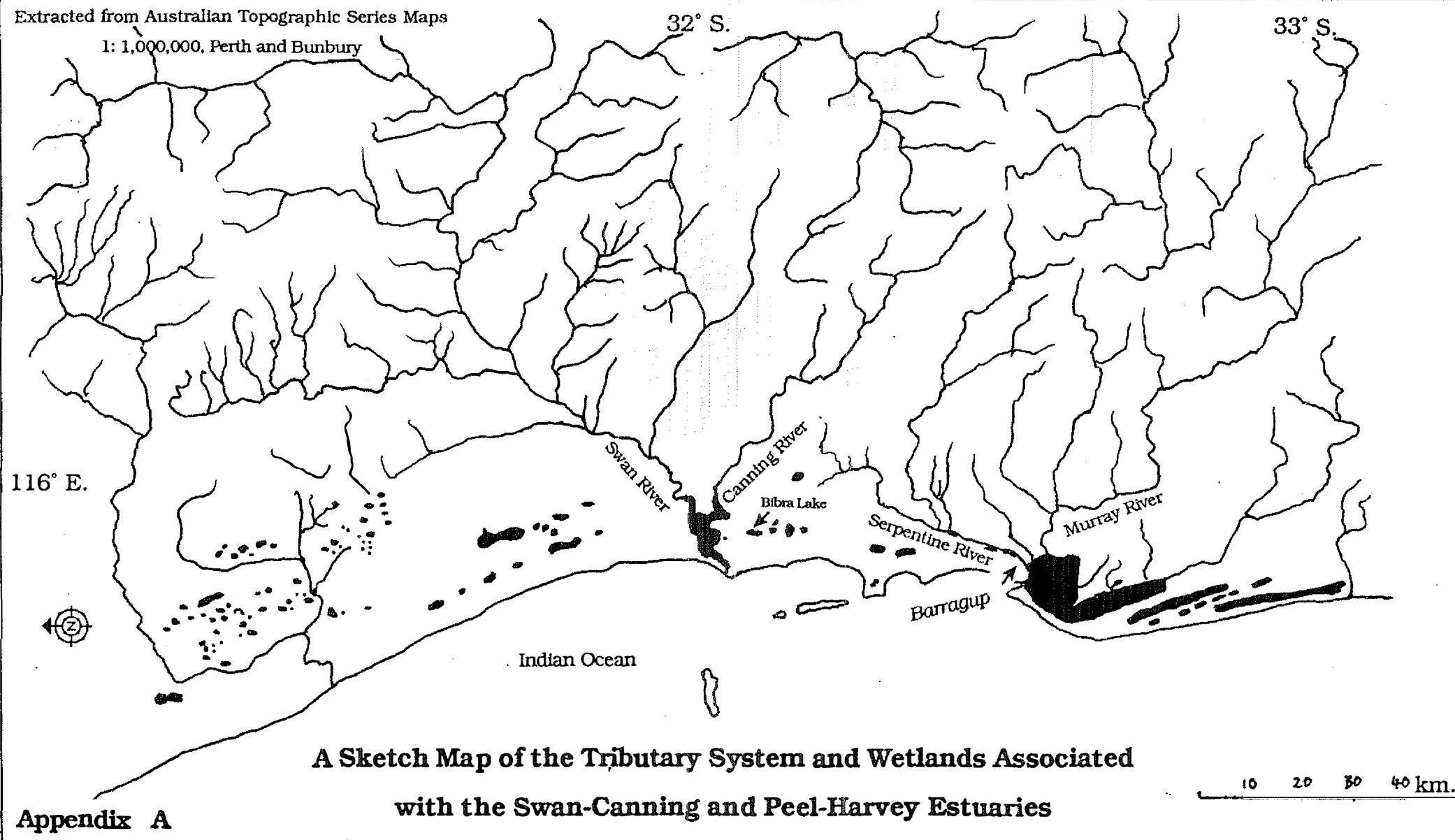
Appendices

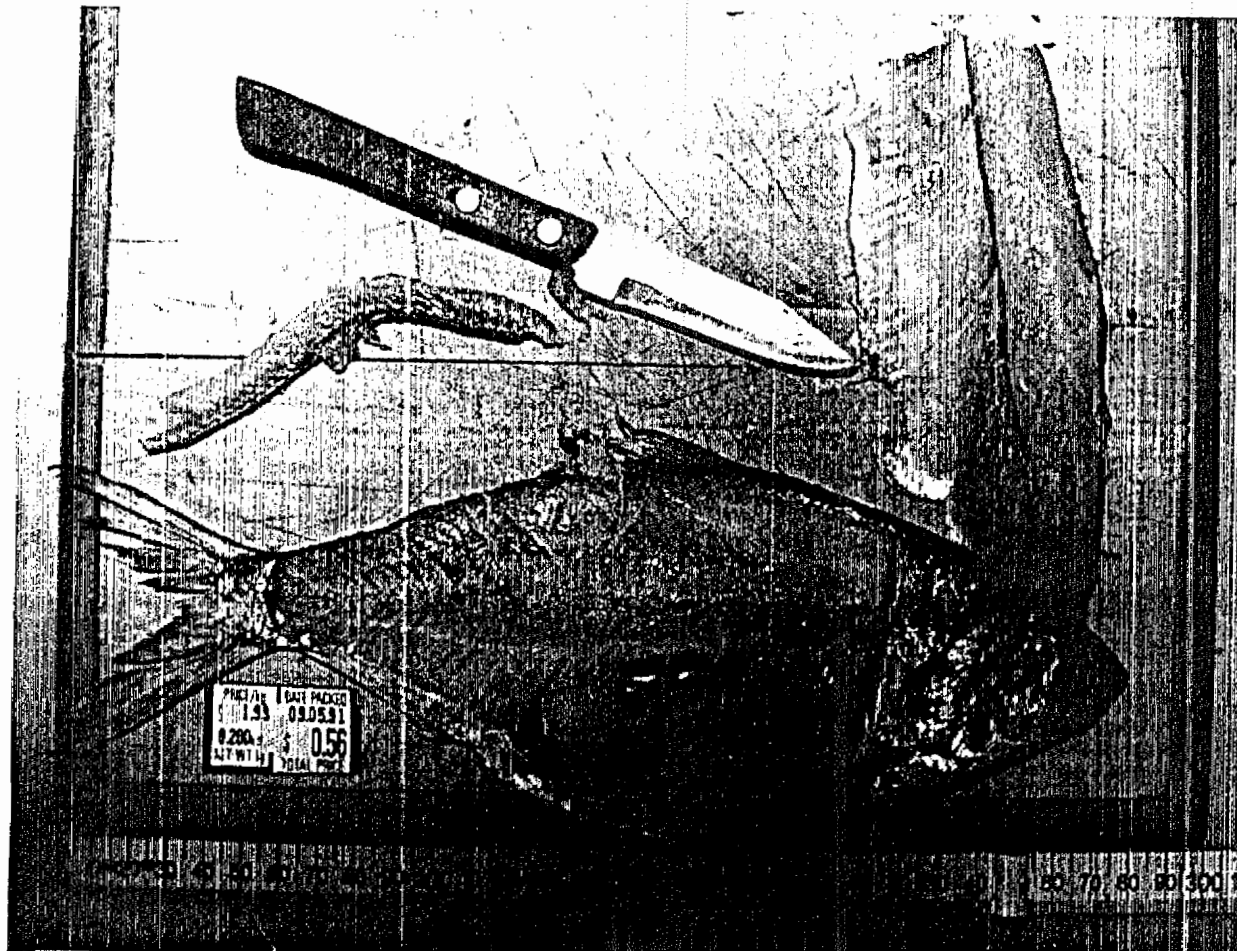
A	A Sketch Map of the Tributary System and Wetlands Associated with the Swan-Canning and Peel-Harvey Estuaries	139
B	The Perth Bony Herring (<i>Nematalosa vlaminghi</i>)	140
C	Some fish spawning times in the Swan-Canning estuary	141
D	A list of local faunal species pursued or killed by G.F Moore and associates: 1830-1837	142
E	A list of local species sighted or killed by Captain Fremantle and his crew in the vicinity of the Swan-Canning Rivers in the year 1829	145
F	A Sketch Map Showing the Sandbanks and the Aquatic Divisions of the Swan-Canning Estuary	147
G	The "sunset shell" (<i>Sanguinolaria (Soletellina) biradiata</i>)	148
H	A List of some Aboriginal placenames in the Swan and Canning Rivers' region	149
I	A Sketch Map Showing Some Aboriginal Place Names Associated With the Environs of the Swan-Canning Estuary	151
J	A Sketch Map of the Aboriginal Crossing Points of the Lower and Middle Portions of the Swan-Canning Estuary	152
K	A Sketch Map Showing Some Places Mentioned in the Text	153
L	Some Aboriginal names of fish and fauna, collected by George Fletcher Moore at Swan River Colony	154

M	A list of local species sampled, killed or captured by the Vlamingh expedition in the region of the Swan River, 1696-1697	156
N	A comparison of the timings of visits to the Swan-Canning Rivers by European Explorers	157
O	Market prices at Swan River Colony	158

Extracted from Australian Topographic Series Maps

1: 1,000,000, Perth and Bunbury





The Perth Bony Herring
Nematalosa vlaminghi

Some fish spawning times in the Swan-Canning estuary

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

<i>A. butcheri</i> (black bream)	*****	
<i>A. caudavittatus</i> (trumpeter)	*****	*****
<i>A. forsteri</i> (yellow eye mullet)	*****	
<i>C. macrocephalus</i> (cobbler)		*****
<i>A. mugiloides</i> (hardyhead mullet)	*****	*****
<i>M. cephalus</i> (sea mullet)	*****	
<i>N. vlaminghi</i> (bony herring)	***	*****
<i>P. endrachtensis</i> (flathead)	*****	
<i>P. saltatdor</i> (tailor)	****	

Source: Loneragen, Potter and Lenanton, (1987)

Aboriginal seasons
Source: Moore, (1884)

birok burnoru wanyarang maggoro jilba kambarang birok

A list of local faunal species pursued or killed by G.F Moore and associates: 1830-1837

Date	Type	Qty seen	Killed	Size	By	Method	Where
1830							
Early Dec	Roos	-	none	-	M+	Dogs	
1831							
5 March	Duck	-	1	-	M	Shot	Upper Swan
	Perch?	-	Few	-	M	Line	Upper Swan
	Turtle	-	1	-	M	-	Upper swan
	Clams	-	Few	-	M	-	Upper Swan
11 May	Turtles	-	2	??	??		
	Ducks	-	2	-	M	Shot	
Moore mentioned on this date that he had been feasting for some time every day on fresh fowl. (implying wild fowl)							
10 May	Parrots	-	2	-	M	Shot	
12 May	Pigeon	-	1	-	M	Shot	
04 June	Turkey	-	1	large	-	Dog	
11 June	Duck	-	1	-	M	Shot	
	Cockatoos	-	2	-	M	Shot	
13 June	Ducks	-	2	-	M	Shot	
	Bird	-	1	Small	M	Shot	
16 June	Crow	Several	1	-	M	Shot	
17 June	Roo	-	1	15lb	M+		
09 July	Roos	-	0	-			
10 July	Mullet	1	1	2lb	M	Found floating	
01 August	Moore remarks that a good dog can provide a constant supply of fresh meat and cited the performance of his neighbor's dog for the following entry.						
01 Aug	Emu	-	2	Adult & chick	Dog		
03 Aug	Duck	-	1	-	M	Shot	
22 Aug	Roo soup	-	-	-	?	-	
	"And our geese are all swans" (p. 65.)						

On 6th August 1831, Moore joined 20 others for a short exploratory expedition inland led by Ensign Dale. During their trip the party endeavoured to supplement their hard rations as much as possible. Dale's account of the exploration can be read in Cross (1833) and he gained darker distinction a few years later by acquiring the preserved head of Yagan and taking it to England as a trophy. (Green 1984:88)

06 Sept	Roo	-	1	-	?	?	
14 Sept	Roos	15	0	-	M+	-	Mt Dale
15 Sept	Roo	-	1 & joey	-	M+	Dogs	
	Bluetongue liz.	-	2	-	M+		
	Snake	-	1	Small	M+		
16 Sept	Roo	-	1	-	M+	-	Mt Bakewell
17 Sept	Turkeys	Some	0	-			
19 Sept	Ducks	-	2	-	M+	Shot	
	Cockatoos	-	2	-	M+	Shot	
21 Sept	Possum?	1	0	-			

Appendix D

	Type	Qty seen	Killed	Size	By	Method	Where
1831							
22 Sept	Swan	-	1	-	M+		
22 Sept	Numbat	1	(Captured)	-	M+		
23 Sept	Cockatoos	-	2	-			
	Also disturbed emu being hunt'd by Aborigines. Saw another emu and many roos.						
26 Sept	Cockatoos	-	plural	-	M+	-	
29 Sept	Game	7	0	-	M+	Shots	Mt Shole
	Cockatoos	-	2	-	M+	Shot	
01 Oct	Roos	-	0	-			
03 Oct	Ducks	-	2	-	M+	Shot	
05 Oct	Ducks	Many	Many	-	M+	Shot	
08 Oct	Moore returns to his home.						
04 Nov	Turtle	-	1	41b	Servant	By hand	
05 Nov	Turtle	-	1	41b	Ditto, caught in grass laying eggs.		
10 Nov	Cobbler	-	?	-	Fished in evening.		
10 Nov	Cockatoos	-	2	-	M	Shot	
	Turtle	-	1	-	M	-	
1832							
14 April	Pigeons	-	3	-	M	Shot	
29 April	Crows	-	4	-	M	Shot	
	Quail	-	1	-	M	Shot	
01 May	Crow	-	1	-	M	Shot	
	Emu	-	1	By neighbor			
02 May	Roos	2	0				
03 May	Roos	-	1	301b	M+	6 Dogs	Darling Escarpment.
	Kangaroo rat taken home by Moore as pet.						
10 May	Moore records a previously unmentioned expedition to a lake where he and two others shot bitterns, pigeons and parrots, and dined at a nearby "house of entertainment" on wild ducks, pudding, cheese and three bottles of wine. Cost 6/- each.						
15 May	Teal	-	Whole brood	-	M	Shot	River
18 May	Roo joey adopted as pet.						
21 May	Turkey	1	0				
23 May	Roos	-	0				
	Snake	-	1	From neighbour	-	-	
09 July	Ducks	-	2	-	M	Shot	
06 Aug	Roo	-	1	-	M	Dog	
22 Aug	Possum	-	1	-	M	Shot	Tree
27 Aug	Roos	9	1	161b	M+	Dogs	
04 Oct	Bittern	-	1	-	M	Shot	
01 Nov	Roo	-	1	801b	M+	Dogs	
	Duck + 10 eggs	-	1	-	M	Shot	
04 Nov	Mullet	-	2	-	M	By hand in shallows	
12 Dec	Goannas	-	2	-	M	Dogs	
	Quail	-	1	-	M	Shot	
	Cockatoo	-	1	-	M	Shot	
27 Dec	Roos	-	0	-	M+		

	Type	Qty seen	Killed	Size	By	Method	Where
1833							
02 Jan	Roo	1	0	-	M	Dog	
03 Jan	Roo	-	1	-	M	-	
	Crow	-	1	-	M	-	
	Pigeon	-	2	-	M	-	
	"Crow is excellent as food" P156.						
14 Jan	Diamond Snake	-	1	-	M		
17 Jan	Duck	12	2	-	M	Shot	
	Water hen	-	1	-	M	Shot	
	Cockatoo	-	1	-	M	Shot	
Between 17 February and 4th March 1833 Moore departed the colony for a trip to King George's Sound and points in between on the schooner <i>Ellen</i> . Species taken on that trip are not included in this list.							
20 April	Roos	-	0	-	Moore's servants.		
	Turtle	-	1	Small	M	Net	
30 April	Roos	2	0	-	M	Dogs	
29 June	Ducks	-	2	-	M	Shot	River
The above incident was a demonstration to Aborigines, who by his account were delighted. (p203)							

1834							
07 March	Birds	-	Some	-	M	Shot, for Aborigines.	
03 May	Duck	-	1?	-	M	Shot	
19 June	Turkeys	2	0	-	M+		
20 June	Crows	-	plural	-	Moore allows Aborigines to shoot them.		
24	Crows	-	plural	-	Ditto		
	Duck	-	1	-	Moore given duck, shot by natives.		
25 June	Ducks	-	2	-	M	Shot	
12 Sept	Roo	-	1	60lb	Caught by dog when Moore was away.		

1835							
26 Feb	Roo	-	1	36lb	Servant	Dogs	
28 Feb	Pigeon	-	6	-	M	Shot	
	Cockatoo	-	1	-	M	Shot	
1835	Type	Qty seen	Killed	Size	By	Method	Where
06 May	Frog	-	1	-	M	Dug by Aboriginal boy.	
23 June	Duck	-	1	-	M	Shot	
29 Aug	Emu	-	1 leg	-	?	?	

On 11 October 1835 Moore remarked that for local Aborigines, killing a Kangaroo or an emu was quite an event and speculated that the good condition of "Murray River Men" compared to the Upper Swan people was due to their having better access to fish. (Moore 1884:286)

1835	? Oct	Roo	-	1	34lb	M	Dog
? Oct	Gallinule (bird)	1	-	M	Shot	On river bank.	
? Oct	Roo	-	1	40lb	Servant	Dog	
? Aug?	Cobblers	-	Many	-	M+	-	Jainabingup

1837							
? April	Duck	2	1	-	M	Shot	

Data source: Moore, (1884)

Appendix D

A list of local species sighted or killed by Captain Fremantle and his crew in
the vicinity of the Swan-Canning Rivers in 1829

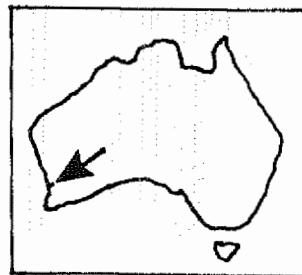
Date	Type	No. seen	No. Killed	Size	By	Method	Where
1829							
24 April	Sperm whales	-	0	-	-	-	150 Miles west of
25 April	Sharks	Several	1	7ft	Crew	Line	Rottnest
27 April	Seals	Several	1	-	Crew	?	Garden Island.
	Snake	1	1	5ft	Crew	?	Garden Island.
28 April	Kangaroos	1 or 2	0	-	Fremantle	-	Garden Island
	Snapper fish	Many	200	10-12lb	Crew	Line	Cockburn Sound
	Seals	Several	3 or 4	-	Crew	Tomahawks	Garden Island
(The seals included a very large sea elephant, which Fremantle shot.)							
30 April	Shags	-	Some	-	Fremantle	Shot	Mangles Bay
	Curlew	-	1	-	Fremantle	Shot	Mangles Bay
	Seal	-	1	-	Fremantle	Shot	Mangles Bay
3 May	Ducks	-	Some	-	Fremantle	Shot	Swan River
	Divers	Many	Some	-	Fremantle	Shot	Swan River
	Swans	10	-	-	Fremantle	-	Swan River
(Stirling also noted pelicans, curlews, gulls and "an amazing number of Shags with a red eye...")							
6 May	Shark	Many	1	8ft	Crew	Line	Cockburn Sound
	Mullet-Whiting	Plenty	4 buckets	-	Crew	Seine net	
	Seal	Few	2	Young	Crew	-	Arthur's Head
	Shags	-	7	-	Fremantle?	?	Arthur's Head
	Gannet	-	1	-	Fremantle?	?	Arthur's Head
	Gulls	-	Some	-	Fremantle?	?	Arthur's' Head
8 May	Fish	-	Plenty	-	Crew	?	From shore rocks
9 May	Seals	Quantity	13	Young	Crew	?	Bartholet Island
	Penguin	-	Some	-	Crew	?	(Carnac Island)
	Gannet	-	7	-	Fremantle	Shot	Ditto

Date	Type	No. seen	No. Killed	Size	By	Method	Where
1829							
Partridge?	1	1	-	Fremantle	Shot	Ditto	
10 May	Fish	-	Unspecified	-	Crew	-	? Island
11 May	Fish	-	Good supply	-	Crew	Boats	Cockburn Sound
13 May	Curlew	-	1	-	Fremantle	?	Swan River
16 May	Plover	-	2	-	Fremantle	Shot	Swan River
17 May	Snapper	-	100	10-12lb	Crew	Line	Cockburn Sound
19 May	Quail	2 brace	1	Small	Fremantle	Shot	Garden Island
20 May	Plover	-	5	-	Purser	-	Garden Island
21 May	Plover	-	4	-	Fremantle	-	Mangles Bay
	Shags	-	Several	-	Fremantle	-	Mangles Bay
22 May	Kangaroo	-	1	Small	Fremantle	-	Mangles Bay
	Plover	-	Some	-	Fremantle	-	Mangles Bay
24 May	Mackarel	-	Many	Small	Crew	-	Alongside ship
25 May	Snapper	Qty	0	Too big	Crew	Line	Cockburn Sound
26 May	Duck	-	1	-	Fremantle	Shot	Swan River
	Little birds	-	Several	Small	Fremantle	Shot	Swan River
27 May	Kite	1	1	Large	Fremantle	Shot	Swan River
28 May	Parroquets	-	Some	-	Fremantle	Shot	Swan River
	Jackdaw	-	1	-	Fremantle	Shot	Swan River
31 May	Mackarel	-	Qty	Little	Crew	?	Alongside ship
1 June	Seals	-	14	-	Purser	-	Garden Island
25 June	Captain Currie positioned his head between a bird and a discharging gun. Survived. Canning River. (Cottesloe 1927)						
On 19th August 1829, Mrs Currie wrote in her diary, "An extraordinary haul of King fish by the Challenger, 2 or 3,000" (Currie, 1829)							

Chart data extracted from Fremantle's 1829 diary in Cottesloe, (1927)

Indian Ocean

32° S.

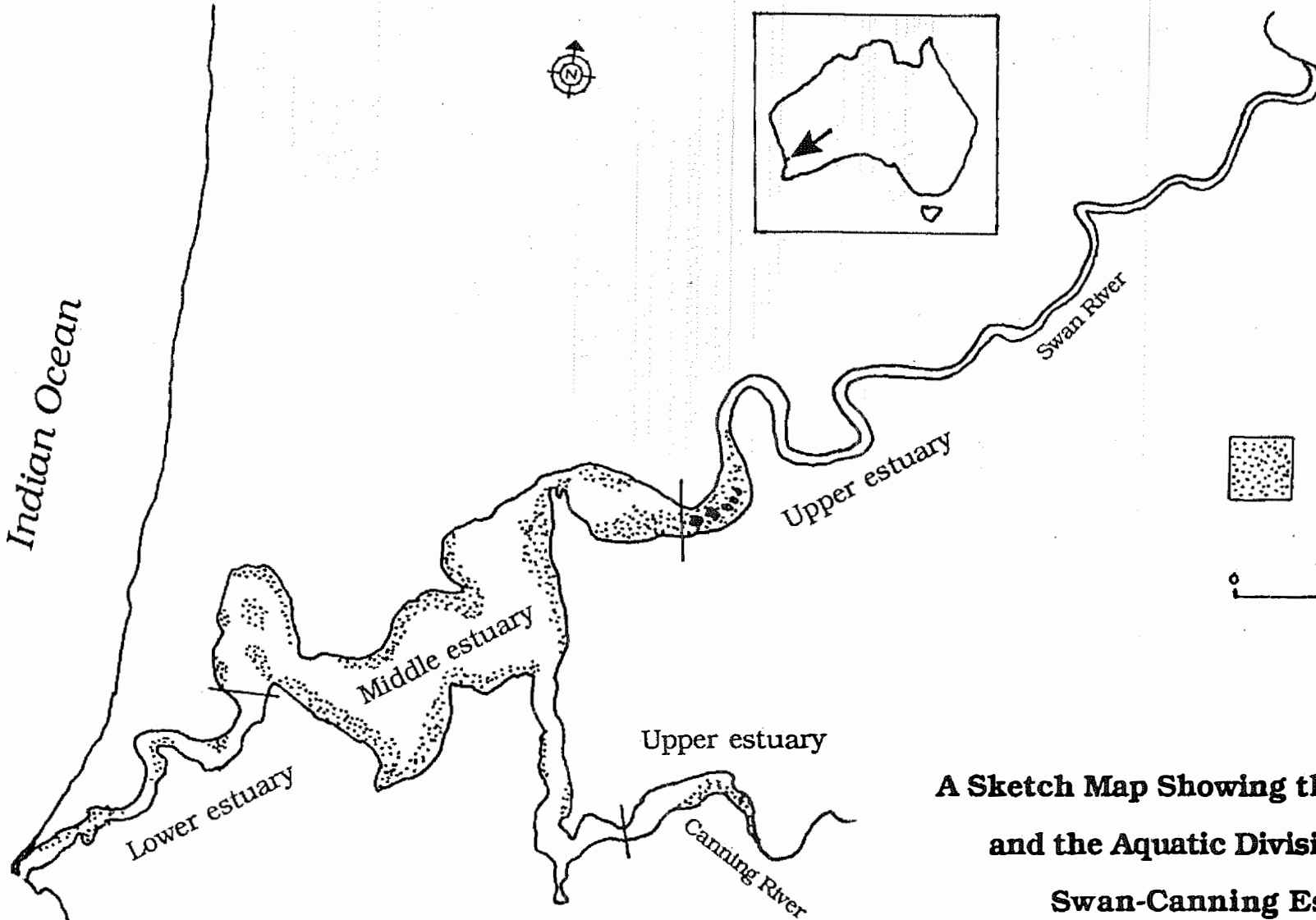


116° E.



Sand banks

0 2 km.



**A Sketch Map Showing the Sandbanks
and the Aquatic Divisions of the
Swan-Canning Estuary**



The Sunset Shell

Sanguinolaria [Soletellina] biradiata

A List of some Aboriginal placenames in the Swan and Canning Rivers' region

Extracted from a list compiled by Robert Menli Lyon and printed in *The Perth Gazette and Western Journal*, (6/4/1833, p. 56; 13/4/1833, p. 59-60; 20/4/1833, p. 63-64)

Walyalup	Fremantle; including both sides of the river; North and South.
Niergarup	Point Preston.
Dyoondalup	Point Walter, the estate of Mr. Waylen.
Beereegup	The estate of Mr Butler.
Gooleegatup	Point Heathcote, the estate of Mr Lukin. Does casuarina abound on this estate for this seems to be the import of the term.
Beenabup	The entrance to the Canning; properly the north side; or the eastern shore of Melville water.
Wadjup	The flats on the Canning.
Goolamrup	Kelmscott.
Gargangara	The gorge of the Canning; including the hills and several estates in the vicinity.
Garungup	Rocky Bay and its vicinity.
Jenalup	Commonly called Blackwall Reach.
Minderup	Freshwater Bay, the estate of Mr J. Butler.
Mandyooranup	The rock at the upper entrance to Freshwater Bay.
Nanulgarup	The estate of Mr Armstrong.
Goodaraboorup	The property of Captain Currie.
Boorianup	Point Pelican.
Goodroo	Eliza Bay. This term without the usual termination seems to be the name of the bay only, and not that of the shore along the bay.
Gargarup	Mount Eliza.
Boorio	Perth; properly Point Frazer.
Byerbrup	The high land, stretching along from Mount Eliza, through the centre of the town of Perth. The camp of Yellowgonga, bearing this name originally stood by the spring at the west end of the town, as you descend from Mount Eliza, and on this very spot did the 63rd pitch their tents, when they came to take possession. So that the head quarters of the king of Mooro are now become the head quarters of the

territories of the British King in Western Australia. On this very spot too the.....
..... now holds out his hand to beg a crust of bread. *Sie tran a gloria mundi*.....

The position was very important to Yellowgonga. It was not only ----- for hunting and fishing; but it gave him command of the flats; the only place where his territories could be invaded from the South; the river being hardly fordable anywhere else....

Goodinup	The springs beside the camp at the west of the town.
Dyeedyallalup	The springs at the east end of town, by the Surveyor General's house.
Gaboodjoolup	Either the bay opposite to Perth, or some place in the vicinity of the Canning.
Gareenup	The point opposite to Mount Eliza.
Boornoolup	The angle between the two main branches of the river. The word signifies a peninsular. But it does not literally correspond to the Greek word; for it signifies a chin. See <i>boorno</i> .
Goorgygoorgyyp	Evidently a contraction for Goorgygoorgyyup, the bay opposite to the ford on the flats. The name imports that the place abounds with rushes. See <i>Goorgooroo</i> .
Goorgyp	Belmount.
Matta Gerup	The flats
Mandoon	Gulldford and adjacent country.
Wurerup	The gorge of the Swan, In this name are comprehended the several estates of Colson, Belvoir, Baskerville, the Hermitage Wobourne Park, Brook Mount, and Henley Park; as well as several hills in the immediate vicinity.
Calup	Monger's Lake. To this place, Yellowgonga removed his headquarters, after the formation of the settlement.

A List of some Aboriginal placenames in the Swan and Canning Rivers' region

<i>Ngangurgup</i>	Two hills on the coast to the North of the sailor's winding sheet, overlooking the villa grant of the Surveyor General.		and the whole space from the main to the islands, and from Collie Head to the Northern entrance beyond Rottnest. See Nara. See also Naral.
<i>Ngoogenboro</i>	The large lake beyond Monger's	<i>Meslon</i>	The Murray.
<i>Booyeeanup</i>	Mount Brown; Clarence. See booyee.	<i>Gilba</i>	The estuary of the Murray.
<i>Wadjemup</i>	Rottnest.	<i>Gogulger</i>	The Avon.
<i>Ngooloomayup</i>	Carnac Island.	<i>Boora</i>	A stream issuing from the mountains some distance to the North of Ellen's Brook, partially known in the settlement under the name of Lennard's Brook.
<i>Meeandip</i>	Garden Island.		A lake into which the Boora discharges itself.
<i>Ngowergup</i>	In the gorge of the Canning. St Anne's Hill.	<i>Waylo</i>	A small river, either issuing from, or taking its rise near the lake of Waylo. This is probably Bannister's River; on the bar of which he and all his party were swamped; and came back, with nothing to relate but the tale of their misfortune.
<i>Weebip</i>	A high mountain beyond the Murray called Mount William.	<i>Gyngoorda</i>	A lake to the North and not far from the Gyngoorda. A lake or large sheet of water to the North and either adjoining the Bookal or not far distant...
<i>Moorda</i>	The blue mountains. The term seems to indicate darkness of colour. See <i>Moorn</i> .		
<hr/>			
<i>Derbal Yaragan</i>	The Swan River. This exactly corresponds to the Swan River of the Dutch. The name is applied to both branches of the river, including Melville Water; to its confluence with the ocean. The whole is called by way of eminence, Derbal Yaragan; namely the river of Derbal. The subordinate names of the different parts are:-	<i>Bookal</i>	
<i>Dootanboro</i>	Melville Water.	<i>Mooler</i>	
<i>Booneenboro</i>	Perth Water.		
<i>Warndoolier</i>	The Northern, or main branch of the river; to which the name Swan River is now limited within the settlement.		
<i>Mandoon</i>	The Hellena. Gynning, Ellen's Brook.		
<i>Dyarlgarro</i>	The Southern branch of the river, now known by the name of the Canning.		
<i>Burdgarro</i>	Subordinate name for a particular part of the Canning.		
<i>Wardoo</i>	Ditto.		
<i>Booragoon</i>	Is the name for the Southern branch of the Canning.		
<i>Derbal Nara</i>	The gulph of the Derbal. This comprehends Mangles Bay, Cockburn Sound, Owen's Anchorage, Gages Roads,		

116° E.



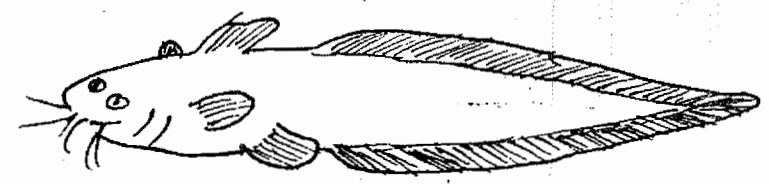
Indian Ocean

32° S.

Moorda

0 2 km.

32° S.



Karalya

Cobbler

Mandoon

Warndoolie

Goodinup
Gargarup

Byerbrup

Boorio

Goodroo

Booneenboro

Matta Gerup

Gareup

Dootanboro

Mandyooranup

Goollegatup

Beenabup

Boorianup

Gargangara

Wadjup

Dyarlgarra

Beereegup

Minderup

Garungup

Niergarup

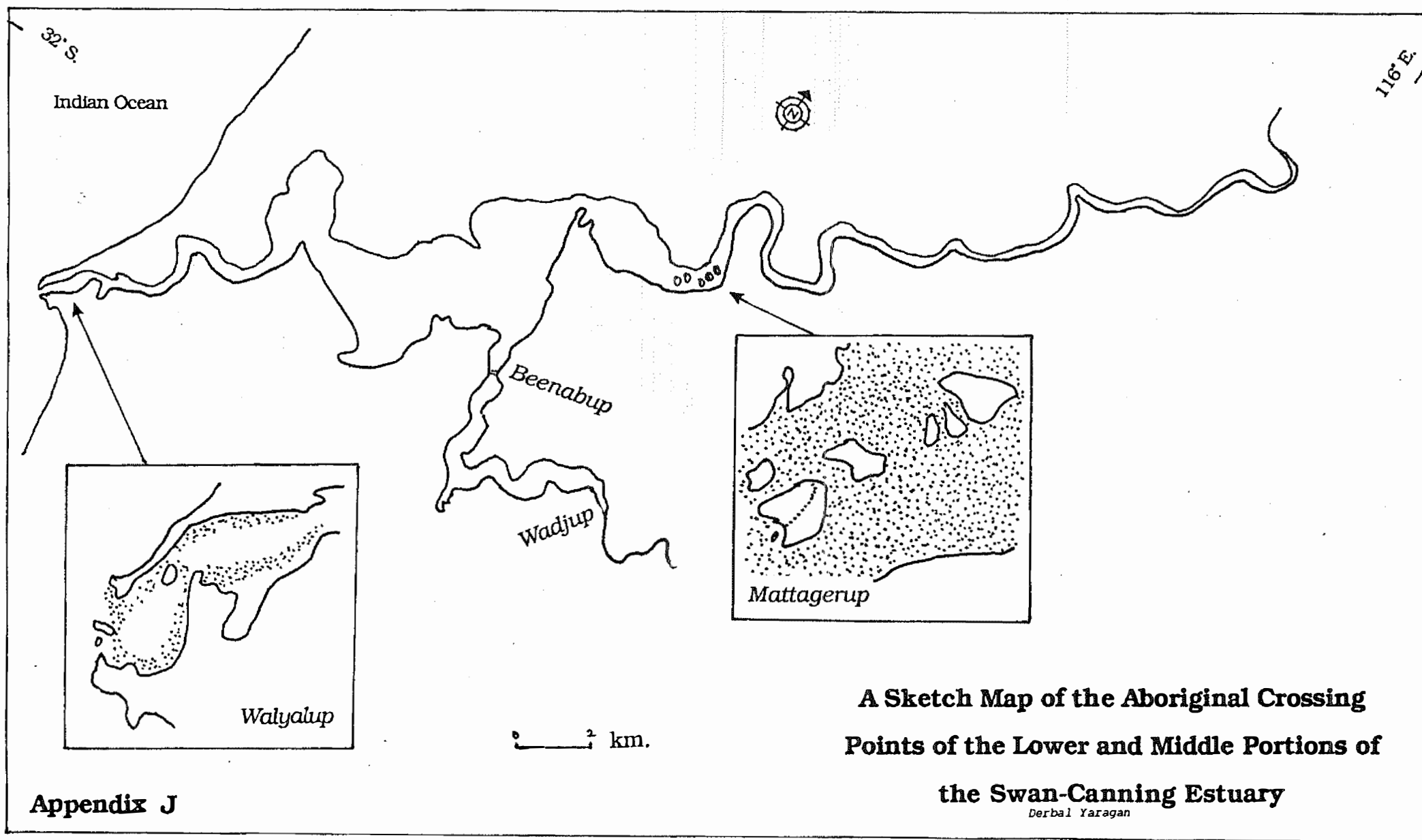
Jenalup

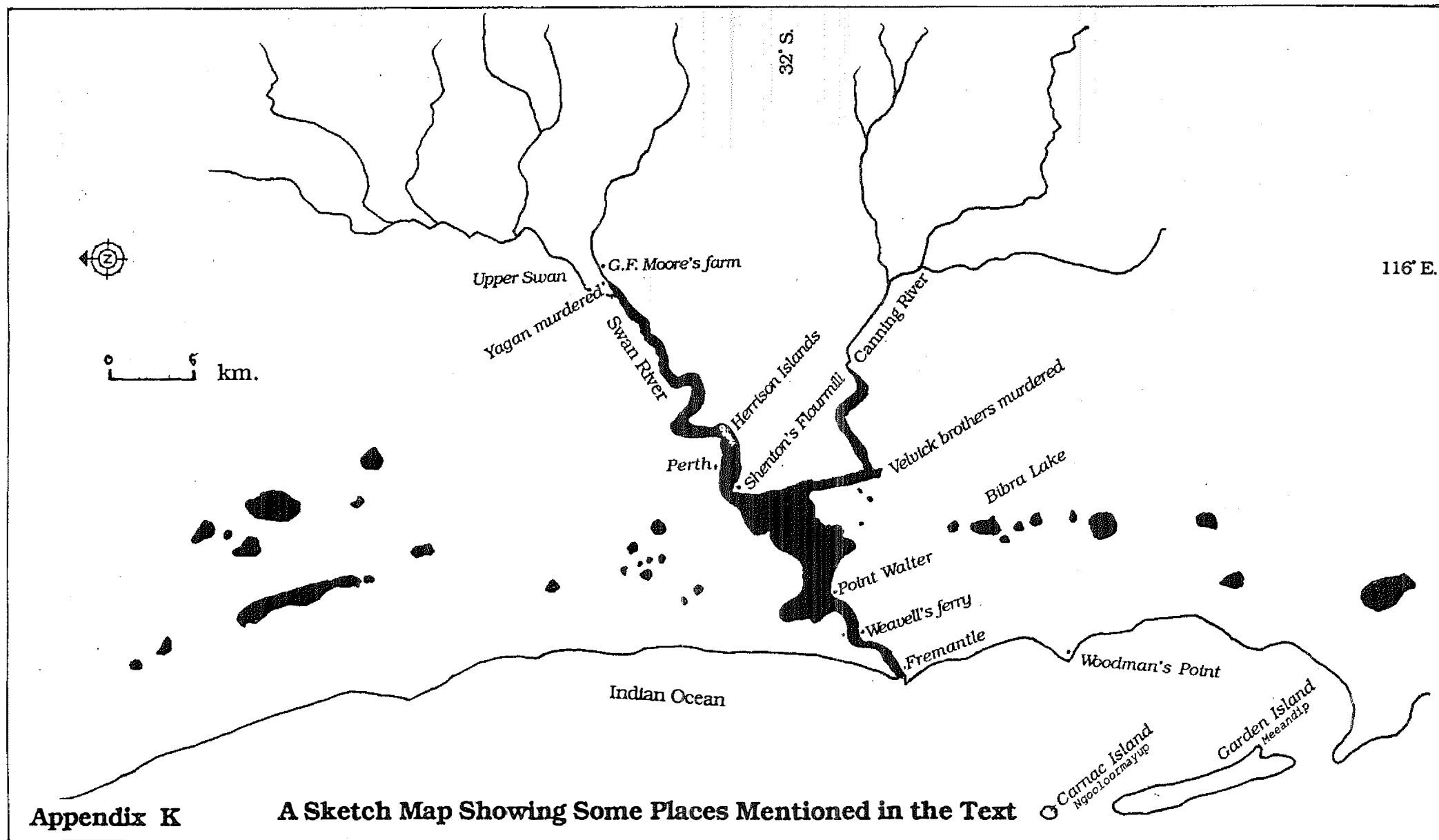
Dyoondalup

Walyalup

Walyalup

A Sketch Map Showing Some Aboriginal Place Names Associated With the Environs of the Swan-Canning Estuary





Some Aboriginal names of fish and fauna, collected by George Fletcher Moore at Swan River Colony

Desirable fish species noted by Moore, (1884:36) were:

King fish (*Argyrosomus hololepidotus*)
Bream (*Acanthopagrus butcheri*)
Mullet (*Mugil cephalus* and *Aldrichetta forsteri*)
Garfish (*Hyporhamphus melanochir*)
Cobbler (*Cnidogobius macrocephalis*)
Perch ?

Moore compiled a dictionary of Aboriginal words in use in the region and from this a number of aquatic species can be identified by their Aboriginal names:

Karalya	Cobbler
Moyort	Cobbler
Moyort	Fish caught in fresh water pools, by putting a quantity of brush-wood at one end of the pool and pushing it to the other, sweeping everything before it. Also <i>Nappi</i> .
Dyindalo	Cobbler
Djindalo	Cobbler type, possibly flathead
Tyung	Cobbler
Karri	Crab
Konak	Crawfish
Dil	Crayfish found in swamps
Bi	A fish (generally speaking)
Yirrila	Fin of a fish
Kanba	Gill of a fish
Beper	
Bepil	
Dabardak	
Jinin	Species of sword fish
Kumbul	A species of flat fish
Tjilki	Crawfish (KGS)
Yarril	Crawfish (KGS)
Karduk	KGS fish species
Mattawit	KGS fish species
Merdelang	KGS fish species
Murdar	KGS fish species
Nagkan	KGS fish species
Ngarri	KGS fish species (salmon)
Ngarrilgul	KGS fish species (kingfish)
Tabadak	KGS fish species
Tuldynang	KGS fish species (jewfish)
T-yundalar	KGS fish species (a flat fish)

Walgar
Warroiltch
Yoiyu
Notan
Bambi
Yellin
Kalkada
Ngamiler
Inbi
Marel
Didi
Bamba
Mundo
Madjit
Bugar
Budulu

By-yu
Budtallang
Darbal
Gabbilang
Gidgigarbel

Gobul
Gogogo
Guifak
Guoyl
Gullima
Gudjarra
Gulyangarra
Guya
Gurjigurji
Gurgogo
Gwineen
Ijarap
Irrgo

Jetta
Kalkalda
Kanba
Kijjibrun
Korel
Kubert
Kurni
Kylli

KGS fish species (also *walgah*)
KGS fish species
KGS fish species (small)
Oyster (KGS)
Flounder
Garfish
Mullet
Mullet
Fresh water mussel
Fresh water mussel
Silver herring
Stingray (not eaten)
Shark (not eaten)
Species of shark
Shark (Leschenault dialect)
Calm weather favourable for fishing. Smooth glassy water.
Season when mullet, salmon and tailor fish abound.
Pelican
An estuary
Of the water: fish, amphibians etc.
Fishing spear, the only method of catching fish apart from weirs according to Moore.
Tadpole
Small cormorant
Black swan
Black Swan (north of Perth)
Swamp hen
A species of frog
The small fry of fish
Species of frog
Reed warbler
Rushes in or near water.
The common stock of food.
Snapper
A small white bivalve shell used for sharpening spears.
A species of rush eaten in June.
Mullet (Mugal)
Wing of bird, gill (fin?) of fish
Waterfowl species, Coot
Shells in general.
Melaleuca spp for spear making.
A species of frog
Boomerang

Some Aboriginal names of fish and fauna, collected by George Fletcher Moore at Swan River Colony

Maggoro	Winter, the time mullet become blind by developing cataracts and cobblers abound.
Malyi	Black swan
Mardangwin	Hunting by moonlight.
Melak	Salmon
Mele	Black swan
Murit	Brown quail
Muritya	Type of water rat
Nammidi	Small fresh water minnow
Nani	Small quail in Upper Swan region
Nolyang	Swamp hens? Thousands were shot during a species aggregation in 1836 and consumed as food. Few seen since. Fishy flavour. p61.
Notan	KGS oysters
Nyanni	Water rail (bird)
Ngalganning	Ibis
Horrnanang	Porpoise
Waughal	The name of the supernatural spirit dominating the aquatic environment of the Swan coastal plain. It especially resides in deep pools of water and exerts influence on many aspects of Aboriginal life. Inexplicable occurrences such as illness or injury may often be attributed to this force having been previously offended by the individual or near kin. It also has the power of life and death over Aborigines and demands the respect set out by custom. (PRW) Whaughal is connected with and part of the spirit which envelops the continent and manifests in names such as the "Rainbow Serpent" in the north of Australia.
Wodta	Bronze wing pigeon. Prolific in summer.
Wurgyl	A species of frog. Favourite food of Aborigines. Found in great abundance in swamps and shallow lakes.
Wyunda	Little grebe (bird)
Yadjarrap	Snapper
Tjarrap	Marine fish with deep sides, caught in abundance on coastal sand banks.
Yagyn	Snake necked turtle.
Yalgor	A swamp.
Yarralak	Species of fish.
Yinbi	Fresh water mussel
Yirriila	The fin of a fish.

Ducks

Ngwonana	Grey duck
Nyuneruk	Grey duck
Tadorma	Mountain duck
Guraga	Mountain duck
Gaddara	Musk duck
Buatu	Diver duck
Maranganna	Wood duck
Errudu	White winged duck
Wimbin	Shoveller duck
Bardunguba	Large nosed blue winged duck

KGS: King Georges Sound. (Albany, Western Australia)

A list of local species sampled, killed or captured by the Vlamingh expedition in the region of the
Swan River, 1696-1697

Date	Type	Qty	Killed	Size	Source	Method	Location
<u>1696</u>							
30 Dec	Quokka		Some	-	GJ	Shot	Rottnest
<u>1697</u>							
6 Jan	Zamia nut	Several	-	-	NJ	Found	North of River
7 Jan	Swans	2	-	Young	NJ	Captured	River
(These two swans were taken back to the <i>Nijptangh</i> alive.)							
9 Jan	White birds	-	2	-	GV	Shot	River
	White cockatoos	Some	0	-	GJ	Saw	River environs
	28 parrots	Some	0	-	GJ	Saw	
?	Swans	2	-	Young	GJ	Walloped	River
(These two swans, one injured, were taken back to the <i>Geelvinck</i> alive.)							
11 Jan	Swans	Many	9-10	-	NJ	Shot	River
	Geese	-	-	-	NJ	-	River
	Divers	-	-	-	NJ	-	River
	Fish	-	-	-	NJ	?	Surface

NJ = *Nijptangh* Journal

GJ = *Geelvinck* Journal

The data has been extracted from English translations in Robert, (1972)

The *Nijptangh* Journal also mentions that at Rottnest there are very few seals; a sort of sardine, and a grey rock bream. A total of four swans (*Cygnus atratus*) were captured alive.

Appendix M

A comparison of the timings of visits to the Swan-Canning Rivers by European Explorers

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

1697 Dutch survey expedition. **

(29 Dec. 1696 to 13 Jan. 1697) 1

1801 French survey expedition **

(14-28 June 1801) 2

1803 French expedition pauses. *

(13 March, 1803) 3

1827 British survey expedition. **

(5-22 March 1827) 4

1829 Colonisation

*****➡

(25 April, Capt Fremantle arrives) 5

¹ Robert, (1972)

² Marchant, (1982)

³ Marchant, (1982)

⁴ Stirling to Darling. Historical records of Australia III. VI PP. 551-565.

⁵ Cottesloe, (1927)

Market prices at Swan River Colony

Date	Fish	Kangaroo	Swan	Wild Duck	Wild Pigeon	Teal	Beef	Mutton	Pork
1831 ¹	1/-lots								
19/02/1831 ²							1/6lb		
14/05/1831 ³							1/6lb		
29/10/1831 ⁴							1/10lb	1/6lb	
05/11/1831 ⁵	*						1/8lb		
12/11/1831 ⁶	6 ^d lb							1/10lb	1/6lb
09/07/1832	G.F Moore, (1884) notes that fresh meat is expensive and costs 1/8lb.								
05/09/1832 ⁷		1/8lb					2/-lb		
06/09/1832		1/8lb					2/-lb		
18/05/1833 ⁸	3 ^d lb	1/4lb	6 to 8/-	1/6	9 ^d			1/6lb	
21/12/1833		1/-lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/6lb	1/-lb
08/02/1834		1/-lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/6lb	1/3lb
10/05/1834		1/-lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/6lb	1/3lb
04/10/1834		1/-lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/6lb	1/3lb
01/11/1834		1/-lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/6lb	1/3lb
24/01/1835		10 ^d lb	6 to 8/-	2/-	9 ^d	1/-	1/6lb	1/5lb	1/3lb

November 1835 G.F. Moore states fresh meat costs between 1/2 and 1/3lb. (Moore 1884)

¹ Powell, (1831) Fish which had been caught in a seine were purchased on the shore at Fremantle by Powell

² The West Australian Chronicle and Perth Gazette 19/2/1831 Fresh lamb was also available for 1/8 lb.

³ Currie, (1831)

⁴ The Western Australian 12/10/1831

⁵ The Western Australian 5/11/1831 reported good supply of beef, mutton, lamb and pork. The beef was "greedily" bought up.

⁶ * "Salted fish available from Rottneest in any quantities, suitable for export." The Western Australian 12/11/1831

⁷ Captain Fremantle RN, in Cottesloe, (1927)

⁸ The Perth Gazette and West Australian Journal 18/5/1833. This issue also quoted prices for domestic fowl, 3/- to 5/- each. Swamp hen, 1/6.