

Aboriginal fish hooks in southern Australia : Evidence, arguments and implications.

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From time to time, in the wanderings of my imagination, I mull over the question of what should be my first course of action if I were the proverbial Martian archaeologist (Jones and Bowler 1980:26), just arrived on Earth to investigate its peoples, cultures and history. And in this imaginary quest, I ask myself, would my time be more productively spent observing and interrogating the "natives", or simply heading for the nearest rubbish dump to begin immediate excavations, *a la* Rathje (1974)? But, having chose the latter, what then would I make of such things, in my putative excavations, as discarded "lava lamps", "fluffy dice" or garden gnomes? Phallic symbols perhaps, ear-muffs for protection from "rap" music, maybe cult figurines! While such musings are, of course, completely frivolous, nevertheless a serious issue lies at their heart, the interface between ethnography and archaeology. In this scenario the choice faced by the alien archaeologist is clearly a false dichotomy. We are not faced with an either/or situation and I think it unlikely, in the current multidisciplinary climate, that anyone today would seriously argue for precedence of one discipline over the other. In basic terms both disciplines make significant contributions to our understanding of Australian prehistory (Bowdler 1983:135), each providing a body of evidence from which models, theories and explanations are developed. Archaeology, for example, provides invaluable time depth and a spatial dimension in studies of change and development in cultures, whereas ethnography puts flesh on the bones of cultures, revealing their intrinsic complexity and contextualising archaeological findings in the process. But each of these evidentiary domains also has its limitations which, of necessity, must be acknowledged. Apart from preservational biases, for example, the element of chance in archaeological research may give quite erroneous or distorted impressions, as O'Connell *et al.* (1988) ably demonstrated in their comparative study of the likely archaeological consequences of *Hadza* hunting. It has also been pointed out on a number of occasions that archaeological finds are effectively meaningless unless they are interpreted in the context of some form of behavioral paradigm, usually based on ethnographic analogy (Flannery 1986:4; Koyama and Thomas 1981:5; O'Connell *et al.* 1988:114). By the same token, ethnography, in most instances, effectively represents only a temporal "snapshot", often missing private acts (Wobst 1978:303), uncommon or unspectacular, but significant, activities (such as women's gathering), as well as broader regional patterns and processes (Wobst 1978:304-6; Yesner 1980:727). In the employment of ethnography unfounded assumptions may also be made that hunter-gatherers are "living fossils" (Jones and Meehan 1989:131), that their societies are in stasis (Blumler 1996:36; Mulvaney and Kamminga 1999:4; Yesner 1980:727), or that the ethnographic present can be projected far into the past, "naive historicism" as Ames (1991:937) terms it. Apart from this, Shipman (1983:31-2) has cogently argued that, with the degree of variation in even the most basic traits in hunter-gatherer societies, there are significant dangers in extrapolating from any particular cultural circumstance. In addition, the impact of external influences on hunter-gatherer societies has, in some studies, either been ignored, not been recognised, or given due weight, providing further scope for distortion (Mulvaney and Kamminga 1999:4; Plattner 1989:5-6; Schrire 1984:1). Caution is therefore necessary in any study employing arguments and evidence deriving from either discipline.

Another issue, one perhaps not given full consideration in Australia prehistory, relates to how and what evidence is used to formulate models, theories and explanations. As noted earlier archaeology relies heavily, though not exclusively (Robins and Trigger 1989), on ethnographic analogy for its interpretive framework. Conversely, archaeology provides essential temporal and spatial dimensions in these matters, and many conjectures would remain unverifiable were it not for archaeology. It would also appear that it is common, when framing the findings of archaeological research, to place them within an appropriate ethnographic context (Robins and Trigger 1989:39). Consequently, given the interdependence of these disciplines, it is necessary that those building a case employing evidence and arguments from both disciplines have a sound understanding of the methodology of each. I believe that this is not always the case, a point others have made previously, particularly by McBryde in raising the issue of the "data quarry" approach in the employment of ethnohistorical evidence (Carmack 1972; McBryde 1979). Furthermore, when constructing broader models, theories or explanations incorporating ethnographic components the methodological limitations and difficulties inherent in such studies need to be recognised. Uncritical acceptance of an ethnographer's judgments or conclusions, for example, may give rise to flawed models, theories and explanations as well as lead to misguided debates. Ideally, in employing ethnographic evidence, as with archaeological evidence, consistent and transparent protocols should be followed, rather than arbitrary usage or discardment of such evidence, as the case may be (Bowdler 1983:135). Such arbitrary practices are capable of introducing further distortions and are therefore counter-productive.

To illustrate some of these issues I would like to consider the position in regard to the traditional usage of indigenous fish hooks in southern Australia. Fish hooks are significant in Australian studies for a number of reasons. In the first instance they are seen as an indicator of "intensification" when forming part of a suite of an increasingly complex and extensive range of fishing techniques and equipment (Lourandos 1985:401; 1997:22). Secondly, debate and discussion continues on the question of whether fish hooks diffused into or were an independent invention in Australia prior to the European invasion (Lourandos 1997:210-11; Mulvaney and Kamminga 1999:263; Walters 1988:102-6), with ramifications for the broader debate on diffusion versus independent invention. Finally fish hooks have been implicated in changes in the gender orientation of cultural hegemony and subsistence patterns (Bowdler 1976; Walters 1988) in pre-Contact Period societies. Consequently their distribution has important implications for each of these theoretical domains and in the validation of any resultant hypotheses.

Three types of evidence have been employed in studies determining the distribution and typology of indigenous fish hooks : archaeological specimens, artefacts held in collections and ethnographic reports. Various researchers have proposed distributions based on these types of evidence beginning with Massola (1956) [Fig.1]. As an illustration of some of the difficulties and contradictions that may arise, as outlined above, consider firstly the distribution of fish hooks along the south coast of New South Wales and beyond. Massola (1956:5-6), relying on ethnographic and artefactual evidence, nominated Lake Tyers as the most southerly occurrence of fish hooks, a position accepted by Walters (1988:101, Fig.2)[Fig.2].¹

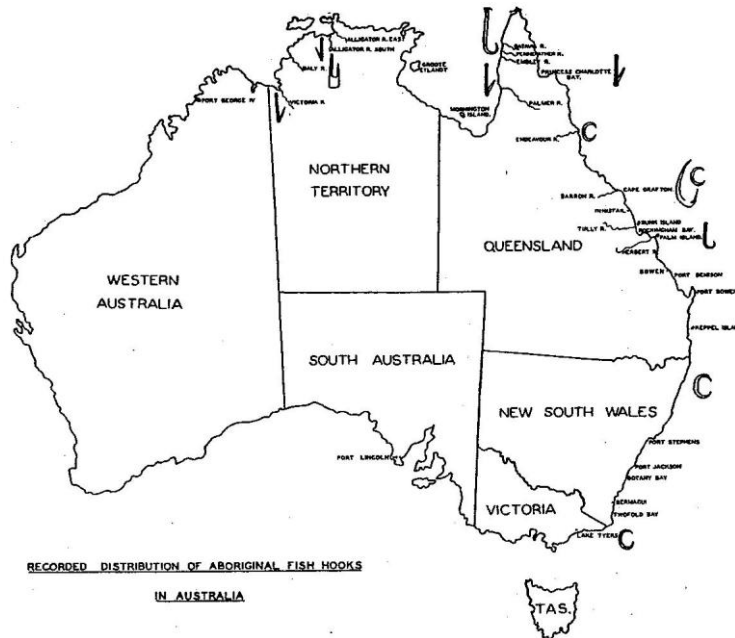


Figure 1 Massola's Distribution of Aboriginal Fish Hooks in Australia
 (After Massola 1956: Recorded Distribution of Aboriginal Fish Hooks in Australia)

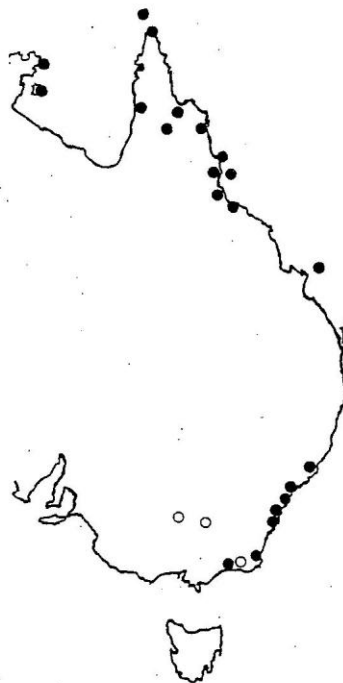


Figure 2 Walters Location of Pre-European Fish Hooks and Toggles
 (After Walters 1988:Fig.2)

Lourandos (1997:210), however, only acknowledges their presence at Durras North, 200 km to the north, with Mulvaney and Kamminga (1999:292), meanwhile, noting that "shell fish-hooks

and stone files have been recovered from shell middens from Newcastle to south of Mallacoota in Victoria" [just south of the Vic./NSW border] without nominating any sources. Clearly this does not represent a consensus. While artefacts and ethnographic reports appear to be accepted by some as legitimate evidence for the presence of fish hooks in particular areas, others, such as Lourandos, rely exclusively on archaeological examples and eschew any artefactual or ethnographic evidence. The difficulty here is that, paradoxically, while ethnography as part of archaeological research seems perfectly acceptable in other studies (e.g. Barker 1991; Rowland 1980, 1982), as are selected ethnographic sources (e.g. Curr 1886-7; Grey 1841; Kreffft 1862-5; Roth 1898), including some of the very same sources employed by Massola (e.g. Howitt 1904; Robinson 1839-49; Smyth 1878), they are not in regard to the southern distribution of fish hooks. Consequently it is unclear what test of evidence or methodological protocols are being applied in regard to the southern distribution of indigenous fish hooks in Australia. This apparent methodological confusion is compounded by what seems to be an implicit and uncritical acceptance generally of Massola's contention that fish hooks were not utilised anywhere west of Lake Tyers, with the possible exception of Western Port Bay (1956:5-6), at least as far as Port George IV in the Kimberley region of Western Australia (1956:1). However, a body of artefactual, ethnographic and archaeological evidence exists suggesting Massola's conclusions may be defective and that there was a more extensive distribution of indigenous fish hooks in Australia, as will be shown below.

Fish hooks, "implements of one or more pieces which are in some way form a hook shape" (Walters 1988:100), were, according to Massola (1956:5), to be found at Lake Tyers. His claim depended on several lines of evidence beginning with a drawing of a bone fish hook in Smyth (1878:391, Fig 226) and an example, quite possibly the same artefact depicted in Smyth, held by the Museum of Victoria since 1888 (Massola 1956:5) [Fig. 3].²



Figure 3 Gippsland Bone Hook
(After Massola 1956:9, Plate No. 3)

Smyth's informant was the Rev. John Bulmer (1878:142-3), a missionary at Lake Tyers from 1862. As noted by Massola (1956:6) this information was repeated by Howitt (1904:761) with the additional information that the lines were made from the inner bark of the Blackwood tree (*Acacia melanoxylon*). Again the informant is Bulmer. As further support for his case Massola cites Chief Protector George Augustus Robinson (In Mackaness 1941) and George Henry Haydon (1846) who were both members of one of the first overland parties from Melbourne to Gippsland in 1844. According to Massola (1956:6) Haydon stated, "In the day the mode of fishing is with fish hooks made of bone." and Robinson, "Their mode of taking fishing is by net, spearing and line and hook, the latter ingeniously made from bone."

Superficially there is a strong case for fish hooks in eastern Victoria. However, to test this an examination of the original sources was undertaken, conscious of the fact that Bulmer was only reported in secondary sources, and was a missionary at a station where presumably people had been brought from various parts of eastern Victoria well into the Contact Period. Bulmer's edited papers (Campbell and Vanderwal 1994) add little to what is available in other sources, stating that, "For fishing in Gippsland, bone hooks, spears and both set nets and drag nets were all used" (1994:49). While Bulmer acknowledges that he had never seen these bone hooks used, "the women fished from canoes. I never saw them using their bone hooks," (1994:50) he does list nine species of fish that were usually or occasionally caught "with the bone hook" (1994:53).³ No further light is shed by Haydon (1846) either, who, as noted by Massola, observed that the *Kurnai*, "display great skill in the formation of their weapons, fish hooks, etc., etc.," (Haydon 1846:43) and, "In the day the mode of fishing is generally with hooks made of bone" (Haydon 1846:44). A more comprehensive transcription of Robinson's journals (Clark 1998) does, however, contain an entry stating, "Mr Jones gave me some bone fishing hooks taken from the Gipps Land blacks, the first I had seen" (Clark 1998:98) which, more importantly, Robinson then sketched, as reproduced in Figure 4 below.

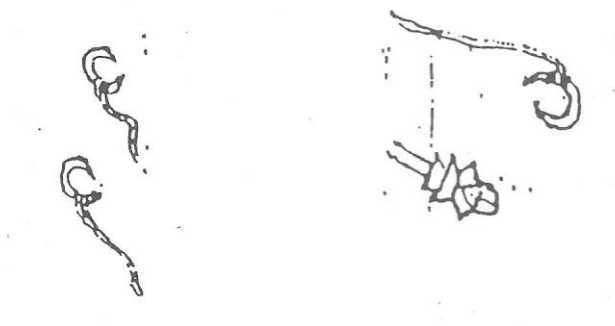


Figure 4 Robinson's Sketches of Hooks From Gippsland
(After Clark 1998:124,Figs.6.6,6.8)

As can be seen these are very similar to Bulmer's hook, providing strong corroborative evidence that bone fish hooks were employed in Gippsland. Furthermore, given that Robinson only visited western Gippsland at this time, it is reasonable to infer that the distribution of these crescentic bone hooks extended to there. Circumstantial evidence suggests that this distribution may indeed have extended as far west as Western Port Bay if the usage of canoes is taken as a guide, there

being a close correlation between the usage of fish hooks and canoes elsewhere (Gerritsen in prep.). Haydon (1846:130) noted many "canoe trees" just west of the Tarwin River while Robinson was more explicit in stating, "These [Gippsland] natives and Western Port natives cut the bark short across and take it of [sic] a straight tree thus sew the ends and gum like Sydney blacks" (Clark 1998:49).⁴ Canoe trees were also noted at the source of the Powlett River just east of Western Port Bay (Smyth 1878:412) and Assistant Protector William Thomas is reputed to have seen canoes in the Bay itself, plying to French Island (Smyth 1878: 412; Gaughwin and Fullagar 1995:41,42). The significance of canoe distribution extending as far west as Western Port Bay can be found in an account from 1801 where a shore party found part of a sunken canoe, two paddles and "some line used in fishing" (Grant 1803:138-9) at the mouth of the Bass River, which flows into the eastern side of Western Port Bay. Smyth also listed *ling'an-ling'an* as the word for the fish hooks at Western Port Bay (Smyth 1878:202),⁵ but this may have been a neologism (Massola 1956:5-6). Immediately beyond there, in Port Phillip Bay proper and the surrounding region, there is only one report, of which I am aware, of canoes being used in a traditional context. Flinders, after exploring Port Phillip Bay for a week in May 1802 commented, "I am not certain whether they have canoes but none were seen" (Flinders 1814:219), while Tuckey, surveying the Bay in October 1803, noted, "No appearance of Canoes or water conveyance of any kind was seen" (Tuckey 1803:121), although he did subsequently comment that canoes had been seen on the Yarra (Tuckey 1805:179n). This contrasts strongly with the Gippsland Lakes where Robinson observed that, "Bark canoes with natives in great numbers float on their waters" (Clark 1998:78). Certainly there are no accounts of hooks being used in the Port Phillip Bay area although there are explicit denials, "Mr Green," is reputed to have claimed the *Woiwurrung* of the Yarra, "were unacquainted with the hook" (Smyth 1878:202).⁶

Further west there are no unambiguous reports of canoes or other water craft in coastal, estuarine or lacustrine waters until the Murray River, Lake Alexandrina and Lake Albert are reached (Gaughwin and Fullagar 1995:42).⁷ In regard to fish hooks Massola (1956:1-2) cites the reputed explicit denials of Eyre (1845:2:266-7),⁸ Schurmann (1879:219), Taplin (1879a:41), Meyer (1879:192), Eylmann (1908:277),⁹ Dawson (1881:94) and Buckley (Morgan 1852:48) as evidence fish hooks were not used in this region.¹⁰ The only evidence he adduces as indicating hooks may have been used in the region was a hook from a private collection, assigned to Port Lincoln, but made from a fresh water mollusc, *Alathyria pertexta* Iredale, found "in the rivers of southern Queensland" (Massola 1956:2).¹¹ Given the uncertain provenience and incongruent nature of that evidence Massola, with justification, dismisses the suggestion that this hook was used in coastal South Australia. A number of additional sources can be drawn upon to support Massola's broader conclusion. Wilhelmi (1862:175), like Schurmann, disclaimed indigenous hooks at Port Lincoln and "hooks and lines were unknown" to Curr's *Wongatpan* clan of the Upper Murray (1883:241). Further negative evidence can be found on the Paroo (Smyth 1878:202) and at Bourke (Curr 1886-7:2:201) while Curr, in reference to the Gippsland hooks, stated that they were, "an implement which I have not noticed in use in any other Victorian tribe" (1886-7:3:548). Presumably any number of statements of a similar nature might be gleaned from a more exhaustive search of the literature to support the notion that there had been no indigenous fish hooks west and north west of Gippsland until one reached the coastal regions of northern Australia. However, as stated earlier, a contrary body of evidence exists which indicates indigenous fish hooks were in use prior to British colonisation in a part of this area, specifically

on the Lower, Central and Mouth of the Murray River,¹² and the Lower and Central Darling River.

Diverse ethnographic sources support the contention that different types of autochthonous fish hooks were made and employed in catching fish in parts of the Murray-Darling Basin. Initial reports originate with a variety of colonists early in the Contact Period. On the Central-Upper Darling *Ngemba* fish hooks, according to Dunbar, "were fashioned from small mulga forks, or from a bent piece of mulga," (1943-4:176).¹³ At Lake Benanee in the 1840s Edmund Morey, founder of Euston Station, noted, "The hook was a fish bone having a suitable barb, and with these rough appliances I have seen them catch fine fish." (Voss 1952:40). Again referring to people of the Murray Valley, James Kirby, "one of the Earliest Bush Pioneers of Victoria", remembered they, "used to catch fish with line and hook but in the lagoon they used to spear them. Their hook was made of two teeth of a kangaroo tied in the form of a letter V" (1894:34). Drawing on information supplied by John Bulmer, who had also been a missionary at Yelta on the Central Murray from 1855-62, Howitt (1904:717) reported that trade items received from the *Barkundji* by the *Wiimbaio* [*Maraura*] of the central Murray, were "exchanged for nets, twine or fish-hooks." In an account of his visit to Lake Alexandrina and the Lower Murray early in 1844 Angas stated, "The cod of the Murray, and a fish in the lake resembling a salmon are taken with a rude hook" (1847:92),¹⁴ echoing an earlier report by Stephens (1839:77), of the inhabitants of this area using "rough hooks and lines for taking fish." Presumably it was observations such as these that lead M.C. Matthews of Clarendon in South Australia to claim in 1895 that Aboriginal people, "on the larger rivers in the interior ... set bone hooks attached to lines" (1895:188).

While historical accounts provided by amateur ethnographers must necessarily be treated circumspectly, other forms of evidence have come to light in more recent times, considerably strengthening the case for traditional fish hooks in this region. Ronald and Catherine Berndt carried out ethnographic research among elder members of the *Yaraldi* clan of the *Ngarrindjeri* people between 1939 and 1943, although this was not published until 1993 (Berndt *et al* 1993). Most of their *Yaraldi* informants had been born in the 1860s, including their principal informant Albert Karloan (b.1864). These informants insisted that bone hooks had been used in their traditional life :

"the people with whom we discussed this matter were emphatic that bone hooks and lines were used traditionally : they supported this contention by saying that hook fragments and drills were to be found in the drifting sands of old camp sites." (Berndt *et al.* 1993:96)

Indeed the Berndts noted "fragments of bone fish hooks" in surface scatters at camp sites opposite Pomberuk Hill near Murray Bridge (1993:14) on the Lower Murray. The Berndts were also given a detailed description of the manufacture of the *Yaraldi* hooks, called *werkurumi* :

"The ordinary hook was made of the same material, kangaroo bone, and also termed 'werekurumi'. The shaft of an average hook was about three inches [7.5 cm] long, rounded at the top with a hole. The hole was made with a drill, also of kangaroo bone: a small depression was first made with a quartzite flake and the drill twirled in the hands of the manufacturer. Aided by a little grit or charcoal in the incipient hole, the latter was soon deepened and a finer drill used to penetrate the bone. A sharpened bone prong of one and a quarter inches [3 cm] in length was

attached to the shaft by bound sinew and pine gum. Hooks we were told were of various sizes. The larger one noted here was used especially for cod, callop, catfish and turtle; the smaller ones for freshwater perch. The plaited fibre 'ngempung' line was attached to the hook by a slipknot and during the summer months it was kept pliable in a piece of damp skin." (Berndt *et al.* 1993:96)

In conjunction with these hooks, grooved sinker-stones, were apparently used as well, "to ensure that the line was not washed away with the current," (Berndt *et al.* 1993:96). A sketch of these hooks, and the drills used to manufacture them, was provided by Karloan, a drawing of which appears below [Fig. 5].

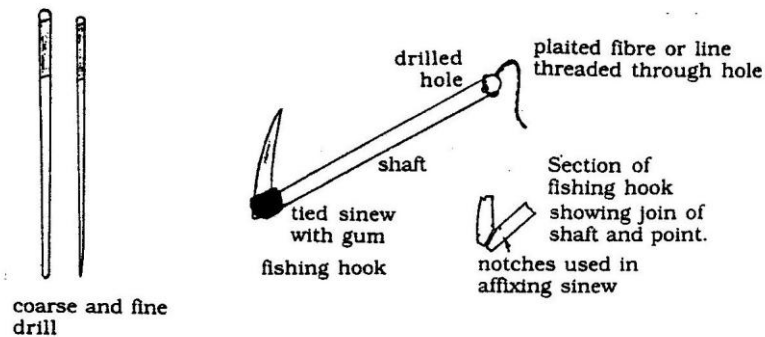


Figure 5 Drawings of *Yaraldi* Hook and Drill
(After Berndt *et al.* 1993:97, Fig.15 B,C)

What appear to be bone hooks have also been discovered in an archaeological context in the Murray Valley. In Grave 3, at excavations carried out at a multiple burial site on Wallpolla Creek, Gallus and Gill (1973) unearthed what they deemed to be two bone fish hooks. They reported that, "In close proximity to the skull, and underneath it, probably originally on the neck, were two bone fish-hooks" (Gallus and Gill 1973:216). These hooks were, "cut from bone and smoothed in the form of a U with uneven sides" (Gallus and Gill 1973:216). Morphologically the hooks were characterised as being "of the samalov type" similar to those found in the European Mesolithic and the Natufian of south west Asia. P.N.G. was nominated as the nearest locality that such hooks have been found (Gallus and Gill 1973:216). Photographs of the hooks and the grave are reproduced in Figure 6 below. A similar type of hook is described as being used in New South Wales, "The fish hooks used by the natives were of bone and in the shape of a boar's tusk" (Fraser 1892:78).

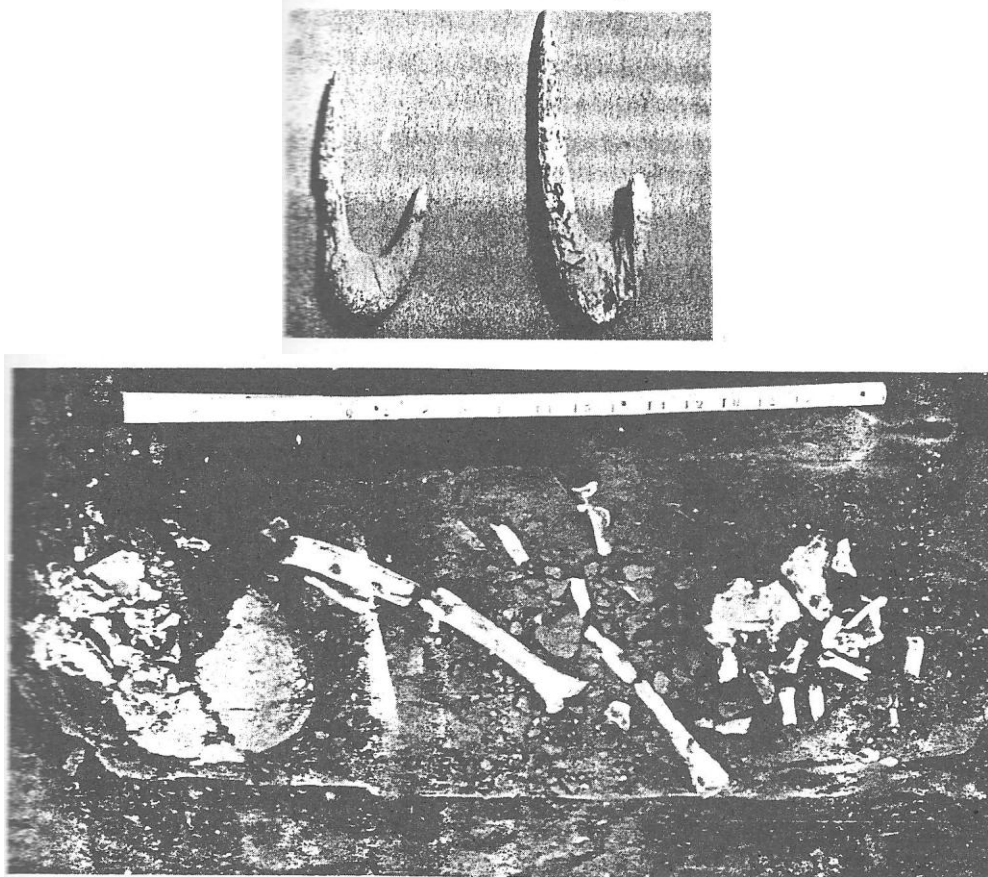


Figure 6 Photos of Wallpolla Hooks and Grave
(After Gallus and Gill 1973:Plate 30)

It would appear, on the basis of this evidence, that fish hooks of indigenous manufacture were indeed used as one of a number of fish procurement techniques on the Lower, Central and Mouth of the Murray River and as far as the upper Darling River. But the evidence, if viewed as a totality, is contradictory and these contradictions must be explained. I would suggest various reasons for these apparent contradictions which may resolve the issue. Firstly, a number of the credible statements asserting the absence of indigenous fish hooks pertain to areas where there appears to be little doubt that such hooks were not used, with no alternative evidence being adduced. These include coastal South Australia (e.g. Schurmann, Meyer and Wilhelmi), the Western Districts of Victoria (Dawson) and the Paroo River (Smyth). Secondly, some negative reports possibly lie just outside the proposed distribution, specifically the Upper Murray (Curr 1883) and Upper Darling (Curr 1886-7:Bourke). This leaves two further credible disclamatory accounts, Eyre and Taplin. In regard to Eyre's evidence it is quite possible he was correct, fish hooks were not used at Moorundie. Angas's summary of fishing methods there (1847:101) does not include hooks, but then Eyre, who was Resident Magistrate at the time of Angas's visit, may have been his source of information. It is also quite possible that these two gentlemen, Eyre and Taplin, simply never noticed, or were not in a position to notice, any locally made hooks or their employment. Highly "visible" nets, fish traps and fish spears were clearly the predominant means of piscine procurement on the Murray-Darling system where fish commonly provided one

of the principal subsistence components in the region (Hobson and Collier 1984:39). The hook, however, is not a highly visible artefact, and may only have been used occasionally or seasonally,¹⁵ in particular localities, or as an adjunct to the principal procurement methods. An account by Beveridge (1889:85-92) of what appears to have been a quasi-traditional fishing expedition on the Lower Murray, for example, indicates the fish hooks (type not specified) were carried by the women in their bags (1889:86),¹⁶ and they would, therefore, not have been readily noticed except when in use. The *Yaraldi*, furthermore, only caught a few particular species of fish, such as cod, callop, catfish and perch,¹⁷ with hooks, and then only some of the time, as an alternative to spearing and netting (Angas 1847:92; Berndt *et al.* 1993:96,562). In Kirby's account, it will be recalled, they "used to catch fish with line and hook but in the lagoon they used to spear them," (1894:34), indicating locational differentiation, Hawker (1975:19) making an almost identical statement. Similarly, the group Beveridge accompanied on their fishing expedition appeared to exhibit a distinct locational preference, deep pools being their "selected fishing grounds" (Beveridge 1889:86,88). Perhaps the most compelling reason why traditional fish hooks were not more extensively observed in this region, or why men such as Eyre and Taplin denied their existence, is because they had already been, or were being, supplanted by European hooks by this time. Smyth observed, "As soon as the natives were able to get hooks of European manufacture they ceased to make hooks of bone or wood, and ancient fish hooks are now very scarce in Victoria" (1878:391) and this appears to be borne out by other ethnographic evidence. Sturt (1849:281) noted that, "The fish-hooks they procure from the Europeans are valued by them beyond measure", Kirby (1894:31) reported, "They seemed highly pleased at getting the latter [fish hooks]", and according to Krefft in 1857 the *Barababaraba* men "were offering their women for a small number of hooks and lines" (1862-5:360). Similarly, Eyre, in denying the manufacture and use of indigenous fish hooks, added, "though they are glad enough to get them from Europeans" (1845:2:266-7), while Bulmer acknowledged that European hooks had already supplanted the *Kurnai* bone hooks by his time (1994:50).¹⁸ In this context it is worth quoting in full Taplin's comments regarding fish hooks,

"The Narrinyeri were not acquainted with fishing by means of hooks before the white man came. They soon learned to appreciate this method, and made native lines to use with European hooks" (1878:41).

Besides the unexplained paradox here of the existence of "native lines", *ngempung*,¹⁹ and the alacrity with which European hooks were adopted, there is probably sufficient reason to conclude that Eyre and Taplin's opinions rejecting the existence of autochthonous fish hooks in the Murray-Darling region may well be incorrect. Consequently a case exists supporting the contention that indigenous hooks had been present in the designated regions, although further archaeological evidence could be decisive in resolving this issue and establishing the distribution more clearly.

Discussion

The implications, if the evidence for the presence of indigenous fish hooks in Gippsland and in parts of the Murray-Darling River system is accepted, are varied yet considerable. Obviously a major revision of the distributional occurrence of indigenous fish hooks follows from the evidence and arguments as presented. Archaeological research in the region may also need to

take the occurrence of fish hooks into account in relevant circumstances. For example, line fishing may provide a possible alternative to the Pleistocene net fishing proposed by Balme (1983,1995) following her analysis of otoliths from the Major Swale (TNL 20) and North Casuarina (TNL 36) sites on the lower Darling. In this instance Balme based her analysis on the assumption that, "Hooks and lines were apparently not used in the region" (Balme 1983:28), citing Lawrence (1969) as her authority. However, Lawrence's limited study did actually cite evidence of fish hooks (1969:96,99,106,116), principally two of the reports detailed in this paper, Kirby (1894:34) and Dunbar (1943-4:176). And he didn't quite conclude that fish hooks were "apparently not used in the region" but, "that fish hooks were not widely used, if at all" (Lawrence 1969:106). Allowing that Lawrence's conclusion was somewhat ambiguous the archaeological evidence, specifically the hooks excavated by Gallus and Gill, is not, and represents a rather unfortunate oversight in this context.

Another question that arises concerns the origins of these fish hooks in relation to the diffusion versus independent invention debate. With respect to the Gippsland hooks there is a distinct possibility that they constitute a distributional extension of the crescentic hooks of coastal New South Wales. The Gippsland hook held by the Museum of Victoria, the drawing in Smyth and Robinson's sketch are all of crescentic hooks. The similarity of the Gippsland canoes, in terms of specific constructional features such as stays or ribs, but with sown ends, to those used in coastal New South Wales lends further support to this proposition. Gender orientation in line fishing, examined below, may also be another common factor warranting consideration. However, although these parallels denote an inter-regional cultural relationship in regard to hooks and their use, significant differences did exist. For example, the *Kurnai* hooks were made of bone rather than shell and their line fishing, with the possible exception of Western Port Bay, was apparently restricted to lacustrine and riverine environments (Smyth 1878:142), there being no certain evidence of coastal or pelagic marine fishing (Gaughwin and Fullagar 1995) in this region. Nevertheless, on balance, it seems likely the indigenous hooks, canoes and associated cultural practices found in Gippsland were related to those of New South Wales, but, without dating, any notion as to the diffusional direction is pure speculation at this point.

Unlike the hooks of Gippsland a strong case can be promulgated for the independent invention of indigenous hooks on the Murray-Darling river system. Hundreds of kilometres separate the distribution there from the occurrence of hooks anywhere else. While it is theoretically possible the Murray-Darling hooks were a technological transfer, from say the east coast, this seems extremely improbable. The only other conceivable possibility of an exogenous origin centres on indigenous fish hooks being a late prehistoric or early Contact Period innovation modeled on European hooks. A dynamic of this nature has been proposed to account for the J-shaped hook of Arnhem Land, the bronze and pearl Macassan type serving as the progenitor (Schrire 1972:665). In this scenario perhaps small numbers of European hooks entered the region when sealers began operating along the south coast from the late 1790s, or were simply observed by the numerous individuals kidnapped by the sealers. Perhaps they reached there through exchange, originating from the areas of early British occupation or as a consequence of the forays of the British explorers. These scenarios would see the extremely rare European hooks being copied using local materials and know-how, thus making hooks more widely available. When European hooks became more plentiful they were then adopted and indigenous forms fell out of favour. Though possible, such explanations necessitate a long chain of events to be plausible. There are also

numerous difficulties with them. For example, one would expect hooks to be common in coastal regions rather than inland if sealers were the source of hooks, or nearer to the sites of British occupation if that is where they originated. Alternatively the distribution would need to correlate with early exploration routes if they originated with the explorers. Realistically the only way in which this question could be settled is for the hooks from the Murray-Darling region to be dated. Unfortunately neither the skeletal material nor the hooks themselves from the Grave 3 at Wallpolla Creek appear to have been dated (Gallus and Gill 1973; Godfrey *et al.* 1996; Pardoe 1995:700). The only indication of the antiquity of the Wallpolla Creek hooks lies in the fact that they were found in the deepest excavated layer at the site, Layer 3 (Gallus and Gill 1973). Obviously the dating of these or other hook material remains a project for the future.

Both Bowdler (1976) and Walters (1988) have proposed that as line and hook fishing was introduced, or becomes economically more important, a shift in gender hegemony took place and men either took over this practice from women, or appropriated their catch. Observed gender differences in line fishing between the northern Australian distribution, where it was mostly a male preserve, and coastal New South Wales, dominated by women (Bowdler 1976:250-255), lies at the heart of this argument. As pointed out earlier, it appears, although the evidence is not extensive or conclusive, that in Gippsland, as in New South Wales, women were the line fishers. Bulmer, it will be recalled, commented that in the early Contact Period, "the women fished from canoes," (1994:50) albeit with European hooks. But such evidence is of limited value as in other parts of Australia women took up fishing following the introduction of European hooks (Bowdler 1976:250). While not specifying gender, Haydon's bare information that bone hooks were used during the day could be taken to imply women were traditionally the line fishers, if seen in contrast to his more extensive and illustrated description of men spear fishing from their canoes at night, using torches, a common practice as well in New South Wales (Hill and Thornton 1892:4). When one considers this question in relation to hooks on the Murray-Darling, the evidence, slim as it is, is for the most part also ambiguous. Krefft in 1857 observed "the women are very expert with hook and line" (1862-5:368), though this was well into the early Contact Period, and it appears European hooks were being used. Beveridge's account of the fishing expedition does not clarify the situation either. Whereas women carried the fish hooks in their bags, as alluded to earlier, men were clearly in charge of the expedition (1889:85,91-2), but who actually engaged in the fishing is not explicitly stated; it may well have been both sexes. However, among the *Yaraldi* use of hooks in fishing appears to have clearly been an exclusively male pursuit (Berndt *et al.* 1993:562). In terms of aquatic resources women were restricted to "collecting", taking such things as sprat and tadpoles in drum nets, mussels by diving, and gathering various crustacea and shellfish (Berndt *et al.* 1993:562-7). Walters attributes the gender orientation in line fishing to the diffusion of a new gender hegemony deriving from the north of Australia (1988:106). Men's disinterest in engaging in line fishing, according to Walters (1988:107), accounted for gaps in the distribution, while women's, "inroads into male domination," (1988:110) explained the occurrence of women line fishing further down the east coast. Even if one ignores the inconvenient evidence that men of the New South Wales coastal regions simply appropriated a proportion of the catch (Bowdler 1976:256; Walters 1988:110) it is questionable whether Walter's model is testable. But this explanation appears to break down anyway in the face of the Murray-Darling evidence, unless either a diffusional linkage can be established, or it is postulated that the same dynamic that created the initial male dominated hegemony elsewhere was being repeated endogenously. Bowdler (1976:255-6) attempted to

demonstrate that the adoption of hooks by women in coastal New South Wales altered their procurement activities and schedules, and resulted in men appropriating part of their catch. Her conclusion, that this was the "first instance of division of labour according to technique," (1976:253) is an important point. More generally it could be argued that if economic intensification was taking place involving a shift in procurement activities from K-selected to r-selected species then a new division of labour is required, necessitating a redefinition of gender roles in relation to subsistence activities. In coastal New South Wales this may have involved Bowdler's "division according to technique," whereas among the *Yaraldi* the concept of "hunting" may have been extended to include line fishing. Admittedly such a model is largely speculative but, in light of the evidence presented here, certainly provides considerable scope for further investigation and debate.

Before concluding it should be noted that the appearance of fish hooks in specific ecozones of the Murray-Darling system, as has been argued, is consistent with an array of studies and lines of evidence indicating increasing socioeconomic complexity in this region. The primary subsistence base including fish, shellfish and crustacea, wild fowl and other birds, macropods and plant foods such as *kumpung* reeds, has been extensively documented. Diverse and ingenious procurement strategies were employed including netting, spearing, weirs and fish traps, and simple collecting. Fish hooks merely add to the list of methods, contributing to the perception that the level of complexity in this region, before the devastating consequences of colonisation took effect, was unusual in Australian terms. Increasing circumscription and sedentism, as well as growing populations and higher population densities, appear to have been a feature of the region at the time of British annexation and occupation of Australia (Birdsell 1968:231; Kefous 1988; Littleton 1999:3; Pardoe 1995:706-9; Pate 1998:98; Webb 1987; 1995:280-9). Extensive burial grounds and cemeteries (Pardoe 1988; 1993; 1995), systematic food preservation and storage (Berndt *et al.* 1993:79,109-11,115; Harvey 1943:109; Simpson and Blackwood 1973), as well as an atypical degree, in Australian terms, of sociopolitical complexity (Berndt *et al.* 1993:58-72; Pretty 1977:305; Taplin 1878:32-4), also contribute to this perception. If considered in their totality it is possible to conclude that the pre-contact Aboriginal people of this region were exhibiting specifically or proximately many of the characteristics usually associated with complex hunter-gatherers (Hayden 1990:33; Pardoe 1995:709; Price and Gebauer 1995:8). Hopefully, in time, further archaeological evidence may arise to confirm or confute this possibility.

The original theme of this paper centred on the interface between archaeology and ethnography and models built upon these foundations. What I have established many would superficially take as given, that ideally models attempting to reconstruct the patterns of the past should incorporate well-researched evidence from both these essentially complementary disciplines, where this is applicable. In many instances these models rely, especially in relation to southern Australia, to some degree upon limited, scattered, idiosyncratic historical ethnographic sources. However, if the historical ethnography is not well-researched errors and distortions may arise. Conversely when employed appropriately and to full effect ethnography, particularly historical ethnography,²⁰ can be a powerful tool in endeavours to reconstruct Australia's past. Hopefully the case presented in this paper illustrates this. Further to this, sound research in each discipline may give pointers to enquiries in the other. As a final illustration of this I would like to conclude with an example drawing attention to the coastal desert economy of Shark Bay and the Gascoyne

region in Western Australia. Already it has been suggested that maritime hunting employing "a new technology : canoes or rafts," (Bowdler 1990:54) may have occurred in Shark Bay. Historical ethnographic sources also hint at the unexpected presence of more sophisticated water craft along the Gascoyne coast (Gerritsen 1994:176-81). Coincidentally virtually the only allusion to fish hooks west of the Murray-Darling system that I have been able to discover relates to this area. Oldfield, drawing on his experiences of the *Watjandi* of the Lower Murchison in the 1850s, commented that, although they "do not use any kind of hook for fishing, they have a word to express such an implement, probably borrowed from the Shark's Bay natives, who use such, fashioned out of fish bones" (Oldfield 1865:274).²¹ He also provided the information that the *Watjandi* used small fishing nets, called *boongo*, which they imported from the north (Oldfield 1865:269, 274,295), presumably from Shark Bay or beyond. Giving credence to this supposition is a report from 1855 of a 3 metre by 1 metre fishing net being employed at the mouth of the Gascoyne River (Phillips 1856:270). Nets were also reportedly used on the northern Gascoyne coast, in conjunction with a form of dugout canoe, to catch turtles and dugong (Rathe 1990:47-9,56,73). These are possibly the only instances of coastal net fishing recorded on the west coast of Australia (Davidson 1933; Gerritsen in prep.; Satterthwait 1986). If aggregated, evidence such as this, while limited, nevertheless strongly suggests that elements of a more complex, intensified maritime economy may have formerly existed in the Shark Bay/Gascoyne region. Consequently this ought to be taken into account in any future archaeological research into prehistoric subsistence patterns there. Such evidence should not be ignored. Thus, while Professor Megaw, in a recent lecture, expressed the view, quite correctly, that, "the study of archaeology may lead us to much more weighty matters than the study of rubbish" (Megaw 1997:48), it is equally true to say the study of ethnography, be it historical or modern, is also more than just the study of rubbish. When effectively exploited and appropriately integrated it is an invaluable resource for both archaeology and prehistory.

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Notes

¹ The location of the 2 examples of "toggles or gorges", the fusiform bi-points usually known as *muduks*, which Walters places on the central Murray River may be erroneously positioned if they represent those found at Devon Downs (Hale and Tindale 1930) and at Fromm's Landing (Mulvaney 1960). Both sites are actually on the Lower Murray. The other example located in the vicinity of Lake Tyers also appears to be wrongly placed, presumably based on what appears to be incorrect information in McCarthy (1976:86). There is no record of which I am aware of a *muduk* being reported from this area. However, McCarthy refers to the "impressions left by binding", a diagnostic criteria raised earlier by Hale and Tindale (1930:206). But Hale and Tindale were referring to an illustration of the line attached to a *muduk* in Smyth (1978:391, Fig. 227) which is adjacent to the illustration of the Lake Tyers hook (Fig.226) and this is probably the source of McCarthy's error. This *muduk*, according to Smyth, came not from Lake Tyers but Geelong, based on information provided by J. A. Panton (Police Magistrate and Warden at Geelong). The *muduk* bears some relation to a fish hook in function and may be the fish hook's antecedent (Walters 1988:103). It may also possibly have complementary distributional characteristics. However, because of the diagnostic difficulties that have arisen in identifying them in an archaeological context (Kenyon

1912:198; Hale and Tindale 1930:205-6; McCarthy 1940; Mulvaney 1960:77; McCarthy 1976:86-88) and because they require more thorough study, beyond the scope of this paper, they will not be considered further.

² Another photograph of this hook can be found in Campbell and Vanderwal (1994:Fig 12)

³ The same list can also be found in Smyth (1878:204).

⁴ However, Haydon (1846:133-4) described the canoes built by the Native Police in crossing the Tarwin River as having the ends not sewn but caulked with clay. These men apparently were from *Woiwurrung* and *Bunwurrung* clans (Clark 1998:41,49). This was also the form of construction of the sunken canoe found in Western Port Bay in 1801, as described in Grant (1803:138-9).

⁵ The earliest appearance of this term appears to be in Bunce (1851:18).

⁶ John Green, Superintendent at Coranderrk. Tuckey (1805:179) also explicitly denied that fish hooks were in use here.

⁷ Despite the lack of reports of canoes from Port Phillip and the Western District of Victoria many vocabularies from these areas appear to contain words for canoes (Dawson 1881:vii; Curr 1886-7:3:474-535). Furthermore Robinson states, "The Murray Blacks make their canoes like Waverong [*Woiwurrung*] and Dargoong-gerong [*Daungwurrung*]" (Clark 1998:49). This, along with evidence of canoe usage from Western Port, and the account of the Native Police making canoes to cross the Tarwin River (Haydon 1846:133-4), as well as Tuckey's (1805:179n) reference to canoes on the Yarra, suggests :

- 1) canoe usage in central and western Victoria may have been largely restricted to calmer riverine and lacustrine waters and,
- 2) been incidental, such as when it was necessary to cross rivers or small bodies of water, and was therefore not readily observable.

⁸ Massola claims Eyre's comments were relating to "the natives from King George's Sound to Adelaide" (1956:1) but this is not correct, Eyre was making a general observation without any geographical specification.

⁹ Eylmann's authority in these matters is highly questionable. He did not arrive in South Australia until February 1896 (1908:6*), appears to only have had a brief encounter with the *Ngarrindjeri* and then spent most of the rest of the period he was in Australia in the desert regions of Central Australia. Massola, in his citation of Eylmann, also omits the final part of the sentence which reads ";nach Spencer and Gillen²", i.e "after Spencer and Gillen [*The Northern Tribes of Australia*]", so the source is actually Spencer and Gillen (1904) and of dubious relevance.

¹⁰ Buckley doesn't actually make any comment whatsoever about fish hooks and cannot, therefore, legitimately be cited as evidence denying their presence in western Victoria. He does, however, describe a method of catching eels in which worms were tied to a line attached to a rod, the worms being gorged and the eel caught before being able to disgorge the bait (Morgan 1852:48). Dawson (1881:94) describes an identical method for catching large fish in the Western Districts.

¹¹ *A. pertexta* Iredale, which Massola links to Cape Grafton (1956:2), is actually a freshwater mussel, reportedly found in "mid and southern Queensland rivers" (Iredale 1934-7:64) where its "type locality" is the upper Brisbane River, 100 km inland (Smith 1992:16). Iredale also reports specimens "perhaps those from the River Isaacs", again 80 km inland. As the collector, C. Richards of Bendigo, obtained other items from South Australia (Michael Pickering: pers. comm.) and because *A. pertexta* is very similar to *A. jacksoni*, which is found in the Murray-Darling basin (Lamprell and Healy 1988:142-5), I requested Museum Victoria to check the identification of this hook (Reg. No. X 9240) which they are unfortunately unable to do at the present time (Michael Pickering pers. comm.).

¹² As defined in Littleton (1999:1-2, Fig. 1).

¹³ This ingenious type of hook was inserted in a mussel and sprung out when ingested by the fish.

While Mitchell (1839) does not specifically record the use of hooks in this area a number of his comments may indicate this (1:220,1:225,2:128). For example, he noted, "that their gins were fishing in the river at a distance," (1:225) without providing any further details.

¹⁴ Cawthorne (1925-6:65) in 1844 also stated that in South Australia "fish are hooked, speared or netted." Similarly one of the early colonists in South Australia, J.C. Hawker (1975:19), refers to people on the Murray in 1841, "fishing with lines and spearing fish in shallow lagoons," apparently in a traditional context.

¹⁵ I would suggest that line fishing was favoured at times when the level of the rivers was low. This was a lean time, as other fish procurement methods were either largely inoperative (anabranch weirs) or more limited in their yield (netting, spearing), and usually occurred in late autumn. Some support for this speculation can be found in the timing of Beveridge's fishing expedition which took place in March (1889:85).

¹⁶ Interestingly a "small portion [of kidney fat was] rubbed over the bait previous to the hook being thrown in the water." (Beveridge 1889:87)

¹⁷ It is noteworthy that Angas (1847:92) nominated cod and "a fish ... resembling a salmon" as the species caught by hook while Beveridge (1889:87) listed "codfish", golden perch, silver perch and "catfish" as species sought on the fishing expedition. There appears to be a high degree of consistency in these reports.

¹⁸ Bulmer (In Smyth 1878:142) reasoned that although their hooks were just as efficient as European ones it was easier to acquire Europeans hooks than use their own which "would be troublesome to make."

¹⁹ Beside the "rude hooks," Angas (1847:I:90) also noted "fishing lines" on the Lower Murray in 1844. Interestingly a number of informants in Taplin (1879b), in response to the Question 26, "Do they make nets, twine, fishing lines, mats or baskets?", report fishing lines being made in their area. These include Rev. Holden: "Maroura Tribe - Lower Darling (1879b:18), T. Moriarty: "Goolwa Clan" (1879b:52), Trooper Noble: Flinders Range, "Alury" (1879b:64) and Bedford Hack: Mt Remarkable, "Noocoona" Tribe (1879b:65). Beveridge (1883:25) also refers to the making of fishing lines using fibre produced from a rush called *boongoor*.

²⁰ I prefer the term historical ethnography rather than ethnohistory in these contexts because it relates to attempts to reconstruct the ethnography of particular groups or cultures at a particular point in time, in Australia usually at the end point of prehistory, whereas ethnohistory appears to be primarily concerned with a narrative description of groups or cultures over time and is not necessarily concerned with ethnographic issues (Carmack 1972:238; Sahlins 1992:1-5).

²¹ Two other reports may indicate the use of fish hooks in the western coastal regions of Australia. In the first instance Grey (1841:1:378) gives an account where two of his bags were snatched about 50 km north of the Gascoyne River. He pursued the offenders who abandoned all the contents except the fishing lines. King (1827:1:43) also reported the one of the men he encountered on a "log canoe" in the Dampier Archipelago had, "a fishing line of his own making attached to his log."

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