

CONCLUSIONS

With these descriptions specific evidence of edge ground axes in the South-West includes some nineteen specimens. This number can be raised to twenty if one includes the re-evaluation of W.A.M. 12206 (Ride, 1958: 171).

To interpret the data available at Walyunga is not easy although apart from the one possibly imported specimen (Group Ib), the other artifacts when seen in conjunction with Ride's work suggests there is an increasing possibility that axe manufacture existed in a most basic form. This is further reinforced by the Bullsbrook specimen. The implications raised by the Lake Hope specimens have already been discussed, and it seems clear that the axes were either used as such or seen as "raw material" for the production of flaked edge chopping tools. At Kojonup and Mount Barker heavily worn specimens suggest again that the implements were used for mundane secular purposes rather than being exotic articles of "magico-religious" significance.

With the ever increasing accumulation of data it will be in time shown I feel that a ground edge industry was present in the South-West of Western Australia. The high proportion of aberrant axe forms and "experimental" specimens suggest that the industry was being introduced along with axe heads from northern and north-eastern areas. Possibly the introduction of manufacturing techniques needed to maintain this industry coincided with the European settlement of the south-west. The introduction of iron and steel implements, it seems, both replaced the indigenous kodj and extinguished the ground edged axe industry in its infancy.

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MOLLUSCS FROM ARCHAEOLOGICAL EXCAVATIONS AT MIRIWUN ROCK SHELTER, ORD RIVER VALLEY, WESTERN AUSTRALIA.

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SUMMARY

Aquatic and terrestrial mollusc shells of at least 12 species have been recovered from archaeological excavations in the Ord River valley. Four of these species are thought to have been used for food by Aboriginal man.

INTRODUCTION

The Miriwun rock shelter is located on a ridge overlooking what was, until late 1971, the eastern bank of the Ord River, some 20 km upstream from the main dam site. With the completion of the dam in that year and the eventual filling of the reservoir known as Lake Argyle, the ridge at Miriwun is expected to become an island and the rock shelter may be inundated from time to time. The position of Miriwun rock shelter

on the Australia 1:250,000 series sheet SE 52-2 (Lissadell) is at grid reference 132943 (C. E. Dortch, personal communication, 1972).

Excavations at Miriwun and other sites within the eventual boundary of Lake Argyle were made by C. E. Dortch, D. Merrilees and others during 1971 and a preliminary report has been prepared by Dortch (1972). These excavations yielded artefacts and animal remains, to be described in due course elsewhere. Much of the mollusc material is fragmentary but shells, representing 12 genera from 9 families, have been recognized. Of these groups, only one, the naiades or freshwater mussels of the Hyriidae, has been the subject of recent taxonomic revision in Australia (McMichael and Hiscock, 1958), so that I have attempted specific identifications only of these. Other family and generic names are from Iredale (1939), McMichael (1967) and Wenz-Zilch (1959-60). The samples here discussed are catalogued in the Western Australian Museum fossil collection under the numbers 72.621 to 72.782 inclusive.

MOLLUSC TAXA PRESENT AT MIRIWUN ROCK SHELTER BIVALVES

Family HYRIIDAE

Velesunio wilsonii (Lea)

Velesunio sp., fragments

Lortiella rugata (Sowerby)

hyriid fragment, probably of *L. rugata*

hyriid fragments, generically indeterminable

Family CORBICULIDAE

Corbiculina sp.

GASTROPODS

Family VIVIPARIDAE

Notopala sp.

gastropod fragments, probably of *Notopala* sp.

Family THIARIDAE

Plotiopsis sp.

Family PLANORBIDAE

Physastra sp.

Amerianna sp.

Gyraulus sp.

Family SUCCINEIDAE

Austrosuccinea sp.

Family PUPILLIDAE

Themapupa sp.

Family SUBULINIDAE

Eremopeas sp.

Family EUCONULIDAE

Westracystis sp.

DISCUSSION

Most of the faunistic remains from Miriwun appear to have been discarded by Aborigines following the use of the soft parts as food (D. Merrilees, personal communication, July 1971). Of the molluscs, this appears to have been the case with the four largest species, *Velesunio wilsonii*, *Lortiella rugata*, *Notopala* sp. and *Plotiopsis* sp. Shells of these species, together with fragmentary material apparently derived from them, comprise by far the greater part of the total molluscan recovery. Up to 1971, the four species are known to have lived near Miriwun either in the main channel of the Ord, in tributary streams or in adjacent flood plain lagoons.

The remaining aquatic molluscs from Miriwun, *Corbiculina* sp., *Physastra* sp., *Amerianna* sp. and *Gyraulus* sp., are all too small to be regarded as sources of food and, apart from the first mentioned, were rare. The site stands well above any likely natural flood level and probably the shells were not deposited in that way. Some of the sediment from the excavations appeared to be pieces of mud, transported (presumably from the nearby river bed) by nest building wasps and birds, while some may be wind blown (D. Merrilees, personal communication, July 1972). Possibly these smaller shells, or some of them, reached the deposit in

such mud or with wind-blown dust. One further possibility is that the large and small shell may have been brought to the site together in dishes or some such containers by Aborigines and may have been the product of unselective collecting, in which perhaps the children participated. Recent collections of living aquatic molluscs in the area now covered by Lake Argyle show that *Corbiculina* sp., *Amerianna* sp. and *Gyraulus* sp. were common in river pools and lagoons near Miriwun; *Physastra* is known from other parts of the East Kimberley district and could also be expected to occur living in the general area of Lake Argyle.

Shells of the land snails *Austrosuccinea* sp., *Themapupa* sp., *Eremopeas* sp. and *Westracystis* sp. were present in small numbers, the last mentioned being the most common. These species were evidently living until recently on the ridge at Miriwun but no modern land snail records from the site are available for comparison. All are of small to minute size and are not likely to have been collected for food by man.

Most of the better preserved shells from Miriwun, particularly of *Velesunio* and *Notopala*, were found in the upper 50 cm (approximately the upper half) of the deposit. Below this level, all of the naiade material had been reduced to small nacreous flakes, generically unrecognizable, and most of the other shells were also fragmentary; a proportion seemed to have been charred. In contrast, many of the *Notopala* shells from the upper half of the deposit showed no evidence of charring or fracture and may have been discards, not eaten perhaps because of the availability of other preferred food. Most of the *Plotiopsis* were quite small and it seems unlikely that they were collected for human consumption; however one of the larger shells, specimen 72.628, showed good evidence of charring and deliberate fracture, as if the animal had been cooked and extracted for food.

The fossil collection of the Western Australian Museum contains shells of *Velesunio*, *Lortiella* and *Notopala* from three other deposits in the East and West Kimberley districts, which are regarded as Aboriginal middens. Cotton (1935) has reported midden deposits containing *Velesunio* and *Notopala* shells beside the River Murray in South Australia. Viviparid snails related to *Notopala* are eaten by the Javanese people, according to van Benthem Jutting (1956).

No marine shells or shell fragments of possible marine species were noticed in the material examined.

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