

THE COASTAL MESOLITHIC INDUSTRIES OF SOUTH INDIA AND THEIR CHRONOLOGY

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INTRODUCTION

Prehistoric studies since 1974 in various parts of Kerala, the south-eastern coast of Tamil Nadu and coastal Karnataka have yielded similar types of material culture from the Mesolithic period, in geomorphic contexts which indicate an early Holocene date. These coastal Mesolithic industries of southern India differ in their typo-technological and morphological features from those of northern India, which are made primarily on small blades. The industries of the southern coastal region are made mainly on flakes. They consist of large implements, and the general characteristics do not justify usage of the term 'microlithic'. Based on my recent studies an attempt is made here to present a comprehensive picture of the Mesolithic industries of these coastal regions and their probable chronology.

Southern India, especially its coastal regions, has been previously little considered in prehistoric studies. Except for a few sites in the Tinnevelli district of southern Tamil Nadu and a solitary site at Chevayur near Calicut in north Kerala, no Mesolithic industries were known until recently (Rajendran 1979). In terms of Palaeolithic sites Kerala remained a total blank until 1973, and it was even suggested that this part of India was uninhabited by prehistoric groups due to unsuitable environmental factors such as heavy rainfall, impenetrable forests, highly dissected terrain, and an absence of suitable raw materials such as quartzite.

However, Kerala today enjoys one of the richest natural settings in southern India, if not in the whole country. Physiographically it has three distinct zones: lowlands, midlands and highlands. The lowlands lie near the coast below 15 m. altitude and consist of sub-recent to recent deposits, with high lateritic headlands in some places. The midlands consist of various types of laterite at different levels, which range from Tertiary to Pleistocene in age. The highlands include the hill region and its foot-hills, and they retain the evergreen forests which still support rich floras and faunas.

The region has several perennial rivers, and also the north-south alignments of back-waters (*Kayalas*) in the lowlands. Most rivers of the region flow westwards through narrow and steep valleys. The majority empty into the back-waters, and a few have direct courses into the Arabian Sea. Climatically, Kerala is

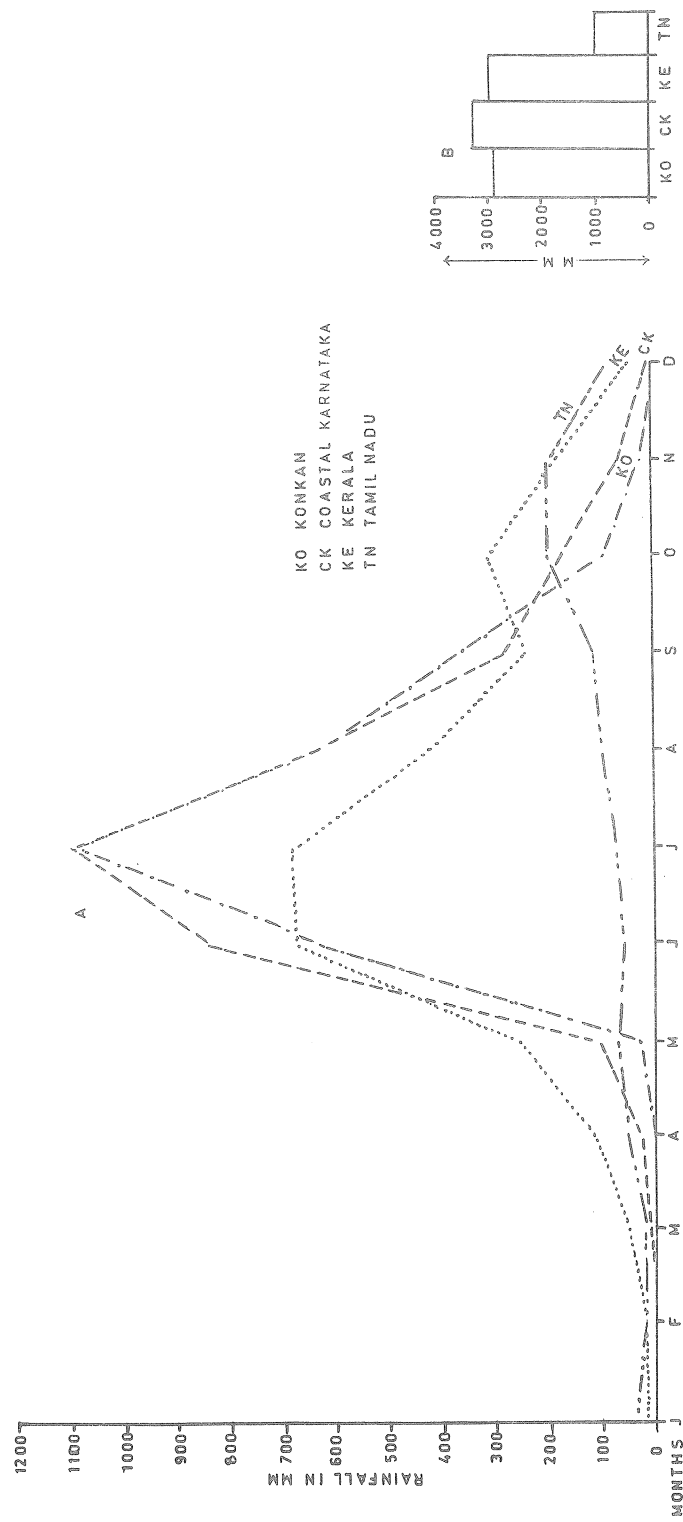


Figure 1. Average Rainfall on the Southwest and Southeast Coasts of India.

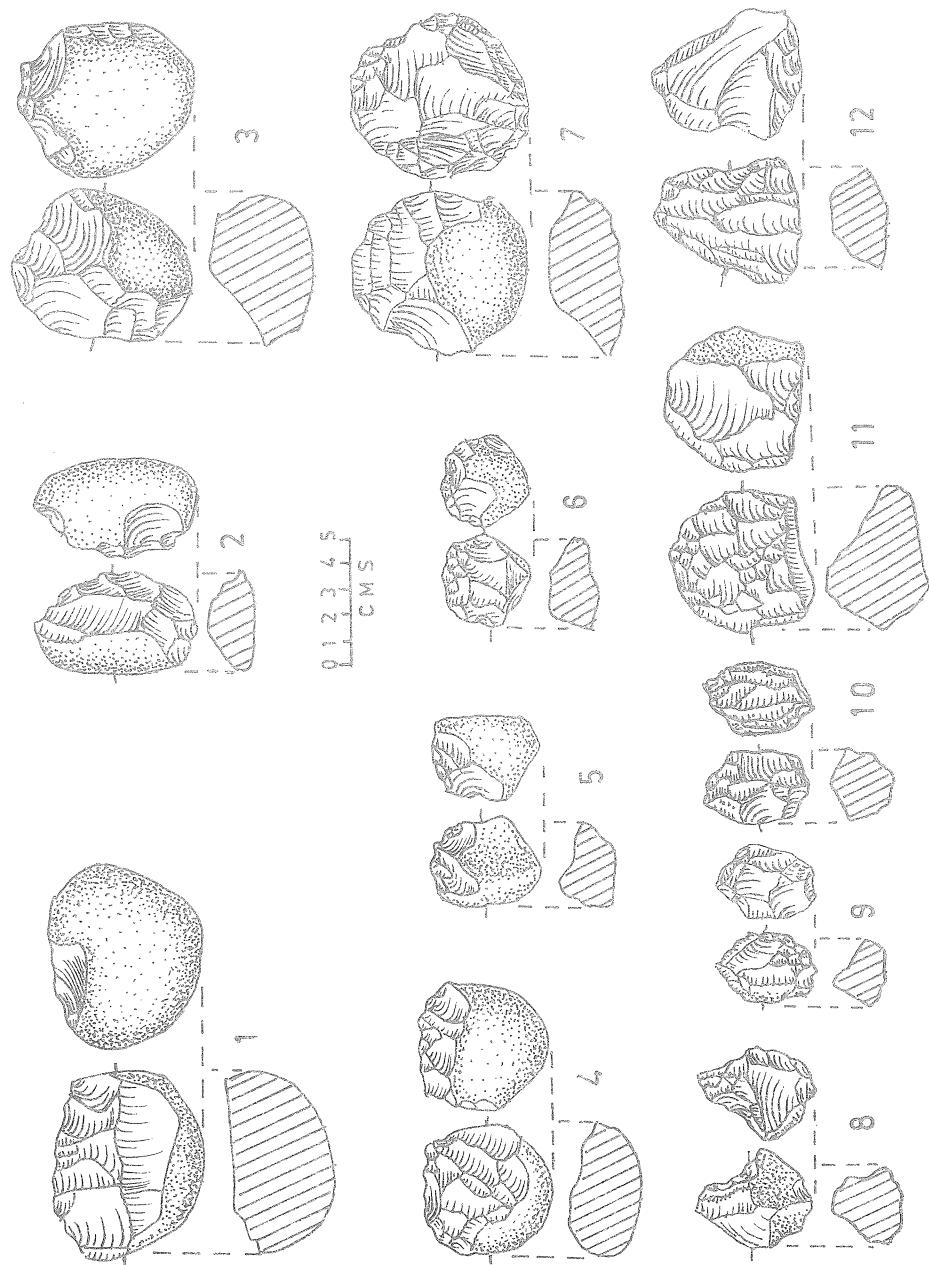


Figure 2. Malampuzha Mesolithic Artifacts, Kerala.

favoured by both the south-west and the north-east monsoons. It has an average annual rainfall of 3085 mm., and the region enjoys an equable climate with temperatures varying from 69°F to 99°F.

Coastal Karnataka is environmentally similar to Kerala, but the situation on the south-east coast of Tamil Nadu is different. In physiography, climate and vegetation these two coastal regions show great contrasts. Tinnevely district, on the south-east coast of Tamil Nadu, has an average rainfall of only 810 mm., which is the lowest in the State. This region therefore has a semi-arid climate, unlike that on the Kerala coast (Fig. 1).

STONE AGE SITES

A good number of Lower Palaeolithic and Mesolithic sites have been discovered in various parts of Kerala since 1974 (Rajendran 1979). The Lower Palaeolithic industry consists of chopper-scaper-flake assemblages of large size, and implement lengths range from 58 to 200 mm., breadths from 52 to 128 mm., and thicknesses from 31 to 88 mm. Mean measurements of length/breadth/thickness are 129/90/60 mm. respectively (Rajendran 1981).

The Mesolithic industry of Kerala consists of various types of small choppers, scrapers, points, borers, burins, lunates, blades, knives and discoids (Figs 2 and 3). Dimensions show a considerable range; in length from 15 to 80 mm., in breadth from 6 to 74 mm., and in thickness from 4 to 48 mm. Mean measurements of length/breadth/thickness are 47.5/40/26 mm. respectively (Rajendran 1978).

Both industries differ in technological and morphological aspects although the raw material utilized for both is the locally-available quartz, which is found as veins in the Archaean gneiss and as pebbles in river beds. Most of the Palaeolithic implements are found on high-level terraces, while the Mesolithic artifacts are generally found on the lateritic surfaces, except those obtained from the Walayar and Mankara sites in Palghat district, and Tenmalai in Quilon district.

The Mesolithic site at Walayar lies about 183 m. above sea-level in the Palghat Gap, and has yielded artifacts both from the surface of an alluvial clay as well as from a detrital laterite which lies 2 metres below. No artifacts have been found within the alluvium itself (Fig. 4). The artifacts found within the detrital laterite are bigger than those obtained from the higher alluvial surface. It was amazing to see that the debitage and implements on the latter were found intact in several circles, indicating working on the spot. Both assemblages are exclusively made on quartz.

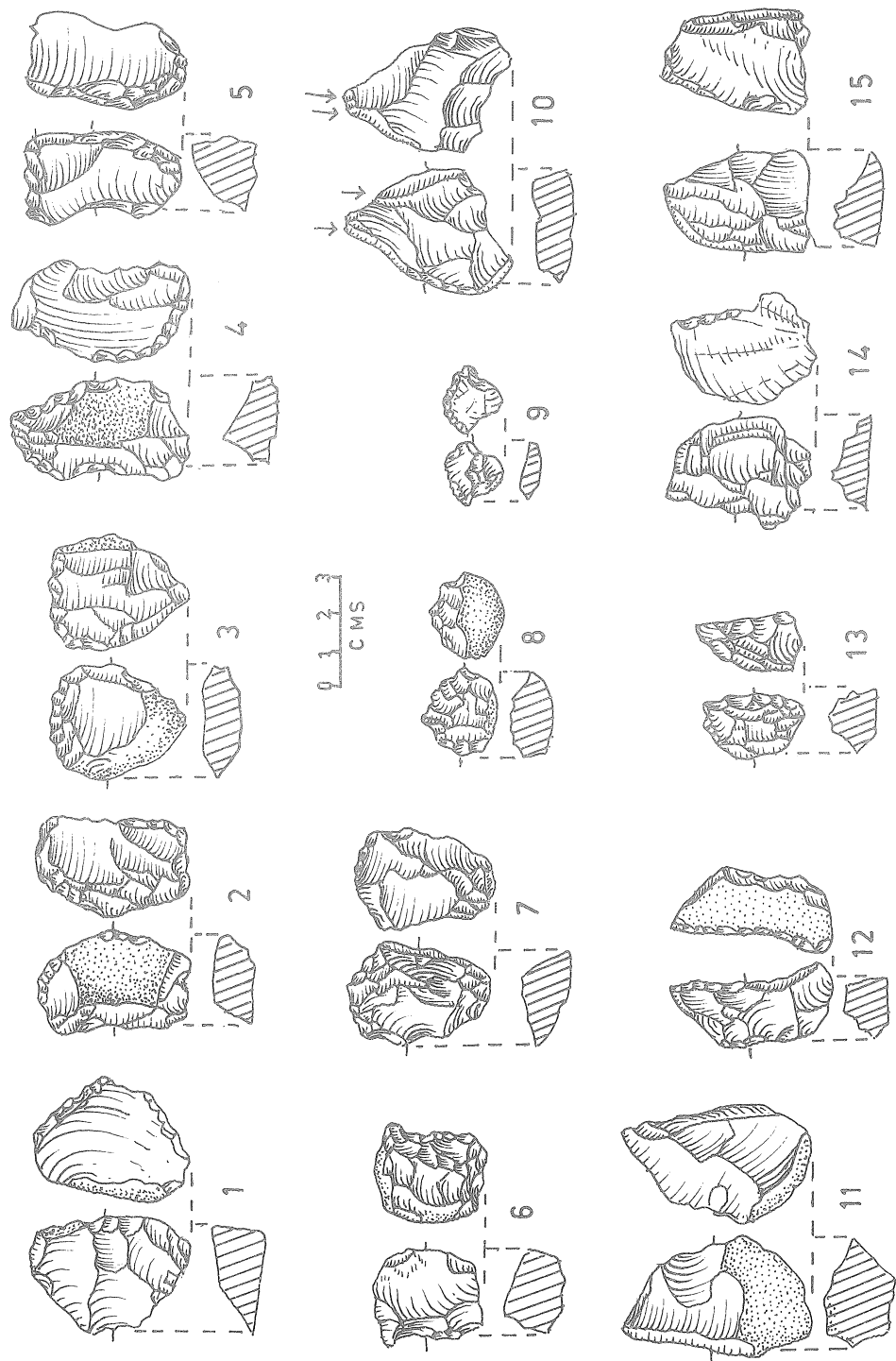


Figure 3. Podippara Mesolithic Artifacts, Kerala.

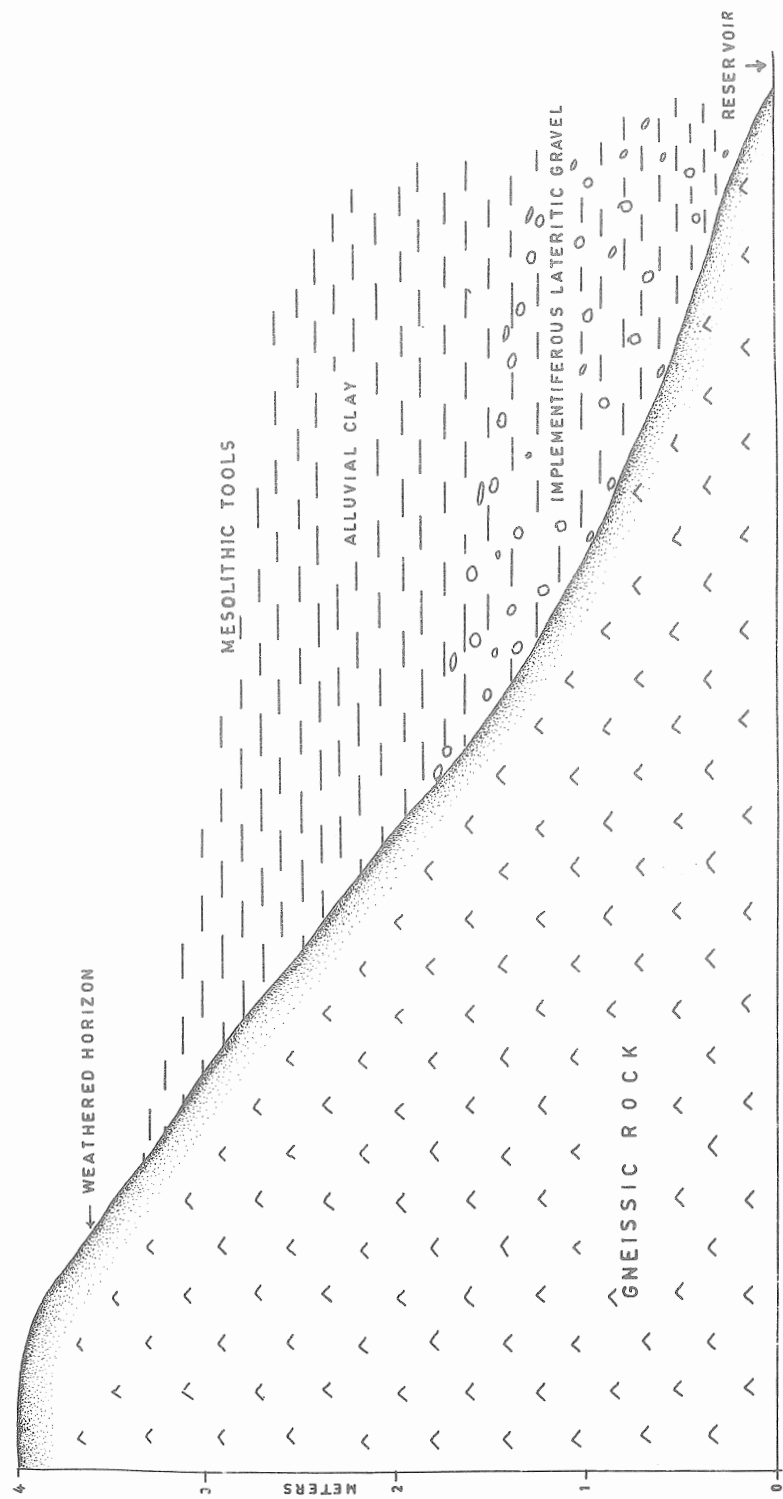


Figure 4. Stratified Mesolithic Site at Walayar, Palghat District, Kerala.

The Mankara Mesolithic site lies on the right bank of the Bharathapuzha river near Mankara railway station at 61 m. a.s.l. Here the river has two terraces. The upper one is composed of lateritic alluvium with weathered quartz pebbles. The lower one has an average height of 2 m. and rests against the former. The implements along with the waste materials are found exposed below this sub-recent terrace. A cave at Tenmalai in Quilon district of South Kerala has also yielded Mesolithic implements. This site lies at the foot of the Western Ghats at 150 m. above sea-level, and is formed in a huge gneiss rock. A few Upper Palaeolithic blades were also obtained, and incisions, probably of the early Mesolithic period, were also seen on the exterior surface of the cave (Rajendran 1982).

The majority of the Stone Age sites in Kerala are found between 30 m. and 180 m. above sea-level in the lateritic midland region. Prehistoric sites are not found below 30 m. altitude, which indicates that the low-lying coastal region may be of recent origin. In addition, prehistoric coastal sites might have been drowned by the post-glacial eustatic rise in sea-level.

Recent work in the Netravati river basin in South Kanara has resulted in the discovery of the first Mesolithic sites in coastal Karnataka (Rajendran 1981). The industries here are similar to those of Kerala and southern Tamil Nadu. At Mani the tools were obtained from the lateritic surface, while at Uppinangadi they occur in stratified contexts (Fig 5). Both sites lie in the midland region at 30 m. above sea-level. The main raw material utilized is the locally-available quartz, which is still found in abundance in the form of river bed pebbles. A few possible Lower Palaeolithic choppers were also discovered at Uppinangadi, and similar tools have also been reported from Konkan (Guzder 1980) and Kerala (Rajendran 1981).

Even though detailed studies are still in progress on the geomorphology of the Netravati basin, it appears from the section (Fig. 6) that there were at least three phases of deviation in the river courses at Uppinangadi. The nature of the weathering in the two earlier pebble horizons clearly indicates that they were deposited at two widely separated geological periods. The disconformity noted between the unweathered pebble horizon and the implementiferous layer again denotes a considerable time difference.

Stone Age sites in Tinneveli district on the south-eastern coast of Tamil Nadu were first discovered by Foote (1914), and were later studied by Krishnaswami (1938), Aiyappan (1945), and Zeuner and Allchin (1956). The sites occur on sand dunes known as teris. Recent work in Tinneveli and Kanyakumari districts has led to the discovery of new sites at Idindakarai and Athankarai, the former being only 4 m. above the present sea-level.

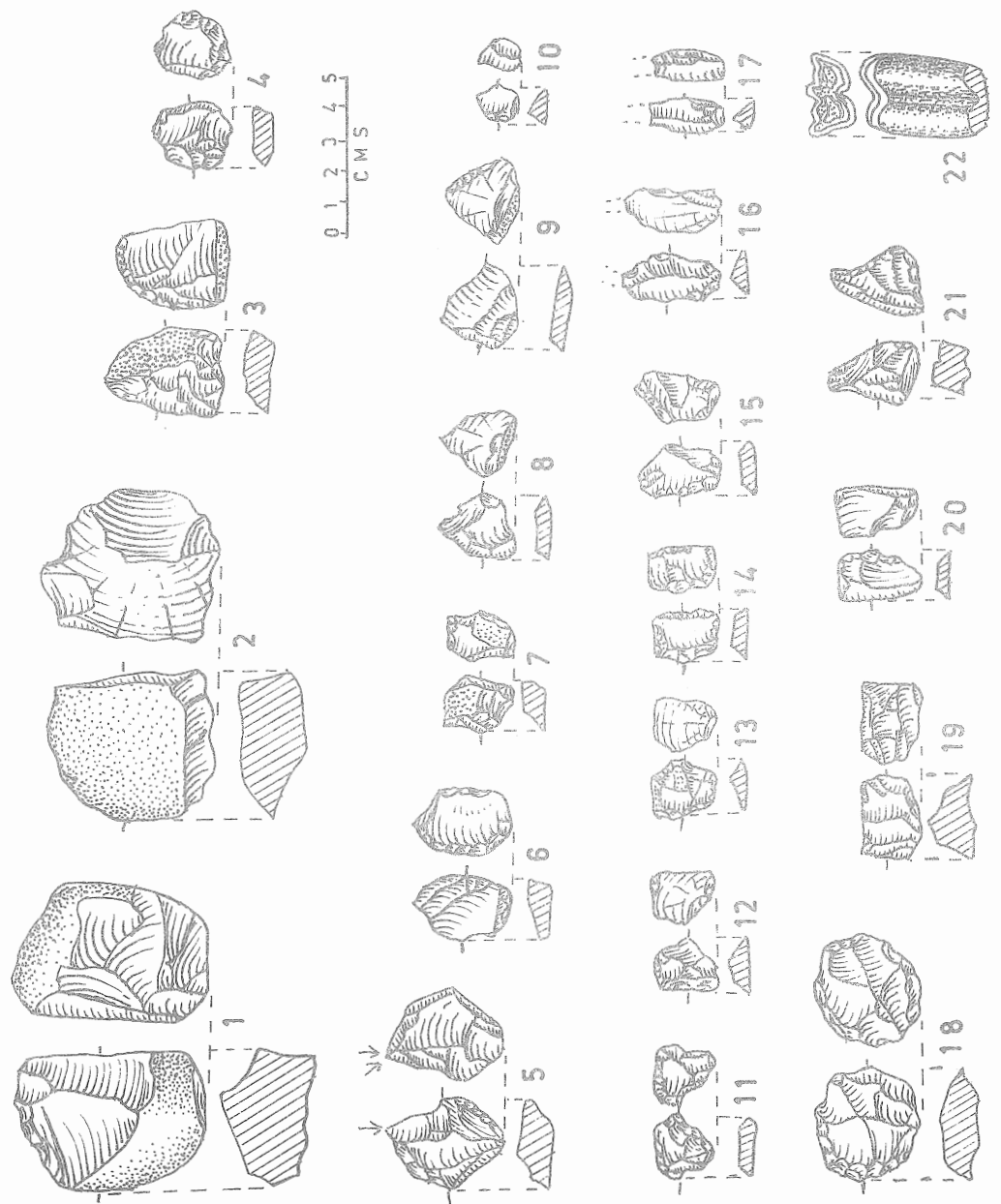


Figure 5. Uppinangadi Mesolithic Artifacts, Coastal Karnataka.

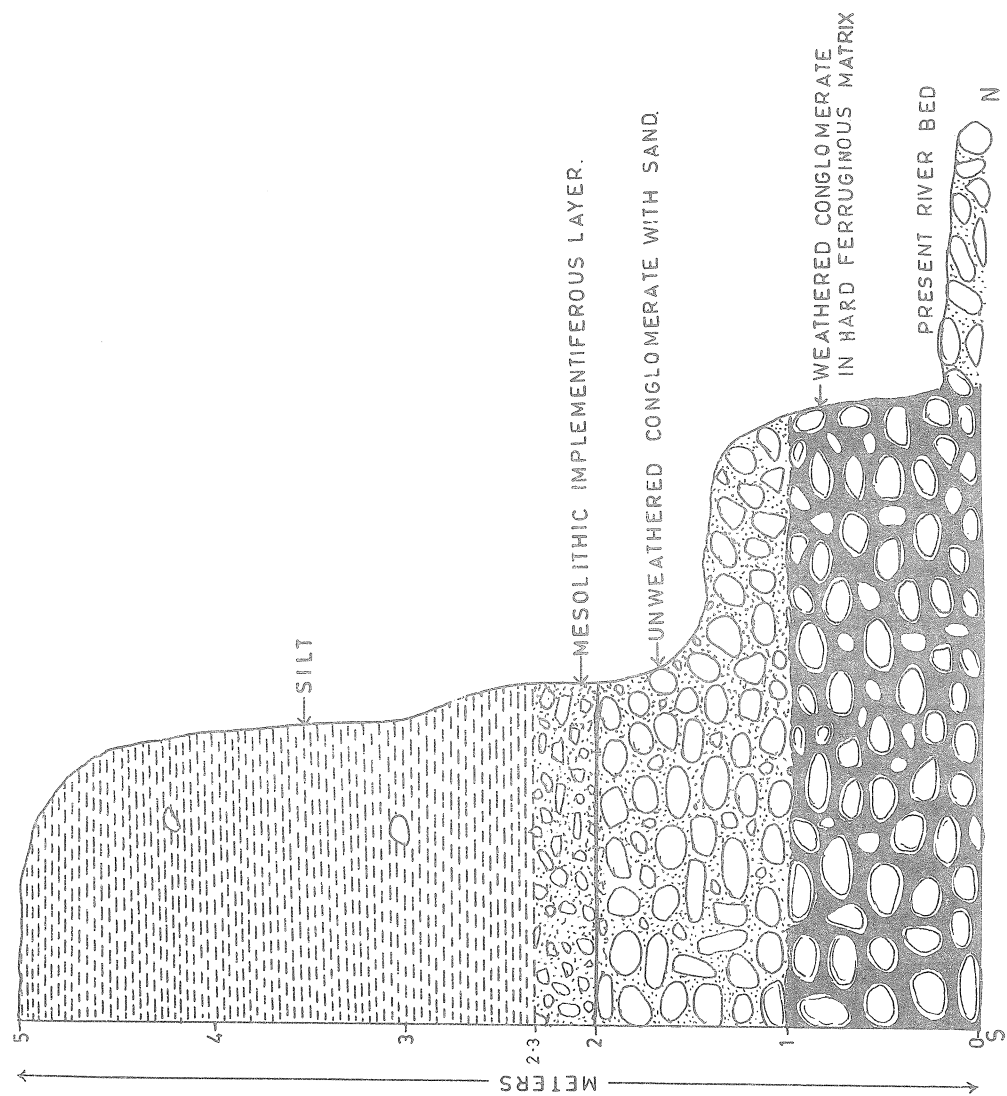


Figure 6. Stratified Mesolithic Site at Uppinangadi, South Kanara, Coastal Karnataka.

At Sawyerpuram, Idindakarai and Athankarai the tools are found only on the surfaces of the stabilized teri sand dunes, and trial trenches dug at Idindakarai and Sawyerpuram confirm this situation. The sequence of geological formations observed at Idindakarai comprises a late Tertiary limestone at the base, and this is overlain by a beach rock at about 2 metres above high tide level. This is rich in land snails which have been dated to between $20,000 \pm 395$ years B.P. (B.S. - 134) and $33,670 \pm 1640$ years B.P. (B.S. - 133). The teri sand dunes, which have uniform physical characteristics throughout their thicknesses, rest disconformably over the land snail horizon (Fig. 7).

To the west of the Kanyakumari temple a beach rock is found resting on pre-Cambrian gneiss at about 2 m. above sea-level, and it grades into an aeolianite at about 7 m. Marine shells collected here from 6 m. above sea-level have been dated to $29,890 \pm 955$ (B.S. - 132). Land snails predominate at 10 m. a.s.l., and reddish-brown sand dunes rest disconformably on the land snail horizon and continue to 15 to 20 m. above sea-level.

Observations at Kanyakumari, Idindakarai and Athankarai clearly indicate that the teri sand dunes are uniform in colour, texture and mineral composition. Mechanical, chemical and mineralogical studies on two teri samples of well-sorted fine to medium sand, collected from 2 m. and 8 m. below the top of a 10 m. cliff at Muttam, show that they contain quartz (80%), feldspar, ilmenite, magnetite, garnet, zircon and rutile. Fe_2 and Fe_3 contents are 0.2 and 4 percent respectively. The sands are uniformly reddish-brown in colour and do not show any apparent pedogenesis. The colour is probably due to the release of iron oxide from dark-coloured minerals in an oxidising environment, but the uniform pigmentation down to a depth of 10 metres is still a problem. However, it is certain that this uniform colouration is not due to pedogenesis, as was suggested by Zeuner and Allchin (Joshi, Rajaguru and Rajendran 1981).

When teri sand is boiled in a solution of dilute HCl and SnCl_2 for nearly 10 minutes the reddish-brown colour of the sand becomes separated, and when the sample is cleaned several times in tap water the reddish colour is removed totally. This indicates that the colour is nothing but a superficial coating. Moreover, on microscopic examination the cleaned samples show little weathering of quartz grains or other minerals, and it seems that weathering alone cannot explain the uniform colouration, and the reason for it still remains obscure.

Field observations show that there are at least two strandlines (at 20 and 4-6 m. a.s.l.) found between 8 and 10 km. inland from the present Tamil Nadu coast. However, no evidence could be obtained to substantiate the sea-level changes postulated

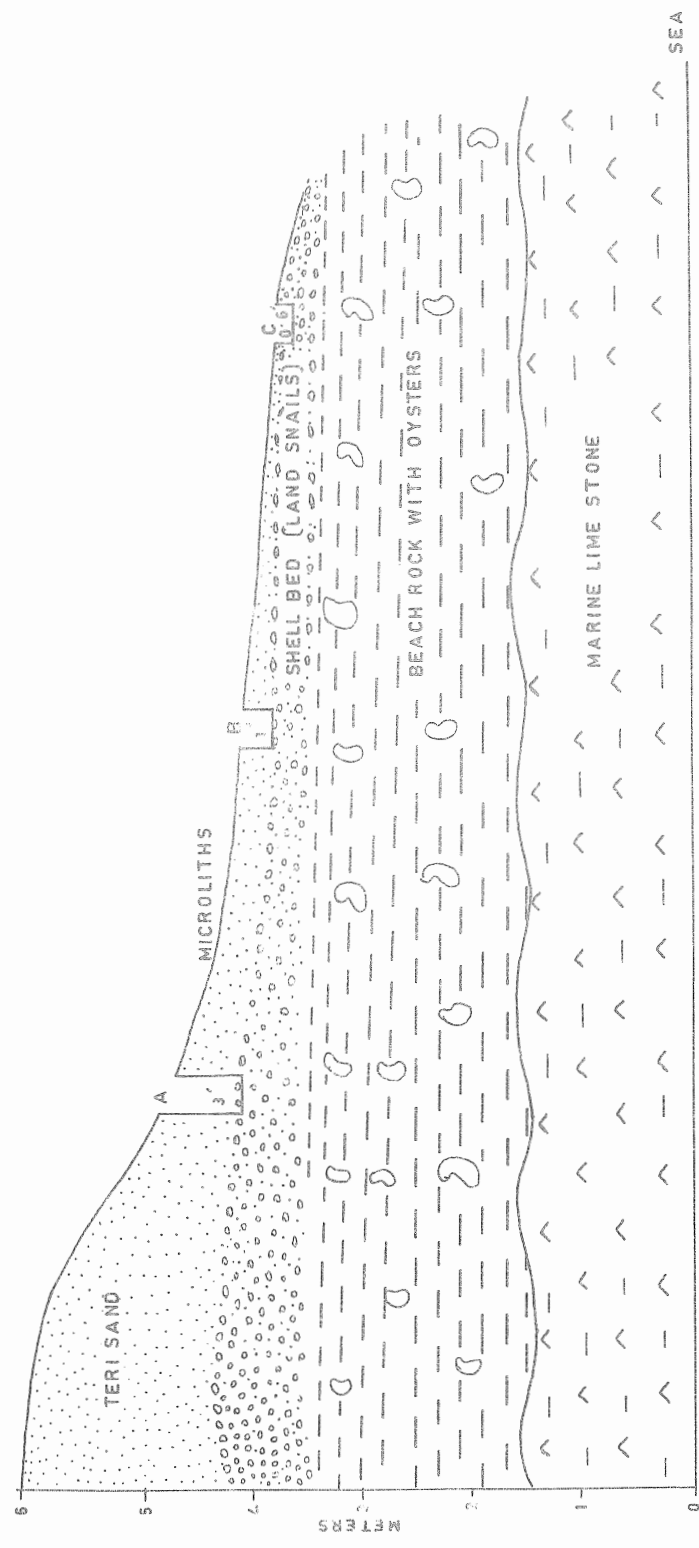


Figure 7. The Section at Idindakarai Showing the Relationship of the Beach Rock and Teris, Tinnevely District, South Tamilnadu.

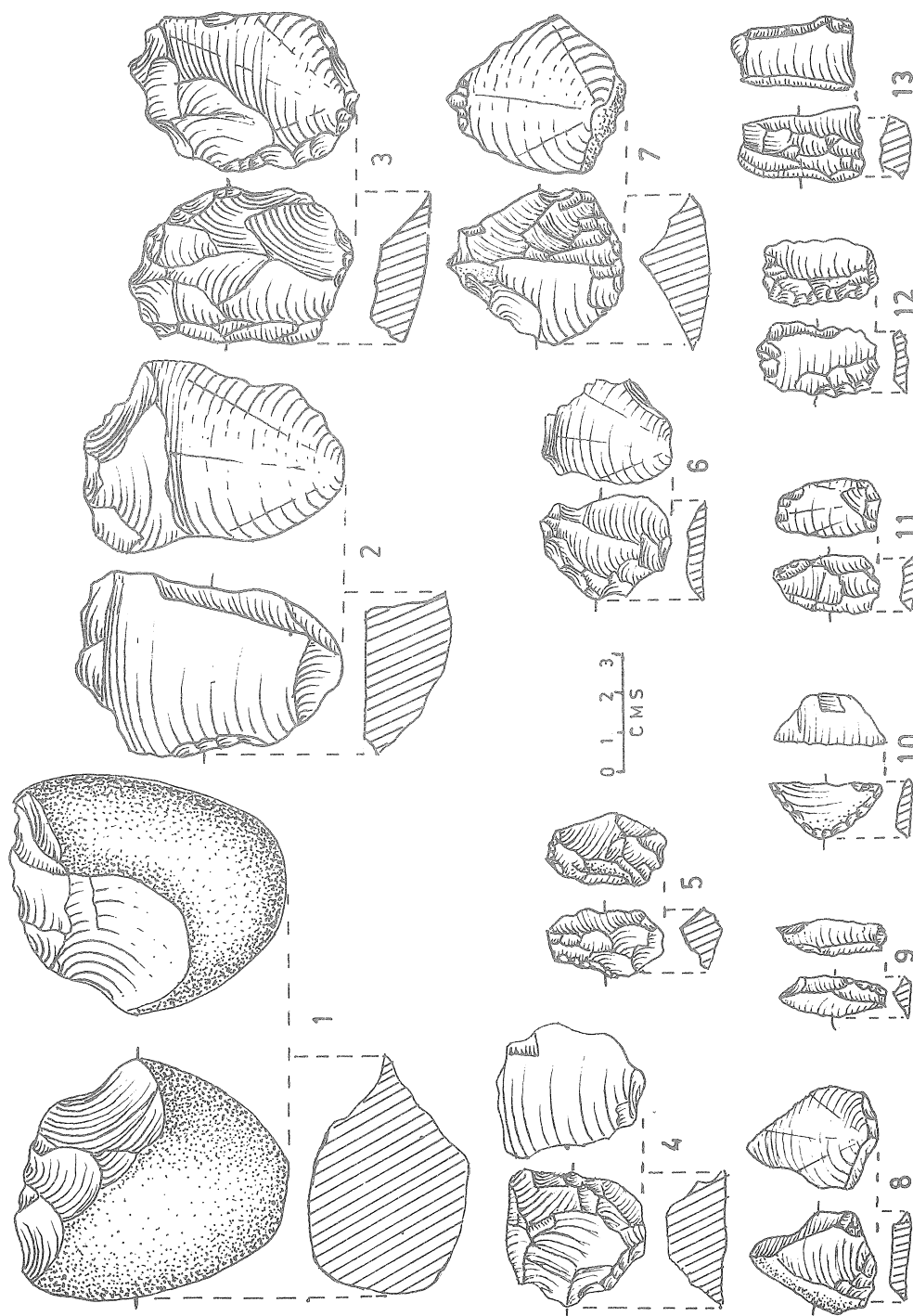


Figure 8. Sawyerpuram Mesolithic Artifacts, South Tamilnadu.

by Zeuner and Allchin (1956). The geomorphological data from the region indicate that the teris in Tinneveli might have formed as regressive dunes during the low sea-level phase of the terminal Pleistocene (post 20,000 B.P.) when the climate was more arid than now. The artifacts are found only on the surfaces of the teris, so Mesolithic groups occupied the region after the period of sand dune formation was over. This suggests that there was an amelioration of climate towards greater humidity in the early Holocene, which was more suitable for human habitation.

One of the most important geomorphological formations in Kerala, coastal Karnataka and Konkan comprises the varied laterites, which range in age from early Tertiary to Pleistocene. Most of the Stone Age sites in this region, especially of the Mesolithic period, occur on the lateritic surfaces in more or less undisturbed condition. None of these regions have any evidence of the late Pleistocene arid phase evidenced in Saurashtra and on the south-east coast of Tamil Nadu, and it is possible that the west coast, south of Thapti, never had aridity in the past, and has always had a tropical wet climate since the end of the Tertiary.

Thus, the south-western coast of India has probably never had any drastic climatic change during the Quaternary period (Rajaguru 1973; Gunder 1980), while the south-eastern coast of Tamil Nadu experienced aridity during the terminal Pleistocene (Rajendran 1979). Irrespective of these differences both regions had more or less similar types of Mesolithic industries (Rajendran, in press), although the Palaeolithic cultural remains show greater contrast (Rajendran 1981).

The main types of Mesolithic implements in these coastal regions include various types of scrapers, borers, points, burins, blades, lunates, knives, discoids, and small choppers (Figs 2, 3, 5, 8). The industry is dominated by a flake element (60% to 80%), and is mainly devoid of geometric types such as trapezes and triangles. An advanced blade technology has not been observed even though blades do occur. Bifacial points have been obtained from several coastal sites. Small choppers, flaked unifacially or bifacially, are well represented and exclusively made on pebbles. The assemblages are never found associated with pottery or any metal objects. Thus, the coastal Mesolithic industry in southern India is mainly non-geometric, non-metallic and aceramic, and based on a flake element unlike that of northern India where the artifacts are made almost exclusively on blades or micro-blades.

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