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THE EARLY FARMING COMMUNITIES OF SOUTHERN MOZAMBIQUE:
AN ASSESSMENT OF NEW AND EXTANT EVIDENCE. (1987)

João M. F. Morais

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THE EARLY FARMING COMMUNITIES OF SOUTHERN MOZAMBIQUE:
AN ASSESSMENT OF NEW AND EXTANT EVIDENCE.

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ABSTRACT

The thesis covers extensive and mostly unpublished archaeological evidence of the early farming communities of southern Mozambique. Environmental patterns and present-day human interactions are assessed, and the potentials of available ethno-historical source materials briefly estimated. The developments, aims and methodologies of the Archaeological Research Programme from 1976 to 1984 are described as providing the first contextual work from which we derive most of our present data.

The individual archaeological sites are evaluated within particular physiographic units conformable to location and environmental setting and described accordingly. The archaeological evidence is presented and discussed in relation to associated sites in the region, as well as related to commonly accepted archaeological traditions in southern Africa. An interpretative view of the data is put forward in relation to regional,physical and cultural parameters, and reconstructions of historical entities are suggested by discreet archaeological pottery traditions. An outline of the early farming community economy and organization is proposed. A review of the archaeology of the early farming communities of eastern and southern Africa is presented as providing a comparative frame of reference of overall historical processes of relevance to local developments.

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CHAPTER 1

THE ENVIRONMENTAL BACKGROUND:
Physiography, Climate and Vegetation.

1.1. Physiographic setting.

Mozambique is part of South-East Africa and occupies most of the lowlands of the region. Its territory stretches from 10° 25'- 26° 52' S / 30° 20'- 40° 45' W with a surface area of 783,030 Km2. Its coastline runs for 2 795 km from the mouth of the Rovuma river to the southernmost point at Ponta do Ouro.

Administratively Mozambique is divided in 10 Provinces: Cabo Delgado, Niassa, Nampula, Zambézia, Tete, Manica, Sofala, Gaza, Inhambane and Maputo. Bordering countries include Tanzania, Malawi, Zambia, Zimbabwe, Swaziland and South Africa (see fig.1.1). As with most African countries the present border is a colonial product which does not conform much with natural or cultural geographic features. According to the last census of 1980 its population was estimated to be 12,130,000 (Moçambique 1983).

The topography of the country is predominantly lowlands below the 200m contour in the regions South of the Zambezi. Towards the border, from parallels 24° to 20°S, there is a slight rise of the groundfloor which forms a transition between lowland and plateau. To the North of parallel 20°S, along the border and North-eastern region, the major feature is a large plateau between 500-1000m, which rises in some localities up to 1500m (see fig.1.2). In percentages, the littoral lowland and marshes form 42% of the territory, followed by 29% for the low plateaus and hills between 200-500m, 25% for the mesoplateau regions between 500-1000m, 4% for the highlands ranging 1000-1500m and only 0.2% for the

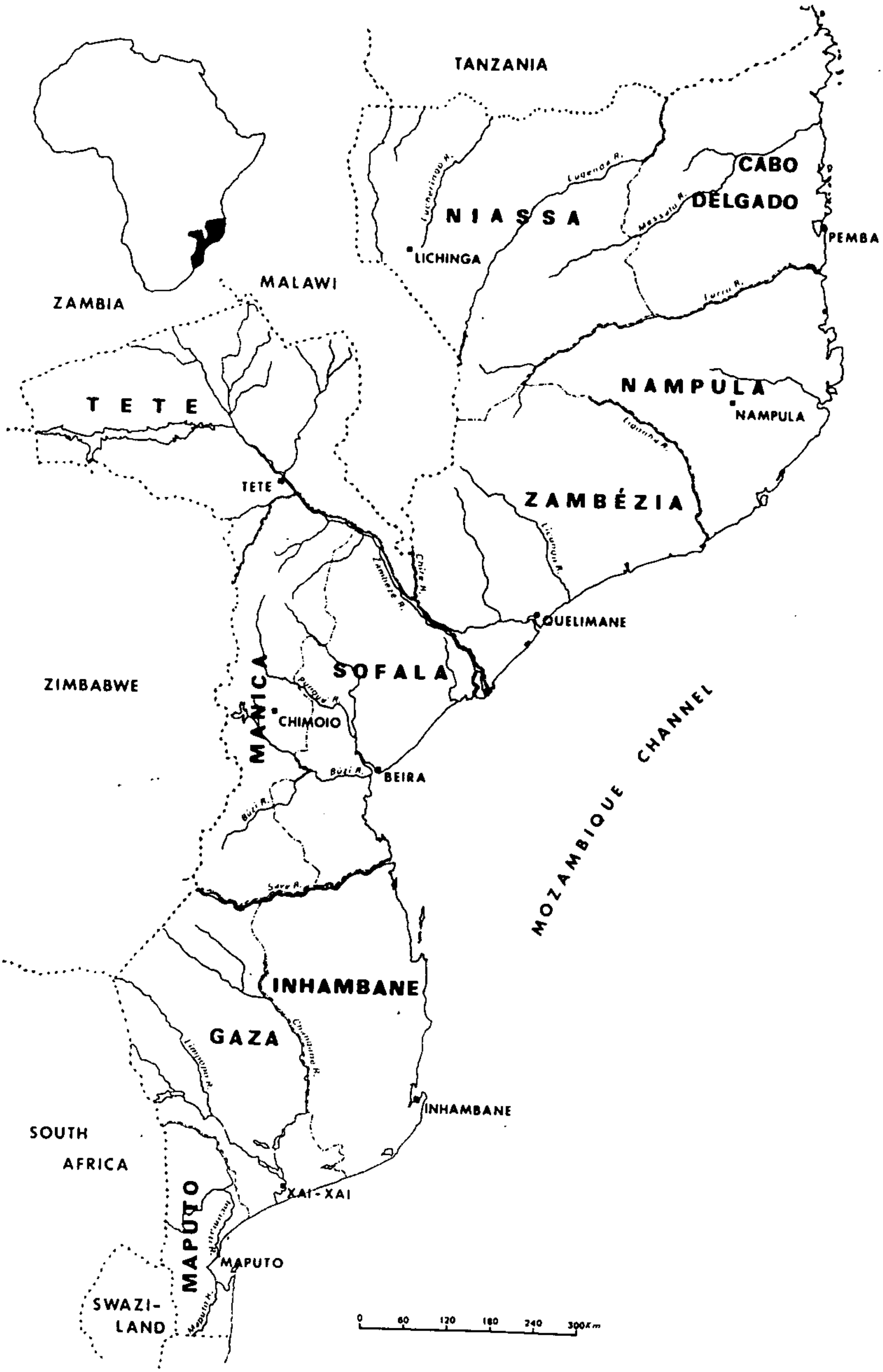


Figure 1.1. Mozambique: administrative divisions and general location in the African continent.

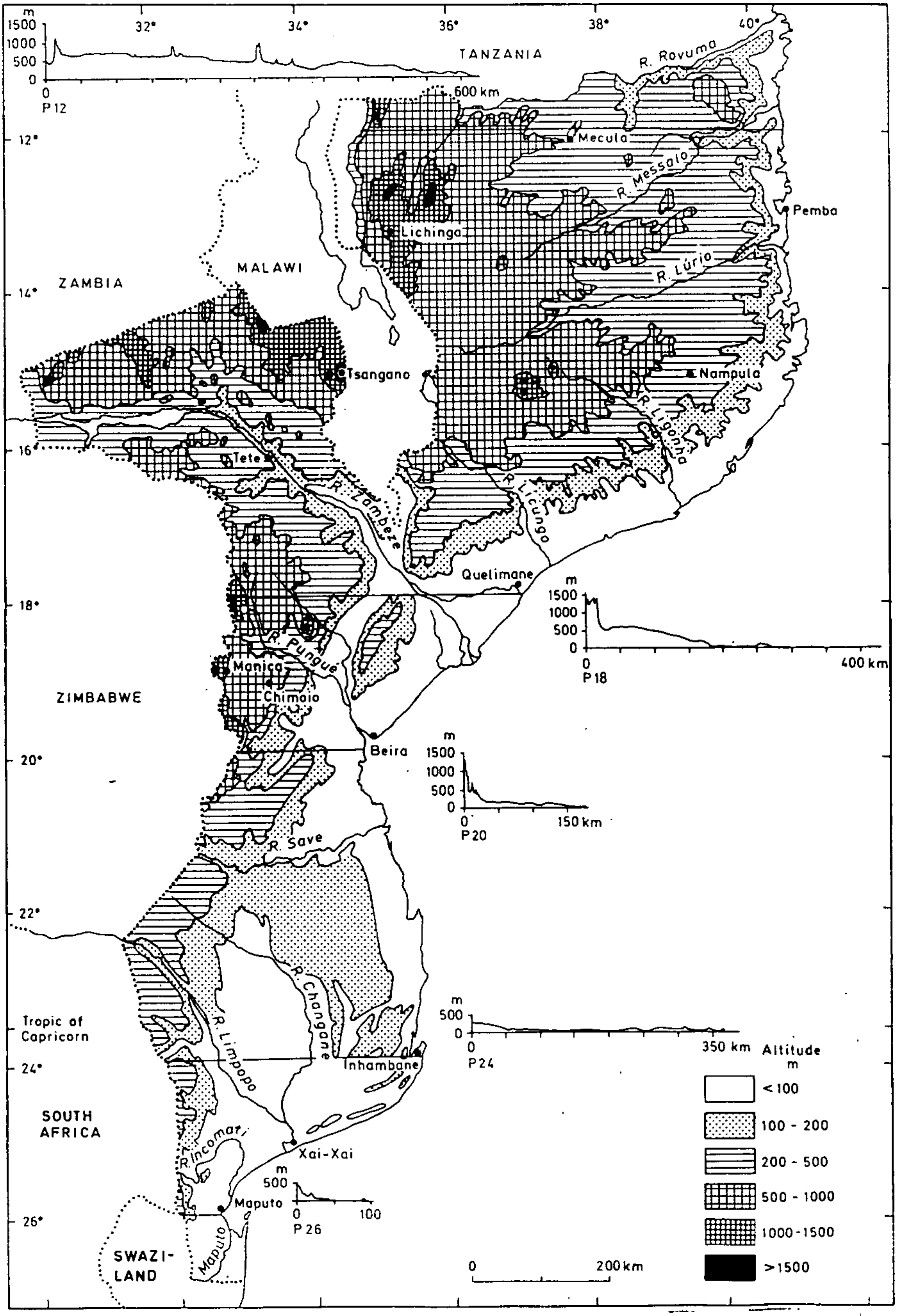


Figure 1.2. Mozambique: topography and hydrography.

mountains above 1500m (Ministério da Agricultura 1977:6).
The drainage system is predominantly orientated towards the Indian Ocean. The fluvial regimen is highly irregular and the flow fluctuates with the alternation of dry and rainy seasons. The high-water flow period takes place between January and March, the low-water flow between June and August. Floods occur in rivers like the Zambezi, Pungwe, Buzi, Limpopo, Incomati, Umbeluzi and Maputo during the wet season, under storm conditions (Indian oceanic hurricanes). The largest and most important basin is that of the Zambezi, followed by the Rovuma, Lúrio and the Limpopo, with large alluvial plains.
The major part of the geological formations of Mozambique is of Precambrian origin occupying approximately 534,000 Km2, compared with roughly 237,000 Km2 of post-cambrian. The latter is constituted by sedimentary and volcanic formations like the Karroo, Jurassic, Cretaceous, Tertiary and Quaternary (see fig.1.3). The Precambrian formations (sedimentary and igneous) are mainly located from the North- Eastern border with Tanzania to the Chire-Zambezi river's confluence, and adjacent to the borders with Zambia, Malawi and Zimbabwe to just South of parallel 20°. This geological feature, sometimes referred to as the "Mozambique Belt" (Afonso 1976:23), occupies most of the Provinces of Cabo Delgado, Niassa, Nampula, Zambézia, Tete and Manica. All the remaining areas, including some spots in Niassa and Tete are of Karroo to Quaternary origin. The coastline from 16°S to the extreme South tip of Mozambique is composed of Pleistocene and Holocene sediments mostly formed by compacted but unconsolidated red and yellow sandstone and sand, interspersed with silt and clay at the major river mouths (Tinley 1971:126).

1.2 Climate.

The climatic environment of Mozambique is determined by a wide

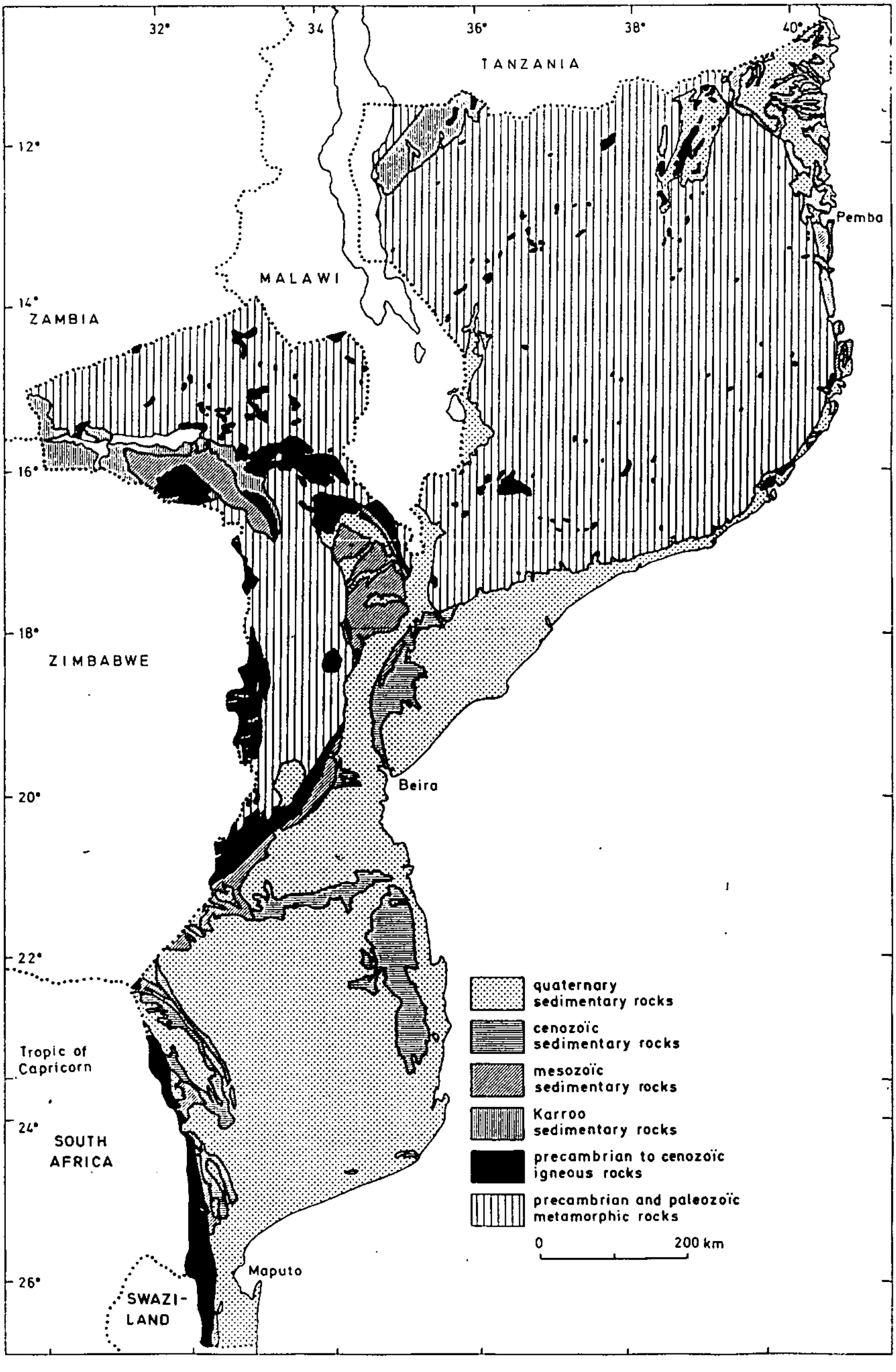


Figure 1.3. Geology of Mozambique.

set of factors derived from its position within South-East Africa: exposure to sunlight, warm Mozambique current, seasonal winds and rainfall, and topography. These elements form a climate pattern that, together with the soil type, determines each of the vegetational zones or ecosystems. The mean annual temperature is 23,5°C, except for the highland region. Seasonal variation in temperatures are minor, tending to increase with distance from the sea, and higher temperatures occur in January or February, due to the thermic inertia of the atmosphere after the sun being overhead at the Tropic of Capricorn (see fig.1.4).

The warm "Mozambique current" paralleling the coast flows from NE to SW and varies little in temperature from Summer to Winter (c.25°-19°C),(Trewartha 1961:123).

A marked seasonal reversal of surface winds occurs from April to October (NE Monsoon with a southerly flow) and October to March (SE Monsoon with a northerly flow), which are to be related to the seasonal movement of the Inter-Tropical Convergence Zone (I.T.C.Z.), affecting especially those regions North of the parallel 20°S (see fig.1.4).

The rainfall pattern during the Summer/Wet season follows a parallel orientation from the coast to the interior in the regions South of the Save. Along the Zambezi basin its pattern is more complex and towards the North regains a parallel feature, but here, facing NE. The highest rainfall values prevail during the period from December to May on the coastal and highland regions. Rainfall decreases from North to South (see fig.1.4). Some authors consider rainfall amount and regularity as the most important single climatic factor in Tropical Africa (de Voos 1975:19). As the range of mean annual precipitation varies from 200mm to 1800mm, some considerable differences of ecosystems are to be expected, and are examined later.

Mozambique is part of the vast region of Summer Rain Climate and Tropical Savanna (de Voos 1975:21). The climatic divisions of

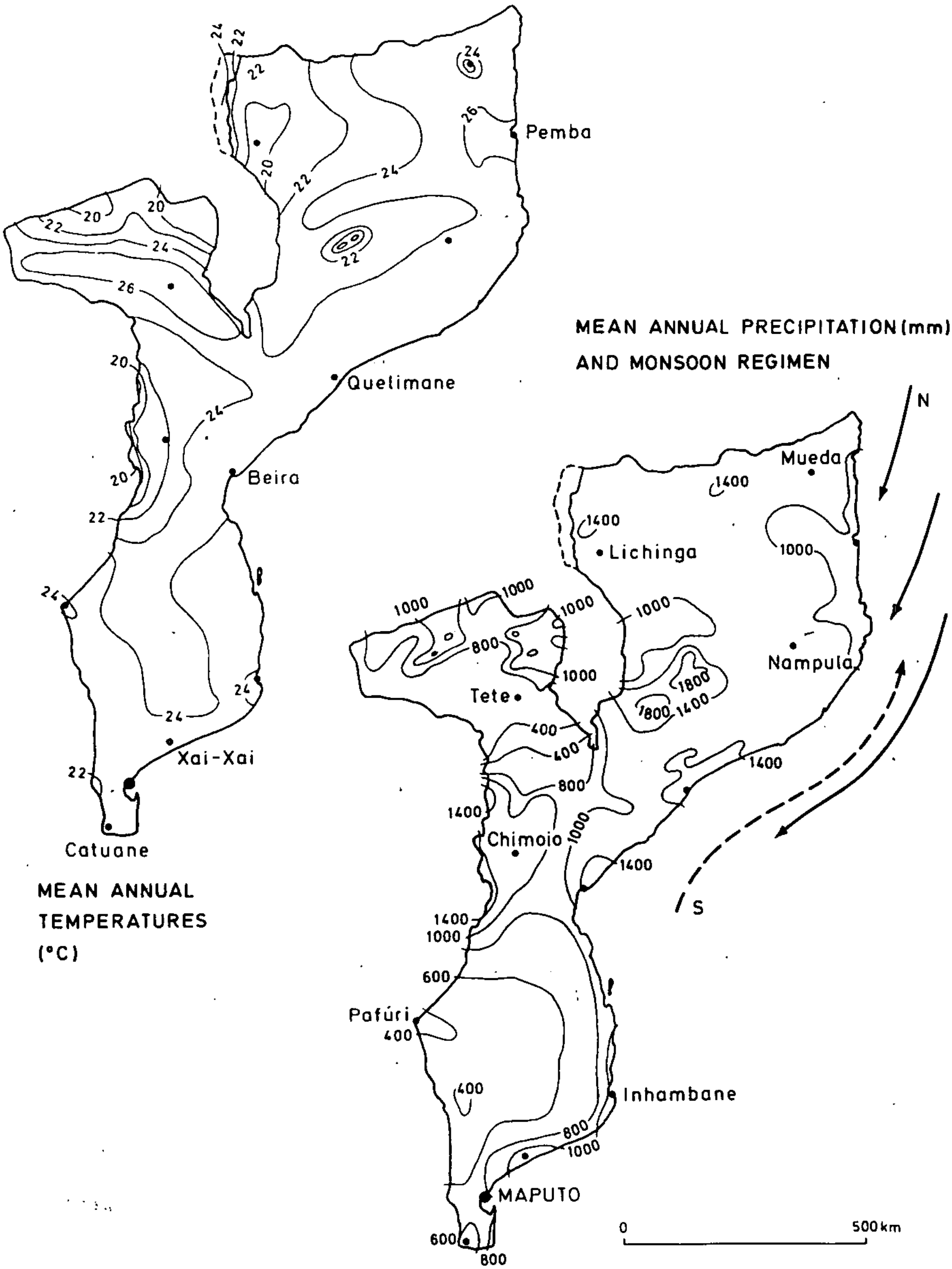
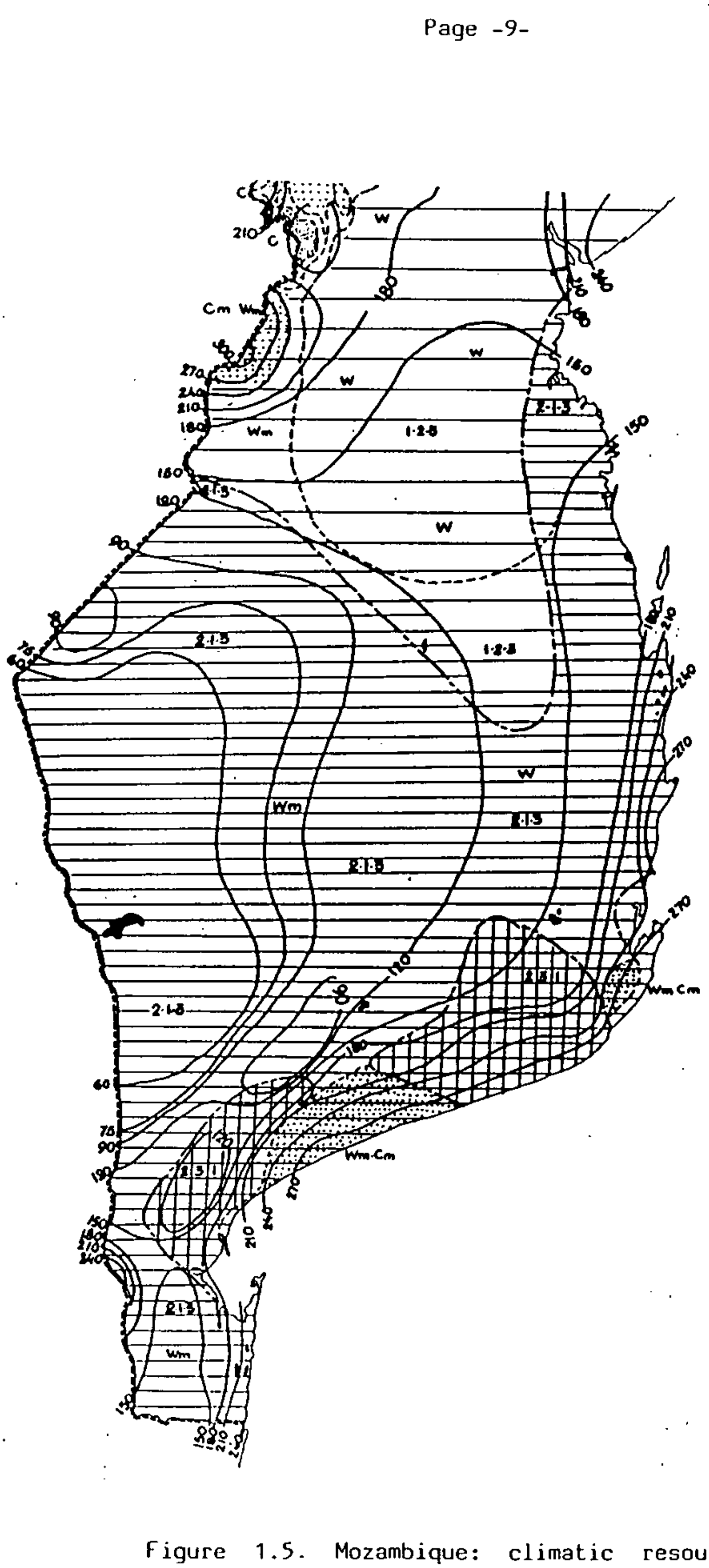


Figure 1.4. Mozambique: mean annual temperatures, mean annual precipitation and Monsoon regimen.

Mozambique, complementing Köppen's general classification with research recently implemented (Ministry of Agriculture, pers.comm.), produces a general pattern in which the Tropical summer rains are dominant North of the Save river and minor but consistent towards the South along the coastal regions (Griffiths 1972:399; Werger 1978:39). The second important climatic unit, Semi-arid, is predominant in some limited areas of the lower Zambezi/Western Zimbabwe border and especially in the interior parts of the Save/Limpopo river basin. In order to define an agro-ecological zonation, based on up-to-date assessment of known climatic patterns mainly collected from mean daily temperatures, a climatic resources inventory was produced at the Mozambican Ministry of Agriculture as a basis for the planning of agricultural policies, and in accordance with standard F.A.O. procedures (F.A.O. 1978:31) (see fig.1.5).

1.3. Vegetation.

Climate, soil and landform are the most important factors in determining vegetation categories. However, other important elements affecting vegetation are biotic (termite, wild animals) and mainly by human activities (hunting and especially burning of the vegetation, for various purposes) (Werger 1978:312). All these factors are well represented in the phytogeographical division of South-East Africa, dominated by two elements: the Zambezian Domain and the Indian Ocean Coastal Belt. Both are subdivisions of major vegetational regions of Southern Africa (see fig.1.6). Boundaries are difficult to trace with precision as climatic climax vegetation has been gradually replaced. This factor is especially evident in the Indian Ocean Coastal Belt where the vegetation is now mostly replaced by secondary types of the Zambezian Domain dominated by vast compositions of woodland, savanna and grassland in areas where forests have mostly occurred



LEGEND

Length of growing period

150 - Isoline of the mean total dominant length of growing period, in number of days.
The growing period is the period in which moisture supply from rainfall is adequate for crop growth.

Growing period pattern

1.2.3- One growing period per year in 60% of the years, with two growing periods per year in 30% of the years and three periods per year in 10% of the years.
2.1.3- Two growing periods per year in 45% of the years, with one growing period per year in 30% of the years and three periods per year in 25% of the years.
2.3.1- Two growing periods per year in 55% of the years, with three growing periods per year in 30% of the years and one growing period per year in 15% of the years.

Thermal Zones

W (Warm)- above 25.0°C
Wm (Moderately Warm)- 20.0°C-25.0°C
Wm Cm - Temperature regime of long growing periods, in which the first part is moderately warm and the second part moderately cool (17.5°C -25.0°C).
Cm Wm- opposite order to the above (15.0°C- 22.5°C).

Figure 1.5. Mozambique: climatic resources inventory. Adapted from the Climatic Resources Inventory map at scale 1:2,000,000, FAO/INIA 1982 a.

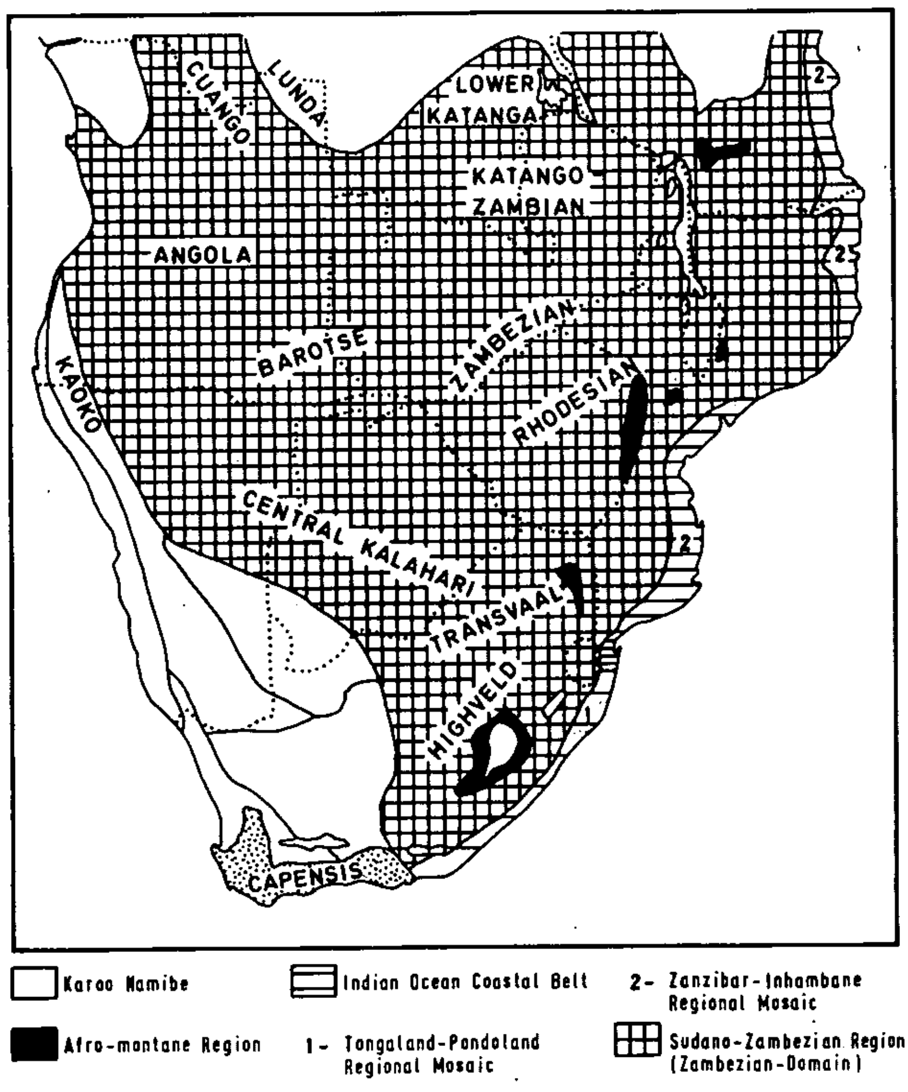


Figure 1.6. Southern Africa: phytological divisions.

in the past (Werger 1978).
The map of the main vegetational categories of Mozambique (see fig.1.7) is based on the detailed study by Wild and Fernandes (1967).

1.3.1. The Indian Ocean Coastal Belt.
This phytological coastal region extends from southern Somalia to South Africa and is mainly formed by approximately 40% of endemic species confined to it. Two regional mosaics are still possible to recognize: the Zanzibar-Inhambane and the Tongaland-Pondoland regional mosaics, divided one from the other by the Limpopo river. From here to the South, as far as Port Elizabeth, the composition of the latter regional mosaic seems to be more heterogeneous than in the northern area, and is constituted by different kinds of forest, bushland, thicket, woodland and savanna which have replaced the original vegetation. From the detailed survey by White and Moll (1978) it seems that the species of the Tongaland-Pondoland Regional Mosaic tend to be especially linked with types occurring in the other southern domains (Afromontane, Capensis and Karroo-Namib). In Mozambique remains of this regional mosaic are to be found between the Maputo border and the Limpopo river, and its vegetation is mainly formed by several types of forest, woodland-bushland-thicket, grassland and swamps. The most representative types of forest of the Tongaland-Pondoland Regional Mosaic in Mozambique are the ones found South of Maputo, and are described as sand forest (lowland sublittoral), dune forest and swamp forest, generally with poorly developed understorey. Fringing forests also occur in the large alluvial deposits of Maputo river, and in the major river deltas of northern Mozambique (Werger 1978:378). The woodland, bushland and thicket regions of this southern mosaic have been mostly affected by the economic activities of a rather dense population: from most of the woody species, only the ones

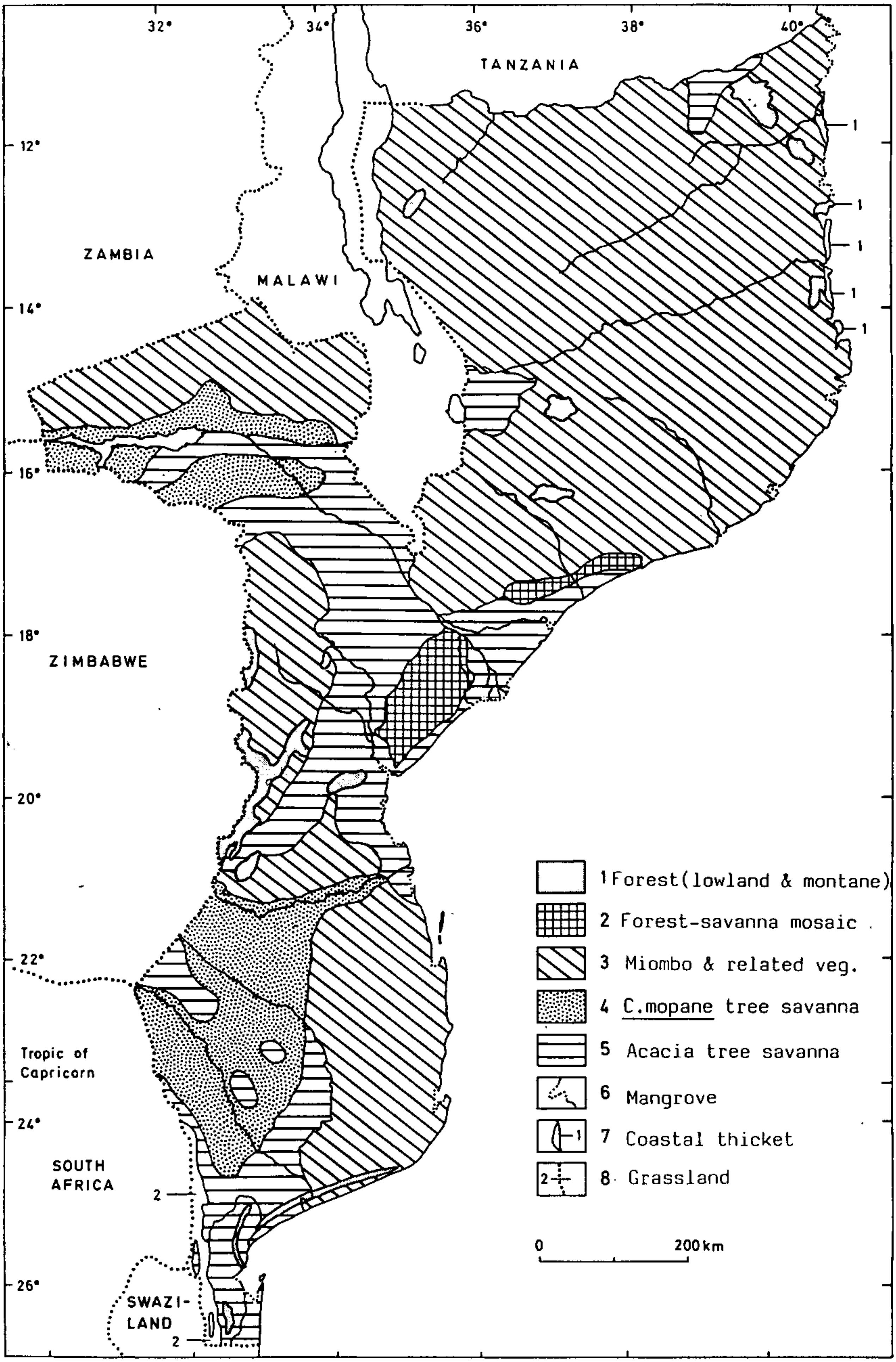


Figure 1.7. Mozambique: vegetation (adapted from Wild & Fernandes, 1967, and Werger, 1978).

bearing edible fruits were preserved. From the coast up to approximately 1000m high in the Lebombo mountains, the vegetation varies from grassland to forest in a mosaic-like pattern. The floral composition of this regional mosaic anthropogenically disturbed are the woodland and sublittoral grassland types (White and Moll 1978:593).

The Zanzibar-Inhambane Regional Mosaic is the major subunit of the Indian Ocean Coastal Belt. In Mozambique its width varies from 50 to 200 Km, respectively, in the South of Save and Cabo Delgado, comprising lowlands up to 200m high affected by a typical climatic pattern in which a perceptible dry season occurs, but not so marked as inland. The vegetation types from this region have been severely destroyed, which accounts for the fact that only few endemic species occur between Mozambique Island and the Limpopo, contrasting with 35% and 40% of endemic species, respectively North and South of this major regional mosaic (White and Moll 1978:564). These figures are to be correlated with the fact that 75% of the present Mozambican population lives within approximately 50 Km of the coast (Tinley 1971:139). The dominant linking species, in contrast with the Tongaland-Pondoland Regional Mosaic, are of western origin (Guine-Congolian and Zambezian). From the Rovuma to the Maputo rivers, the Zanzibar-Inhambane Regional Mosaic, as with its southern equivalent, comprises a poorly described complex mosaic of various types of forest, woodland, bushland,thicket, savanna, grassland, aquatic and semi-aquatic communities. According to the different climatic and soil patterns, the forest comprises five different types: moist evergreen (in the northern part), moist semi-deciduous (Sublittoral belt of ancient dunes), dry deciduous (scattered along North of Massinga) in regions with 700-1400 mm of rainfall, Hirtella (in regions of 1200-1400 mm rainfall North and South of the Zambezi delta), and fringing forest in the alluvia of some major rivers. The woodland is mostly formed by a "floristically impoverished version of Miombo Woodland" between the Rovuma and the Limpopo rivers (White and Moll 1978:578). Thickets occur in the recent dunes of almost the entire length of the Mozambique coast. Grasslands do not occur separately but in mosaic with other vegetation on seasonally flooded clayed depressions (the "tandos" between the Save and Buzi rivers) in high water-table badly-drained regions, interspersed with a typical palm ("Nipa") community. Some of these badly drained grasslands, when on the deltas of large rivers, develop typical aquatic and semi-aquatic communities. Large mangrove communities on halomorphic soils are also present in the mouth of major river swamps and mud-flats exposed at low tide from several of the bays and estuaries between the Rovuma and the Maputo.

1.3.2. The Zambezian Domain.

The Zambezian Domain is the major vegetational composition in Southern Africa, forming approximately 75% of the total area (Werger & Coetzee 1978:301). In Mozambique the various components of this domain have been gradually replacing what previously was the Indian Ocean Coastal Belt, most probably induced by anthropogenic activities. Seasonal precipitation, rainfall gradients, and patterns of soil and climate in Mozambique define 3 major vegetational types of the domain for the region: moist-tropical Miombo woodland, dry-tropical Colophospermum mopane savanna or woodland, and warm-temperate and dry-tropical Acacia tree savanna and other mosaic vegetation (see fig.1.7).

The Miombo woodland type is the most widespread vegetation component in Mozambique North of the Limpopo, being part of the common Brachystegia spiciformis-Julbernardia globifora Miombo vegetation on acid soils at medium altitudes of Zimbabwe, Eastern Zambia and Malawi. North of the Zambezi into Northern Mozambique this type is clearly dominant, occurring in a taller form compared with the shorter Miombo form further South (Malaisse et al.,1975; Werger & Coetzee 1978:314). Its versatility is shown by adaptations to both the high altitudes in the Provinces of Manica, Tete, Quelimane, Nampula, Niassa and Cabo Delgado, as well as to the lowlands, where Miombo is to be found associated with sandy soils in the Provinces of Sofala, Inhambane and Gaza, its southernmost limit. Miombo woodland occurs with some endemic species of the Indian Ocean Coastal Belt and is regarded as a secondary succession to the previously destroyed wet forests (Werger 1978:348). Being so widespread in different ecosystems, the Miombo woodlands are far from being considered an homogeneous type. It is however typical of this community to be dominated by trees of the genera Brachystegia, Julbernardia and Isoberlinia. The field layer is constituted by different forms of shrubs and grasses. The phenology (biological production cycle) of these components varies with season: Miombo trees and shrubs flower before the advent of the rains, as do a large number of herbs (several types of geophytes). The fruits of some species ripen during the rainy season, but the majority of them have their fruits available during the dry season. Grasses flower later during the rainy season (see fig.1.8).

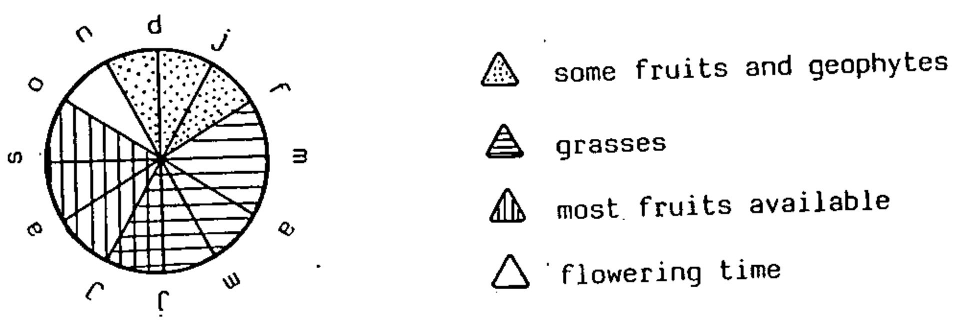


Figure.1.8. The phenological cycle of the Miombo floral composition

Moist-tropical Miombo woodlands are separated from warm-temperate and dry-tropical Acacia tree savanna and other mosaic vegetation by another typical woodland or tree and shrub savanna type: the Colophospermum mopane. This species dominates the vegetation of dry, clayed soils in arid (400-800mm rainfall) areas of the major hot and dry river basins, like the Zambezi, Save, Changane and Limpopo, or on loamy sand types of lacustrine calcareous formations in the South of Save river hinterland. In Tete Province, typical mopane is part of a woodland with tall trees like Adansonia digitata (Baobab) and nutritional grasses of Andropogon sp., Setaria sp. and Cenchrus ciliaris. In the South of the Save hinterland the mopane is part of a mixed tree and shrub savanna. The understorey of mopane vegetation is usually poorly developed, and that is probably one of the reasons for the susceptibility to erosion of the soils, as well as accounting for the reduced role played by fire as in many other types (Werger and Coetzee 1978:353). However, because of the rich nutritional value and prolonged period of availability, mopane can support considerable numbers of wild and domestic animals. Early in the dry season when most of the undergrowth has already died down, mopane is still green. It is during the wet season from October to February that the woody species flower, and have their fruits ripe from March to April. It is also during the rainy season up to March-April that geophytes, succulents and grasses are active. However,with geophytes it is the period after active growth (i.e. flowering time from June) when they are at peak of usefulness (see fig.1.9).

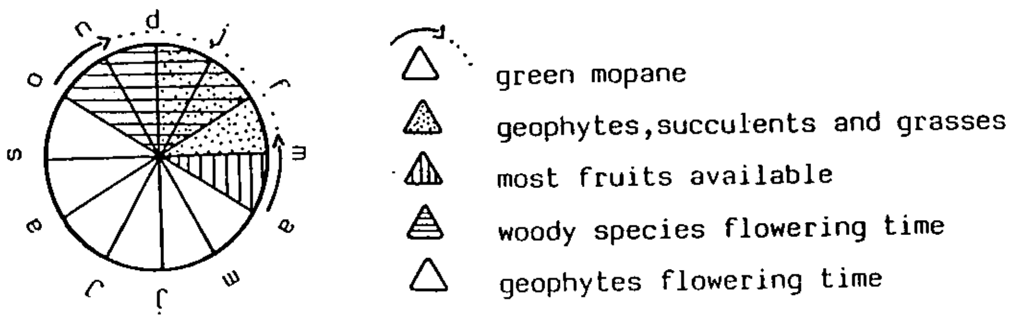


Figure 1.9. The phenological cycle of the C. mopane tree savanna.

The warm-temperate and dry-tropical Acacia tree savanna floral composition is the second most widespread type in Mozambique after the Miombo woodland, and is rather unevenly distributed. Its character can vary from thicket, to woodland, savanna or grassland, but the Acacia tree savanna is one of its most distinctive forms and is the reason why we use it as the general heading for this group. Thickets normally occur in patches, especially among the savanna, as regenerative stages after disturbance such as shifting cultivation, overgrazing or severe fire damage, or as components of specific landforms like the upper slopes of valleys or soils (Werger & Coetzee 1978: 316). The under-cover of this heterogeneous floral composition is mainly formed by grasses, either of the "sour" or "sweet" varieties, or both together. "Sour" grasses have a high fibre content, a wiry appearance and lose their nutritive value early in the dry season. "Sweet" grasses are softer, with less fibre, and retain their nutritive value well into the dry season. "Sour" grasses are associated with high rainfall areas and poor acid, sandy soils. "Sweet" grasses are typical of dry regions and clayed soils. But both normally coexist in the field.

The seasonal aspects of this highly varied vegetation differ from type to type, and can be summarized only in general terms. With the beginning of the rainy season, grasses and herbs grow out fast, and the shrubs as well as the woody species flush with new leaves which do not survive with the onset of the dry season. Only in drainage lines, "dambos" and depressions do the grasses stay green for sometime after. The first half of the dry season is the period during which most species bear ripe fruits (see fig.1.10).

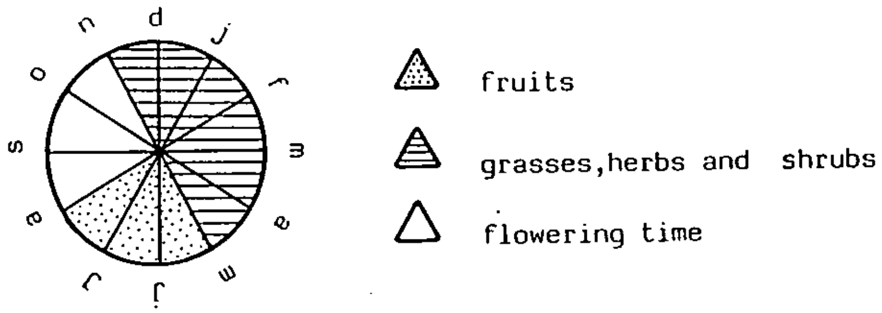


Figure.1.10. The phenological cycle of the Acacia tree savanna and related types.

There are four main categories of the savanna type of this composition: the lowveld (subtropical) Subhumid Mountain Savanna, Arid Mountain Savanna, Combretaceae-dominant plains Savanna, and Acacia-dominant plains Savanna. The first category includes the Eastern Lebombo range towards the coast with a rainfall of approximately 700mm. This is one of the most favourable regions for human settlement, agriculture, animal grazing of "sweet" and "sour" pastures, and production of charcoal for consumption at the capital. Advantage has been taken of these resources, and in arable areas very little natural vegetation remains. Another distinctive feature in the same region is the extensive grassland of the Eastern Lebombo slopes.

The arid Mountain Savanna is dominated by Androstachys johnsonii in scattered patches of dry tropical areas of woodland and shrub savanna. This type occurs in the Eastern Lebombo Mountains, South-eastern Mozambique in the semi-arid to arid regions bordering the coastal zones, where it alternates with Julbernardia savanna, in the northeastern corner of the Mozambique-Transvaal border North of the Limpopo, and in the narrow coastal zone of northern Mozambique between areas of dry deciduous thickets.

The Combretaceae-dominant plains Savanna occurs in tropical flats of approximately 500-700mm of rainfall in Malvérnia (Western Gaza Province), in patches between the Changalane-Limpopo river basins, and in localized regions in the sublittoral sandy soil zone of Nampula, Central Mozambique and South of the Limpopo river.

The Acacia-dominant Plains Savanna occurs interspersed with other woody genera (e.g. Sclerocarya, Julbernardia, Androstachys, Adansonia, mopane and Hyphaene) in fine-textured soils South of the Save, and between the Zambezi and the Save rivers in the sublittoral belt, mainly along the Buzi river and also in the Gorongoza region.

CHAPTER 2

PATTERNS OF MAN-LAND RELATIONSHIPS AND HABITATS.

2.1. Land-use systems.

The relevance of regional ecological evaluation of vegetation and soil types in relation to ancestral agricultural practices is well known to African agronomists. Earlier studies made this point quite clear (Trapnell and Clothier 1937; Allan 1965) while demonstrating the close relationship of vegetation, soils, and the local systems of land-use.

In Mozambique, the agricultural census of the indigenous sector carried out from 1961 to 1966 allowed the definition of a number of agricultural regions where the occurrence of different cultivated species was seen to be suitably adapted to the climatic conditions of the area (Carvalho 1969). However, the study does not articulate traditional cultigens with specific land-use criteria. The main crops under traditional cultivation include: grain sorghum "mapira" * (Sorghum spp.), bulrush, candle and pearl millets "mexoeira" (Pennisetum spp.), manioc "mandioca" (Manhiot esculenta Grantz), maize "milho" (Zea mays L.), groundnut "amendoim" (Arachis hypogea L.), beans "feijão" (gen. Papilionacea) and finger millet "nachenim" (Eleusine coracana Gaerth), which are in most cases associated or otherwise define clear agricultural regions (Carvalho 1969:map 1). A feature also worth stressing is that the cultigens in association seem all to be very well proportioned taking into consideration the local environmental conditions (Id.:13).

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* Vernacular Portuguese names are given in inverted commas.

Over 1,5 million farmers and respective families were engaged in 1973 in subsistence agriculture producing mainly maize (Zea mays L.), manhioc (Manhiot esculenta Grantz), rice (Oryza sativa L.), peanuts (Arachis hypogea L.), and a variety of other vegetables and fruits (Moçambique,Missão de Inquérito Agrícola 1973). However, the majority of these also grew crops for the market, as well as gathering other non-cultivated cash products like cashew-nuts "caju" (Anacardium occidentale L.), coconuts "coco" (Cocus nocifera L.), and sesame "gergelim" (Sesamum indicum L.). Excluding the fertile alluvium of the river valleys and other rich soil formations where crops can grow regularly every year in the same fields, most of the agricultural activity is carried on in areas cleared by cutting and burning. This widely applied agricultural system is known as "slash and burn" cultivation and, whilst making use of fallow where demanded by environmental constraints, in general requires an easy availability of cultivated land. In areas where land becomes in high demand this system eventually degenerates into a rotational fallow system where the land is not left to re-establish completely through shifting crop fields (Grove and Klein 1979). All these variants of land-use systems are associated with particular environmental and technological circumstances: long dry-season with only one growing period, limited soil fertility, seasonal and hand labour without animal assistance or use of fertilizers, which are not uncommonly related to periods of famine. Particularly important during these hardship periods is gathering of wild plants and insects, as well as hunting wild animals. These latter activities may also be maintained to supplement the regular diet especially in specific areas or during a suitable season: honey in southern and central Mozambique, fishing along flood plains and lakes, shell-food gathering along the coastal sandstone platforms or river-mouth mangroves, as recorded in several regions (Tinley 1964; 1977:81). From what is known in other regions most vegetational units provide an extra source of energy, Miombo being a good example with at least fifty edible plant species recorded (Malaisse 1978:605), and fruits available throughout the dry season, as mentioned above.

From what was said before, we can theoretically draw an eclectic land-zoning pattern inspired from the von Thunen model of agricultural land use (Sallade and Braun 1978:20) for areas where there is no major ecological instability. These will be represented as an uneven set of central and peripheric zonations (see fig.2.1).

The most agriculturally preferred areas are obviously the ones where least work is required, such as drainage lines and alluvial soils in the flat lands, followed by savannas, thickets and forests in order of preference, as each one requires more work in cleaning.

The fields where crops will be planted (mostly sorghum, maize and millets) start normally to be cleared in the middle of the dry season (around June) and the waste is burnt before the rainy season starts (October-November). Planting takes place soon afterwards in November-December depending on the rains. The size of the fields depends on the family needs and quantity of expected yield. Hoeing of fields for removing grass and weeds takes place during the plant growth, and reaping is normally accomplished around May-June.

Sorghum and manioc are especially selected crops when the soils are at their poorest, the latter also being particularly adjusted to dry-season rainfall (Carvalho 1969:32), and hence of capital importance when a crop failure occurs. For the same reason the same author records that in regions of semi-arid climate in southern Mozambique there is an higher occurrence of crop diversity generally in parallel with Pennisetum spp. (Carvalho 1969: 39), which was found as least rainfall dependent of all the crops in the region (Id.1969: 30). The only agricultural calendar

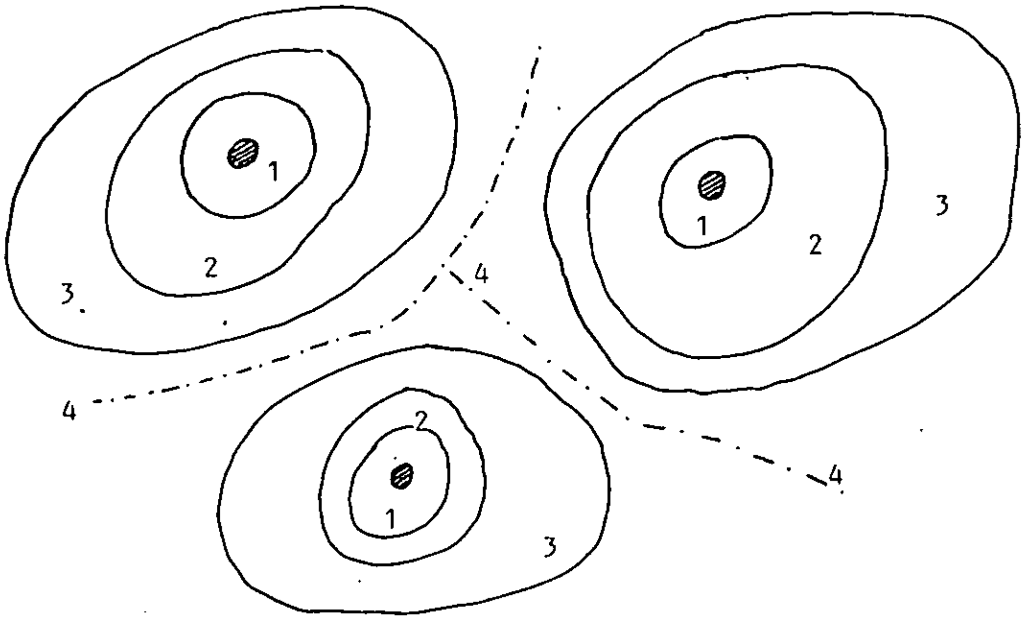


Figure 2.1.Model of farming land-use zoning pattern

0. Houses and Gardens.
1. Zone under permanent cultivation.
2. Zone of rotational fallow cultivation.
3. Zone of shifting cultivation.
4. Bush for hunting and collecting.

(see below for comments)

Zones 1 and 2 might not be much differentiated, depending on soil potentials and size of the community. In zone 1 both soil and vegetation cover potentials are heavily affected. In zone 2 the soil properties are normally degraded, but able to recover after adequate fallow.

In Zone 3 the soil properties might not be much altered, but when herding is associated, the vegetation cover tends to deteriorate due to grazing.

In zone 4, both primitive soil and vegetation are not affected. The distance of this zone from the center might also vary and intermingle the others.

ecologically meaningful that we know of is given by Tinley for the Gorongoza region in the Sofala Province (Tinley 1977:81).
Division of labour is in general quite well defined among the modern peasant societies in Mozambique. Men's work is mainly divided in different periods of the year in a succession of agricultural activities such as clearing, planting, weeding, harvesting, and storing. Complementing these, hunting, fishing and building or restoring houses and granaries are also frequent, when much work is not required in the fields. The women's role is mainly devoted to household management, food preparation, water provision, pottery making, gathering of wild foods, shellfish, and firewood, as well as relevant agricultural activities in gardens and crop fields. Young children are especially confined to the household territory under women's care, and depending on age, might help them in some of the tasks.
According to the F.A.O. Production Yearbook (F.A.O. 1974), by 1970 the total arable land was circa 4% of the area of the country, the land under permanent crop production 0,3%, permanent meadows and pastures 56,2%, forest and woodlands 24,8%, and other land 15,1%. For the same year the land tenure was distributed in 49,9% for the modern sector and 50,1% for the traditional one (Moçambique, Missão de Inquérito Agrícola 1973). However, it should be noted that in terms of the total farming population, the modern sector of European origin only represented about 1% of it. There are as yet no figures available for either land requirements of critical population densities of the traditional land-use systems in Mozambique.
Some farmers also keep livestock in areas free from Nagana (animal trypanosomiasis) transmitted largely by vectors of several types of Glossina which affects considerable parts of the territory (see fig.2.2), and which covered even wider regions in Mozambique before the impact of the panzootic plague of 1889-1898 (Dias 1961). This factor, together with a large degree of

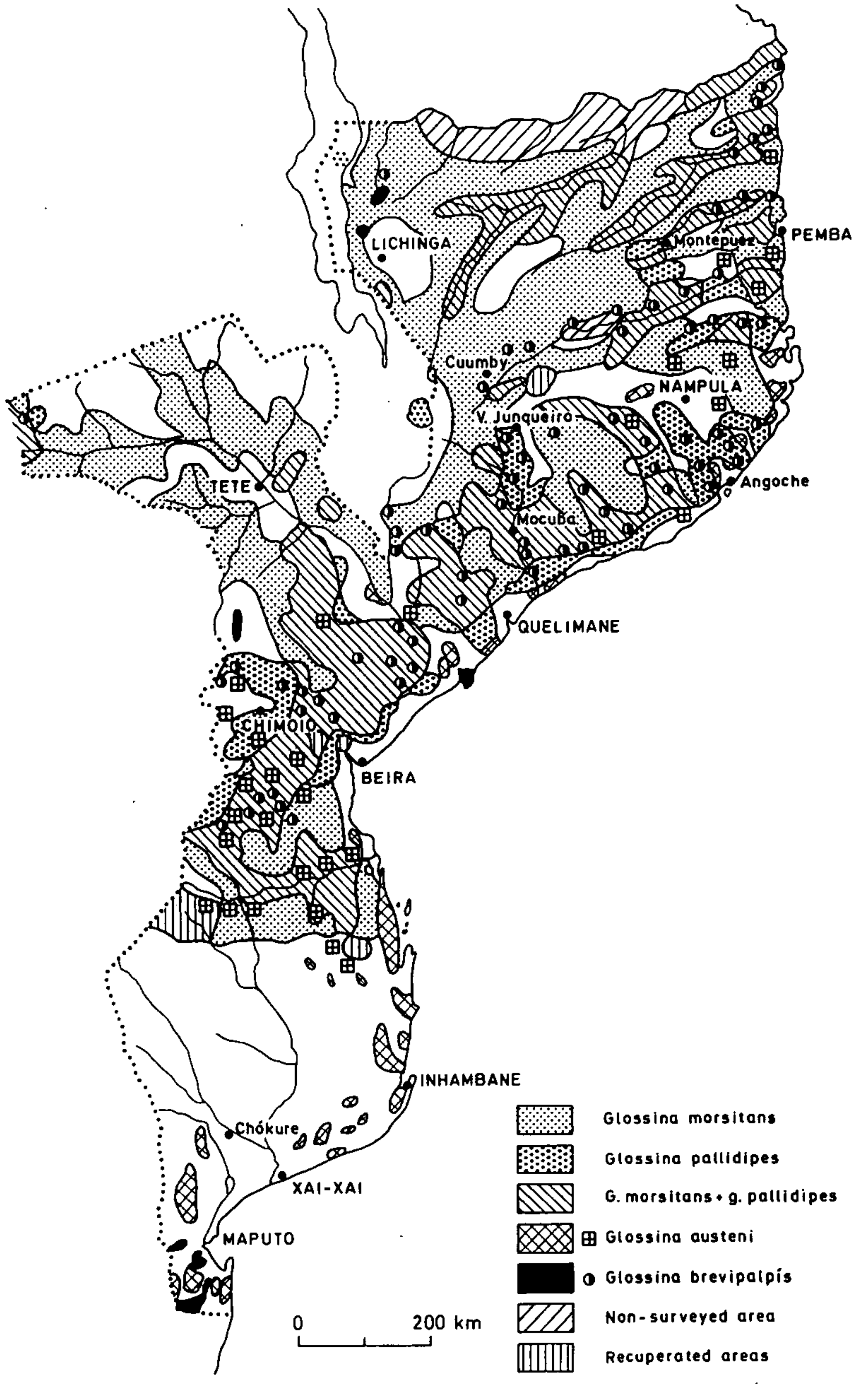


Figure 2.2. Mozambique: Glossina distribution.

hunting of the wild fauna, may have had an important influence on the favourite tse-tse host population. Judging from the historical accounts pre-dating it, at least the regions South of Save river, nowadays relatively free from Glossina, were until then affected (Id.:56). However, there seems to be a modern southwards spread from the Save river of both G.pallidipes and especially G.morsitans, observed from 1947 to 1972 (F.A.O./ Moz.,Ministério da Agricultura, pers.comm.). In the South of Save river region G.austeni is limited to some isolated pockets, far away from permanent water sources, and confined to very dense forest islands surrounded by dry semi-open woodland savanna.

Another fact to be considered for livestock distribution is regular water supply and suitability of grassland types (see below pages 162-4). However,it is clear in the case of Mozambique that, since the vast majority of the country includes adequate mixed pastures where "sweet" and "sour" grasses coexist, the main imperative for the actual distribution of livestock is the absence of Glossina.

Of a total of 1,422,128 cattle surveyed in 1977 more than one half were from Maputo and Gaza Provinces, followed by Zambézia, Tete and Inhambane Provinces with approximately a total of 400,000 head (Ministério da Agricultura 1977:34). The large majority (more than 50%) of the cattle are of the local so-called "landim", or rather Sanga and Nguni types, and a predominant Zebu breed in the Province of Tete. As in most African communities, there is no evidence for a predominant pastoral economic basis in modern Mozambican peasant societies.

2.2. Man's selective influence on Habitats.

Extensive and intensive use of the environment by agrarian communities in the past are expected to have gradually transformed some specific ecosystems in Mozambique. Descriptive data for this country is however unsystematic, which requires us to infer some of the evidence from other similar areas (Allan 1965; de Voos 1975; Malaisse 1978).

De Voos suggests that "... the existing savanna vegetation is not as "natural" as was once supposed, and the range of natural savannas has undoubtedly greatly extended under man's influence..." in areas where woody vegetation would otherwise have corresponded to a climatic climax, and he lists fire as one major factor (de Voos 1975:30). Protection of specific tree species, grazing and trampling of the land by domestic stock and consequent influence of man in the wild fauna are mentioned as complementary for gradual transformation into some of the present savanna ecosystems. Also for Malaisse (1978:602), the Miombo is not a climatic climax but a fire climax on a three-stage regressive series (dense dry forest- open woodland- savanna) mostly induced by wood cutting and fire to the presently intermediate and predominant Miombo stage (the major woodland formation from a total of 12% woodland coverage of Africa). It thus seems relevant for us to understand further the differences between the so-called natural and man-induced savannas in terms of habitat management. In general sense, the situation seems to be a balanced one as put forward by Allan (1965:210-2) for the Miombo woodlands of South-Central Africa, when he argues that the general low productivity, low human-carrying capacity with very moderate population densities, and the presence of Glossina has prevented the population reaching the necessary level to alter the environment.

For the case of Mozambique one could assume that most of the Miombo woodland and savanna is a secondary succession of the Indian Ocean Coastal Belt Forests mentioned above. Considering that savanna formation increases the mean annual temperature, its mean daily amplitude, and decreases the relative humidity

(Malaisse 1978:602) one can assume that man-made modifications mainly induced by agriculturalists should have brought a considerable change in a number of regional climatic patterns, soil erosion and degradation.

Several climatic, soil and vegetation structures suggest different ways of land management, and these are thought to have different forms of impact from one phytological region to another. It has been pointed out above that the Indian Ocean Coastal Belt South of the Limpopo is more heterogeneous than the northern area, and with more evidence for manipulation and change of the natural vegetation. We have also mentioned previously that, as an average figure, 75% of the population of Mozambique lives on a 50Km coastal strip that varies in its environmental constitution. Considering that the figures represent an uneven distribution of the population, a number of land-use criteria and carrying capacity limitations are expected to have determined those changes in the past. Taking into consideration the agricultural regions of traditional agriculture proposed by Carvalho (1969), the cultivated species for one specific area seem to be quite consistent with the climatic conditions available, being also less dependent on soil conditions (Id.:14). This being so, with higher human input, satisfactory productive levels might be achieved in soils of poor quality, provided that conditions are not adverse. Which suggests that famine is more closely related to climatic factors than to peasant land-mismanegement. However, even if we have some of the indicators of the dynamics involved, we lack sufficient data to provide a set of explanations based more on causes (land-use and other agricultural practices vis-a-vis the environment) than its consequences (ecological transformations).

There is little doubt that interactions between man and the environment have taken place in Mozambique for quite some time. From what was previously described of the floral units some effects of this can be inferred: insufficient seasonal precipitation and consequent dry vegetation induces regular fires, a major tool for vegetation control. Burning of the grass litter and some of the woody species stimulates the growth of young grass which suits the needs of both cattle and wild animals. Forest and woodland clearing for new fields, together with fire-controlled savannas may modify the climate and result in a reduction of the average rainfall and, with the lack of vegetation, water-tables may fall due to rapid run-off which may inhibit the regeneration of woodland or forest (de Voos 1975:30). Increase of animals in areas free of *Glossina* may result both in overgrazing and uncontrolled growing of thickets, especially in dry areas with 600mm or less of rainfall (Werger & Coetzee 1978: 317). The presence of *Glossina* may conteract this tendency and favour hunting activities.

Other minor biotic elements that may induce transformations of the vegetation are termite and elephant.

CHAPTER 3

SOURCE MATERIAL I: GENERAL BACKGROUND.

3.1. Introduction.

If there is a recognizable pattern of social behaviour and cultural traditions among present-day communities, how may we define the historical processes underlying their transformations in time?

Historical records very rarely follow a simple descriptive continuum unless one is examining only a single line of evidence. The early Portuguese documentation for Mozambique might provide the adequate source for the study of the Portuguese mercantile expansion in the region, as well as revealing valuable insights into the nature of the extant institutions among the contemporary farming communities.

As in the case of society itself, and particularly its cultural institutions, which always express meaningful values and hence are always in transformation, languages are also a product of change, as obsolete social practices tend to be excluded or assimilated into new ones of different quality and expression. Comparatively, the modern linguistic picture as available, even if not immediately relevant to the nature of our research, seems to be internally consistent and to allow some very general projections into the past.

Ethnology, which was for many years the scientific paradigm in the study of pre-capitalist societies, had its own ways of ordering the evidence as cultural traits and areas, a method thought of as being "nearly as useful in the ordering of the immense range of ethnographic variation as is the Linnaean system in the ordering of biological forms" (Murdock, quoted in Ehrich and Henderson 1968:565). A related model seems to have dominated the tradition of ethnographic studies in Mozambique, where both analytical (Junod 1962) and synthetical approaches (Rita-Ferreira 1975) were clearly oriented towards the empirical construct of "Kulturkreise" or areas of homogeneous culture (Zwernemann 1983: 53), as a means to classify and describe the available evidence. We will take up the discussion later on when evaluating the contribution of ethnology for the knowledge of the cultural patterns represented in Mozambique.

3.2. Early Portuguese documentation.

The Portuguese left an outstanding body of documentary sources for Southeastern Africa from the late 15th century onwards, which has been apparently underestimated. Vivid reports of the epoch include writings of government officers, priests, merchants and navigators expressing, no matter the specific newcomers's roles and cosmologies, after-images of societies whom they contacted for the first time. These substantial descriptions of customs and traditions should be seen as primary sources of information which, given an appropriate hermeneutical treatment, form a valuable source of interpretation of past communities in the region. A good example of these primary sources are the several volumes of "Documentos sobre os Portugueses em Moçambique e na África Central" (Centro de Estudos Históricos Ultramarinos 1962-1971) covering the period 1497 to 1560, and the roughly contemporary narratives of the "História Trágico-Marítima" (Brito 1971). Also relevant are the "Records of South Eastern Africa" (Theal 1964) and "The Portuguese in South Africa" (Theal 1969).
For the sake of illustrating some of the potential we selected a number of historical references from documents mentioned by Martinez (1975) which have special interest for the earliest period of mercantile contacts in the coastal regions of Southern

Africa.

The first contacts of the Portuguese in the Cape Province of South Africa (1486), and later in the Natal coast (1497-1499), reveal the presence of several hunter-gatherer and pastoral communities of Khoisan linguistic expression, and provide details on their appearance, housing, clothing, diet, implements and ornaments, as well the type of cattle and sheep raised (Theal 1969:82; Centro de Estudos Históricos Ultramarinos 1962-1971, vol.I: 8; Velho 1940; Castanheda 1924: 10-12). Another reference is made which seems to reveal a wider geographic distribution of these communities by 1512, at least as far as the Zimbabwe plateau, but this time also involved in the coastal to hinterland trade network (Centro de Estudos Históricos Ultramarinos 1962-1971, vol.III:184).

It is however obvious that the Portuguese special interest in their encounters with farming communities lay in the possibility of their producing valuable exports such as ivory and gold. Competition between the newcomers and the influential Arab mercantile establishments on the coast at Sofala and Mozambique Island provides a basis for assuming that pre-Portuguese interchange was already a consolidated tradition among most of the seaside populations (Centro de Estudos Históricos Ultramarinos 1962-1971, vol.IV:276-278), to some of whom new creeds and cultural values were also gradually conveyed in areas North of Sofala, which acted ere long as regional trading centers (Castanheda 1924:14-16). Details of this Indian Ocean commercial network that should have been especially active in the central and northern Mozambican coast, at least from the 9th to the 15th centuries, are also referred to by early arab writers (Morais 1978: 8-9; Rita-Ferreira 1975:25-37). From late 15th century the Portuguese documents deal quite extensively with the social formations involved in trade between Sofala and Great Zimbabwe both in terms of production, distribution and technological levels of farmers and their rulers, like housing, settlement patterns, mining procedures, trade routes (Centro de Estudos Históricos Ultramarinos 1962-1971, vol.I: 388-400), and upper class competition among Rozwi and Mwenemutapa for the control of the market (Ibid.,vol.I:506). A good example of the relevance of the Portuguese records for the historical reconstruction of the Mwenemutapa State is provided by N.da Costa (1978) and Randles (1981).

Furthermore, some of the sources do also contribute in interpreting particular historical processes among major present-day ethnic groups. This is the case for the connotation of a Karanga (Shona) minor entity among the Thonga in the Inhambane region. At least one document dated from 1501 establishes dissimilarities between the "Mocaranga" and the "Botonga", which propounds the former as an earlier and specialized community (Centro de Estudos Históricos Ultramarinos 1962-1971,vol.VII: 480-486; Castanheda 1924: 10), still surviving in the contemporary Guambe chieftainship (Matos 1973:22-27). Continental trade included copper in exchange for cloth, which was obtained at the coast in exchange for ivory. Apart from elephant hunting, regular activities included agriculture mainly performed by women, cattle-raising, and fishing with spears in dug-out canoes (Castanheda 1924:29-30). Among some of the most distinct features for the Thonga was the manufacture of fabrics and containers out of tree bark, and the utilization of bows and arrows, which suggests to Martinez a cultural presence of the Khoisan speakers among this group (Màrtinez 1975:22). However it should be noticed that only clothing made out of skins is traditionally used among the Khoisan (Inskeep 1978 b:36).

Most of the above mentioned sources also furnish a number of other references about continental interchange mainly channelled along major rivers like the Save and the Limpopo.

Further South in the Maputo Bay and inland region, the early accounts are for the period 1552-1554 and describe the pattern of trade (mainly ivory for beads and cloth), housing, gathering, and some of the types of settlement (Brito 1971:3-31 and 33-136). Of special interest is the possible reconstruction of some of the most distinct present chieftainships from the early descriptions of the Inhaca, "Zembe"(Tembe), "Rumo"(Fumo),"Domanhica"(Manhiça), and Lebombo.

These are but a few examples of some of the earliest published sources for Mozambique. Isolated documents dated up to 1835 are presently being retrieved and processed at the Historical Archives in Maputo (A.Sopa, pers.comm.).

3.3. A classification of the Bantu languages in Mozambique.

It is not an aim of this thesis to discuss the several schools and hypotheses developed by Bantu linguists in formulating a classificatory system for establishing the origin and development of the Bantu languages. It seems obvious that there is a need to reach a better definition of the present-day geographical distribution of the language groups, especially when the present political divisions of Africa are so misleading, before we proceed to further consideration of the Mozambican culture history. Also relevant, even though apparently ambitious and not previously attempted for this area, is the structural analysis of the nature and extent of the Bantu languages in thinking (Lanham 1979:81), as a privileged sign system (T.G. Winner 1979:75), and language interpretation as a "culture text" (I.P.Winner 1979: 108).

Considering the initial descriptive phase of Bantu linguistic studies in Mozambique, presently being carried out in the Department of Modern Letters at the Eduardo Mondlane University, Maputo, we will describe here only its proposed taxonomy as put forward by Rzewuski (1979). According to the Guthrie classification (Guthrie 1971), Mozambique is listed in 4 distinct zones -P, N, S and G- the two former ones also related respectively to Doke's South-Eastern and South-Central Bantu (Doke 1954), both categorizations geographically oriented. Doke explicitly states his own method as being " mainly a geographical classification ... of areas characterized by similar linguistic phenomena ..." (Cope 1971:214). More recent consolidated views (Cope 1971:232) are not seen as relevant or innovative; which is why Guthrie's classification is considered at this stage as the most appropriate for Mozambique (Rzewuski 1979:3), while also including the wider units proposed by Heine for comparative purposes (Heine et al. 1977) (Table 3.1).

Table 3.1 Provisional classification of the Bantu languages of Mozambique. (Mkanganwi's (1972) two distinct Ndau dialects are also included). After Rzewuski (1979:1-2).

GUTHRIE	HEINE et al.
	VIII-8: Eastern Plateau Group
G.40: Swahili	-15: East-coast
P.20: Yao	-17: Yao
P.21: Yao	
P.23: Makonde	
P.25: Mavia	
P.30: Makua	-19: Makua
P.31: Makua	
P.32: Lomwe	
P.33: Ngulu	
P.34: Chwabo	

(continued)

N.30: Nyanja	-20: Nyanja
N.31a: Nyanja	(ranging also
N.31b: Cewa	Guthrie's N.43
N.31c: Manganja	and N.44)
N.40: Senga-Sena	-22: Rue
N.41: Nsenga	(Guthrie's
N.42: Kunda	N.45)
N.43: Nyungwe	
N.44: Sena	
N.45: Rue	
N.46: Podzo	
S.10: Shona	-21: Shona
S.11: Korekore	
S.13a: Manyika	
S.13b: Tebe	
S.15: Ndau -Western Ndau	
-Coastal Ndau (Shanga)	
(after Mkanganwi 1972)	
S.50: Tswa-Ronga	-24: Tsonga (Shangaan)
S.51: Tswa	
S.52: Gwamba	
S.53: Tsonga	
S.54: Ronga	
S.60: Chopi	-25: Inhambane
S.61: Chopi (Lenge)	
S.62: Tonga (Shengwe)	

Further research should assess the validity of Heine's argument that all Mozambican languages belong to the same genetic Eastern-Plateau group (Heine et al 1977:65), something which cannot be demonstrated before detailed study of the linguistic diversification and convergence of the local languages, including the eventual interference of a pre-Bantu linguistic substratum which was never previously evaluated, (Rzewuski 1979:3).

Whilst there occurs a high degree of linguistic convergence, which is clearly shown in the case of the so-called dialects of the Swahili languages from the coastal areas of northern Mozambique,- these have also been used as the basis for direct historical inferences, and interpreted as being the product of an extension of the eastern African coast Swahili culture into the area (Prata, cit. in Rita-Ferreira 1975:40). This is not acceptable on linguistic grounds, considering that all the regional languages bear a greater degree of relationship with neighbouring languages spoken towards the interior, the closest affinities being restricted to culture words mainly related with Islam, commerce, fishing and navigation (Rzewuski 1979:4). A similar situation occurs in the Zambezi valley, a natural route from the coast to the interior since precolonial times, which produced a form of vernacular Sena and Nyanja. While Guthrie classifies them under distinct groups N.40 (Senga-Sena) and N.30 (Nyanja), for Cope, Sena (Guthrie's N.44) is included in both Senga-Sena and Nyanja groups (Atkins,cit. in Cope 1971:236). However, Heine avoids the Sena designation using Rue instead, while opting for including Nyungwe and Nsenga not under Guthrie's N.40 (Senga-Sena), but under the Nyanja group (Rzewuski 1979:4). This highly subjective picture becomes more apparent when confronted with the data available so far for other groups such as the Makua and the Tswana-Ronga studied more systematically by Prata (1960) and Doke (1954), respectively.

It would be worthwhile to question if, what it suggests to us (a

low degree of linguistic differentiation over such large areas like the Zambezi valley and Northeastern coastal Mozambique), could not be a product of recent language expansion (Gregersen 1977:146). Moreover, it would be interesting should the picture prove to be different for other areas in the country when appropriately surveyed; bearing in mind that the whole of the Bantu languages are classified by Greenberg as a recent subdivision within the Benue-Kongo family (Id.:212).
Above all, much descriptive and comparative research needs to be implemented, together with a detailed assessment of the documentation so far available (Universidade Eduardo Mondlane 1978), before a clearer view is produced for Mozambique. It is also our belief that, given the unity of the Bantu languages which is not disputed (Cope 1971:215), research should be guided to the evaluation of its overall language structure, moving its field of analysis "from vocabulary to grammar" (Kuper and Van Leynselle 1978:350). The relevance of linguistic studies is considered further in chapter 6.1.1. below.

3.4. Historical review of archaeological and ethnological research in the colonial period.

Social studies were implemented in Mozambique under an ethnocentric colonial administration, and shaped by particular disciplinary developments elsewhere. Having both an important element of expression of prevailing ideologies, they had specific political as well as academic implications in the colony. The former objectively accounted for the fact that the knowledge of pre-Portuguese social formations and historical processes underlying contemporary Mozambican societies were neglected. The latter introduced a spontaneous and relatively progressive attitude establishing the basis for comparative ethno-historical analysis, and might be of much use when critically assessed

(Morais 1984: 115).

Apart from the documentary accounts previously mentioned (see sub-chapter 3.1.), very little is known about the interest early Portuguese travellers may have had for gathering material evidence of ancient civilizations. However, one can assume that a number of ethnographic collections should have reached Portugal, for artefacts are reported to have been offered to the Vatican as early as the sixteenth century and studied by the influential naturalist Michael Mercati (1541-93), whose published work only became available in 1717 (Clark 1978: 5-6). The publication of this work almost certainly explains the remarkable interest shown by the Bishop of Mozambique in announcing in 1721 to the Royal Academy of Sciences in Lisbon the discovery of rock paintings in the territory. This rather extemporaneous interest, which should be seen as part of the post-renaissance rationalism, influenced by the notorious mercantile role of Portugal among the other European nations at the time, does not however seem to flower before late in the nineteenth century when, due to the specific interests subsumed to the European "scramble for Africa", traveller's accounts with some ethnographic content are resumed (Andrada 1885;1886). But first, for the sake of clarity, we will speak of the early contributions to Mozambican Archaeology, bearing in mind that in terms of their intellectual history, they ought to be evaluated concomitantly with ethnographic records, both being formative sciences subsumed by the same social practice.

Although one would expect that after the Portuguese take-over an increasing importance would be given to the establishment of antiquities services, as in some of the neighbouring British colonies, this did not happen. The reason for this attitude should be sought in the almost non-existent role of Archaeology in the Portuguese metropolis, and in the apparently modest cultural remains that, unlike the spectacular and controversial

Zimbabwe monuments, did not call for immediate attention. The only research carried out till 1930 was connected with the interest of foreign scholars as part of their regional surveys in border regions with Mozambique, particularly in the areas of Chifumbaze, prospected in 1907 by Carl Wiese (Phillipson 1976: 17), and Manica, where Wieschoff excavated in 1930 remains of stone wall buildings (Wieschoff 1941).

The nationalistic colonial reforms put forward by Salazar from 1932 are quite significant considering that prominent ideological and economical strategies were introduced into the Portuguese administration. Even if no decentralized policies were implemented, the wisdom of making profitable the colonial enterprise, which required a better insight into its labour power, became apparent. These measures led the "Administradores" (a similar function to the British District Commissioners) to produce short memoirs on specific traits of the ethnic groups in the regions under their jurisdiction, though unfortunately most of them remain unpublished. Also dating from the beginning of this period is the establishment of a Monuments Commission (Comissão dos Monumentos e Relíquias Históricas de Moçambique) whose 1943 principles, established as general aims concerning conservation and cultural heritage promotion were, "(to) act as testimony for the veneration of past generation of colonists, as a means of (providing) archaeological and historical culture, and to promote tourist interest ..." (Boletim Oficial 1943:60). Furthermore, initiatives were taken from the central government, through a specialized overseas research body, for the commissioning of a number of scientific missions to initiate systematic coverage of subjects such as Geography, Botany, Hydrography and Anthropology, among others.

Of immediate interest in the present context are the activities of the Anthropological Mission (Missão Antropológica de Moçambique) which, even if predominantly motivated by the comparative biology of man (or physical anthropology in the German sense, c.f. Zwernemann 1983:22), and thus not relevant as ethnology, produced also the first accounts on the "local prehistory" writen by Portuguese scholars (Correia 1934; Santos Junior 1941). From the forties onwards there arose a growing awareness of Stone Age archaeology stimulated by work in South Africa, and through contacts established mainly by Portuguese natural scientists with colleagues across the border, who visited some newly reported Mozambican sites (van Riet Lowe 1943; Wells 1943; Breuil 1944). The work of authors like Barradas and Bettencourt Dias were well evidenced over a period of approximately 30 years, during which time, of 93 Stone Age sites known before 1975, 68 were recorded by them (Morais 1976 and 1984:114). It was only after 1960 that archaeological studies started to show an interest in a wider range of subject matter. In Central Mozambique Oliveira initiated a series of reports on the rock art and Iron Age, while Dickinson extensively excavated in Sofala between 1969 and 1972, searching unsuccessfully for evidence of a pre-Portuguese settlement. The only survey work implemented in the Tete Province of Central Mozambique was by Ramos in the early seventies, and substantially covered the area in a search for assessment of Iron Age and early Portuguese settlements,as part of the rescue operations for the construction of the Cahora-Bassa dam in the Zambezi (Ramos and Rodrigues 1978; Ramos 1979). Mainly in Southern Mozambique Liesegang, Smolla and Korfmann conducted between 1968 and 1971 extensive coastal surveys as part of the "Africa-Kartenwerk" geographical survey of the Institut für Vor-und Frühgeschichte, Frankfurt University, while Martinez, and Derricourt covered more limited regions. The Northern regions of Mozambique were the least surveyed, being only very briefly visited by Castro and Monteiro. An analysis of the surveyed and reported sites for the period discussed, shows clearly that while quantitatively they are denser towards the

South, qualitatively they comprise mostly Stone Age sites (predominantly of later character), followed by Iron Age sites, predominantly recorded from surface evidence and in localized scatters. This rather unbalanced situation was only rectified subsequently, as we will discuss further, but is summarized in Table 3.2..

Table 3.2 A chronological overview of the archaeological surveys carried out in Mozambique.

	Stone Age	Iron Age	Total	Stone Age	E.I.A.	L.I.A.	Total
SOUTH	67	16	83	7	10	26	43
SOUTH/CENTRAL	19	6	25	8	8	23	39
NORTH	7	0	7	8	37	71	116
TOTAL	93	22	115	23	55	120	198
	Pre-1974 arch.sites traced from biblio. sources			Arch.Survey Programme 1976 to 1984.New surveyed sites either sampled / excavated			

It is however necessary to stress that, no matter the growing interest and valuable contributions made by individuals, the efforts were mostly the product of dilettante devotion and only marginally sponsored by Portuguese institutions unspecialized in social studies. Most of the published papers can be found scattered in "Memórias" of the Instituto de Investigação Científica de Moçambique, the "Boletim" of the Sociedade de Estudos de Moçambique, "Moçambique",a colonial government journal, and "Monumenta" a periodical of the Comissão de Monumentos. These comprise over 200 titles of uniform content, but all pertinent as general reference data for future work, as well as for comprehension of the development of Archaeology in Mozambique (Morais & Ferrão in press).

There is as yet no critical assessment of the ethnological sources for Mozambique although survey of the existing documentation up to 1954 is listed by Rita-Ferreira (1961). As a preliminary observation it is interesting to note that the bibliography is clearly more numerous for the ethnical groups who are divided by the border with neighbouring countries, especially the Tsonga, Shona, Maravi and Yao. This reflects a comparatively limited research input in Mozambique, and ultimately explains why the foreign ethnologists generally outnumber the Portuguese scholars while aiming at treating whole cultural entities.

Early in the period 1890-1930 the research of H.A.Junod and Theal seems to be influenced by the first Portuguese documentary sources for southern Mozambique (H.A.Junod 1913; Theal 1896 and 1919). This period is also marked by the outstanding production of H.A.Junod, a swiss missionary from 1896 and 1936, whose seminal work among the Tsonga in the first decade of this century is still the primary source for the Tsonga (Junod 1962). It seems to us relevant to notice that its first translation and publication in Portuguese only appears in 1944. In South-Central and Central Mozambique should be mentioned the research conducted by A.Cabral among the Thonga, Chopi and Tswa, and F. Boas among the Ndau (Cabral 1910 and 1925; Boas 1923), and in North Mozambique the surveys produced for the Makua and Lomwe groups by Lupi and Pires (Lupi 1907; Pires 1921-22).

It is interesting to notice that during the period 1930-1960 the research trend is similar to the one mentioned above for archaeology. The first Congress of Colonial Anthropology (I Congresso de Antropologia Colonial) was held in Porto in 1934, and it seemed to succeed in drawing attention to the importance of ethnological fieldwork in the colonies. There is a growing number of publications made by Portuguese researchers like C.Montez, Lacerda, M.Correia, S. Alberto and Santos Junior, among others, being mostly devoted to reports on wider multi-ethnic regions. Among the better known foreign researchers, covering specific groups, we should mention D.Earthy (Valenge), H.P.Junod (Chopi and Tsonga), Lanham (Thonga), Fuller (Gwamba), and Mitchell (Yao),(in Rita-Ferreira 1961).

From 1960 onwards the studies seem to be inclined more towards the cultural-historical interpretations of smaller ethnical units, and except for a limited number of Portuguese scholars like C.Matos (1973), Rita-Ferreira (1975), Dias (1964;1970) among the most representative, the field is mainly covered during the early seventies by overseas researchers like Alpers (1969), Isaacman (1972), Newitt (1972), Smith (1973) and Webster (1973). It was especially after the latter group that the traditional culture-ethnic picture-frame was translated into an historical discourse, which is somehow already reflected in recent research reviews (e.g. Rita-Ferreira 1982).

CHAPTER 4

SOURCE MATERIAL II: RECENT ARCHAEOLOGICAL RESEARCH.

4.1. Introduction.

In order to make clearer the presentation of this chapter, the evolution and affiliation of the different institutions dealing with archaeological research in Mozambique from 1974 is presented in synopsis form. We conclude this introduction by summarizing the role of a number of researchers, including the writer, in some of the activities which are thought to be relevant for a better comprehension of the development of the projects during the period.

From 1974 to 1976 an Archaeology Section formed part of the Earth Sciences Department of the Scientific Research Institute of Mozambique (I.I.C.M.), which, until 1975, was a multi-disciplinary research body, directly responsible to the Provincial Government of Mozambique, and linked to the Overseas Scientific Research Institute (J.I.C.U.) in Lisbon. Shortly after independence in 1975, the I.I.C.M. was incorporated in the administrative structure of the Eduardo Mondlane University, Maputo, and from 1976 to 1978 the Archaeology Section was associated with the Center for African Studies within the I.I.C.M.. The Center was set up, among other newly implemented research centers under the I.I.C.M., to develop historical and political-economy research programmes related to southern Africa. In 1978 the Archaeology Section was placed directly under the I.I.C.M. and, because of the specific nature and development of the research programmes implemented by the Section, it was given a higher degree of administrative and financial autonomy. Later, in 1980, the Section was incorporated into the Faculty of Arts of the Eduardo Mondlane University, as the Department of Archaeology and Anthropology. Because it was independently financed through international cooperation, the research programme fell very much under the university research council through which the funds were channelled.

Throughout 1974 and 1975 the Section was under the directorship of Prof.G.Soares de Carvalho, the writer being among the founding members of the Section, together with R.Duarte, M.L. Dias,T.Cruz e Silva and J.S.Martinez. Most of the research work was collectively carried out during this period, each individual being responsible for a specific sub-project.

In 1976 the writer was appointed head of the Section at about the time that R.Duarte and M.L.Dias (later M.L.Duarte) left the Section to organize the new National Museums and Antiquities Services. J.S.Martinez went to Portugal, and T.Cruz e Silva was assigned full-time lecturer at the Department of History. In 1976 and 1977 M.and J.Stephen from Southampton University were also attached to the Section.

In 1977 P.Sinclair from Cambridge University was appointed researcher, and until leaving for Sweden for further studies in 1982, he assisted the writer in administrating the Archaeological Survey Programme. Meanwhile, in 1980 L.Adamowicz from the Institute for African Studies of the University of Warsaw, has also been a member of the Programme, especially responsible for work in Nampula Province.

From 1980 the writer was appointed head of Department of Archaeology and Anthropology, before going to Oxford for one academic year. The research programme was during the period directed by P.Sinclair, and the Department by the anthropologist A.Loforte.

From 1982 to early 1985, during a number of limited periods, four swedish assistants were appointed to the Department by the Swedish Central Board of Antiquities (RAÄ): P.I.Lindqvist,

L.Jonsson, and N.and G.Nydolf.
Late in 1983 R.Duarte returned to the Department of Archaeology and Anthropology,and is now (1986) in charge of the Archaeological Research Programme, as well as actively carrying out research work in northern coastal Mozambique.
As the only Mozambican archaeologist during most part of the period, the writer had to combine teaching, administration, as well as participation in a number of fieldwork research programmes in South-Central and southern Mozambique. From 1982 the writer initiated, as part of a research programme proposed to Oxford, the survey, with selective excavations, of the regions South of Maputo. However, increased terrorist activity in the region imposed severe restrictions on fieldwork and the project had to be curtailed late in 1983 when, for inescapable personal reasons, he was obliged to leave Mozambique.
A.Loforte is now head of the Department of Archaeology and Anthropology.

4.2. Archaeology at the time of independence.

From 1974 the Archaeological Section under the Earth Sciences Department of the Scientific Research Institute of Mozambique, became the first specialized research unit to be fully sponsored as an official research institution. It owed most of its initial support to Prof.G. Soares de Carvalho, under whose directorship a rescue programme on the Stone Age of the Massingir dam region was initiated. The cooperation and encouragement of Prof. Revil Mason at the University of the Witwatersrand Archaeological Research Unit was also important,since well studied and reliable Stone Age collections were otherwise unavailable for comparative purposes. The work, in which the writer participated (Soares de Carvalho et al. 1974) aimed at a systematic treatment of archaeological evidence in a chronological framework, and demonstrated the need for larger, regional surveys. The perspective gained from the project also made it possible to extend the frame of interest to cover the Iron Age sites of the region (Duarte 1976).

The independence of the country, effected in 1975, brought about a major shift in problem orientation. Our restricted experience from Massingir and the imperative for a wider public education, together with an apparent public interest in knowledge of their own past,made clear the need for a more explicit research programme designed to elucidate processes of change in pre-colonial societies in Mozambique. The lack of human and material resources had to be faced, the working perspective of the now defunct colonial Monuments Commission had to be discontinued, and new theoretical frameworks implemented. For the first time ever, teaching of African prehistory was included in the school curricula from the primary to university levels, decisions had to be made concerning the education of antiquity service personnel, and a policy established for the preservation and dissemination of information about known sites. In 1977 a "Serviço Nacional de Museus e Antiguidades" (Museum and Antiquities Services) was organized by M.L. and R.T.Duarte, both of whom had previously worked in the Archaeology Section. The new service immediately began a national campaign to establish a cultural resource inventory, and initiate public education. The Archaeology Section assisted this programme by providing teaching facilities and by taking care of the archaeological aspects of the work.

Earlier surveys had been heavily biased both geographically and in terms of the historical period covered; of 115 sites reported prior to 1975, 72% were concentrated in the south and only 19% referred to the Iron Age (see Table 3.2). Furthermore, most of the latter sites were known because of their monumental nature; rock paintings and Later Iron Age stone enclosures. Although the biassed nature of the sample was recognized, no resources were available to initiate a major national survey programme. Instead it was decided to concentrate on Iron Age sites near Maputo so that new methodologies could be easily tested. The results of this preliminary regional survey project have been published in a joint volume (Morais et al. 1976) which provides important reference material for future research.

4.3. The Archaeological Survey Programme of 1976-1984.

The 1976-84 survey programme has more than doubled the number of known sites (Table 3.2). It should also be emphasized that most of the sites discovered before 1975 consist either of redeposited Stone Age materials, such as surface scatters mostly derived from erosion processes, especially on early river terraces, or sites with monumental remains. During the colonial period, archaeological goals were limited to providing a general description of the sites without taking into consideration the nature of the deposits or site formation processes,and inter-site relationship. A conceptual framework and appropriate research methodology were definitely lacking.

The strategy designed for the 1976-84 programme of surveys has involved the development of a sampling procedure that could be applied in different regions, and allows previous results to be incorporated. There was an obvious need to compensate for the bias towards Stone Age and southern region sites by proceeding with fieldwork in a number of unsurveyed areas, and by deliberately concentrating our efforts on post-paleolithic materials. Limited resources determined the selection of small survey units, chosen as representative of particular types of landscape, geomorphology, vegetation and soils. The sites located were generally evaluated either through random surface collections or small scale excavations. Ideally, though this proved difficult to achieve, a collection of at least 300 sherds was made from Iron Age sites in order to allow the application of further locational methods for inter-site distribution studies (Sinclair in press).

In conformity with the criterion of even coverage, the total number of sites identified by the survey programme is fairly equally distributed among two of the regions with 22% and 20% in the south and south-central regions respectively. The higher incidence of the work in the North (58% of all the reported sites) accounts for the need to compensate for the lack of previous work. It is clear, however, that most of the sites discovered are either Early Iron Age (28%) or Later Iron Age (60%), the latter being comparatively easier to recognize. Our preliminary results also call for further work in areas that remain unsurveyed due to shortage of personnel and time, such as Sofala, Manica, Tete, Zambézia, Niassa and Cabo Delgado Provinces,as well for an extension of the time depth covered to include more paleolithic sites (accounting to only 12% of all the surveyed sites).

As part of the survey programme, existing archaeological collections were catalogued, laboratory facilities implemented, and research procedures standardized. Among the latter, a system of numbering the sites according to a grid reference system based of the 1:50,000 scale map as the main unit for inventory purposes was implemented. Accordingly, each site is recorded by four digits which stand for latitude and longitude, two letters relating it to the sub-unit of the 1:250,000 scale map comprising the 1:50,000 sheet, and the last digit or digits ordering the series number of the site recorded in the basic 1:50,000 survey unit. Efforts have been made to build up an osteological collection to be used for archaeozoological studies, and regular access to radiometric facilities, was obtained from the University of Rome.

By 1978 the archaeological survey programme was already well established,rendering it eligible for a three year research grant from the Swedish Agency for Research Cooperation (SAREC) which has since then been renewed. This financial assistance made it possible to expand the research programme in order to incorporate from 1982 a direct cooperation agreement with the Swedish Board of Antiquities (RAÄ) involving technical support, and personnel, the latter participating in fieldwork projects up to 1985. From the early stages of this cooperation a number of resources became accessible, such as radiochronology, phosphate analysis and osteology. In addition, computing facilities at the Department of Archaeology and Anthropology at Eduardo Mondlane University were made available from 1983, which allowed the development of a number of data retrieval and statistical applications that are currently being tested.

From 1976 the Archaeology Section, as well as providing the first courses in African Prehistory at the University in which the writer, among others, lectured, ensured the incorporation of some educational materials, complete with regional examples to schoolbooks from adult to secondary education. Information started to be regularly given to the press, and local inhabitants were asked to participate in fieldwork, either as excavators or by visiting work in progress. Contribution to the creation of site museums at some of the most important sites also became, human resources permitting, part of the Archaeology Section's terms of reference. In 1979, a site museum was opened at Manyikeni after four seasons of fieldwork in which several hundreds of local residents participated (I.I.C.M. 1979). The Archaeology Section, and its sucessor, the Department of Archaeology and Anthropology, has also been directly involved in the education of "agentes de cultura" (district culture delegates, Museum and Antiquities Services) at a secondary education and specialized level. This programme has aimed at graduating qualified technical archaeological and anthropological assistants to work in the different provinces.

From 1980 a policy of regular departmental publications was established through the series "Trabalhos de Arqueologia e Antropologia". That few titles have appeared in this series is due to considerable fluctuation in availability of research personnel in the programme, which from 1978 included only one Mozambican archaeologist (the writer). Due to the low number of university students and academic priorities this situation cannot be much altered before the end of the decade, when postgraduate studies will be offered for the first time.

4.3.1. The south-central region.

During the period 1976-78 most resources were invested in excavations at Manyikeni (2234-Bb-2),a major Zimbabwe culture site. During 1976-1977 the stone enclosure was tested by P.Garlake and the writer to provide information on chronology and cultural affinities (Garlake 1976). In order to test the hypothesis that social differentiation was expressed at the site, later campaigns in 1977 and 1978 concentrated on sampling the area outside the nuclear zone represented by the walls. The results led to the development of an appropriate methodology for the investigation of similar sites when the occurrence of differentiated activity areas can be assumed (Morais and Sinclair 1980; Sinclair in prep.).
Over the same period extensive surveys were also carried out in the Save river-Vilanculos bay region, mainly by P.Sinclair,Cruz e Silva and A.Loforte,in which the writer also participated for limited periods (Sinclair 1985 a.). These resulted in the discovery of a number of sites,illustrating the basic Iron Age sequence for the area. Among the most important of these are Chibuene (2235-Ab-1), an early mercantile coastal site,the Bazaruto Island Iron Age complex (2135-Cb-2, 2135-Cd-3,4 and 7), and Hola Hola (2134-Ad-1), an Early Iron Age site overlooking the

Save river.

The coastal sites are of interest for their evidence of offshore activities as well as later seafaring, the latter more adequately represented at Chibuene, 5Km south of Vilanculos. This particular site is of considerable importance as it provides evidence for early long-distance contacts with the Persian gulf from about the 9th century onwards (Sinclair 1982:163), thus confirming reports in early Arabic documents (Trimingham 1975). The site, which had probably been occupied earlier, is likely to have been one of the southernmost points in the East African Coastal mercantile network. A date of 1505+-160 AD (St-9703) for the beginning of the top occupation of the site (with two <250 BP dates for the upper top occupation, St-8491 and St-8492) was recently obtained by Sinclair (pers. comm.), making it roughly contemporary with the arrival of the Portuguese to the region. The nature of the excavated evidence is described in detail by Sinclair (1982).

Ponta Dundo 1 and 2, and Bazaruto dune, all located in Bazaruto island, and Marrape (2235-Ab-2) in the extreme eastern tip of Vilanculos Bay, provided interesting comparative pottery collections similar to Ziwa, Hola Hola and Chibuene, which suggests a coastal facies of the Gokomere/ Ziwa tradition (Sinclair 1985 a.; Phillipson 1977: 113).

Hola Hola was surveyed in late 1977 as part of the coverage of the lower Save River basin, being so far the only positively identified Early Iron Age site in the area. Remains of approximately 27 building structures could still be inferred, and preliminary excavations provided a pottery collection which suggests an affinity with the Gokomere/ Ziwa tradition, dated to ad 890 +-50 (R-1326) at this site (Sinclair 1985 b.).

Further northwest towards the Chimanimani massif in Mavita (1933-Ca-2),pottery closely related to Ziwa, as well as slag and well preserved pieces of tuyere was recovered in 1976 by R. Duarte, but no detailed work has been possible since then.

4.3.2. The southern region.

Between 1976 and 1982 minor and irregular surveys and excavations were carried out in the south of Limpopo region. Among the most important sites is Matola (2532-Cd-1), a single component Early Iron Age site near Maputo,on which preliminary reports were presented by Cruz e Silva who conducted excavations in 1976 (C.e Silva 1976; 1980). In order to enlarge the ceramic sample and to reassess the dates the site was re-excavated in 1982 by the writer, P.I.Lindqvist and L.Jonsson, with results which places it among the earliest Iron Age sites in southern Africa. Furthermore, Matola is now taken as the type site for the earliest ceramic phase in the region (Evers 1981: 66). Approximately 10Km east of Matola, in the University Campus (2532-Dc-1), a more dispersed site related to Matola has also been recently excavated. From personal observation by the writer, the spread of this tradition seems to extend to areas further north in Vilanculos bay, as well as to near the Limpopo river mouth at Xai-Xai (2533-Ba-1), and Bilene P.O.(2533-Ac-2) (Martinez 1976: 7,17), in Siaia (2433-Dd-4), and near the southernmost border at Caimane (2632-Ac-4) and Zitundo (2632-Db-9) (Morais 1984:118-9). A surface collection of pottery from Gurué, Zambézia Province, housed at the Center for Prehistory and Archaeology of the Tropical Research Institute in Lisbon, also contains Matola sherds (Rodrigues forthcoming). Further North near the city of Nampula (1539-Ab-10) a number of Matola fluted bowls were also recently discovered (Adamowicz pers.comm.). However, the indications of Matola north of the Save river should be treated cautiously until confirmation. As the sites of Matola, University Campus, Caimane and Zitundo have only recently been excavated, or re-excavated (in the case of Matola), special mention of them will be made later.

Other pottery assemblages observed during this period are related to NC 3, Shixini, Broederstroom, and Lydenburg (Inskeep 1978 a: 129; Maggs 1984:333), first identified in the region at the Tembe river mouth (2632-Ab-5), Inhaca P.O. (2532-Bb-0), and later at Zitundo (Morais 1984:119). For reasons of consistency with recently established terminology, from here on we will apply the term "Lydenburg tradition ", incorporating assemblages related to the above ones mentioned, and the ones forming Huffman's "Bambata, Sterkspruit and NC3 stepped continuum" (Hall and Vogel 1980: 441-2; Maggs 1984: 333). From 1983 a decision was taken to make a regional study of the evidence relating to the Lydenburg tradition period in the regions south of Maputo, as part of the writer's interrupted research programme.

In 1976 Martinez proposed a "phase I of the southern Mozambique coastal kitchen midden tradition", which was seen as indicating a pre-Early Iron Age cultural component (Martinez 1976:15). Preliminary excavations and surface occurrences were given for a number of sites at Xai-Xai, Chongoene, Massano and Závora dunes. Interesting as the subject may be, circumstances have so far precluded further evaluation of his hypothesis.

The site of Nhachengue (2235-Cc-1) reported by Sinclair in 1980 provided an interesting early date (715+-80 AD, St-8497) but no further indications are possible until analysis has been carried further on what seems to be a ceramic tradition distinct from those mentioned above (Sinclair pers.comm.).

4.3.3. The northern region.

The archaeological survey programme was extended to the north in 1978, following upon the general reconnaissance made in 1976-77 by R.T.Duarte based at the time at the Nampula Museum. Preliminary surveys and selective excavations were carried out in that province by P. Sinclair and T.Cruz e Silva. During two seasons in 1978 and 1979 the districts of Murrupula, Nampula, Mossuril and Ilha in the Nampula Province were visited, as well as Ibo in Cabo Delgado Province (Sinclair 1985 c.: 3). This first reconnaissance has been succeeded since 1981 by an extensive survey programme carried out by L.Adamowicz (1983; 1985), now at the stage of analysis of fieldwork results. Therefore, we will only comment on some of the general results related to the evidence of early farming communities in the region, as a final report will be presented in due course.

Of a total of 92 surveyed or excavated sites in the region covered by Adamowicz, 71 contain Later Iron Age occurrences, 37 Early Iron Age and 18 Later Stone Age (Adamowicz 1985: appendix 1). The most impressive sites are the Chakota (1438-Db-1), Nakwaho (1439-Dd-1), Riane (1340-Ca-1) and Muse (1537-Bb-3) rock shelters, with both rock paintings, and Stone Age and Iron Age cultural layers. However, the latter are mostly represented at both single and multi-component open sites. Namolepiwa (1539-Bb-1) is so far the only cave with rock art containing a single sequence of Early Iron Age, and therefore with a considerable potential for further work.

The earlier ceramics are characterized mainly by jars with horizontal bands of diagonal comb stamping or incision, and fluted bowls. Having been kindly allowed to examine the ceramics for a preliminary perception of its character, it seems to the writer that the former two pottery categories represent facies of the Early Iron Age Kamnama tradition of Zambia, where it is dated to between the 3rd and 5th centuries ad., and to the third century ad. Mwabulambo tradition of Malawi (Phillipson 1977: 111-13, Adamowicz 1985:32). However, the fifteen C14 dates available from the sites of Aeroporto Nampula (1539-Ab-2), Muaconi (1540-Ba-2), Murekani (1539-Ab-1), Chakota, Nakwaho, Namolepiwa and Riane range from the 5th-10th century ad., which might soon need to be revised, judging from the chronological evidence of the affiliated types elsewhere, and the early character of some of the wares, especially the ones similar to Matola recently excavated at site 1539-Ab-10 (Adamowicz per.comm.).

Furthermore, Adamowicz claims the association of grindstones with Early Iron Age pottery at Nakwaho and Riane caves (1985:fig.1 and p.30), which if confirmed, would be the first archaeologically documented occurrences of this type in Mozambique. During a brief reconnaissance carried out by M.Stephen in 1978 in the Niassa Province, similar surface evidence was found at Maua cave, but no firm associations were established.

Sinclair's test excavations of Murekani (1539-Ab-1) provided evidence for affinities of the pottery types with Kwale (fluted bowls), and especially Nkope (oblique combstamping and incision), together with iron slag (Sinclair 1985 c.: 16).

From this early survey other minor non-excavated Early Iron Age occurrences were also reported at Chikwakwa (1538-Bd-1) and in the northern bank of the Lurio river (1339--Db-1), the latter showing degrees of similarity with Murekani (Sinclair 1985 c : 5 and 10).

A list of the most relevant surveyed sites in south-central, southern and northern regions is provided (see Table 4.1). In order to obtain an accurate geographical plotting of the sites mentioned in the text, a map was generated for Mozambique (Figure 4.1), and another, more general, for relevant African sites (Appendix 2 Figure 1). These applications were carried out at the Department of Quaternary Geology, Uppsala University, with the kind assistance of Olle Bäckström, who had previously designed and tested the appropriate software. For the purpose of our application a digitizing table was used for the input of the cartographic matrix, and subsequently the data fed into an Hewlett-Packard micro-computer 80 series. After processing of the listings and conversion of the information into geographical

points, these were plotted into the map matrix.
These applications, not previously used for Mozambique, provide a basis from which future developments may be drawn, especially in handling the data obtained from the ongoing archaeological survey programme.

Table 4.1. Early farming community sites in Mozambique.

SITE	NAME	LA	LA	LO	LO	DATE	CONF	CONT	FINDS
1339-Db-01	R.Lurio	13	39	39	51	-	o.s.	s.c.	p.s.
1339-Db-03	Namapa II	13	43	39	50	-	o.s.	s.c.	p.s.
1340-Ca-01	Riane	13	44	40	09	465	r.s.	t.e.	p.
1438-Cc-01	Saua	14	56	38	14	-	o.s.	s.c.	p.
1438-Db-01	Chakota	14	36	38	51	295	c.	t.e.	p.c.bo.
1439-Dd-01	Nakwaho	14	58	39	45	690	r.s.	t.e.	p.s.
1440-Aa-01	Tikiniya	14	30	40	30	-	h.	s.c.	p.s.
1440-Cc-02	Namialu II	14	54	40	00	-	o.s.	t.e.	p.
1537-Bb-03	Muse III	15	04	37	49	-	r.s.	s.c.	p.s.
1538-Bd-01	Chikwakwa	15	21	38	53	-	o.s.	s.c.	p.
1539-Ab-01	Murekani	15	08	39	18	720	o.s.	ext.	p.s.
1539-Ab-02	Aeroporto N.	15	09	39	18	575	o.s.	t.e.	p.s.c.
1539-Bb-01	Namolepiwa	15	54	39	54	315	r.s.	t.e.	p.s.c.
1540-Ba-02	Muaconi	15	07	40	35	920	o.s.	t.e.	p.s.
1738-Aa-01	Bajone	17	14	38	05	-	r.t.	s.c.	p.
1933-Ca-02	Mavita	19	32	33	08	-	o.s.	s.c.	p.t.s.
2134-Ad-01	Hola Hola	21	18	34	18	890	h.	t.e.	p.b.bo.c.
2135-Cb-02	Bazaruto	21	43	35	28	-	d.	s.c.	p.sh.
2135-Cd-03	P.Dundo 1	21	47	35	27	-	b.	s.c.	p.b.
2135-Cd-04	P.Dundo 2	21	47	35	27	-	b.	s.c.	p.b.
2235-Ab-01	Chibuene	22	02	35	19	770	d.	ext.	all but t.
2235-Ab-02	Marrape	22	09	35	26	-	b.	s.c.	p.
2235-Cc-01	Nhachengue	22	51	35	11	715	o.s.	s.c.	p.
2332-Cc-05	Massingir	23	54	32	04	920	r.t.	ext.	p.c.b.bo.
2433-Dd-04	Siaia	24	57	33	46	-	o.s.	s.c.	p.
2532-Cd-01	Matola IV	25	57	32	26	140	r.t.	ext.	p.s.c.sh.
2532-Dc-01	U.Campus	25	57	32	36	175	o.s.	ext.	p.s.c.sh.
2533-Ac-02	Bilene P.O.	25	19	33	14	-	d.	t.e.	p.
2533-Ba-01	Xai-Xai	25	07	33	43	-	d.	t.e.	p.sh.bo.c
2533-Bb-01	Chongoene	25	05	33	49	-	d.	s.c.	p.c.sh.
2632-Ab-05	Tembe	26	00	32	29	-	r.t.	s.c.	p.
2632-Ac-04	Caimane	26	19	32	08	1070	r.s.	ext.	p.sh.bo.c
2632-Ac-09	Mazeminhama	26	26	32	08	-	c.	s.c.	p.
2632-Bb-00	Inhaca P.O.	26	02	32	50	-	b.	s.c.	p.
2632-Bb-04	E.Faife	26	06	32	56	-	o.s.	s.c.	p.
2632-Bb-07	Maputo Praia	26	03	32	59	-	d.	s.c.	p.
2632-Bb-08	P.Raza	26	03	32	54	-	d.	s.c.	p.
2632-Bd-02	Massingane	26	22	32	55	-	d.	s.c.	p.
2632-Bd-03	Tane	26	22	32	55	-	d.	s.c.	p.
2632-Db-09	Zitundo	26	44	32	49	190	h.	ext.	p.s.c.t.bo
2632-Db-11	P.Mamoli	26	42	32	53	-	d.	s.c.	p.

CONF Configuration:
b. - beach
c. - cave
d. - dune
h. - hilltop
o.s.- open site
o.r.- rock shelter
r.t.- river terrace
DATE: earliest most reliable.

CONT Context:
ext.- extensive excavation
s.c.- surface collection
t.e.- test excavation

FINDS:
b. - beads
bo.- bone
c. - charcoal
g. - glass
p. - pottery
po.- porcelain
s. - slag
se.- seeds
sh.- shell
t. - tuyere

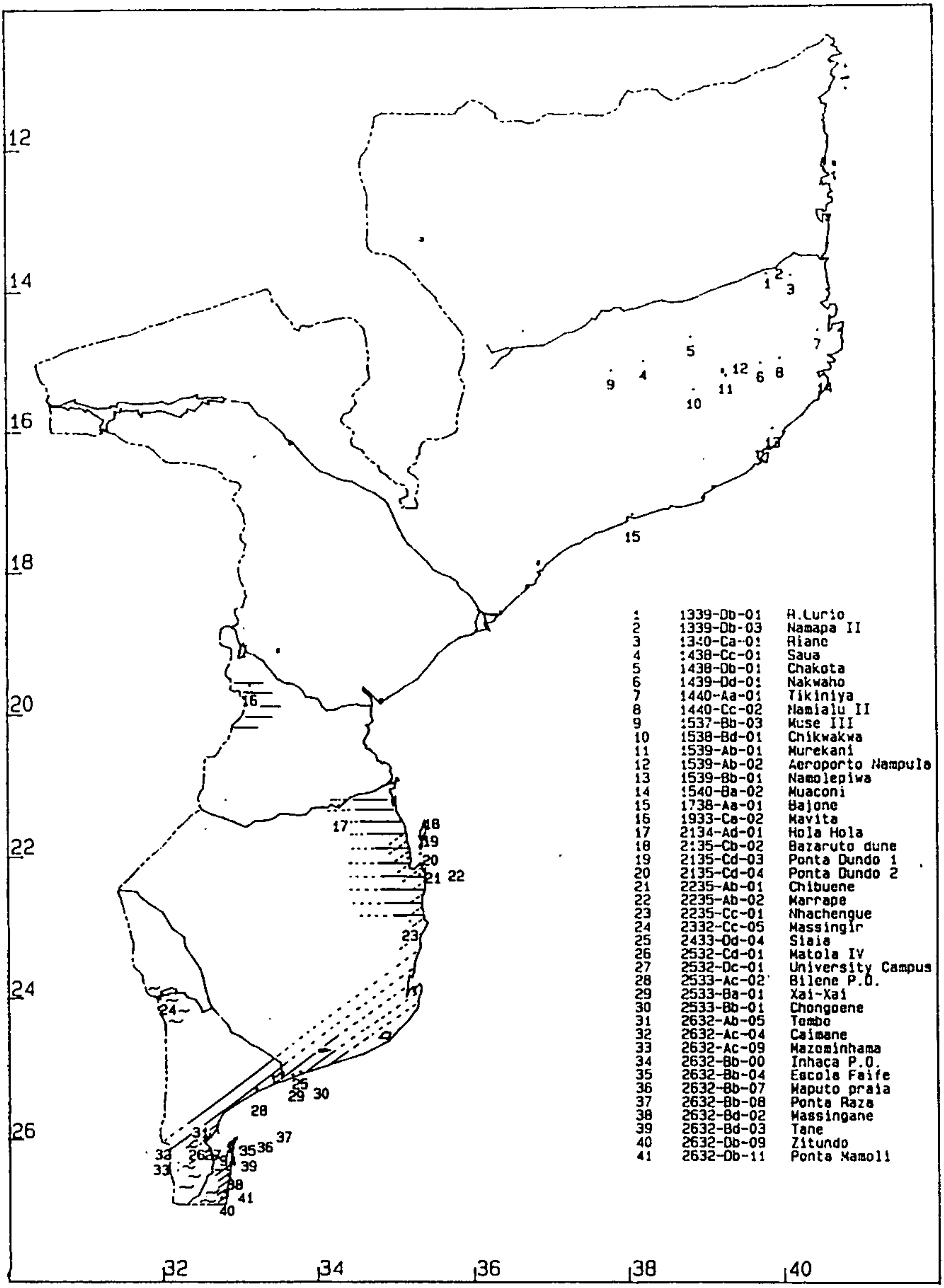


Figure 4.1. Location of the early farming community sites mentioned in the text. The shades ▨ ▤ ▤ distinguish Matola, Lydenburg and Gokomere/Ziwa traditions, respectively. The sites number 25-31 and 35-41 are Matola, 24 and 32-34 are Lydenburg and 16-22 are Gokomere/Ziwa. Site number 40 has both Matola and Lydenburg assemblages. The broken lines stand for possible, but as yet unconfirmed, geographical extensions of the pottery traditions in southern Mozambique.

CHAPTER 5.

THE ARCHAEOLOGICAL EVIDENCE OF EARLY FARMING COMMUNITIES IN SOUTHERN MOZAMBIQUE.

5.1. Site summaries: descriptive method.

To achieve a systematic description of the sites, the following aspects were considered for each: physiography, previous research, agro-ecology, data collection and archaeological evidence,spatial analysis (whenever available), and discussion. The sites will be dealt individually, and primarily ordered by their physiographic setting, the general data on the geographic setting having been set out in chapter 1. Factors considered under these five heads are summarized in Table 5.6, and are as follows:

Physiography.

For this study the two general divisions of marine and terrestrial systems are subdivided into littoral and estuarine for the former, and interior dune cordon and riverine for the latter.

The only available study of the coast-line environmental systems in Mozambique is by Tinley, who uses a framework of four main natural regions: coral coast, parabolic dune coast, swamp coast and delta coast (Tinley 1971:127). For the present study, the second and third regions are the most relevant ones, and should be equated with our littoral and estuarine system respectively.

Coastal shore (a generic designation comprising mostly coral coast) which is exclusive to the north, and parabolic dune coast, both originated from narrow continental shelf zones with over-steepened slopes.

The coast from Vilanculos Bay to Ponta do Ouro, is the most relevant for the areas included in the present survey. It is characterized as a dune rock coast with high parabolic-shaped dunes. Capes are predominantly oriented to north and northeast. A number of islands were formed from the separation of north-trending peninsula headlands , as is the case for the islands of the Bazaruto Archipelago and Inhaca, but the majority to the north appear to be derived from isolated submarine platforms (Tinley 1971:127,129).

The estuarine type occurs at the river mouths where the continental shelf is broad, and at intervals along the entire coast. Mangroves sometime constitute a foreshore protection from the open sea, but most estuaries occur within the protection of a river mouth or some other shelter barrier. Deltas appear especially in the periphery of shallow seas formed where sediments pushed out by the rivers have been deposited, as in the case of the Zambezi and Save rivers (Id.: 129).

The interior dune cordon is classified by Tinley (Ibid.:127) as related to the parabolic dune coast, being characterized by large deep lakes behind high barrier dunes, separating an old dune formation from a more recent one (Barradas 1962:14). The lagoons are mostly freshwater systems fed by local drainage, but some are also linked to the sea. They are seen to have been, in the past, connected directly to the littoral, but are now separated by high forested dune ranges (Tinley 1971:136).

The riverine system is the most general of our categories, and should be related to the regional terrestrial physiographic units. The most common feature is the alluvial plains of the low hinterland, more or less affected by the coastal dynamics as approaching the sea, and dependent on the nature of the local geomorphological processes of the river. Usually the low riverine plains are affected by high tide levels.

In considering the dynamics involved in time, especially for the first three categories, changes in the sea level and humanly induced transformations are determinants for settlement location. During the Quaternary, changes in the shoreline should have been especially significant over the flattest continental platforms with bights, river deltas, estuaries and swamps. Present-day dynamics are also visible in the bight of Sofala which are to be related with the present rate of 1,12 mm/year eustatic rise of sea level, and isostatic sinking owing to alluvium or tectonic instability (Tinley 1971:132), changes that are likely to have been operative since at least the settlement of the early farming communities in the coastal regions.

Paleoenvironmental studies in Mozambique are just being initiated, and no results are yet available. A number of test samples were recently made by Professor L-K. Königsson from the Department of Quaternary Geology of the University of Uppsala, which are presently being processed. It is hoped that this pioneer work will later provide information regarding landscape history, climatic development and sea level changes in southern Mozambique (Uppsala University 1985: 8).

Previous research.

Preceeding surveys or excavations in the respective region or site are presented. Most sites have been reported as a result of the implementation of the Archaeological research Programme (see chapter 4.1), which included the revisiting of previously recorded sites.

Agro-ecology.

A brief description of the site setting is given first.

In dealing with soil units, vegetation, present day agricultural potentials, and traditional agricultural patterns of each location, we have used either preliminary data from current work, or standardized categories.

Regarding the soils there is generally an understandable imbalance of detail between the continental classification (F.A.O./ UNESCO 1973, 1974, 1977) and the regional one (Gouveia e Marques 1980; FAO/INIA 1982 b.). However, considering that fieldwork is still in progress in Mozambique, we will use both sources (Fig.5.1).

The classification used above for the vegetation (see chapter 1.3 and Fig.1.7) is complemented, when they are available, by regional details (e.g. Barradas 1962, Wild and Fernandes 1967).

Present day agricultural potentials and traditional agricultural patterns are provided by, respectively, preliminary survey work (FAO/UNDP/MOZ 1980 b.), and early studies (Carvalho 1969). As will be seen, agricultural potentials and traditional patterns quite frequently do not match, which should in principle be the result of recent cultural transformations which cannot be explained without further investigation.

In terms of general man-land relationship, we should notice that for the most part, it is in the coastland composed of sandy soils that the highest concentration of population occurs (see p.13). Therefore, the most important settlements and agricultural fields, tend to converge, first, to the riverine and deltaic alluvial soils, and secondly on the compacted red sands of the coast. Since especially the latter bear the richest soils for cultivation, their high humic content supporting primary forest, these are the ones mostly affected by shifting cultivation practices. This has led to the transformation of large areas in southern Mozambique into steppe or secondary thicket, and is a contributor to the heavy erosion of exposed and unconsolidated coastal barrier dunes (Tinley 1971:139).

Considering that there are no established criteria for the

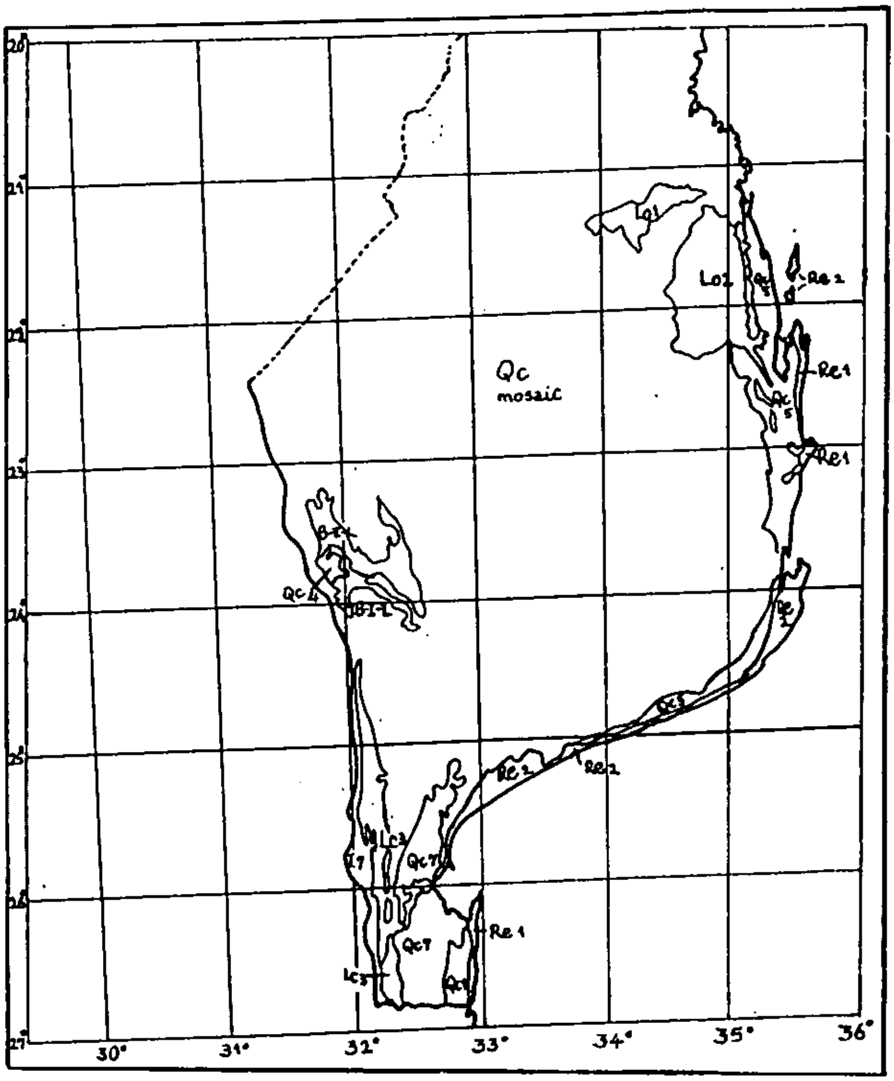


Figure 5.1. A simplified soil map of southern Mozambique (scale 1:8,000,000). Drawn from the map of the "Soil Resources Inventory of Mozambique at scale 1:2,000,000", FAO/INIA 1982 a. See following page for details.

Comments to Figure 5.1.:

The South of Save and Mozambique plain is part of the broad soil region 43 (FAO/UNESCO 1977:65), characterized in general by aeolian and fluvial deposits of Tertiary and Pleistocene age which gave rise to large sandy areas of Cambic Arenosols. The deltas of the Zambezi and Limpopo rivers consist of Eutric Fluvisols (soils developed from recent alluvial deposits) with Solonchaks (soils with high salinity). Large areas of Vertisols (heavy and difficult-to-work soils) occur at the edges of the sandy plain.
Soil taxonomy of the nomenclature used in the map (FAO/ UNESCO 1974 and 1977) is as follows:

I- Lithosols: indicates soils with hard rock at very shallow depth. These soils are in most cases not suitable for agriculture owing to dissected topography and stoniness of the substratum.

Lc- Chromic Luvisols: soils with strongly defined colour, owing to a clay horizon, and one of the most representative within this wide soil unit. These soils occur in unfavourable ecological conditions, with insufficient water supply, and are therefore best suited for extensive livestock raising combined with essential food crops.

Lo- Orthic Luvisols: soils of common occurence, with a clay horizon. Similar soil properties as the Chromic Luvisols described above apply to this type.

Re- Eutric Regosols: soils of unconsolidated materials, exclusive of recent alluvial deposits,and generally occuring in association with shifting dunes. The suitability of these soils for agriculture is extremely limited.

Qc- Cambic Arenosols: connotative of soils with changes in colour structure or consistence resulting from weathering in situ. These soils occur especially in dry regions, and have some fodder value which makes them suitable for grazing. The alluvial soils bordering rivers offer the best agricultural opportunities, whereas inland only millets and beans are widely cultivated.

B-I-L- A combination of Cambisols, Lithosols and Luvisols. Cambisols (B) are characteristic of a recent stage of soil formation and therefore possess a fairly high potential fertility. Lithosols (I) and Luvisols (L) are described above.

Note: the Arabic numerals stand for the standard soil association representation as documented in the International Map Sheet (FAO 1978: 54).

concept of drought, we accepted the suggestion put forward by De Jager and Schulze (in Hall 1981: 39). Drought is therfore taken as a period of more than 20 days without rainfall within the normal rainy season, causing a consequent 20% loss of yield in vegetative crops.

Data collection and the archaeological evidence.

A number of criteria for data collection were influenced by the nature (e.g.eroded scatter, single or multiple horizon, primary or secondary context) and location (e.g. coastal, inland, open, shelter) of each site. Further work was decided on the preliminary assessment of a site's relevance for the survey programme, mainly on the basis of surface evidence. Among these, pottery sherds were taken as the most distinct element of the chronostratigraphic features observed. This constraint became especially apparent in highly eroded sites which were innapropriate for excavation.
Almost every site displaying evidence of well preserved horizons was excavated. For the purpose of the present summary, at least one excavated site is present in each of the four physiographic units. It seemed to us quite clear that although, in terms of locational evidence,the littoral dune areas were more accessible, they also presented the highest erosion patterns which made difficult the implementation of excavations.

Pottery:
Ceramics are one of the most obviously diagnostic of the material culture elements, and played a decisive role in the location of sites. The strategy followed for pottery collection varied from total recovery of sherds from small scatters (e.g. Xai-Xai, Mamoli), through random sampling of extensive surface evidence (Ponta Dundo 1 and 2), to haphazard collecting of rim and

decorated sherds.

On the analytical level, a method of describing ceramic assemblages was designed and is currently applied in the study of the Mozambican collections (Sinclair in press). All the decorated sherds are recorded in terms of shape and decoration motifs, and are individually marked with the site number and accession code to facilitate future cross-reference. Undecorated sherds were weighed and counted. No attempt was made to reconstruct vessels owing to a general high level of fragmentation of the collections. No temper analysis was previously carried out, but a programme of systematic analysis and identification of clays is currently being carried out by B. Hulthen in Lund on a small sample of sherds. It is hoped that the experimental application to the Mozambican sites of methodologies already tested elsewhere (Hulthen 1982) will provide a firm basis for evaluating the future potential of the method for our own research projects.

Some of the major pottery assemblages are recorded in 80-column data sheets for computer processing. The data are converted and manipulated by an IBM-Pc microcomputer using the "Knowledge Man" data base (Micro Data Base Systems 1984), and the graphs are derived using the same system. Additionally, Correspondence Analysis has already been tested by Sinclair (1986) with interesting results.

In the site summaries we compare decoration motifs with seven categories of vessel shape, following the methodology described in detail by Sinclair (in press):

Categories 1: R; Bo/Ba; Bo; Ba.
(any vessel shape)
2: R/N; N.
(dependent or independent restricted vessels)
3: Sh/Bo/Ba; Sh/Bo; Sh.
(independent bowls or restricted vessels)

4: R/N/Sh/Bo/Ba; R/N/Sh/Bo; R/N/Sh; N/Sh/Bo/Ba;
N/Sh/Bo; N/Sh.
(independent restricted vessels)

5: R/N/Bo/Ba; R/N/Bo; N/Bo/Ba; N/Bo.
(dependent restricted vessels)

6: R/Sh/Bo/Ba; R/Sh/Bo; R/Sh.
(restricted vessels with simple contour- constricted bowls)

7: R/Bo/Ba; R/Bo.
(unrestricted vessels with simple contour - open bowls)

(Note: The abbreviations Ba, Bo, N, R, Sh stand respectively for base, body, neck, rim and shoulder).

A standardized numbering system classifying decoration was added to the previous work by L.Adamowicz and the writer.

Shells:

Shells are present in the majority of the sites. Except for the early survey made by J.S.Martinez (1976: 10, appendix 1) in the littoral sites of Xai-Xai and Chongoene, and Moura (1969) for the regions South of the Save, no systematic malacological species identifications, nor classification of shell:meat ratios were established for the species present at the sites. However, from casual observation, the dominant Lamellibranchs are Ostrea (Crassostrea) cuculata (Born) and Mytilus perna L., and the gastropods Thais bufo (LAM) and Achatina sp..

Slag:

The occurrence of slag is restricted to three sites: University Campus, Zitundo and Matola. Because of the pattern and quantity of occurrence in the two former, the quantities by trench and layer were registered and weighed. For Zitundo, chemical analysis was undertaken by the Swedish Central Board of National Antiquities (R.A.Ä) and the results are presented in appendix 1. Furthermore, spatial analysis was applied by P.Sinclair for Zitundo and University Campus, to which reference in detail will be made later. This application is intended to suggest ways of defining distribution patterns within a site (e.g. activity areas, space utilization) which are of great relevance for the selection of areas for subsequent excavation. Future applications will primarily consider the potential of the method for location of furnaces, especially in cases where tuyere fragments also occur, as in the case of Zitundo and University Campus.

Bone:

Osteological applications were first made on a limited scale for the Massingir 1/72 site by R.Welbourne (Duarte 1976) and are described below, also at the Zimbabwe of Manyikeni (Barker 1978). Bone clearly associated with the earlier sites is sparse, and difficult to identify owing to bad state of preservation. Bone fragments occur at Chibuene, Chongoene, Xai-Xai, Zitundo, Matola and Hola Hola. Bones at the lower deposit of Chibuene were identified as sheep and cattle (Sinclair 1982:162), and the latter are also present at Massingir (Duarte 1976:15). No facilities exist in Mozambique for processing of osteological samples, but a comparative collection is being built up locally.

Charcoal:

Charcoal occurrences were registered at all the sites with exception of Mamoli and Tembe. Its production should have varied from site to site. At the coastal middens it is seen as mostly associated with cooking of shells, whereas in the living sites with slag it is conspicuously related to metallurgical practices. However, this might prove to be more complex, as fireplaces and pottery production also require considerable quantities of fuel.

At the University Campus spatial analysis also included the distribution of charcoal within the site for further testing of the method. Up to now no attempt has been made to identify floral species from burned wood.
The majority of the radiocarbon samples obtained were derived from charcoal believed to be associated with the archaeological events to be dated.

Other archaeological remains:
The only occurrences of other types of archaeological remains from the ones above mentioned are seeds, porcelain, glass and beads. Unidentified burned seeds were recovered from Matola by Cruz e Silva (1976:5), and by the writer at the same site and at Caimane (Morais in prep.). At the Bazaruto complex fragments of glazed Sasanian Islamic pottery were recovered (Sinclair 1985 a. 6), and splashed tin-glazed ware, as well as glass fragments from a number of vessels, occurred in the lower occupation deposits of Chibuene (Sinclair 1982: 152). Glass and shell beads were present both at Chibuene (Sinclair 1982:161) and Massingir 1/72, where, additionally, copper beads were found (Duarte 1976:16).

Radiocarbon chronology.

As part of the strategy for building up a chronostratigraphic framework for Mozambique, radiocarbon dating of sites was seen as a major priority within the survey programme. The first radiocarbon dates reported for sites in Mozambique were submitted by Barradas (1977; Sheppard and Swart 1966: 427-8).These were processed from shell, having in mind both dating the Middle to Later Stone Age sequences and interpreting the geomorphological records at Kassimatis, Revez Duarte, Forno da Cal sites in Maputo Province,and Chidenguele in Gaza Province. An earlier application intended to determine regional coastal geomorphological processes is also reported for the Estoril Beach Camp in Beira, Sofala Province, but this time processed from wood (Robins and Swart 1964:32).

As an outcome of the earlier fieldwork carried out soon after independence, a radiocarbon date from Pretoria was obtained by R.Duarte for the early farming community site of Massingir 1/72 (Duarte 1976; Hall and Vogel 1980:442).

With the beginning of the archaeological research programme from 1976 to 1979, the samples were processed by the Institute of Geophysics of the University of Rome, and from 1979 onwards by the Swedish Natural History Museum. As these two laboratories applied different measuring techniques, they should here be briefly stated. The Rome laboratory processed the samples using the gas counting technique, converting the carbon into carbon dioxide, methane, ethylene and acetylene for further counting. The produced dates are not calibrated, and therefore we apply for those the corrections recommended by Ralph et al. (1973). The samples processed by the Swedish laboratory were measured by scintillation counting, being additionally all 13C corrected, and the dates are taken as giving more accurate readings. All reported dates are converted from years before present into AD dates (BP= before AD 1950), with plus and minus error range in years.

To avoid errors arising from the misassociation of sample and event, every researcher involved in the survey programme had as a commonly agreed procedure to sample, whenever possible, from charcoal concentrations, and only from in situ evidence associated with the cultural remains. Standardized radiocarbon sample forms were always used, stating detailed qualitative and quantitative information on the nature of the sample, site, environment, meaning and stratigraphy. Conventional handling procedures for samples were followed, and no pretreatement was undertaken locally before submission.

Thirty-four dates are available for the sites included in the present survey. One is from Pretoria, seven were processed by Rome, and the remaining twenty-six by Stockholm. The majority of dates were obtained from charcoal (31), and three respectively from seeds, shell, and burned bone. The date from seeds will be discussed further when describing the Caimane site. All the charcoal dates obtained from the coastal middens at Chongoene, Xai-Xai and Bilene gave modern readings and appear to be contaminated; they will be further discussed below. The date on shell from Matola was experimental, and associated charcoal was also submitted for comparison. As expected, there are problems related to the use of the shells, which give an age approximately 550 years older than that for the charcoal. This might be a result of the known environmental constraints to which shell seems to be especially susceptible, such as limited water circulation in estuaries, rich limestone contents in the water, or even contamination after death.

Sinclair (1985 c:24) commenting on the date from burned bone from Hola Hola, observes that the reading is later than one would expect, judging from preliminary comparison of the ceramics with similar Gokomere types from Zimbabwe. Owing to the porous nature and low carbon content of bones, among other factors, it has been suggested that the dates on bone tend in general to be younger than the true date (Vogel 1969:84). This remains to be seen in the case of Hola Hola which obviously would benefit from dates on charcoal.

A list of radiocarbon dates of the sites mentioned in the text is presented in Table 5.1..

Spatial analysis.

Both cultural and mechanical processes of site formation are best dealt with by applying spatial methods. These have been developed by P.Sinclair for Ponta Dundo 1 and 2 (Sinclair 1985 b), University Campus and Zitundo (Sinclair forthcoming a. and b.), and suggested both by previous work at Manyikeni (Morais and Sinclair 1980), and current research by Sinclair (in prep.).

Owing to the eroded nature of the sites at Ponta Dundo the collection method was designed to obtain a representative sample of ceramics from an extensive surface scatter. This procedure combined random and non-random collection of pottery from a gridded area and will be further described below. At University Campus and Zitundo, detailed survey, mapping and excavations allowed the utilization of the data for a computer-aided spatial analysis. The Surface II software package for simulation of spatial distributions was used (Sampson 1978;Sinclair forthcoming a. and b.).

The distribution of the trenches at Zitundo was made according to a stratified random sample procedure at a 1% level of approximately 2,000 square meters. The application was used only for the spatial evaluation of slag occurrences. The location of the 1x1m trenches at the University Campus site was designed to provide an overall coverage of the surface distribution of pottery (ca. 0.12%), but not as a random sample. The spatial study was based on each of the following excavated data categories: weight of pottery, volume of charcoal, number of shell fragments and number of slag fragments (Sinclair forthcoming a.).

Discussion.

This section deals with the confrontation of the presented data with a wider set of related evidence elsewhere. We either take it after a particular site description, or include it in the relevant part of the text as a summary discussion for sites with a set of comparable information.

5.2. Site summaries: description of the sites by physiographic context.

5.2.1. The littoral sites: the Bazaruto complex, Chibuene, Bilene, Chongoene, Xai-Xai, and University Campus.

The Bazaruto complex (Bazaruto Dune P.O.; Ponta Dundo 1; Ponta Dundo 2).

Previous research:

All three sites of the Bazaruto complex are situated in Bazaruto Island, the major island out of six forming the Archipelago of the same name in Vilanculos Bay. Chibuene is situated approximately five kilometers south of Vilanculos, the district administrative center.
No systematic coverage of the littoral regions of southern Mozambique was undertaken until 1968 (Smolla 1976). The earliest reference to coastal shell middens is reported by Van Riet Lowe (1943) and Wells (1943), who briefly described a number of sites located near to the Limpopo river mouth, south of the area being considered. Later on, archaeological and ethnographic surveys were carried out in areas further north in the Save River mouth (Dickinson 1971, 1976), or south all along the coastal areas from Cape S.Sebastião to Maputo (Dias 1960; Lawton 1967;Derricourt 1975; Smolla 1976; Liesegang 1976), thus leaving an apparent gap in the knowledge of the region between the capes of Bartolomeu Dias and S.Sebastião.
To compensate for the patchiness of previous surveys, and as part of the Archaeological Survey Programme of 1976-84, the areas in the Vilanculos Bay region were visited on a number of occasions by researchers from Eduardo Mondlane University. This led Sinclair and M.Stephen to locate in 1977 the site of Chibuene

(Sinclair 1982), and later in the year Sinclair and Cruz e Silva to extend the survey to the Bazaruto Island where a number of sites were found (Sinclair 1985 a.). The sites of Bazaruto Dune and Marrape were discovered in 1979 during a period of new surveys in the region by Sinclair and the writer (Sinclair Id.).

Agro-ecology:

All three of the island sites are now covered by shifting dunes stripped of vegetation. No contemporary archaeological evidence was found in the interior parts of the island. The island, approximately 30 km long and 10 km width, is formed by a coral platform with a surface of coastal sandy soils held by a typical binding flora. Two major freshwater lagoons, Biti and Lengue, and a number of smaller ones, are located in the central part of Bazaruto island.

The soils are described as sandy soils common to several parts of the littoral shifting dune formation (FAO Re69-1a, FAO/INIA Re2), constituted by sands of coarse texture, low humus content, and therefore with extremely limited agricultural suitability (Fig. 5.1). The slope class is level to gently undulating (dominant slopes ranging between 0 and 8%), (FAO/UNESCO 1973; FAO/ INIA 1982; FAO 1978:46,47,54). The lithology of this soil belongs to the type of the recent and Quaternary coastal deposits (FAO/ UNESCO 1977: 175,210).

The vegetation is composed of an open, wooded grassland and littoral thicket of imperfectly/poorly drained littoral dune area, (FAO/UNDP/MOZ 1980 d.). A detailed listing of more specific littoral species and floral processes is given by Wild and Fernandes (1967:16-7). Most of the coastal sand-binding floras are also listed by Tinley (1971:136).

The present day agricultural potential of the region is classified as J2, with 800- 1200 mm rainfall, and small risk of drought with about five months of precipitation (FAO/UNDP/MOZ 1980 b.). This set of circumstances makes suitable a number of cultigens on the well-drained inland dunes, like maize (Zea mays L.), sorghum "mapira" (Sorghum vulgare Pers.), groundnut (Arachis hypogea L.) , and cassava (Manhiot esculenta Grantz), as well as coconut (Cocus nocifera L.) and cashew nut (Anacardium occidentale L.).

The region is classified as R.33 (unit 87) in terms of traditional agriculture, maize being the most predominant product with approximately 51% of all the others (Carvalho 1969:47).

Data collection and archaeological evidence:

Bazaruto Dune P.O. (2135-Cb-2), 21° 43' 50''S- 35° 28'00''E:

This is a multi-component site, with both early farming community and later farming community pottery, located by Sinclair and the present author in 1979. Compared to the sites of Ponta Dundo the occurrence of sherds is rather limited. This factor accounted for the non-random recovery of the exposed ca.40 decorated sherds. No clear defined horizons were located (Sinclair 1985 a: 6). A description of shape, and motif and category comparison of the ceramics is provided by Sinclair (Id.:13).

No radiocarbon dates for the site are available.

Ponta Dundo 1 (2135-Cd-3), 21° 47' 30''S- 35° 27'' 00''E :

Of all the surveyed Bazaruto surface occurrences, Ponta Dundo 1 is the largest of the eroded scatters, extending for an area of approximately 21.000 square meters (300x70 m),(Appendix 4, plates 1 and 2).It was located by Sinclair and Cruz e Silva in 1977.

Both Early and later farming community ceramics are present, the latter predominanting. A summary of the pottery, which includes

description of 50 decorated sherds, is given by Sinclair (1985 a.:5,11). Some sherds from the typologically earlier assemblage are illustrated (Appendix 3, Figures 1 and 2). A single sherd reminiscent of the Matola tradition was recovered, which together with similar evidence collected by the writer between Ponta Chue and Duvini, north of Vilanculos Bay, suggests an important topic to be further investigated.
When we visited the site a very localized patch of a fast eroding shell midden was still visible, with an in situ horizon 20-25cm below surface. A charcoal sample from this location was submitted by P.Sinclair to Rome for dating, but as yet no result has been obtained.

Spatial analysis:

The nature of the site called for the application of sampling techniques to obtain a representative pottery collection. The site was gridded into 50 meter blocks, and 18 random points, with an area of 25 square meters each, obtained on a 1% stratified sampling level. All the pottery within the units was recorded. A number of non-random collections were additionally made. A map documenting the nature of the sampling (Fig.5.2) was produced by Sinclair (1985 a.).

Ponta Dundo 2 (2135-Cd-4), 21°47' 05'' S- 35°27' 20'' E :

North of P.Dundo 1, along the beach, a smaller eroded pottery scatter occurs. The site was located by Sinclair and Cruz e Silva in 1977. Sinclair (1985 b.:6,12) describes the surface pottery as derived from several phases. A sample of approximately 200 sherds was used by him for shape and decoration motif comparison. From preliminary analysis of the pottery, sherds similar to Hola Hola are reported, and types occurring at P.Dundo 1 are also common.

Figure 5.2.- Ponta Dundo I: plan showing distribution of pottery samples collected.

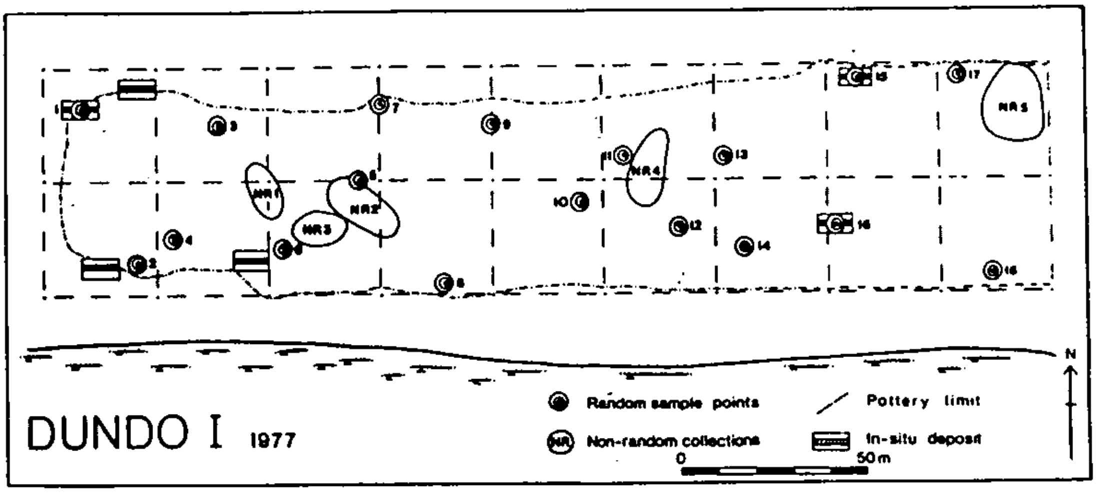
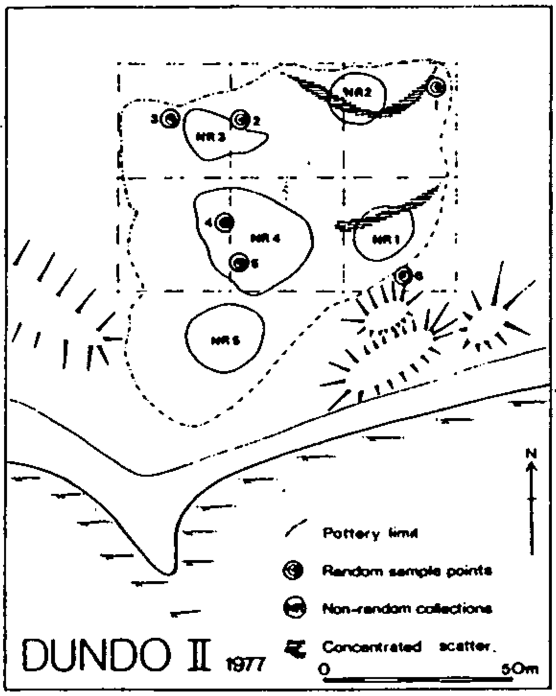


Figure 5.3 - Ponta Dundo II: plan showing distribution of pottery samples collected.



In order to document the former assemblage, a small selection of sherds are illustrated (Appendix 3, Figures 3 and 4). Another interesting piece of evidence is the occurrence of blue green glazed Sassanian Islamic ware.
No date is available from the site.

Spatial analysis:

As in 2135-Cd-3, a sampling technique was applied and described by Sinclair (1985 a.:5). To fit the smaller area a 30x30 m grid was laid out, and pottery collected from 6 random sample points and 5 non-random locations. A map (Fig 5.3) illustrating the area coverage was produced by Sinclair (Id.).

Chibuene (2235-Ab-1), 22°02' 02''S- 35°19' 30''E.

Previous research:

The Vilanculos District began to receive our attention after 1976, as part of the project carried out at the Zimbabwe of Manyikeni (Morais and Sinclair 1980). Having in mind the need to shed some light on earlier or contemporary coastal components of Manyikeni led Sinclair to excavate Chibuene (Sinclair 1982), as well as to survey the Bazaruto Archipelago, the latter project also involving the writer in several occasions. The results of this survey work has been recently presented in Sinclair 1985 a.. The coastal regions north of Vilanculos Bay are virtually unsurveyed, and should be regarded as an area for future work. During a brief foot survey carried out by the writer along the beaches from Vilanculos to Ponta Comuine no sites were recorded, probably because most of the foredune and dune cordons are well protected from erosion by a thick binding flora. However, a single sherd of a fluted bowl similar to the ones from Matola was recovered during this survey from the beach strand between Ponta Chue and Ponta Duvini.

Agro-ecology:

The site is formed by successive accumulation of horizons, where shell middens are predominant, resting on a calcareous dune rock. The seaward side of the site is being presently heavily eroded by wind and sea to which it is directly exposed (i.e. no foredune feature occurs),(Appendix 4, plates 3 and 4).
Chibuene is part of the same agro-ecological zone as the ones of the Bazaruto complex, but with a clearer terrestrial facies. The site is situated in the littoral thicket and forest of recent dunes described in Wild and Fernandes (1967: 16-7), but also bordering with the sublittoral region. Here the latter is characterized by a Miombo Woodland on "Sul do Save sands", dominated by Brachystegia spiciformis, and described by Wild and Fernandes (1971: 21-2). The sandy soils of the sublittoral dunes runs in a coastal strip from the Bazaruto Island latitude to the formations on alluvium north of the Limpopo river mouth. Furthermore, this formation is generally interpreted as a type secondary to evergreen forest which has been cleared by cultivation, with a dense Brachystegia growth and a poor grass cover (Id.: 21).

Data collection and archaeological evidence.

A report on the earlier excavations at the site is provided by Sinclair (1982:149-152). Further excavations were subsequently carried out by the same author, and a final report will incorporate material still under study.
Of the two major periods of occupation, we will be concerned here

only with the lower units, which yielded 326 sherds of both local and imported ceramics. The local pottery was provisionally correlated with the Gokomere-Ziwa tradition, having also some affinities with assemblages from Hola Hola and Ponta Dundo 1 and 2 (Sinclair 1982:155). However, a closer level of typological similarity has recently been established with the site of Nhachengue (2235-Cc-1) further inland near Mapinhane, which is dated to AD 715 +-80 (St-8497), (Sinclair 1985 a.:10, and pers.comm.). Some of the unglazed sherds are also found to be close to the early Kilwa and Manda types. It is difficult to judge if these are made locally or imported from the Kenyan and Tanzanian sites. A small number of sherds were additionally identified as being similar to the final phase of the Natal Early farming community period. A detailed description of the pottery is given by Sinclair (1982: 153-160), and it is noticeable that the variety of pottery types present at the site seems to indicate, among all the present evidence for the early farming communities studied in the country, the highest level of cultural diversity.

The glazed wares from Chibuene include only a single type, namely tin-glazed with splashed painted decoration. This type occurs at sites further north in the coast (Manda and Kilwa). In addition light blue glazed Sassanian Islamic ware occurs at Ponta Dundo 2, and all of these are of possible Persian origin (Sinclair 1982: 152,163).

Numerous glass fragments and glass beads were recovered. Shell beads were in small number, and in contrast to the ones made out of glass, were most probably locally made.

Metal occurrences are very rare, and some unidentified seeds were excavated.

Osteological evidence includes a skeleton of an adult human, and a small sample of bones still under study, which includes both sheep and cattle (Sinclair 1982:161-2).

Radiocarbon chronology:

A number of new radiocarbon dates are available, and are listed in Table 5.4.(Sinclair pers.comm.). From these it seems clear that the early sequence covers the period from the late 5th to the 9th century AD. Three of the dates (St-8494, 8496 and R-1325) seem to cover a 700-850 ad main chronological period.
A 13th-14th date (St-8493) for the later occupation of the site makes it contemporary with the first period at the zimbabwe of Manyikeni 50km inland (Morais and Sinclair 1980: 351).

Discussion of the Vilanculos Bay sites (Bazaruto complex and Chibuene):

Sinclair (in prep.) classifies all the above mentioned sites as the "Hola Hola facies" of the Gokomere/Ziwa tradition, the latter as first discussed by Phillipson (1977: 113). However, this classification is only provisional, as the picture does not seem homogeneous: from analysis of the pottery assemblages, the similarities between the Bazaruto sites and Hola Hola seem to be clearer than either of them is to the basal unit of Chibuene or Nhachengue, the two latter bearing a closer degree of affinity to each other (Sinclair pers.comm.). The problem is complicated by the lack of chronological data for comparing the Bazaruto sites with Hola Hola, which makes the contemporaneity of Nachengue (1 date, late 7th to 8th century) and Chibuene (3 dates falling within the range early 7th to 9th century) rather more significant (Table 5.1). Furthermore, the proposed identity is reinforced by recent pottery manufacture analysis carried out by B. Hulthen (pers.comm.) from which samples of the two latter sites are seen as very closely related. It seems nevertheless relevant to stress the fact that only Chibuene and Ponta Dundo 2 have, in common, evidence for imported ceramics (Sassanian

Table 5.1: Radiocarbon dates of the archaeological sites in Mozambique.

Site	Date BP	Date AD	Lab.no	Mat.	Corr.
Littoral sites:					
Chibuene (2235-Ab-1)	1400+- 85	550	(St-8495)	Ch.	13C
	1270+- 80	680	(St-8494)	Ch.	13C
	1180+- 50	770	(R-1325)	Ch.	850-830
	1155+- 85	795	(St-8496)	Ch.	13C
	665+- 80	1285	(St-8493)	Ch.	13C
Bilene (2533-Ac-2)	<250		(St-8588)	Ch.	13C
Chongoene (2533-Bb-1)	<250		(R-1337)	Ch.	-
	<250		(St-8585)	Ch.	13C
	<250		(St-8587)	Ch.	13C
	<250		(St-8591)	Ch.	13C
	880+-100	1070	(St-8590)	Ch.	13C
Xai-Xai (2533-Ba-1)	<250		(R-1329)	Ch.	-
	<250		(St-8592)	Ch.	13C
	<250		(St-8586)	Ch.	13C
	510+-165	1440	(St-8589)	Ch.	13C
U.Campus (2532-Dc-1)	1775+- 85	175	(St-9836)	Ch.	13C
	1590+- 75	360	(St-9838)	Ch.	13C
	1355+-100	595	(St-9837)	Ch.	13C

(continued)

Site	Date BP	Date AD	Lab.no	Mat.	Corr.
Estuarine:					
Matola (2532-Cd-1)	1880+- 50	70	(R-1327)	Ch.	140
	1720+-110	230	(St-8546)	Ch.	13C
	1470+- 80	480	(St-8547)	Ch.	13C
	2025+- 80	-75	(St-8548)	Sh.	13C
	1120+- 50	830	(R-1328)	Ch.	910-890
Interior dune cordon					
Zitundo (2632-Db-9)	1775+-105	175	(St-8909)	Ch.	13C
	1760+-105	190	(St-8911)	Ch.	13C
	1685+-105	265	(St-8912)	Ch.	13C
	1575+-105	375	(St-8913)	Ch.	13C
	1435+-105	515	(St-8910)	Ch.	13C
Nachengue (2235-Cc-1)	1235+- 80	715	(St-8497)	Ch.	13C
Riverine:					
Hola Hola (2134-Ad-1)	1060+- 50	890	(R-1326)	Bone	950
Caimane (2632-Ac-4)	880+-210	1070	(St-8873)	Ch.	13C
	715+- 90	1135	(St-8874)	Seed	13C
Massingir (2332-Cc-5)	1030+- 40	920	(Pta-1640)	Ch.	980

Key for abreviations:

Source material for date (Mat.): Charcoal (Ch.), Shell (Shell).
Correction (Corr.): 13C corrected for all St- labeled dates. The Pta- and R- labeled dates are corrected by a range or mid-point value, as suggested by Ralph et al. (1973). For details see chapter 5.1., radiocarbon chronology.

Islamic ware), and the singularity at Chibuene of the presence of pottery types from Kilwa and Manda further North in Tanzania and Kilwa.

We will consider ahead when discussing Hola Hola, the most relevant elements of identity with the Gokomere/Ziwa tradition. The minor indications (2 surface sherds, one from Ponta Dundo 1, another from the beach north of Vilanculos) of a Matola component predating the Gokomere/Ziwa assemblages cannot be made too much of for the time being in the absence of a larger sample. It is thus up to future work to establish the presence in this region of Matola communities, whose remains are well represented along the coast from Natal to the Limpopo river mouth. As mentioned above, there are are also suggestions at Chibuene of pottery types which are close to the final expressions of the Lydenburg tradition in Natal. This being the case, and in view of the evidence that in Natal they are a product of a regional evolution (Maggs 1980 b:139), either they must have been introduced from there, or they are the product of a similar evolution from an earlier component which has not yet been locally found.

What seems important here is the indication of an apparent diversity of wares of local, inland and coastal typological affiliation. This may call for an interpretation in which a higher degree of cultural relationships should be postulated and sought for in further analysis.

Unfortunately very little is known of the economy of the coastal communities for the period. The only evidence comes from Chibuene where shellfood gathering, and domestic (sheep and cattle) and wild animals were part of the diet. The seeds present in the site were not identified, but agriculture or use of the wild flora (or both) are likely to have existed, as the region provides good agro-ecological potentials.

The growing importance of coastal and interior trade, at least from the 9th-10th centuries onwards, is indicated by both the presence at Chibuene of a number of coastal imports of glazed ware, glass and beads, and by similar bead assemblages linking the region with the Zhizo sites of the Zimbabwean plateau (Sinclair 1982:163). This wider set of contacts should have been reinforced by an Indian Ocean trade network which linked Persia to Kilwa, Manda and south at least to Chibuene. However, although we have speculated elsewhere about these events, mainly from documentary evidence (Morais 1978:8), much more archaeological evidence is necessary before we are able fully to understand the regional trading elements present at Chibuene,the links between this site and the interior Nhachengue, and further inland to the contemporary Zimbabwean sites.

The pattern of regional contacts, and the potential role that the Save river had in terms of linking the coast and interior might be expressed in the similarities of the pottery assemblages from Bazaruto complex and Hola Hola. Local coastal navigation seems to be evidenced since an early farming community occupation at Bazaruto would require the use of boats for transport or fishing. We do not know for certain how long the archipelago has been cut off from the continent. Judging from the historical descriptions by Frei Joao dos Santos, who in 1609 recorded from Bazaruto island proficent fishing from boats and diving for meat and pearls (in Theal 1964, vol.VII: 65), and the low degree of recent local eustatic changes from 6.000 bp to 1930 (Tinley 1971:132), the sites were most probably already insular at the date of occupation.

<u>Bilene</u> (2533-Ac-2),<u>Chongoene</u> (2533-Bb-1) and <u>Xai-Xai</u> (2533-Ba-1).

Previous research:

As mentioned above, the earliest survey undertaken in southern

Mozambique was focused around the littoral areas of the Limpopo river mouth (Van Riet Lowe 1943; Wells 1943), where these sites are situated. Later on Barradas (1968), Smolla (1976), Martinez (1976) and Derricourt (1975) also visited the area, and occasionally reported new surface scatters. A wider survey of the region was initiated shortly afterwards by Martinez, who discussed the nature of the early farming community pottery assemblages and fauna (Martinez 1976).

The coastal dune areas were also briefly visited during irregular periods between 1976 and 1982 by members of the archaeological research programme, and a first overview and reassessment of Martinez's work provided in Sinclair, Morais and Bingham (1979).

In order to continue work for the present project and to obtain radiocarbon samples the sites were visited in 1982 by R.Inskeep (University of Oxford) and the writer.

Agro-ecology:

The site of Bilene is situated on the base of the first exposed dune ridge south of the higher coastal calcareous sandstone promontory near the outlet of the Bilene lagoon, which is the only one in this part of the coast to be periodically linked to the sea. Calcareous sandstone outcrops of the barrier coast have a characteristic northeast trend (Tinley 1971: 127), and are visible when not covered by steep barrier dunes. Behind these a number of large and deep freshwater lakes occur. Sweet water fed by underground streams is also obtainable from a number of other smaller lagoons very close to Bilene (Barradas 1962: E.F.-6).

The Bilene site is located in a region of sandy soils (FAO/ INIA Re2), constituted by sands of shifting dunes having coarse texture and extremely limited fertility (Fig.5.1). These are part of the littoral sandy plains with slope class level to gently undulating (FAO/INIA 1982 b.; FAO 1978: 47-54). However, the inland region is also classified as having comparatively richer soils especially associated with savanna woodland (FAO Qc39-1a, FAO/ UNESCO 1973; Gouveia e Marques 1980). The lithology of this soil association belongs to the type of the Quaternary alluvial and coastal deposits (FAO/ UNESCO 1977: 156,210). When near the coast, the soils are seen as belonging to ancient dune formation, varying in colour in a number or red, yellow and greyish hues (Barradas 1962: 73-4).

The sublittoral and littoral vegetation of Bilene is composed, respectively, of a savanna woodland and littoral thickets, the latter of no agricultural potential (FAO/UNDP/MOZ 1980 a.). The savanna woodland components are typical of the whole southeastern sublittoral regions south of the Limpopo River, and are well described in the Flora Zambeziaca type 34, as well as the littoral thickets of the type 14b, by Wild and Fernandes (1967: 33,16), and Barradas (1962: 109). Martinez (1976: 2) also lists the major components of the dune vegetation cover.

The present day agricultural potential of the Bilene region is classified as J2, with 800- 1200 mm rainfall, and small risk of drought and approximately five months of precipitation (FAO/ UNDP/MOZ 1980 b.).

The region is classified as R.32 (unit 124) in terms of its traditional agriculture. This type dominates the thin coastline strip from Quissico to Marracuene, with the exception of a limited area in the Limpopo river mouth. The cultigens present are the same as the ones referred to above for the Bazaruto complex, but here with 40% of the cultivated area being used for maize (Zea mays L.) and 37% for groundnut (Arachis hypogea L.),(Carvalho 1969:47).

The sites of Chongoene and Xai-Xai further north along the coast, are located along the erosion slopes of the first dune ridge. The most concentrated occurrences in Chongoene are near to the hotel (approximately 200 m south), either at the level of the sand road to Xai-Xai, or on several extensive surface scatters in the first main dune erosion. A few dark shell-midden horizons with charcoal are still visible, and occasionally some of the pottery associated is seen eroding from within or from the top of the horizon.

Chongoene and Xai-Xai are also situated in the region of the typically littoral sandy soils (FAO/ INIA Re2), but here in the area bordering the fertile soils of the lower Limpopo river basin (FAO Je7-3a), and constituted by sands of coarse (littoral) to fine and heavy texture (interior), on the sandy plains of slope class level to gently undulating (Fig.5.1), (FAO/INIA 1982 b.; FAO/UNESCO 1973; FAO 1978: 47,54). The latter soil type occupies the best drained part of the lower Limpopo river valley and constitutes very good farmland. Both lithologies are formed by recent alluvial and coastal deposits of ancient dune origin (FAO/UNESCO 1977: 118,207; Barradas 1962: 74).

The vegetation on the coast is the same as for all of the above mentioned littoral sites. The sublittoral region is formed by dry tree-savanna- moist grassland- fringing forest- aquatic flora mosaic of large river alluviums (Wild and Fernandes 1967: 55-9). This is the most varied floral association in Mozambique, providing considerable potential for the farming communities in the region.

The present day agricultural potential is classified as I2, having 1000- 1200 mm precipitation and a single prolonged rainy season (FAO/UNDP/MOZ 1980 b.).

The area is also part of the traditional agriculture region R.32 (but here unit 107) mentioned above for Bilene, and on the border-line of the main region for maize (accounting for 58% of all the cultigens) in southern Mozambique (Carvalho 1969: 39).

Data collection and archaeological evidence:

Bilene (2533-Ac-2), 25°19' 40''S- 33°14' 30''E.

Five shell middens containing pottery and stone artefacts from Bilene are illustrated by Smolla (1976:265-6). No detailed account of the sites is given except for the singularity, among all the ones in the region surveyed by the author and M.Korfmann in 1968, of displaying stone artefacts. Some of these are said to be associated with pottery, and Smolla interprets them as being the result of secondary utilization, and not an evidence of a pre-farming-community settlement. Furthermore, the considerable typological variation in the pottery decoration from the sites is seen as a consequence of being assemblages representing different ages, and not a product of stratigraphic disturbance.

A description of surface collections of pottery is also given by Martinez (1976:5-8). Judging from his reference and map, most of the sites visited by him seem to be on dunes slightly further south (25°19' 30''S- 33°14' 30''E) than those where the finds of early farming community pottery included in the present survey were recovered. However, we will first describe the occurrences mentioned in his early report.

While including Bilene in his analysis, Martinez only mentions the site in association with the finds from Xai-Xai and Chongoene, all classified as belonging to an early farming community "phase 2" group ("phase 1" being pre-Bantu). However, the distinctions between phase 1 and 2 seem primarily to be based on the observation of a limited number of surface pottery collections from which he infers for the latter group a larger number of shape categories, a fabric with less shell content but usually better fired, and richer in decoration with a predominance of shell-stamping (Martinez 1976:7-8). No indication is given of the size of the sample used in his analysis, and only two distinct sherds from Bilene are mentioned and illustrated: that of a fluted bowl similar to the ones from Matola,and another of a jar with a perpendicular parallel line of punctates on the rim (Martinez 1976:Figs. 18 and 16). This scant evidence might have accounted for Bilene not being listed in the pottery shape comparison by Martinez,who includes only Xai-Xai and Chongoene.

Taking into consideration the need to enlarge the pottery collections, later visits were made to the region by members of the archaeological survey programme, including the writer. However, only a small number of newly exposed surface scatters were found in the previously surveyed locations containing early farming community period pottery, and one other site (2533-Ac-3) located by R.Inskeep and the writer, containing a number of surface occurrences both with Early and later farming community pottery types, as well as Later Stone Age implements (Appendix 4, plate 5).

A pottery analysis of the finds from 2533-Ac-2 was carried out by Sinclair (pers.comm.)and is listed in Table 5.2 for illustration.

Table 5.2. Analysis of pottery sherds: Bilene

SHAPE CATEG.	DECORATION MOTIFS A Plain	B Flut.	C1	C2	D	E1	E2	F	G Areal shell	H1	H2	I1	I2 irreg.	Total
1	-	-	-	-	-	7	-	-	3	-	4	-	5	19
2	15	-	-	-	-	-	-	-	-	2	-	1	-	18
3	-	-	-	-	-	-	-	-	-	-	-	-	-	0
4	11	-	1	1	1	12	2	5	-	-	-	1	-	34
5	-	-	-	-	-	-	-	-	-	-	-	-	-	0
6	-	-	-	-	-	-	-	-	-	-	-	-	-	0
7	18	1	-	-	-	2	-	-	-	-	-	-	-	21
Total	44	1	1	1	1	21	2	5	3	2	4	2	5	92

Radiocarbon chronology:

As no reliable dates are available for the region, a sample was collected by R.Inskeep and the writer from a heavily eroded shell midden at Bilene 2533-Ac-3. At this location, remains of one horizon from which a number of pottery sherds seemed to originate was still visible. The sample (which was dated to <250 BP, St-8588) (Table 5.1) is unfortunately likely to be contaminated, or ultimately the pottery to be derived from a different source with no visible horizon.

Chongoene (2533-Bb-1), 25° 05' 30''S- 33° 49' 30''E.

Smolla (1976:265-9) refers to two shell middens with Early and Later farming community pottery for the Chongoene region. The author does not detail the criteria underlying his interpretation, but correlations established with pottery from Zimbabwe lead one to infer that they are based on typological grounds. From these he concludes that the farming community period pottery assemblages of southern Mozambique belong to a tradition different from any described by Summers, and which he calls "Area C" (Smolla 1976:268).
Martinez (1976:4) increases the previous records, reporting the existence of fourteen locations of shell middens in the region, including the sites visited earlier by Wells (1943) and Smolla (1976). Of these only one was excavated (CH I), incidently the furthest one away from the coast (1.300m), the remainder being merely sampled. As referred to above for Bilene, two pottery phases are proposed by the author, the Chongoene excavated samples being represented in both. However, it seems difficult to claim two occupation periods judging from the sections illustrated by Martinez (1976:fig.1),which consistently display single thick shell midden deposits. A double horizon seems to

occur only at the excavated site, which is reported to contain only "Phase 2" pottery. A description of the typological differences for the two phases is given (Martinez 1976:5-8), but no formal attributes of the excavated pottery assemblages are presented, and doubt has been cast on the distinguishing criteria established (Sinclair et al. 1979).

Derricourt (1975:136) also mentions a number of surface finds of pottery from several shell middens at Chongoene, which he postulates as being of one kind. The collection- 12 decorated body sherds and 3 rims- seems however too small to consider them more than indications. The collections are now housed at the University of Fort Hare, in South Africa, and we have not had access to them.

The Chongoene shell middens were visited on several occasions by members of the archaeological survey programme, and the comparative collections enlarged. Furthermore, all the previously recorded locations were compared with the earlier accounts above mentioned and registered in our files. The collected pottery, analysed by P.Sinclair (pers.comm.), is illustrated in Table 5.3.

Table 5.3. Analysis of pottery sherds: Chongoene

	DECORATION MOTIFS										
SHAPE CATEG.	A Plain	B Nippled	C	D	E	F1	F2	G1	G2	G3	Total
1 (R, Bo, Bo/Be, Be)	-	-	-	-	-	-	-	-	-	-	0
2 (R/N, N)	-	-	-	-	1	-	-	-	-	-	1
3 (Sh, Sh/Bo, Sh/Bo/Be)	-	-	-	-	-	-	-	-	-	-	0
4	1	-	1	1	1	2	2	4	-	1	13
5	-	-	-	-	-	-	-	-	-	-	0
6	-	-	-	-	-	-	-	-	-	-	0
7	57	2	-	-	1	-	-	-	1	-	61
Total	58	2	1	1	3	2	2	4	1	1	

(continued)

SHAPE CATEG.	H1 ///	H2	I1	I2 xxx	J1	J2	J3	K	L	Total
1 R Bo Bo/Ba Ba	1	-	-	1	-	1	-	-	1	4
2 R/N N	-	1	-	-	-	-	-	-	-	1
3 Sh Sh/Bo ShBoBa	-	-	-	-	-	-	-	-	-	0
4	-	2	-	2	2	-	-	1	-	7
5	-	-	-	-	-	-	-	-	-	0
6	-	-	-	1	-	-	-	2	-	3
7	6	-	9	-	6	-	1	9	2	33
Total	7	3	9	4	8	1	1	12	3	123

The most common malacological species represented at the middens are Perna perna, accounting for more than 95%, and Thais bufo (Martinez 1976:10-1), and an average estimate of meat weight/person ratios from the shell remains is proposed, in an attempt to count individual meals and to assess site formation processes.

The only excavated osteological evidence are two molars of a medium sized artiodactyl associated with the CH1 midden (Martinez 1976:10).

Radiocarbon chronology:

In 1978 a charcoal sample from one of the shell middens was submitted to Rome by P.Sinclair and the writer (<250 BP, R-1337). In order to re-evaluate the irregular date, a series of four charcoal samples were collected in 1982 during a brief visit to the site by R.Inskeep and the writer. All the samples were carefully selected from obvious horizons, two from the base of a thick shell midden (1070 +-100 AD,St-8590 and <250 BP,St-8591), and two from within the deposits (<250 BP,St-8587 and <250 BP, St-8585). It seems clear that contamination of the dates requires

that in the future the samples are taken from excavated horizons, avoiding both uncertainties regarding the provenance of the pottery and reliability of the sampling procedure.
The alternative view, that the dates are accurate although logically tenable, would require a complete revision of the chronostratigraphic framework, and this is not justified on the basis of presently available evidence.

<u>Xai-Xai</u> (2533-Ba-1), 25°07' 15''S- 33°43' 30''E.

Seven shell middens with pottery, another one with pottery and stone artefacts, and eight shell middens without cultural remains are reported for the region by Smolla (1976). These are indistinctly numbered as sites 12 to 27. The only particular reference is given to site 19 where a small number of sherds are said to recall the "southern tradition" or "channeled ware" of the early farming community (Id.:268), that the present writer takes as corresponding to what is now classified as Gokomere/ Ziwa.
Eight shell middens are described by S.Martinez for the Xai-Xai region, including the locations previously visited by Van Riet Lowe (1943), Wells (1943) and Smolla (1976). Of these, only one midden previously reported by Smolla (Smolla's site 12? and Martinez's XX-II), an isolated midden located north of the remaining seven, was excavated (Martinez 1976:4).
The inconsistency of the presented data is similar to that mentioned above for Chongoene. The XX-II site seems from our observation of the section drawing to have two well defined horizons, but at this particular location only "phase 1" pottery is reported (Martinez 1976:fig 1;5). At four other locations

surface occurrences are said to display evidence of pottery similar to the Matola jars with bevelled rim with a single line of broad line incision (Martinez 1976:7;fig.3).

Derricourt (1975:135-6) briefly mentions in his report several sites at Xai-Xai, but does not list the findings. Due to the imprecise description of the location of his sites 736, 737, 739 and 740, we were unable to re-visit them, nor have we had access to the collections now housed at the University of Fort Hare, Cape. The description of the earlier pottery collected by Van Riet Lowe and Wells (Derricourt 1975:137-8), is too general to allow useful comment, and these collections, once available at the Natural History Museum in Maputo, seem unfortunately to have been lost.

The main site and surroundings have been briefly visited on several occasions by members of the archaeological survey project, including the writer, who on one occasion with P.Sinclair visited the locations previously described by Martinez. All the middens of the sequence Xai-Xai I, and III to VIII, were relocated with reference to the only building in the vicinity; a small cement house belonging to "Wenela". Their location is respectively circa 30, 200, 400, 450, 600,800 and 900 meters South from the above mentioned reference point. The pottery from the various exposures at Xai-Xai is definitely of different ages. The occurrences described by Martinez as Xai-Xai I,II and III are later farming community, whilst that at approximately the locality described by Martinez as Xai-Xai VII is an undisturbed site with Matola pottery and middens associated with Perna perna shell. This site is approximately 1 meter above shoreline overlain by about 8 meters of dune sand (Appendix 4, plates 6, 7 and 8).

The collected pottery was analysed by P.Sinclair (pers.comm.) and is presented here in composite form (Table 5.4).

Table 5.4. Analysis of pottery sherds: Xai-Xai

DECORATION MOTIFS

SHAPE CATEG.	A Plain	B Fluted	C BLI	D1	D2	E1	E2	F	G DS	H	Total
1 R Bo Bo/Ba Ba	-	-	-	10	-	19	-	1	-	-	30
2 R/N N	-	-	-	-	-	-	-	-	-	-	0
3 Sh Sh/Bo ShBoBa	-	-	-	-	-	-	-	-	-	-	0
4	20	-	-	27	1	3	-	3	3	-	37
5	-	-	-	-	-	-	-	-	-	-	0
6	3	-	9	-	-	-	-	-	-	-	12
7	46	1	-	18	1	-	1	-	4	1	72
Total	69	1	9	55	2	22	1	4	7	1	

SHAPE CATEG.	I1	I2	J1	J2	K1	K2	L	M BLI	N	O Grooving	P Red	Total
1 R Bo Bo/Ba Ba	-	-	-	-	1	1	-	1	1	1		6
2 R/N N	-	-	-	-	-	-	-	-	-	-		0
3 Sh Sh/Bo ShBoBa	-	-	-	-	-	-	-	-	-	-		0
4	1	1	-	-	-	-	-	-	-	-		2
5	-	-	-	-	-	-	-	-	-	-		0
6	-	-	-	-	-	-	1	-	-	-		1
7	2	-	1	1	-	-	-	-	-	-		4
Total	3	1	1	1	1	1	1	1	1	1		164

As for Chongoene, the most predominant shell species are Perna perna (>95% in all samples) followed by Thais bufo, and preliminary ratios of meat weight/ person from the surveyed shell middens are presented (Martinez 1976:10).

Only a few antelope and rodent bone fragments were recovered from

XX-I (Martinez 1976:10). Wells (1943) reports the discovery of a human femur from this very same shell midden, which is interpreted by him as being of an individual of bushman type. Charcoal occurs in massive quantities, and is assumed to be a by-product of the cooking of shells, when associated with shell middens. However, it has been noticed occurring without pottery or shells, which might be an indicator of burning of vegetation.

Radiocarbon chronology:

A charcoal sample was collected by P.Sinclair and the writer from an horizon with early farming community pottery, but provided an unreliable result (<250 BP, R-1329). During a later visit of R.Inskeep and the writer three additional samples were made. An example of contamination is provided by the dates obtained for superimposed horizons which gave a modern reading for a basal charcoal lens (<250 BP, St-8592) lying beneath a compact horizon of shells which gave a comparatively earlier date (510+-165 BP, St-8589). The shell midden had evidence of pottery sherds on its top. The third date obtained from charcoal within another thick shell midden also gave a modern reading (<250 BP, St-8586).

Discussion of the Bilene, Chongoene and Xai-Xai sites.

As has been previously pointed out, either due to the nature of the coastal sites of the region, or to inappropriate sampling procedures, the pottery collection recovered from the sites is mostly of a mixed nature. This factor has been further aggravated by the lack of a chronological frame of reference which would assist in differentiating typologically distinct assemblages.
The pottery collections from the three sites are of a too uneven number and origin to suggest the application of an inter-site decoration motif/ structure vessel shape category comparison. It

is however worthwhile to point out that Xai-Xai comes first with 21 different decoration motifs, followed by Chongoene with 19 and Bilene with 13. This might indicate the degree of assemblage mixture, as well as the cultural diversity of the groups using the middens through time . It is also in the Xai-Xai collections that a higher degree of shape and decoration motifs similar to Matola are to be found (Martinez 1976: fig.3, types 6 and 7). Of the three sites Bilene is the one with the most limited stylistic variation, which might nevertheless reflect a sampling bias. However, we may also speculate to what extent a higher environmental diversity, as shown at Chongoene and Xai-Xai, would have facilitated a more intensive pattern of cultural exchange among the early farming communities in that region.

Provisionally, and on the grounds of preliminary pottery analysis, we should assign an important component of the described sites to the Matola tradition.

Martinez's (1976:7-8,15) assumption of a two phase "southern Mozambique coastal kitchen midden tradition" representing two distinct moments of the peopling of southern Mozambique (a pre-Bantu and a Bantu phase) should be disregarded for the moment on the grounds of sampling inconsistency. However, his awareness of the presence of Matola and NC3 elements in the collections, as well as for the evaluation of site formation processes and quantitative estimations of shellfood gathering are still valid observations.

The nature of the sites suggests an economic pattern of exploitation of coastal resources, especially evident by the presence of shell middens. The distribution, size and contents of the middens- within the first or second dune ridges, with thick but concentrated shell deposits of very limited shell species, and with or without pottery- indicates a pattern of temporary settlement corresponding to periodical visits to the coast from inland villages. This event would have taken place in particular

periods according to the nutrition needs, agricultural or other economical calendar, and during especially productive tides.
No matter how attractive the interpretation of a seasonal occupation of sites along the coast seems to be, there is a clear need for relating them to the corresponding permanent settlements in the interior. The occurrence of two Matola sites approximately 50km away from the Limpopo river mouth at Chibuto and Chaimite (Liesegang pers.comm.) is most interesting in this respect and should be further investigated, especially considering that no previous systematic survey has been attempted in the region.

University Campus (2532-Dc-1), 25°57' 30''S- 32°36' 00''E.

Previous research:

The site, located within the grounds of the main University Campus in Maputo, was first found by R.T.Duarte in 1975. Its discovery received special attention for the striking similarities of the pottery collection to the one excavated at Silver Leaves, and to the available evidence from Matola (2532-Cd-1), (T.C.e Silva 1976:3). However, research priority was given to the latter site, due to the comparatively low-yield nature of U.Campus. Later in 1978 and 1982 the site was reworked by, respectively, T.C.e Silva and P.Sinclair, and L.Adamowicz, mainly for enlarging the comparative pottery collection and to provide training for students. From 1984, security reasons in Mozambique made unfeasible the implementation of the research programme in areas away from the urban centers. Accordingly a decision was taken to initiate extensive excavations at the site, and these were carried out during two seasons in 1984 and 1985 by the Swedish Antiquities consultants N. and G. Nydolf.

Agro-ecology:

The site overlooks the bay, and is implanted in the red soil top of a lateritic formation.

The soils of the region are described as having high sand content (FAO Qc44-1a, FAO/INIA Qc7) (Fig.5.1). This soil type is common to several interior southern Mozambique sandy plains overlapping ancient dunes, formed by sands of coarse texture and low humus content, and of slope class level to gently undulating (FAO/ UNESCO 1973; FAO/INIA 1982 b.; FAO/ UNDP/MOZ 1980 c.). This type of soil is usually poor for cultivation due to slightly acid pH at the surface, and insufficient organic components. However they have some forage value and are suitable for grazing (FAO/UNESCO 1977:210). The lithology of this soil association is formed by alluvial and lacustrine deposits of the Quaternary, and neogene components such as limestone, marl, calcareous sandstone, sand and clay (FAO/ UNESCO 1977: 157). The well drained soils of this region have commonly red sands occurring on the top of a lateritic rock of the same colour which forms a ridge facing Maputo Bay. This aspect is seen to have been accelerated by an earlier dense forest cover (Barradas 1962: 73-4,63).

The vegetation is classified in the Flora Zambeziaca nomenclature as type 34, being formed by woodland and savanna woodland (southeastern sublittoral) (Wild and Fernandes, 1967: 33-4; Barradas,1962: 109). Littoral thicket and forest of recent dunes, occurring at all coastal sites, are absent here. Almost all the present vegetation is probably secondary, the original vegetation having been woodland or more or less closed forests. Now the vegetation is especially composed of a damaged woodland, and patches of secondary savanna. A treeless form of the latter occurs on sandy soils, which is the case at the site and other localities in town used as gardens for an ever growing urban population. However, the site is also close to the formations on

alluvium of the Tembe and Matola River estuaries (Flora Zambeziaca type 54, Wild and Fernandes, 1967: 55-9).
In terms of the present day agricultural potential the region is part of L3, with 600- 1000 mm precipitation during a period of c. four months of rainfall, and subject to occasional periods of drought. The most suitable cultigens are sorghum "mapira" (Sorghum vulgare Pers.) and millet "mexoeira" (Pennisetum typhoides), and, marginally, groundnut (Arachis hypogea L.), cassava (Manhiot esculenta Grantz), coconut (Cocus nocifera L.) and cashew nut (Anacardium occidentale L.)(FAO/UNDP/MOZ 1980 b.). From the traditional agricultural survey the area is classified as R.29 (unit 125), covering most districts of the Maputo Province. The relative percentage of cultigens are 41% for maize (Zea mays L.), 22% of several species of beans (e.g. Phaseolus vulgaris L., Lablab purpureus L., Vigna unguiculata L.) and 22% of groundnut (Arachis hypogea L.) (Carvalho 1969:18,47; Wild 1972: 221,193,267). It is interesting to notice to what extent cultural transformations have induced the cultivation of maize in unsuitable environmental conditions, a situation that it is not unique in most part of southern Mozambique and invites further investigation (A.Berger, The Swedish University for Agricultural Sciences, Uppsala, pers.comm.).

Data collection and archaeological evidence:

The site has a low concentration of archaeological remains. the earlier collections by Cruz e Silva and Sinclair provided a small number of shells, pot sherds and slag, occurring in two horizons. The upper comprised mostly category 7 vessels with shell stamping motifs and the same red colouring (Sinclair pers.comm.). The second collection of ceramics which occurred below 40cm showed a marked similarity of shape and decoration to Matola: single line of broad line incision on jars is the most predominant type (29 sherds), followed by fluted bowls (13), double line of broad line incision (4), and blocks of perpendicular parallel lines (2), the latter both on jars. A comparative analysis of the pottery from this site with the collection from Matola and Zitundo is presented below (Table 5.9.).

As mentioned above, the site was recently re-excavated by N. and G.Nydolf, and the pottery collection considerably enlarged. A site report is now available (Sinclair, Nydolf and Nydolf 1986). The writer is grateful to them for making the data available before formal publication, which allows the presentation of the pottery assemblage (Table 5.5).

Table 5.5. Analysis of pottery sherds: University Campus (after N. and G. Nydolf's 1984/5 excavations).

	DECORATION MOTIFS							
	A	B	C	D	E	F	G	Total
SHAPE CATEG.	Plain	Fluted	BLI	///	Red	Shell	Stamped	
1	77	97	157	9	2	53	8	403
2	-	-	-	-	-	-	-	-
3	10	-	1	-	-	-	-	11
4	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-
6	10	-	73	5	-	1	-	89
7	3	9	-	1	-	-	1	14
Total	100	106	231	15	2	54	9	517

No detailed analysis of the shell species present was carried out, but Perna perna seems to be the most predominant type.

The osteological remains from the site comprised only a very few unidentifiable fragments.

The occurrence of slag was recorded in detail for within-site spatial distribution analysis. Judging from the number of occurrences registered in the excavated 60 1x1m trenches, its concentration seems to be more limited than those for pottery, shell or charcoal (Sinclair forthcoming a.). Some fragments of tuyere were found, and some features seem to indicate the occurrence of rudimentary pit furnaces (Sinclair, Nydolf and Nydolf 1986: 23).

Radiocarbon chronology:

A series of new radiocarbon dates are available (Id.: 18; Table 5.1). It is however interesting to notice that a date (175+-85 AD, St-9836) shows a 2nd/ 3rd century inception of the occupation of the site, which makes the event contemporary with Zitundo (175+-105 AD,St-8909) and Matola (140+-50 AD,R-1327) to which we shall refer again later. A terminal date of the 6th/7th century (595+-100, St-9837) marks the latest occupation period at the site, which is interpreted as a single unit of the Matola tradition (Ibid: 17).

Spatial analysis:

Simulation studies for the site were applied on the basis of the data collected by N.and G.Nydolf (Sinclair forthcoming a.).
A sampling strategy for the University Campus is not facilitated by the virtual absence of surface evidence. Earlier survey work implemented in 1977 benefited from the exposures made available during the diggings of an extensive trench for construction work. This fact made it possible for C. e Silva and P.Sinclair to obtain an evaluation of the lateral extension of the site. On the basis of the work later implemented by L. Adamowicz, and more comprehensively by N. and G. Nydolf, the site is now known to

cover an area of approximately 300 x 250 meters.
The site was mapped and thirty 1x1 meter trenches non-randomly selected and excavated. On the basis of the frequency of the archaeological occurrences 30 more trenches were excavated, comprising in all about 0.12% of the total surface area of the site. In order to fully use the good trench coverage and the limited amount of data, a spatial analysis of excavated finds was carried out by Sinclair (forthcoming a.). This made possible the assessment of a simulated distribution pattern generated by the quantitative values obtained for the pottery, charcoal, shell and slag in each of the excavated units. The obtained map (Fig.5.4) has allowed the interpretation of the archaeological features on a spatial inter-relationship level (Id. 1985 a.). Additional work by G. and N.Nydolf has been carried out on the basis of the spatial analysis with the excavation of an additional six 4x4 meter trenches.

Discussion:

The environmental location of the site, chronology, absence of evidence of a permanent settlement, shell middens, as well as the pottery collection, makes University Campus remarkably similar to Matola.
Both sites, which are only about 12km apart, belong to the same agro-ecological zone. In both areas evidence for leached soils and degradated vegetation occurs. Our classification into two different physiographic units was based on the fact that University Campus is facing the Maputo Bay, whereas Matola is located near the river mouth. Nevertheless, both have the same easy acess to either coastal or estuarine ecosystems. Their similarity is in this respect, and in terms of agro-ecological characteristics, much greater than is University Campus to any other of the littoral sites, which all belong to distinct soil

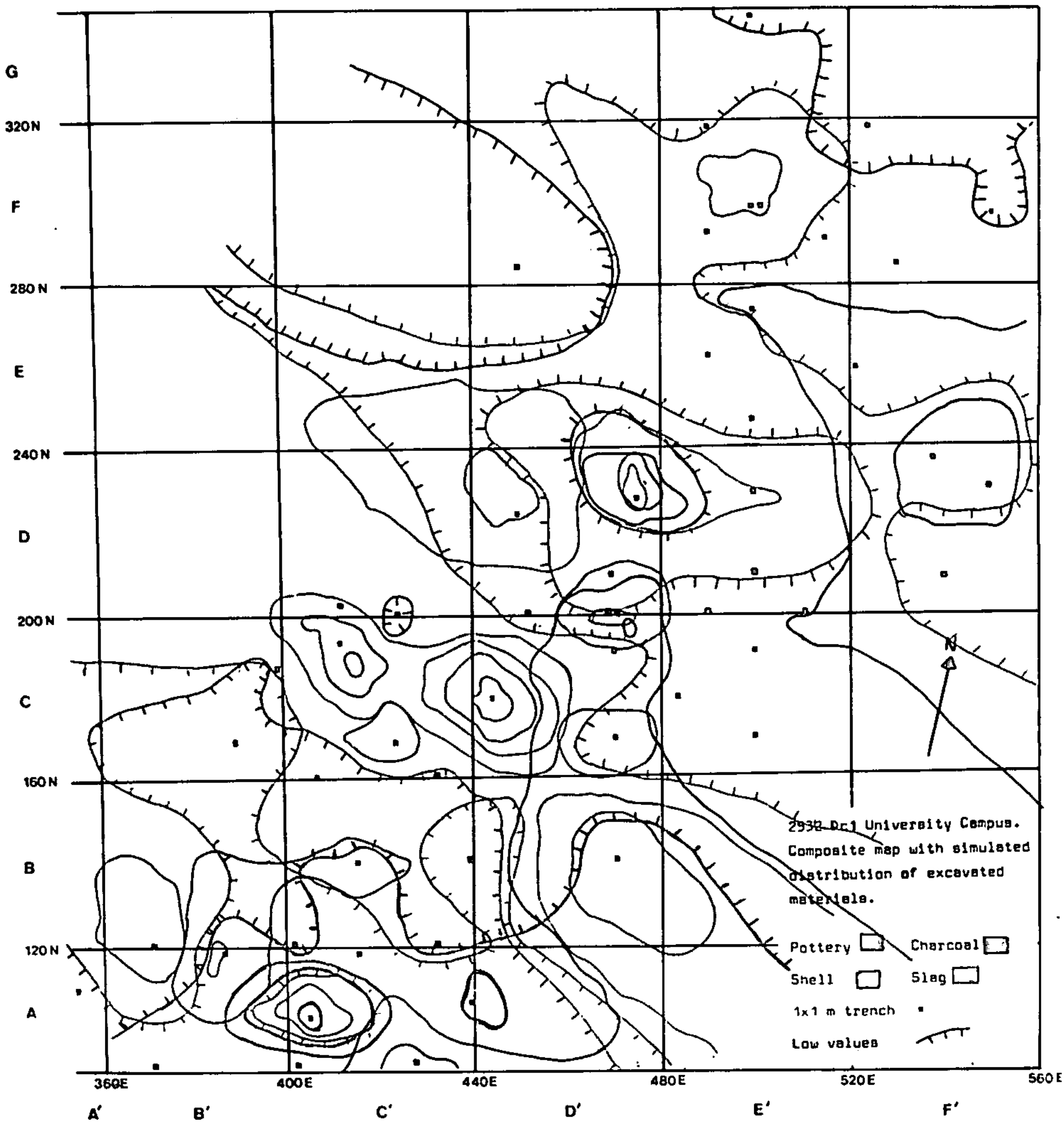


Figure 5.4. University Campus: simulated distribution of excavated materials. (After Sinclair, P.J.J. and Nydolf, N. and G.W. 1986).

and present day agricultural potential units (Table 5.6).
The rainfall gradients are also distinct in the southern coastal regions, as from western Maputo Bay inland as far as the Lebombo mountains, lower and less regular precipitation occurs.
Matola is closer to agriculturally rich alluvial soils than is University Campus. However, University Campus is located in an area of the second most productive soils in the coast; the compacted red sands (Tinley 1971:139). Considering that shifting cultivation is, for the level of the traditional agriculture practiced, the only way of obtaining high productivity from leached soils, this may account for an increasing level of destruction of the primary vegetation along the coast. Considering that the only floral evidence came from Matola and was not identified, the role of agriculture in the case of the Matola sites cannot as yet be assessed. Alternatively, the present day evidence might be comparatively recent, and additionally accelerated by the modern production of charcoal for cooking in urban areas, or earlier on for smelting furnaces.
Two meaningful elements are present at University Campus: slag and shell. Smelting would require important quantities of fuel, mollusc meat might have been smoked as visually recorded (Martinez 1976:12), and salt produced by means of sea-water evaporation through cooking (Earthy 1933:37), activities that should be taken into account as another explanation for the destruction of the earlier vegetation.
One element of distinction between the two sites is in terms of size: the estimated area for University Campus is c. 75.000 m2 compared to c.4.000 m2 for Matola. However, the concentration of archaeological remains is considerably higher in the latter site.

Physiographic regions and sites	Composition of the horizon or context	Soils	Vegetation	Present-day agricultural potential	Traditional agriculture	Data collection	ARCHAEOLOGICAL DATA						C14 dates	Spatial analysis	Cultural associations
							Pott.	Shell	Slag	Bone	Charcoal	Other			
Littoral															
Bazaruto	multi.,secondary	Re2	14b	J2	R33	random & non-random	X	X	-	-	X	Sassanian	Table 5.4	Figure 5.2 &5.3	Gokomere/Ziwa,Sassanian Islamic
Chibuene	multiple,primary	Re2	20+14b	J2	R33	extensive	X	X	-	sheep, cattle	X	seeds, glass	Table 5.4	-	Gokomere/Ziwa,Manda,Kilwa
Bilene	multi.,secondary	Re2	34 + 14b	J2	R32	non-random surface	X	X	-	-	X	-	-	-	Matola
Chongoene	multi.,secondary	Re2	54 + 14b	I2	R32	"	X	X	-	X	X	-	Table 5.4	-	Matola
Xai-Xai	multi.,secondary	Re2	54 + 14b	J2	R32	"	X	X	-	X	X	-	Table 5.4	-	Matola
Univ.Campus	multiple,primary	Qc7	34	L3	R29	extensive	X	X	X	-	X	-	Table 5.4	Figure 5.9	Matola
Estuarine															
Matola	single,primary	Qc7	54	L3	R29	extensive	X	X	X	X	X	seeds	Table 5.4	-	Matola
Tembe	single,secondary	Qc7	54	L3	R29	n/r surf.	X	X	-	-	-	-	-	-	Lydenburg
Dune cordon															
Zitundo	multiple,primary	Re1	43	I2	R29	extensive	X	X	X	cattle?	X	tuyere	Table 5.4	Figure 5.15	Matola, Lydenburg
Mamoli	single,secondary	Re1	43	I2	R29	n/r surf.	X	-	-	-	-	-	-	-	Matola
Riverine															
Hole Hole	single,primary	Lo1-2b	35	M2	Gr8	test trench	X	-	-	X	X		Table 5.4	-	Gokomere/Ziwa facies
Caimane	multiple,primary	Lc3	69	L4/F8	Gr10.2.1 & R129	extensive	X	-	-	-	X	seeds	Table 5.4	-	Zitundo, Lydenburg
Massingir	single,primary	Qc4,17 B-I-L	48	L2	R116	extensive	X	-	-	cattle	X	copper beads	Table 5.4	-	Klingbeil

Table 5.6. Summary of site data and ecology.
The symbols (X) and (-) stand respectively for presence and absence of finds. Details are mentioned in the relevant part of the text.

5.2.2. The estuarine sites: Matola and Tembe.

Matola (2532-Cd-1) and Tembe (2632-Ab-5).

Previous research:

The Matola site was located by J.S.Martinez in 1968 during the construction of the main road Maputo-Matola. However, it was not before the publication of a new pottery tradition occurring at Silver Leaves in Transvaal (Klapwijk 1974), that a firm association was established with the Matola and University Campus finds (see above). Preliminary excavations at the site were carried out in 1975, and a representative pottery sample as well as two radiocarbon dates obtained from Rome (Table 5.1),(Cruz e Silva 1976, 1980; Hall and Vogel 1980).
Considering the discrepancy in the dates, we decided in 1982 to re-excavate the site, in which the writer was assisted by L.Jonsson and P.I.Lindqvist. More recently, some test excavations were also carried out by N.and G.Nydolf, but no information from these is yet available, except for the fact the the excavated ceramics do not seem to alter the initial view in regards to the assemblage as first described (N.Nydolf pers.comm.).
The site of Tembe was reported to us from the river mouth of the same name near Maputo Bay by Y.Adam in 1976. No opportunity was available to implement further work in this area, although its potential was briefly assessed by the writer during a short survey.

Agro-ecology:

The Matola site is located in the red soils of an old Matola river terrace, approximately one kilometer from the modern river bank at the landward end of the river mouth (Appendix 4,plate 9).

The Tembe site is located in the left bank of the Tembe river mouth by a marshy shoal known locally as "Baixa Goufudze", in an erosion ravine between the old terrace and an extensive mangrove formation.

Both sites are part of the soil formation with high sand content (FAO Qc44-1a; FAO/ INIA Qc7) derived from aeolian and fluvial deposits of Tertiary and Pleistocene age. The lithology of this formation is formed by Quaternary alluvial or lacustrine deposits and neogene elements of limestone, marl, calcareous sandstone, sand and clay (FAO/UNESCO 1977: 65, 157). Soil texture is formed by sands of coarse texture and of slope class level to gently undulating (FAO/UNESCO 1973; FAO/INIA 1982 b.; FAO/UNDP/MOZ 1980 c.). Barradas defines these soils as part of ancient fluvial alluvia, which forms old terraces with red soil, as in the case of Matola (Barradas 1962: 77).

The vegetation at Matola is in the border-line of the savanna woodland type described above for University Campus, and the formations in alluvium of the Matola River estuary (Wild and Fernandes, 1967: 55-9). The latter type is especially relevant at Matola, and is formed by a mosaic vegetation of dry tree savanna-moist grassland- fringing forest and aquatic flora. The areas with this complex vegetation type are periodically flooded, badly drained. plains with fringing forest along the branches of the estuaries. Away from the river bed they are followed by a dry savanna in slightly high, well drained areas, and extensive grasslands (Id.: 56-7).

There is no detailed survey of the grazing potentials of the region. Myre (1971:151) lists the area immediately South of Matola as being mostly formed by "second class" pastures, which are available from September to April, and provide an annual carrying capacity of 2 to 7 hectares per head of cattle.

The present day agricultural potential and traditional agriculture patterns belong to the same woodland and savanna woodland zonation as the one described above for University Campus (see p.87).

Matola (2532-Cd-1), 25°57' 45''S- 32°27' 50''E.

Data collection and archaeological evidence.

Earlier work by C.e Silva (1976, 1980) included surface survey of the site and surroundings, and excavation of a 24 square meter area.The stratigraphy comprised two units: a top undifferentiated horizon occurring between 15-75cm deep, and a compact midden in a localized area described by C.e Silva as the 75-85cm living floor (Appendix 4, plates 10 and 11). From the analysis of the pottery occurrences by stratigraphic layers (C.e Silva 1976:figs.4a-f), the top deposit is formed by scattered fragments of pottery, shell and charcoal, which become more numerous as the living floor is approached. Detailed excavation of the midden provided a variety of associated evidence: approximately 10.000 pot sherds, some slag and iron pieces, Crassostrea cucullata (Born) shells, several small unidentified bones, and teeth identified as belonging to wild artiodactyla, and a few unidentified carbonized seeds. The first dates for the site were available in 1979, for samples taken during the 1975 excavations. The two readings came both from the 75-85cm horizon: 140+-50 AD (R-1327) and 910/890+-50 AD (R-1328), both dates corrected as suggested by Ralph et al. (1973).

The pottery of all the levels is in general of very fragmentary nature. The pottery was analysed in terms of vessel shape and rim form. Decoration is described in broad categories. Based on the description of the midden assemblage (C.e Silva 1976:5-6; 1980:350) the information is summarized by the present writer in Table 5.7.

Table 5.7. Matola pottery analysis (after C. e Silva 1976,1980).

VESSEL SHAPE	RIM FORM	DECORATION	PERCENTAGE (circa)
1.Independent restrict.vessel with short or everted neck (sub-spherical pot)	Bevelled,plain or simply rounded	Combination of broad-line inc. (single,double, block of parallel perpend.lines),comb-stamp.	85%
2.Unrestricted vessel.			
a.Hemispherical bowl	Plain or fluted, lightly inturned or ext.thickened	Combination of fluting,Broad-line incision, comb-stamping	11%
b.Idem,carinated			4%

In order to reassess the chrono-stratigraphic sequence; the site was re-excavated in 1982 (Morais in prep.).
Eight 1x1m trenches were excavated covering areas progressively away from the 1976 trench in order to assess the extension of the site,to correlate the stratigraphy, and to obtain new radiocarbon dates. The sequence follows from a disturbed modern top deposit to a thick red-brown horizon resting on the top of a sterile, old red sand dune. The middle unit contains irregularly distributed pottery, shell and charcoal, which becomes more numerous when associated with a light brown soil probably derived from contemporary scattered middens. It is in the base of this deposit that the main living floor described above occurs, on a somewhat darker soil. The recovered stratigraphic sequence displayed in general a consistent picture: ceramics, shell and charcoal were unevenly distributed in the middle red-brown unit, especially more dense further down in the sequence, and always so when

associated to a greyish-brown soil where charcoal was conspicuously more abundant. No clearly defined horizon was found corresponding to the 75-85cm living-floor described by C.e Silva. However, in the trench closest to the original location excavated in 1975, the finds were denser. The pottery fabric, shape and decoration, in association with the stratigraphic sequence, suggests to us an even cultural continuum during the period covered by the radiocarbon record which we will discuss below. A comparative pottery analysis including a sample from Matola is presented further (see Table 5.9). The pottery assemblage is characterised by a restricted range of shapes, from which the dominant type is formed by independent restricted vessels (jars) with vertical or everted necks, followed by unrestricted vessels (bowls) with angled contours. The jars commonly have a bevelled rim, and below it a single or double line of incision, or single bands of obliquely incised lines. The bowls have horizontal fluting with or without a single line of incision or punctates, and occasionally a space motif occurs in the body of the vessel.

No additional information was obtained in regard to the evidence provided by C. e Silva (1976) for the occurrence of shell, slag and bone.

The first testing implemented in Mozambique of phosphate sampling as an indicator of activity areas was carried out at the site with the kind assistance of D.Damell from the R.A.Ä.. A series of ten samples were collected from the base of the red-brown unit, and from the 75-85 living-floor, at 2 meter intervals on a line along the exposed road cut. A reference sample was additionally taken approximately 50 meter away in the opposite side of the road cut. Unfortunately the results do not seem to show any meaningful pattern of values (Damell pers.comm.).

A detailed site report will be presented later (Morais in prep.).

A discussion of the archaeological evidence from Matola in comparison to University Campus was presented above (p.92-3). Further on a number of cultural traits will also be compared with the site of Zitundo.

Radiocarbon chronology:

A series of three new radiocarbon dates was obtained from the 1982 excavations (Table 5.1). The earliest of the series (230+-110 AD, St-8546) comes from a single charcoal piece in between potsherds, near the bottom of the deposit of the trench closest to the original 1975 location. The two other dates come from a trench located 50 meters away from the former one, on the other side of the road-cut. The charcoal sample dated to 480+-80 AD (St-8547) was recovered in a brown horizon with shell, pottery, stone and bone fragments, lying in the base of a light brown deposit with scattered finds. Contamination from the upper horizon should not be ruled out as some termite nests were visible. A shell sample from the same layer was dated to 2025+-80 BP (75 bc) (St-8548) and, considering the difference of the reading compared to the one processed from charcoal, should be seen as an example of the relative unreliability of the radiocarbon counting from shell.
From the available evidence it seems reasonable to interpret a 2nd to 3rd century inception of the occupation at Matola. If one rules out the former inconsistent 9th-10th century date (R-1328) obtained from the bottom occupation during the 1975 excavations, we are left with a continuous activity at the site until at least the 5th to 6th century (St-8547). It is however necessary to complement the dating of the upper deposit in order to confirm the terminal occupation, which, at least at University Campus and Zitundo, is dated to the sixth century.

Discussion:

The first reports of the Matola tradition were made by Klapwijk (1974) for Silver Leaves in the Transvaal, and C. e Silva (1976) for Matola, near to Maputo. The tradition was named Matola after suggestion by Maggs (1980 a.:92). Other Matola occurrences are known from the lower Limpopo river basin and adjacent coastal region at Chaimite, Chibuto, Bilene, Chongoene and Xai-Xai, and from the Maputo Province at University Campus, Zitundo, and Ponta Mamoli. In Mozambique North of the Limpopo the evidence for the occurrence of Matola tradition should be taken with reserve until detailed analysis is carried out and presented. This applies to a single fluted sherd recovered by the writer at Vilanculos Bay, and indications of a Matola component in the assemblages from Gurue in the Zambézia Province (Rodrigues pers.comm.), and Nampula (Adamowicz pers.comm.). The tradition is seen to extend southwards along the Natal coast, and westwards to Harmony, Eiland and Kruger National Park in the north-eastern Transvaal, Castle Cavern in western Swaziland, and at the edge of the Zimbabwean plateau in the Mt. Buhwa area (Evers 1981: 68). These occurrences considerably extend the range of the tradition since was first reported. The earliest dates of the tradition occur in southern Mozambique at Matola, University Campus and Zitundo (see Table 5.1), where it should have had its inception between the 1st and the 3rd century AD.. Confronting the dates with the available chronological indications of the Matola tradition elsewhere, Maggs suggests the early farming communities in Southern Africa to have been first present in southern Mozambique (Maggs 1984: 334). The dates from Silver Leaves, Eiland , Enkwazini and Mzonjani are all from the late 3rd and 4th centuries AD., and the tradition is discontinued in the Eastern Tranvaal about 350-400 AD. (Evers 1981:71; Hall 1981:72; Maggs 1980 c.:3, 1984: 333). However, in the case of southern

Mozambique, it seems to us that at University Campus and Matola, the Matola occupation is present at least until late in the 7th century. At Zitundo the tradition has a probable development of style from the 4th to the 5th/6th century which is already to be correlated with the Lydenburg tradition. Maggs (1984: 338) strongly suggests the origin of the latter tradition from Matola, a view that first emerged from his own research from Natal. However, in accepting this view, there still remain to be explained the factors which account for the Matola tradition being more conservative, as in the case of Matola and University Campus, or evolving to new pottery expressions, as in the case of Zitundo.

But more relevant than ceramic typologies based on different criteria of pottery classification and interpretation is the available data in the economy and ecology of the Matola farming communities (Morais 1978:5; Maggs 1980 c.:5 and 1984:339). At Matola there is no evidence of a permanent settlement, and at any rate comparable in extension to the sites from Natal with at least an area of 2 hectares (Maggs 1980 a.:87; 1984: 339). The only concentrated evidence so far recovered is the midden containing pot sherds, shell, and some bone and slag, where the work was first carried out (C.e Silva 1976). Excavations later implemented by the writer failed to expose more than unevenly distributed finds that we postulated as being disturbed middens. It has been mentioned above that the vegetation should have supported woodland or closed forest, which is now extensively damaged (see p.64). Furthermore, the site seems to have selected a region where the soils offer the best agricultural opportunities (Figure 5.1), being also conveniently close to the Matola river mouth and Maputo Bay. These factors should hypothesize the practice of agriculture, and strongly suggest the need to have the recovered burned seeds identified. Evidence for the cultivation of <u>Pennisetum americanum</u> is reported for

Silver Leaves (Klapwijk 1974: 22). Food needs should have also been complemented by gathering of shellfood, mainly of Crassostrea cucullata (Born), as well as hunting. The minor occurrence of slag and iron pieces imply small scale iron-smelting at the site. Hall (1981: 55,63) has noticed for the early farming community sites in Natal the absence of economically specialized settlements, which seem however to have had their activities oriented to both metal working and exploitation of marine resources.

Based on the evidence so far available, Matola could either have been a temporary settlement of shifting agriculturalists and food collectors, or represent a permanent living site; in either case with dwellings of a more or less perishable nature. There are as yet no house structures recovered. Frequent changes of plots are also to be expected owing to slash-and-burn cultivation in soils where leaching rapidly occurs. Tinley (1971: 142) estimates that a plot in this type of soil is currently used for a period of 2-3 years, with a minimum fallow of 12 years. Additional seasonality is also suggested by exploitation of marine resources and hunting.

However, there is a strong need for incorporating a wider regional coverage of sites, as a means to assess their patterns of correlation. In Natal (Hall 1981: 69-70) the early farming communities sites are consistently located in the lower dune slopes either on the coastal cordon, or between lake St Lucia and the coastal dune cordon. From the limited evidence of Matola occurrences in southern Mozambique they seem to display a higher heterogeneity, being the sites either located in the modern coastal dunes (Bilene, Chongoene and Xai-Xai sites), near to a marshland estuarine environment of old woodland or forest (Matola and University Campus sites), or in the well drained soils close to the marshlands and coastal lagoons (Zitundo and Ponta Mamoli sites). The heterogeneity of the settlement pattern might

indicate a low level of economical specialization, and, correlatively, a higher level of technological constraints to deal with specific environmental conditions. However, it should be noticed that a clear preference for metal working occurs from the early Matola period at Zitundo, which should be confronted with the evidence from Natal where similar sites are found near marshlands (Hall 1981: 70).
Having in mind the need to develop from a generalized point of departure in view of the limited evidence, the writer suggests that the Matola sites were preferably located in areas with ready availability of water, agricultural soils, good number of mostly evergreen or semi-decidous tree species and edible fruits, marine and lacustrine potentials in fish and mollusca, and iron ore sources. Additional information from the Matola sites occuring inland in southern Mozambique and elsewhere are necessary, in order to shed some light in the economical and ecological determinants of the earliest farming communities of the region .
There is as yet no archaeological evidence allowing the Matola tradition as possibly representing early farming community settlements of the proto-Southeast Bantu speakers, as proposed in linguistic grounds by Ehret (1982 b.: 163-4).

Tembe (2632-Ab-5), 26°00'15'' S- 32°29'45''E.

Data collection and archaeological evidence:

The only reported evidence from the site comes from Martinez (1976:13). These are very scant surface indications from a very limited collection which includes 24 body sherds, 2 rim fragments, a decorated body sherd and fragments of one decorated pot. Martinez (1976:fig.19) illustrates one vessel and quotes a personal communication of Prof.Revil Mason's comparison of it with the ones occurring at Broederstroom in the Transvaal, and to

the NC3 (i.e. Lydenburg) tradition of Natal.
No other information is available, and the site should be revisited later on.

5.2.3. The interior dune cordon sites: Zitundo and Ponta Mamoli.

Zitundo (2632-Db-9), 26°44' 40''S- 32°49' 30''E.

Ponta Mamoli (2632-Db-11), 26°42'33''S- 32°53'50''E.

Previous research:

The earliest references to the archaeology of the region South of Maputo were made by Dias (1947), who first reported the site of Caimane.
Smolla also briefly visited the area in 1968, and 3 shell midden localities with pottery are marked on a map in his publication (1976:265), but none are further described or illustrated. The three sites seem to be located at Inhaca Island (no site reference number), half the way between S.Maria Cape and Ponta do Ouro (site 44), and Ponta do Ouro (site 43), respectively.
As part of the Archaeological Survey Programme the writer planned to investigate the nature of the early farming communities in the three physiographic zones from the coastal dunes westward, through the Maputo, Tembe and Matola river basins, and to the Lebombo highlands. To implement the project the writer was assisted by the Swedish Antiquities colleagues L.Jonsson and P.I. Lindqvist.
During a short field season L. Jonsson and L. Adamowicz surveyed the Namaacha-Lebombo mountains but no early farming community sites were discovered. The work was then concentrated at Caimane to which we shall refer later. The coastal areas and interior dune cordon were covered by P.I.Lindqvist and the present writer. Along the seashore from Ponta Dobela to Ponta do Ouro a number of mainly later farming community surface scatters were found. However, some of the evidence also pointed to the occurrence of minor early farming community components at Ponta Raza

(2632-Bb-8), Duna Massingane (2632-Bd-2), and Duna Tane (2632-Bd-3),(Appendix 4, plates 12 and 13). Towards the interior dunes, the areas around the littoral lagoons were especially surveyed. This led to the discovery by P.I.Lindqvist of the Zitundo site (2632-Db-9), exposed at a sand pit used for road construction. During two seasons in 1983 extensive excavations were then initiated by the writer, assisted at periods by colleagues from the Department (R.Duarte, P.Sinclair, P.I. Lindqvist and L.Jonsson).

Occasional surveys were also made in the surrounding region around.Ponta Mamoli (2632-Db-11) was located by the writer during one of these occasions, but the nature of the site did not allow more than the recovery of a small number of typical Matola sherds eroding out from an interior dune adjacent to the main road.

No opportunity was made available to initiate the survey of the interior river basins before the fieldwork was discontinued.

Agro-ecology:

Zitundo is located on a hill which overlooks both Satine lagoon to the east, and the old dune grassland to the west, approximately seven kilometers inland from Mamoli and eight kilometers from the seashore (Appendix 4, plate 14). Mamoli is close to the seashore, beyond the main dune ridge, and placed near to three small seasonal pools.

Both sites are part of the soil association often occurring with lithic and petroferric formations (FAO/ INIA Re1) (Fig.5.1), extending from Inhaca Island to Ponta do Ouro along a thin stretch along the coast, which are of extremely limited suitablility for cultivation (FAO/INIA 1982). However the region is also listed as having other soils of more sandy content (FAO Qa7-1a) comprising a much broader region from south of Maputo Bay to Cape Saint Lucia (Natal), but a specific description of its properties is not given (FAO/ UNESCO 1977: 210). Both classifications agree in regard to textural classes and slope classes which are listed as being constituted by sands of coarse texture and dune formations of slope class level to gently undulating (FAO/UNESCO 1973; FAO 1978: 44,46,54). The lithology of this unit is formed by Quaternary alluvial and sandy coastal deposits (FAO/UNESCO 1977: 152,211; Myre 1971: 19). Barradas includes the latter within the family of the recent sandy soils of non-dune origin (ancient seashore, lagoon bottom or sand bank), typical of a stretch from the littoral to the Maputo river basin (Barradas 1962: 83).

The Zitundo site is at the boundary between an area with hydromorphic soils of organic origin near to the littoral lagoons and seasonally flooded pans, the most suitable for agriculture in the southern Maputo coastal region (the "machongos" depressions), and the grassland marginally suitable for herding (Barradas 1962: "esboço pedológico" and "esboço de aptidão agrícola" maps ; Myre 1971: 123). Ponta Mamoli is more associated with the littoral ecological facies and soil types, but benefitting from the proximity of a number of small flooded pools. These together with the lagoons make provision for regular supply of freshwater.

The vegetation belongs to type 43 on the Flora Zambeziaca classification, being mainly formed by a semi-deciduous tree savanna (southeastern sublittoral),(Wild and Barbosa 1967:41-2). However, a lowland grassland component also occurs due to systematic destruction of trees for firewood (Id.:66-7; Hall 1981),and eventually in particular for smelting, which require ample quantities of wood, as we referred above (see p.102, and Van der Merwe 1983: 16). Barradas (1962: 109,114) integrates the description of the vegetation and the pedology.

A valuable study of the coastal gramineae,dynamics and assessment of pasture potentials is provided by Myre (1971: 68,151-6), who lists the grazing potentials of this area as third class (within a five class rating), due to the high sandy soil content and the occurrence of some toxic species. This means that there is suitable grazing, but requiring rational management of herds. The dominant gramineae association is formed by Themedo-Salacietum (kraussiae), normally available for pasture from September to mid February, and with a carrying capacity (as defined in Strange 1980:168) estimated in 11/12 hèctares per head of cattle. Further inland along the Futi and Maputo river basins the pastures are comparatively poorer, having approximately only half of the carrying capacity and annual availability of the ones from the coastal grazing land.

The present day agricultural potential of the region is classified as I2, with 1000-1200 mm precipitation during a prolonged rainy season lasting approximately 6 months. This makes especially suitable the cultivation of maize (Zea mays L.), groundnut (Arachis hypogea L.), cassava (Manhiot esculenta Grantz), coconut (Cocus nocifera L.) and cashew nut (Anacardium occidentale L.).

The region is listed as R.29 (unit 132) in terms of traditional agriculture, being the same category as the one described above for the University Campus site (Carvalho 1969:47).

Data collection and the archaeological evidence:

The work at Zitundo was initiated by surface surveying of the archaeological finds- mainly pottery and slag- and by detailed topographic mapping of the site (see Figure 5.5). A stratified random sample at the 1% level of approximately 2.000 square meters was decided as the most appropriate methodology, following earlier applications (Morais and Sinclair 1980).

A site report will later be presented (Morais in prep.), and only some of the evidence will be summarized here.

Twenty 1x1m trench were excavated. A combination of ärtificial

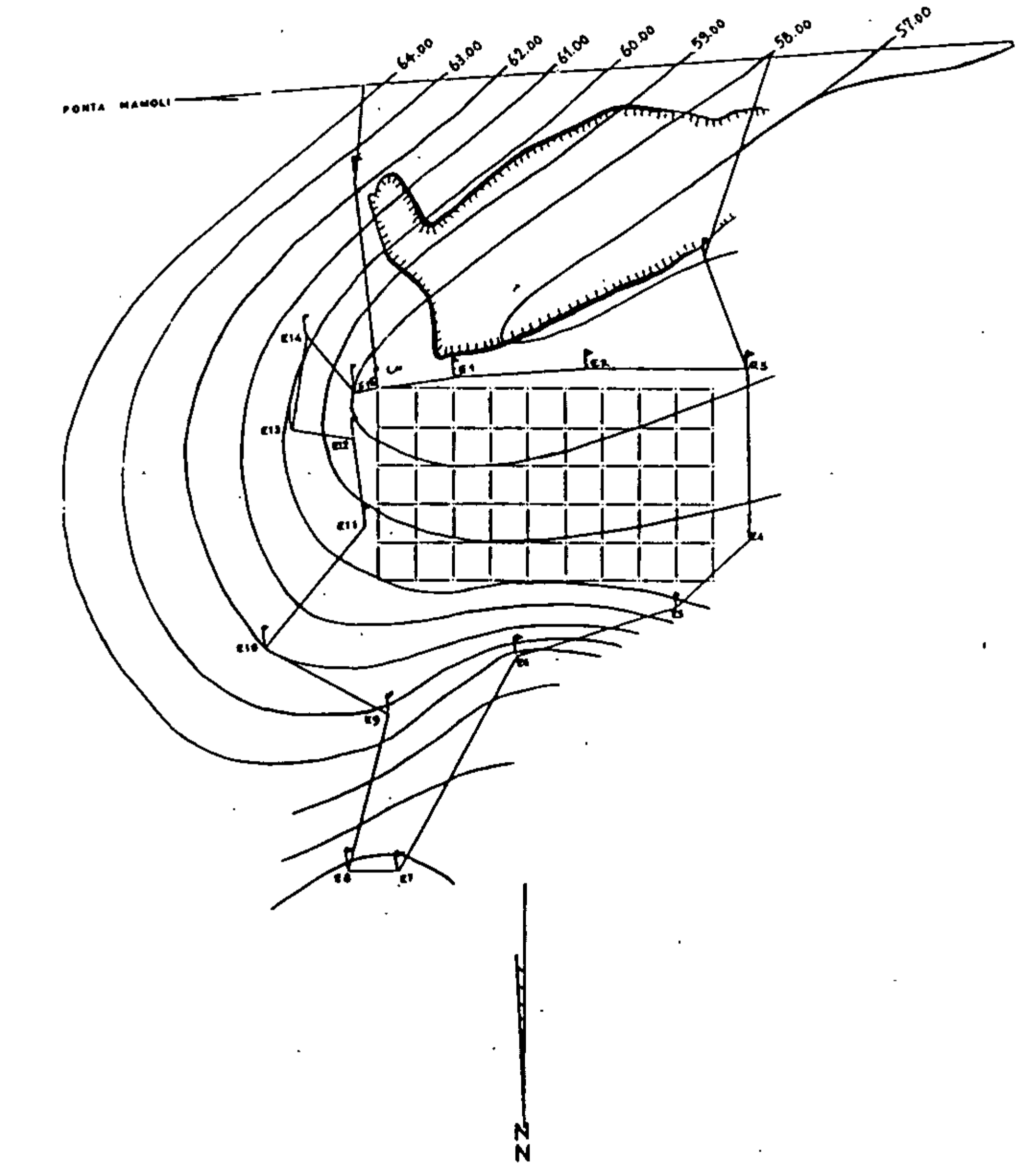


Figure 5.5 Zitundo: survey map.

64.00 Altitude in meters

20x20 meter grid

E1 Topographic stations and points defining the maximum surface extensions of the archaeological finds

Sand pit

spits and interpretation of cultural layers was initially followed. The stratigraphy showed consistently a continuum of occupation from a greyish-brown to a lighter grey deposit, resting on a sterile light orange-brown sandy soil. In general the finds were rare in unit 1 (20-40cm) and increased in unit 2 (40-60cm) and 3 (60-80cm) tapering off at deeper levels (>100cm). All the trenches had evidence for both pottery and slag but in varying quantities. The highest number of pottery sherds was found in association with possible remains of middens in lighter soil deposits (Appendix 4, plate 15).
Detailed study of the pottery is in progress (Morais in prep.) and only a small selection of the predominant ceramic types are illustrated (Appendix 3, Figure 5). An analysis of the ceramics has been carried out using the methods described above. Results only attain the level of generality for present purposes, and are included here as Table 5.8.

Table 5.8. Analysis of pottery sherds: Zitundo

	DECORATION MOTIFS								
	A	B	C	D	E	F	G	H	Total
SHAPE CATEG.	BLI	Fluted	dot						
1	33	7	2	15	15	4	1	-	77
2	-	-	-	-	-	-	-	-	-
3	7	-	4	8	17	10	1	2	49
4	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-
6	1	-	4	-	2	2	-	1	10
7	-	-	-	-	-	-	-	-	-
	41	7	10	23	34	16	2	3	136

Additionally, a comparison of the pottery collections from Zitundo, Matola and University Campus was undertaken, and is presented in Table 5.9..

Table 5.9. Comparative pottery analysis from Zitundo, Matola, and University Campus. The motif decoration categories were made general to accommodate comparison between sites.

DECORATION MOTIFS:	ZITUNDO		MATOLA		UNIVERSITY CAMPUS	
	#	(%)	#	(%)	#	(%)
Broad Line Incision...	41	(30)	238	(76)	231	(55)
Fluting..............	7	(5)	61	(19)	106	(25)
Blocks perpend.lines..	39	(29)	14	(5)	15	(4)
Alternating blocks....	34	(25)	1	(0.3)	-	
Chevron..............	3	(2)	-		-	
Punctates............	10	(7)	1	(0.3)	9	(2)
Stamping (Comb,dented)	-		1	(0.3)	-	
Stamping (Shell)......	2	(1)	-		54	(13)
Red colour...........	-		-		2	(0.5)
Total sherds	136		316		417	

From the analysis the assemblage shows a high degree of similarity to Matola and University Campus, but in Zitundo with a higher range of decoration motifs. As a trend, jars with a single line of broad line incisions and fluted bowls, both typical of the Matola tradition, were found to occur mainly deeper in the sequence. The pottery from the upper occupation units have, in addition to a minor earlier Matola component, more conspicuous decoration motifs: alternating bands of incision, blocks of perpendicular parallel lines, and cross hatching, among others. This fact suggested as a possibility the presence at Zitundo of a second early farming community occupation phase, which is to be correlated with similar pottery types occurring at Tembe, Bilene, Chogoene, Xai-Xai, and especially in some of the Natal sites (Morais 1984:118-9).

The presence of shell is very rare and is limited to the upper units 1 and 2. No species identification was carried out at the time of writing.

A number or thick layers of slag and charcoal were found, with or without pottery associated. Slag is present in every excavated unit, but quantitatively to a much greater extent in units 2 and especially 3. A few fragments of tuyere occurred, as well as fragments of iron ore with ferricrete-like texture. Some minor iron ore occurrences of that nature can be found near to the site, but no survey was carried out specifically for the purpose. Hall (1981:169) reports that considerable quantities of "bog-iron" are available in the lake margins in Zululand, namely at St.Lucia, formed through the precipitation of ferruginous materials by bacterial action. This has furthermore determined the pattern of settlement location in that area South from Zitundo, and that would be relevant to further assess in our study area. Another potential source for iron in the region is provided by a major ferruginous geological feature occurring approximately 30 Km northwest in the right bank of the Maputo river South of Salamanga.

The evidence appears overwhelming that smelting was carried out in the site. However, no furnace structures have been found up to now. In order to assess the most likely areas to be further tested, analysis of the spatial distribution of slag was carried out (Figure 5.6). Considering the fact that the potential of chemical analysis of slag for understanding of the production processes involved was never tested before, samples were processed by the Central Board of National Antiquities of Sweden (RAÄ), and results are presented in Appendix 1. The determination of the composition and the fusion temperatures of the slags seem to be consistent with the assumption of being derived from a single smelting process which used direct reduction furnaces with good eficiency (appendix 1: table I and II). Similarly to the case of roughly contemporary sites in coastal Zululand (Hall 1981: 61), there seems to be no indication of copper oxide (being in this case the iron ore used as a flux for the production of copper),and it must be concluded that iron working was the only activity carried out at the site.

Bone fragments are very rare at the site, being restricted to three of the excavated trenches in units 1 and 2. In one of these 4 metapodial fragments occur, which have been provisionally identified as cattle (L.Jonsson pers.comm.). The relevance of livestock as a component of the economy of the early farming communities is however an open question. No indications of Matola settlements including cattle have so far been recovered. The earliest faunal evidence of domestic sheep, goat and cattle come from the fifth century at Broderstroom in Transvaal (Phillipson 1977:120) and from the seventh century Tugela River valley (Hall 1981: 146; Hall and Vogel 1980: 441), which are to be correlated with the Lydenburg tradition, and at several Gokomere/Ziwa sites in Zimbabwe dated to about the sixth century (Thorp 1979: 461). Notwithstanding the above mentioned data,the role of domesticated animals in the economy of the first farmers of the region is still unclear.

Charcoal pieces are very common in all of the middens, and always in great quantities when associated with slag. No identification of floral species from charcoal has been attempted due to lack of available technical facilities.

Radiocarbon chronology:

The radiocarbon dates for Zitundo (Table 5.1) are internally consistent with the stratigraphic evidence. All the five readings were processed from charcoal, and 13C corrected .

The earliest date for the site (175+-105 AD,St-8909) comes from an excavated trench, in the lower part of unit 3 associated with slag. From the same unit,in a trench 9 metres away, a date of 265+-105 AD (St-8912) was obtained for charcoal associated with Matola pottery. In this same trench, the upper part of the unit with predominant slashed pottery is dated to 375+-105 AD (St-8913).

In the periphery of the site, where a main occurrence of slag was visible, an exposed erosion cut was cleared and charcoal samples taken. A lower deposit with pottery and slag, which should be correlated to the base of unit 3 at the main site, was dated to 190+-105 AD (St-8911). The sequence is here clearly followed by a well defined midden, mainly formed by charcoal pieces and some rare pottery sherds. A sample taken from this locality provided a reading of 515+-105 AD (St-8910).

Spatial analysis:

On the basis of the excavated evidence, it was considered worthwhile to carry out a spatial analysis of the slag destribution, as it provided a potential for planning for the future and helped with the problem of localizing smelting areas. The method has been developed for a number of Mozambican sites by P.Sinclair, whom was requested to apply it at Zitundo (Sinclair forthcoming b.).

Assuming the 105 slag samples recovered from the excavated levels to be derived from a single continuous occupation, the evidence was grouped together by trench. These, being the result of a stratified random sample procedure previously applied with satisfactory results (Morais and Sinclair 1980), provide a good coverage of the area under study. The objective of the application was to find, from the values of the slag, its distribution in the form of a contour map. This allows us to visualize the hierarchies of concentration of the slag in space, and especially to predict the best areas where furnace remains are expected to be localized. Taking into consideration the sharp variation of weights of the slag samples, and the characteristics of the programme utilized, a square root transformation of the values had to be applied (Sinclair forthcoming b.). The image of the simulation is presented in Figure 5.6.. The interpretation seems fairly straight forward: There is an even distribution of low occurrences in most of the excavated area, and a heavy concentration of slag from one of the trenches in basal unit 3. Further work is required in order to investigate if the latter is the only common source for all the slag occurrences in the excavated area, or if other minor concentrations are to be expected. Furthermore, the very high values obtained in combination with the others seem to indicate an activity area, and thus the existence of a furnace nearby is a strong possibility to be later evaluated. However, we might also consider arguable that furnaces may have been dismantled after each firing, thus explaning the fact that no complete furnaces for the period have been found, an hypothesis put forward by Maggs (1984: 341).

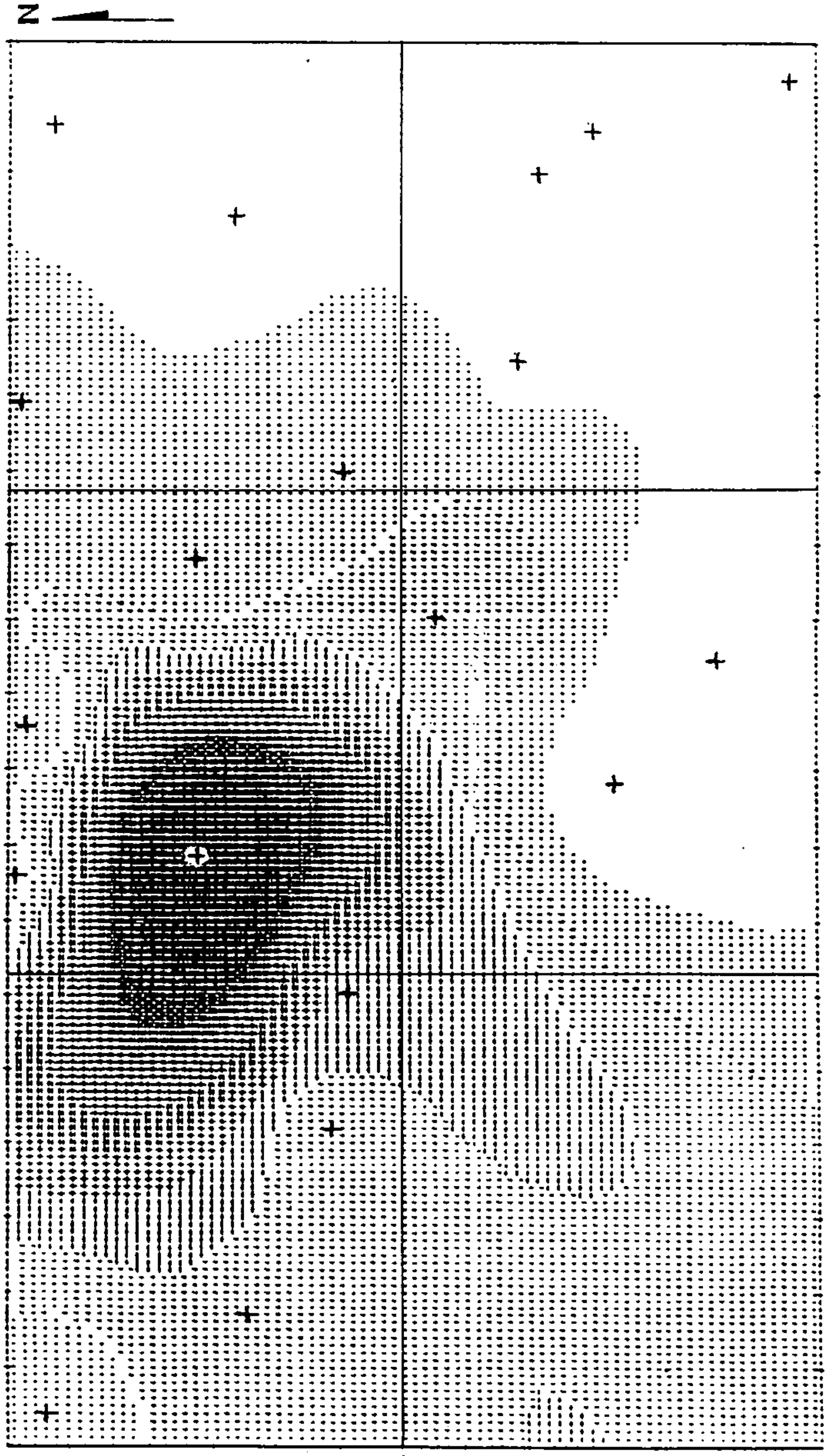


Figure 5.6 Zitundo: simulated distribution of slag.
The different shades from light to dark indicates progressive levels of slag concentration, which is relatively lower in the south-east excavated area. The represented grid is 20 x 20 meter.

Discussion:

The archaeological evidence from Zitundo provides so far the only available sequence documenting in situ differentiation within the Matola tradition. A brief but interesting reference is also made by Maggs (1984: 333-6) in terms of the contemporaneity of both Matola and Lydenburg traits occurring in Klein Africa in northern Transvaal, dated to the 5th/6th century. This factor poses a number of questions wich we raised elsewhere (Morais 1984: 119), and essentially indicates the need to direct our research towards identification of sites where similar cultural elements seem to occur. In the present stage of the research, and based on preliminary pottery analysis and site stratification, the Matola elements at Zitundo can only be interpreted as being the earlier component of a sequence from which pottery types evolve to more elaborate forms of expression. Considering that the Matola traits seem to constitute its substratum, and that the new forms are to be more closely identified with the ones represented in the Lydenburg cluster (Hall and Vogel 1980:441; Maggs 1984: 333), we suggest that the latter is regionally derived from, or influenced by, the former. This process is seen to take place at the site in a rather short period, as shown by the dates mentioned above. From 175+-105 AD (St-8909) to 375+-105 (St-8913), Matola pottery becomes less predominant, as the Lydenburg types develop more conspicuous.

However, controversy exists in regards to the status of both traditions, either differentiating (Evers 1981: 92), or derivating, one from the other (Maggs 1984: 333). Hall (1981: 146) observes a case in which a seventh century site from the Hluhluwe River valley of the Zululand interior is clearly related to the earlier Matola sites of the coastal plain. This is an aspect that we cannot comment on, as in our study region the only riverine Lydenburg occurrence is at Caimane, which we will later refer, but neither reliable dates nor pottery assemblage indications may stand detailed comparison. The data from Natal and Transvaal seem to invite further discussion which also leads Hall to question, after Maggs, whether the Matola and Lydenburg traditions are linked in a process of internal development which lead the early farming population to move up the river valleys from the coast, or, alternatively, to result from a second "wave" of migration from the north; the latter view supported by Phillipson, Huffman and Evers (Hall 1981:146; Evers 1981:92). One aspect raised by Maggs (1984: 333), which seems to bear more relevance to the topic, is the grownth into regional variation of the sites belonging to the Lydenburg tradition, which is apparent in the cases of Ntshekane in Natal, and Klingbeil in the eastern Transvaal, around the ninth century.

It is commonly accepted that the Lydenburg tradition is dated from the fifth to the eighth centuries, and is mainly characterized by a wider range of motifs than in Matola assemblages. Decoration of the Lydenburg pottery is dominated by incision technique with a range of of single multiple horizontal or oblique bands of decoration, oblique cross-hatched lines, opposed hatching (herringbone), normally placed on the neck, rim or body of pots. Its distribution ranges from the sites of the coast of Transkei at Mpane, to Msuluzi Confluence and Ntshekane in Natal, north to Maputo at Zitundo, Tembe and Caimane, and inland to Swaziland at Castle Cavern, and the Transvaal at Lydenburg itself, Klingbeil, Plaston, Broederstroom, Matakoma and Klein Africa (Evers 1981: 84; Maggs 1984: 333-4). This wider regional picture seems to represent the extension of Matola settlements from areas that were previously confined to east of the Great Escarpment. From around AD 500 sites of the Lydenburg cluster expanded into higher altitude areas of the Transvaal and Natal up to the 1000m contour (Hall 1984: 340).

In terms of settlement pattern, the site of Zitundo benefits from its position near to the marshlands and coastal lagoons, and to the terrestrial grasslands further west. The hydromorphic "machongo" soils, occurring close to the site, provide the best agriculture in the whole southern Maputo coastal region in a 30 Km north-south strip between Piti lagoon and the border (Barradas 1962: "Esboço da aptidão agrícola" map). The site is also in the border line between the rich soils and the only suitable coastal grazing. There were no house remains recovered, but the number of middens suggests regular periods of occupation of the site. Considering that the finds of mollusca were rare, we would suggest that the component of the economy at the site to be more concerned with agriculture, animal husbandry, and, especially, metal production. Direct evidence for the two former activities was not recovered, but the pottery and some of the scant faunal remains suggest that the surroundings should have been used for cultivation and herding. Crop plants identified for the period are few. Maggs (1984: 341) reports from sites in Natal dated to the 7th/8th centuries, the occurrence of the millets Eleusine corocana and Pennisetum typhoides, and Sorghum spp.. From the beginning of the Lydenburg tradition animal domesticates are present. The nearest evidence of livestock comes from the 7th century Tugela River valley further south (Hall 1981: 146) and especially from extensive osteological evidence of cattle and ovicaprines from the site of Msuluzi Confluence, where domesticates are seen to be the main source of food (Voigt 1980: 145). Cattle and sheep also occur at the 6th century Lydenburg Heads site (Evers 1981: 90; Voigt 1982 a.: 31). At Zitundo the possible cattle remains also seem to post-date the earliest Matola phase. As it is the case for many of other sites from the same period, but very much apparent at Zitundo, metal work should have been intensively carried out judging from the amount of recovered iron slag. It is our proposal that iron sources in the form of "bog-iron" or ferricrete, occurring in the vicinity, have furthermore determined the site location. Hall (1981: 70) has found out that the settlements in Zululand which revealed evidence for metal working were mostly found near marshlands, a situation that fits with our present data. The general location of his earliest "group 1" sites are to be found in the coastal cordon east of St. Lucia lake where most marshland environments occur. At Msuluzi Confluence, and inland riverine site in Natal, the iron ore source seems to be provided in the form of siderite, with extensive evidence of iron smelting (Maggs 1980 b.: 113, 138). The situation of Zitundo, which is west of Satine lagoon is somewhat different to the latter case. But similar to the Zululand sites, patches of marshland also occur close, an environmental prerequisite of site location that might have played an important role in the past.

The approximate area of the site is 18,000 m2, estimated by surface observation,or digging additional test pits away from the main area. This figure for Zitundo is higher than the 4,000m2 estimated for Matola, but considerably below the 75,000m2 suggested for University Campus, which nevertheless displays comparatively lower archeological concentration in relation to the former site. The size of Zitundo seems to be, however, relatively small in comparison to the figures of 8 to 20 hectares for Lydenburg settlements in Namibia, Botswana and South Africa (Maggs 1984: 341), and 7 to 15 hectare for correspondant ones in eastern Transvaal (Evers 1981: 85). Therefore, it seems acceptable to postulate that the Lydenburg tradition initiates a period of more intensive residence in areas where good agricultural and grazing outputs could be achieved, and some forms of economical specialization (e.g. metal work) sucessfully accomplished. This pattern occurs in the Transvaal, Tugela Basin and coastal lowlands of the Natal, suggesting that a mix of fertile soil, waterside location, good grazing, summer rainfall regime and good supply of wood were prerequisites for settlement

(Hall 1984: 342). This set of environmental conditions would have further determined a pattern of preference for savanna over plateau or upper river basin open grassland, and therefore coastal to inland low-lying valley environments are expected to have become the most favoured corridor for the farming communities of this period (Hall 1981: 146; Maggs 1984: 342-3). However, attention should particularly be focused on the small scale patterns of circulation as evidenced by coastal short-term camps, as opposed to dune cordon (Ponta Mamoli) and marshland (Zitundo) settlements. Whenever patterns of mobility or regional economical integration between the coast and the hinterland are forseen, the nature of the littoral/dune cordon/marshland environment is rich and varied enough to suggest that it was used as a single economical territory during the early farming community period. The only exception to the general pattern of well settled early farming communities are the scatters of contemporary pottery on the coast, which are seen as possible extensions of the permanent groups living a few kilometers inland (Hall 1981: 147). This might account for the reduced number of shells recovered at sites such as Zitundo, but would imply the recovery of associated sites located on the coastal dunes. During our brief surveys in the region we did not have the possibility of testing this hypothesis.

5.2.4. The riverine sites:Hola Hola, Caimane, and Massingir 1/72.

Hola Hola (2134-Ad-1), 21° 18'00''S- 34° 18'26''E.

Previous research:

The lower course of the Save river in the Mozambican border did not receive as much attention as the Zimbabwe interior.

Historical references to its importance for the mercantile Sofala-hinterland network are made by Mauny (1959:20) and Beach (1980:40). Only a small number of limited surveys were carried out by Barradas (1967) and Dickinson (1971).
As part of the 1976 season at Manyikeni, the writer together with P.S.Garlake and G.Barker briefly visited some areas in the Mabote District up to the Zinave Game Reserve and Banamana lake south of the Save river, for collection of oral tradition and survey, aimed at disclosing more information regarding early stone enclosures in the region, but without success.
The lower course of the Save River region became the focus of the Archaeological Research Programme in 1977 when a number of sites, including Hola Hola, were located (Sinclair 1985 b.). Finds from Hola Hola including an assessement of the agro-ecological potential are provided by Sinclair (1985 b.). The relations between Hola Hola and sites in the Zimbabwe as well as Vilanculos Bay are discussed in Sinclair et al. (1979), and Sinclair (1982).

Agro-ecology:

The site is localized on a 100 meter high limestone outcrop of the Jofane formation, an older Save river terrace in its northern bank.
Sinclair (1985 b.:19-22) describes the agro-ecology of the region, site catchment analysis of the site, and surveys the economical patterns of the present-day farming communities.
The soils of the region are constituted by a mainly brownish and compact argillic layer (FAO/ INIA Lo1- 2b) with some calcareous material,relatively deep and mainly derived from Karroo formations (Wild and Fernandes 1967:35), and by sands of medium texture, and slope class rolling to hilly (8% to 30% slope range), (FAO/UNDP/MOZ 1982, FAO 1974: 38). The broad region is also listed by FAO as having an association of the former soils

and soils of poor to relatively poor organic content with lamellae of clay accumulation (QL 15-1a) (FAO 1973; 1974:34; FAO/UNESCO 1977:163,208).

The vegetation is characterized by Colophospermum mopane savanna woodland, a floral community which is listed as type 35, and described by Wild and Fernandes (1967: 34-5).

The grass layer is of tufted species including, among others, Eragrostis spp. and Setaria spp. (Wild and Fernandes 1967:35), which are listed by Myre (1971:108) as providing good pasture.

The present day agricultural potential is classified as M2, with precipitation ranging between 500 and 700mm per annum, and a short 3 to 4 month rainfall season. The region is listed as suitable for pearl millet "mexoeira" (Pennisetum typhoides) and marginally for sorghum "mapira" (Sorghum vulgare) (FAO/UNDP/MOZ 1980 b.). However the traditional agricultural pattern shows a diverse picture in which maize (Zea mays L.) occupies 55.5% of the total area used for agriculture, followed by 45.5% of sorghum (Sorghum vulgare), 2% of beans (Phaseolus vulgaris L.; Lablab purpureus L.; Vigna unguiculata L.) and 1% of groundnut (Arachis hypogea L.). The region is listed by Carvalho (1969:37; apendice III) as GR 8 (unit 80).

Data collection and archaeological evidence:

A site report is provided by Sinclair (1985 c:15-21).

The site was completely mapped and 44 surface features recorded. Most of the features are thought to belong to house foundations as daga, bone and pottery occur associated. Four 1x1m test pits, representing a 4% sample of the surface area of one of the features, were excavated.

A representative sample of 223 decorated sherds was used for describing the nature of the assemblage, which includes a wide range of shape and decoration motifs. Among some of these, especially in the category of the independent restricted vessels, there are some which are strongly reminiscent of the Gokomere/ Ziwa tradition. In Appendix 3 (Figure 6) we illustrate a small number of sherds belonging to the latter type. In the category of the bowls dissimilarities are found in comparison to "Gokomere", and "Zhizo" and "Coronation facies", respectively of the phase 1 and 2 of the Gokomere/Ziwa tradition. This lead Sinclair (1985 b.:24) to propose Hola Hola as a facies of the Gokomere/Ziwa tradition. There are also some surface minor modern components in the assemblage which suggests a more extended time period for the occupation of the site, even if little evidence of a spatial distinction of pottery styles was observed by Sinclair during the surface survey.

A few glass and shell beads were also recovered on the surface.

Small fragments of bone were excavated and are still to be identified.A single lump of slag occurred in one of the trenches.

Radiocarbon chronology:

A sample of burnt bone was obtained from one of the test pits and dated to 950+-50 AD (R-1326) after the correction factor suggested by Ralph et al. (1973). As we suggested in our descriptive method section dealing with radiocarbon chronology, the reading might be younger than the true age, due to the nature of the source material. This would fit with Sinclair's interpretation that the pottery tradition at Hola Hola is closer to "Gokomere" (phase 1) than to "Zhizo" (phase 2) of the Gokomere/Ziwa tradition (Sinclair 1985:24). However the date is little more than a chronological indication that might be adjusted with further fieldwork.

Discussion:

A discussion of the early farming community period from Zimbabwe is presented by Phillipson (1977: 115-8). This author is the one who first applies the concept of a "Gokomere/Ziwa tradition", following Huffman's proposal of a phase 1 facies with the same name, as part of the Early Iron Age "stamped-ware tradition" of northern Mashonaland (Huffman 1971: 24). The tradition designates a number of pottery assemblages mainly occurring in Zimbabwe, as a product of a process of continuous change during the first millennium ad. In general, "Ziwa" sites seem to be distributed in the Eastern Highlands along the Mozambique border and into the Save valley, whereas "Gokomere" ware is mostly distributed in the south-west area of Zimbabwe (Phillipson 1977:113). However, this geographical division is seen today as barely distinguishable (Maggs 1984: 337). Within Gokomere/Ziwa three phases of development are interpreted from distinct pottery morphologies, which details will be not mention here (Huffman 1971:26-8; Phillipson 1977:115; Sinclair, Morais and Bingen 1979; Sinclair in prep.). Phase 1 is represented at Mabveni, Gokomere and "Place of Offerings" (Ziwa Mountain, Inyanga), and is seen by one author to emerge from the 2nd century ad, on account of one date (Huffman 1982: 136). However, the early date should be questioned, as similar pottery is generally dated between the 3rd and 5th centuries at Great Zimbabwe, and the 5th and 7th centuries at Gokomere Mission (Phillipson 1977: 115; Maggs 1984: 338). Phase 2, beginning around the 6th century, displays higher inter-regional diversity and geographical area of occupation, and occurs in the regions of Harare (Coronation Park site), Matabelaland (Zhizo site), the Lowveld (Malapati site), and Fort Victoria/Shabani (Makuru Hill site), the latter being the most representative site of the phase (Phillipson 1977: 114, 119). Within phase 2, two facies have been recognized: Coronation in

eastern Zimbabwe, and Zhizo in the west (Maggs 1984: 337). Phase 3 occurs at the northern plateau at Maxton Farm and Chitope around 1000 ad., being out of the scope of the present study.
The Gokomere/Ziwa tradition is currently seen to occur in southern Mozambique from the site at Mavita in the Chimanimani massif (Manica Province), to Hola Hola in the lower Save River, and in the coastal region of Vilanculos Bay and Bazaruto Archipelago. The site at Mavita, based on personal observation of the pottery collection, displays similarity with the types of phase 1 occurring in the neighbouring Inyanga area of Zimbabwe, as described by Phillipson (1977: 115). The pottery from Hola Hola and Ponta Dundo (Bazaruto Island) is also caracterized by a similar range of pottery assemblages which are to be correlated with the Gokomere/Ziwa tradition. The basal units at Chibuene in Vilanculos also display some minor affinities with that tradition, which are however to be reviewed (P.Sinclair pers.comm.). At Hola Hola some of the comb stamping dominant motif from Gokomere is locally substituted by shell stamping, which contitutes an interesting example of regional variation (Sinclair 1985 b.: 24). In overall terms, the Hola Hola assemblage seems typologically closer to phase 1 than to phase 2 of the Gokomere/Ziwa tradition. However,on chronological grounds, Hola Hola is contemporary with the phase 2 of the Gokomere/Ziwa tradition (Id.: 24). But these are just preliminary indications, as both assemblages from Hola Hola and Ponta Dundo (Bazaruto Island) are insufficiently dated, and regional diversity of archaeological entities are still to be identified. Considering that a number of features from the Hola Hola assemblage are similar to pottery types present at Ponta Dundo, Sinclair (Ibid.) proposes a "Hola Hola facies" of the Gokomere/Ziwa tradition.
Information in regard to the range of economical activities carried out at the sites in Mozambique related with this tradition is rather scant. The settlements seem however to be

relatively large, possibly of a semipermanent nature, and situated close to water, as are those of phase 1 and 2 in Zimbabwe (Phillipson 1977: 119). Mavita is located on a hill-top, having evidence for extensive occurrences of daga fragments, tuyere, and slag (R.Duarte, pers.comm.). Hola Hola, is also located on a hill-top terrace of the Save River, with wide-spread evidence of housing and middens. Here some of the stone piles registered are seen as possible support for house or grainbin foundations (Sinclair 1985 b.: 15), a situation that is not uncommon for the Gokomere/Ziwa sites of phase 1 and 2 in Zimbabwe (Robinson 1965: 3-4; Phillipson 1977: 115). Small fragments of unidentified bone, a few glass and shell beads, as well as some slag fragments occurred at the site. The two sites of Ponta Dundo in the Bazaruto Island are now heavily eroded, and finds stretched considerably on the ground. We presented above, during the discussion of the Vilanculos sites, evidence for a growing pattern of regional contacts provided by coastal and riverine navigation, and indicated by early insular settlements of Bazaruto Island. These contacts are expected to have been made from coastal Mozambique to the Zimbabwe hinterland since the first phase of the Gokomere/Ziwa tradition: marine shells and glass beads are present at Mabveni, Gokomere Mission and "Place of Offerings", the latter items being probably only imported from relatively later in the first millennium (Phillipson 1977: 115, 118). Cattle, sheep and goat are also present in most of the latter sites, but not as yet identified in most of the contemporary sites in Mozambique, with the exclusion of Chibuene.

Caimane (2532-Ac-4), 26°19'00''S- 32°08'45''E.

Previous research:

Caimane rock shelter by the Changalane river in the Maputo

Province was first reported by B. Dias (1947) during a geological survey made in the region. At the time a small test trench was dug, but neither description nor excavated collection were to be found later on by us. The area was briefly surveyed in 1982 by L.Jonsson and L.Adamowicz, and the site revisited by them during that period. Considering that no other in situ Later Stone Age and early farming community locations had been discovered in the region, a decision was made to carry out excavations at the site. These were implemented by Jonsson and the writer (Morais 1984:119).

Agro-ecology:

The site is a shelter cut by an earlier level of the Changalane river in the local rhyolite,in the edge of the Lebombo mountains 150 m. above sea level (Appendix 4, plate 16).
The soils of the region are described as having a predominant strong brown to red argillic layer and relatively poor in organic matter and phosphorous (FAO/ INIA Lc3-2ab),(FAO/INIA 1982; FAO/ UNESCO 1973; FAO/UNESCO 1974:38; FAO/UNESCO 1977: 122,208). Along the river basin the soils are basaltic of Karroo origin and of recent fluvial derivation (Barradas 1962:20).
The vegetation is described as an edaphic controlled extratropical lowland grassland of Themeda triandra-Turbina (Ipomoea)oblongata, the type 69 of Wild and Barbosa (1967:66-7). Two intergraded formations include a grassland with very scattered trees and shrubs, and true grassland with these trees and shrubs almost entirely absent. Barradas (1962:105- 6, 112) describes in detail the vegetation types in relation with soil categories.
In terms of the present day agricultural potential the region is classified as L4, with 600-1000mm precipitation per annum during approximately 4 months of rainfall, and with a high risk of

drought. The most suitable cultigens are sorghum "mapira" (Sorghum vulgare) and pearl millet "mexoeira" (Pennisetum typhoides), and marginally for groundnut (Arachis hypogea L.), cassava (Manhiot esculenta Grantz), cashew nut (Anacardium occidentale L.) and coconut (Cocus nocifera L.), (FAO/UNDP/MOZ 1980 b.).The site is on the border line with region F8 occurring further west in the 200-600 m altitude range, with increased rainfall (circa 6 months), and small risks of drought. The river basin is the most suitable area for cultivation. The grazing potential is among the best for the region, being formed by the so-called "first class grazing" association of Acacia nigrescens and Themeda triandra (Myre 1971:34-5,150; FAO/ UNDP/ MOZ 1980 a.). These pastures are available during approximately seven months from September to April/May, having an annual carrying capacity of 2 to 4 hectares per head of cattle.

Carvalho (1969: 40; apendix 3) describes the traditional agriculture of the region as Gr.10. 2.1. (unit 129). According to the cultivated area in relation to the total region, maize (Zea mays L.) is represented with 60%, groundnut (Arachis hypogea L.) with 21.5%, beans (Phaseolus vulgaris L.; Lablab purpureus L.; Vigna unguiculata L.) with 13%, and sorghum "mapira" (Sorghum vulgare) with 5% .

Data collection and archaeological evidence:

A site report of the 1982-1983 excavations will be available in the near future (Morais in prep.).

The site is formed by a main rock shelter where extensive excavations were carried out by Jonsson, and a second minor shelter approximately 20 meter away, were a test trench was dug by the writer. At the main shelter the excavations revealed a disturbed surface component mostly derived from redeposition, where early farming community pottery occurred. On the basis of the available evidence which includes a small sample of decorated pottery, we assign its earliest components to the Lydenburg tradition. The nature of the deposits at the small shelter seems to be more reliable, but with a much lower level of occurrence for the same type of pottery. Here the main farming community period occupation seems to be represented by later types, with a minor early farming community event recorded in between the former and underlying Later Stone Age layers. The small number of the early farming community pottery is thus to be correlated with the surface occurrence at the main cave, and it is formed by an assemblage with a predominance of decorated jars with parallel perpendicular bands of broad line incision, pendant triangles, and single or multiple horizontal lines of broad line incision. We will have, soon, a more detailed account of the excavated pottery, which at this stage the writer would provisionally suggest, on typological grounds, to have the Zitundo later assemblage as its closest correlate. A small collection of sherds is illustrated in Appendix 3 (Figures 7 and 8).

A storage pit with a funnel shape, and approximately 30cm diameter at the top, occurred at the base of the middle,early farming community layer. The pit contained circa 50 cc. of unidentified burned seeds.

No shell or slag occurred associated with the iron age finds.Some highly fragmented and unidentified bone was found. Bone was also used to produce some very small beads occurring on the top of the early farming community layer. Charcoal pieces are represented in most of the deposits, especially in the later farming community (top) layer.

Radiocarbon chronology:

Two dated samples are already available, and two additional ones are being processed. Both of the former are derived from the test

excavations at the smaller shelter. The youngest of the dates (1235+-90 AD, St-8874) was obtained from burned seeds deposited in the bottom of a storage pit.As this occurrence is in the layer containing early farming community pottery its late reading might either indicate that the feature was cut through the earlier deposit, or that some of the visible leaching or termite activity have contaminated the counting. The second date was processed from charcoal (1070+-210 AD, St-8873) belonging to the interface deposit between the upper and lower farming community pottery, and should be provisionally seen as a terminus post quem date for the upper, later farming community strata.
Two other relevant dates are still to be processed and should date the terminal period of the Later Stone Age deposit at the small shelter, and a surface layer at the main shelter with Early farming community pottery associated with bone. The latter date might however prove to be contaminated, as an early counting on bone in the same surface strata (differentiated on the basis of having a much softer texture and light colour) gave an inconsistent date (1155+-270 AD, St-8892).
Additionally, six dates are available for the Late Stone Age sequence at the main shelter, which range from BP 8045+-110 (St-8879) to BP 795+-270 (St-8892) (Morais in prep.).

Discussion:

The site at Caimane bears special relevance as it provides, together with Massingir 1/72, one of the few available evidences in southern Mozambique of a Lydenburg tradition development in areas away from the coast. We mentioned, in discussing the evidence from Zitundo, reasons for postulating a regional differentiation within the Lydenburg tradition. This has implied that coastal to low-lying valley environments would have formed natural corridors for the early farming communities from the fifth century onwards. The site of Caimane, as well as Massingir 1/72 that we will refer to later, are within such river valleys. On the basis of the present data, which is rather limited, the writer can only discuss this question in general terms. Owing to limited time, no systematic survey was carried out to assess the settlement patterns of the interior river valleys in comparison to the ones on the coast. Nevertheless, we are aware, as pointed out by Hall (1981: 149), that it is in the former area that the high inherent fertility should have allowed the maintenance of an agricultural population of higher density than on the coastal plain. A similar situation occurs in the Lydenburg valley and in parts of the Tugela Basin (Maggs 1984: 42). In this sense the site of Caimane is ideally located, as it associates regular water and rich agricultural potentials of the river alluvia, with high quality year-round grazing. There is also evidence that the local grassland has been edephically controlled, which might indicate pasture management practices going back in time. Unfortunately, the bad state of preservation of the excavated bone did not allow us to carry out animal identification. Also the burned seeds recovered are not yet identified, and very little at this stage can be said in regard to the early farming economy at the site. However, no matter what we might expect from the region where the site is located, the nature of the shelter and of the excavated materials seem to indicate that the site was only used temporarily. No indication of a permanent living settlement in the region was found, and most of the deposits at the site, including middens, seem to have been subject to repeated disturbance. Furthermore, the shelter has very little deposit accumulation having its bedrock near to the surface, and owing to its dimensions would only have allowed limited room. In the present circumstances the writer would suggest that the site was only used at periods as a camp, possibly as a base for seasonal herding, with the main permanent settlements not yet identified. Hall (1981: 146) reports that his Early Iron Age site in the Hluhluwe Valley dated to the 7th century is clearly related to the earlier sites of the coastal plain. This situation also occurs at Caimane where the pottery is closely associated to the later Lydenburg components of Zitundo. Unfortunately no contemporary dates were available from the former site, and the scant evidence does not allow us to envisage distinctions of the economy of Caimane and Zitundo, beyond the fact that no iron work was carried out at Caimane. We should conclude that the data we discuss is only very prelimary, and reflects above all an insufficiency of archaeological sampling. Further work pursuing these indications should later be implemented.

Massingir 1/72 (2332-Cc-5), 23°54'S- 32°04'E.

Previous research:

The fieldwork in the area of Massingir initiated in 1973,in which the writer participated, was determined by the construction of an earth dam in the Olifants river near to the Transvaal border (Soares de Carvalho et al. 1974). The first phase of the project dealt only with the Stone Age. After completion of this it became apparent that the scope of the research should be extended to incorporate the study of the archaeological evidence of the farming communities threatened by flooding.
An extensive survey initiated by R.Duarte (1976), and in which the writer participated for brief periods, produced an number of sites of which three were excavated. Among the ones reported, Massingir 1/72 is of special relevance,as it provides information regarding a late first millennium farming community settlement, and the first one in Mozambique where cattle remains were positively identified.

The position of site 1/72 in relation to the other early farming community sites was analysed by Sinclair et al.(1979) and the finds compared to those of the Eastern Transvaal.

Agro-ecology:

The site is located in the right bank of the Olifants river, approximately 60 km north-west of its confluence with the Limpopo, and 5Km upstream from the village of Massingir. It lies on an eroded alluvial clay deposit of the middle terrace 20 m above the present river level (Appendix 4, plate 17). The top soil is formed by a thin gravel resting directly on the top of a calcareous bedrock (Duarte 1976:2).
The Massingir region is part of a multicomponent soil zone characterized by interior sandy to rocky plains of the old river terraces (FAO/INIA 1982, Qc4), and by the badly drained clayed soils of the modern river bed (Id., B-I-L). While the former have mostly soils of low to intermediate fertility and of coarse texture, the latter complex soil association presents deposits of high humus content and medium to fine sand texture. The slope class is level to gently undulating. In the continental FAO/UNESCO classification (1973, Bc7-2bc) the region is described as being a soil association dependent on irrigation for agricultural purposes (FAO/UNESCO 1977:72). Barradas (1962:57,73,87) describes the pedology of the region as a Quaternary, lacustrine, calcareous, with alluvial depressions in the cretaceous surface, having soils with high contents of silica and calcium carbonates. Another typical occurrence is the ferruginous formation in contact with the saline "mananga" soils of sandy-clayed nature. The former types are identified by Barradas (1962:58-9) as red-ferruginous sandstone of Upper Pleistocene origin resulting from a warm and humid paleoclimate.
The vegetation is defined in general as the tree-savanna

composition L2 of deficient rainfall pattern, and seems to be well associated with each soil formation (FAO/UNDP/MOZ 1980 a.). The site is in the tree savanna Flora Zambeziaca type 48 dominated by the Acacia spp, and near to the border line with type 50 (Colophospermum tree savanna), the most prevailing floral community north of the site and further east down the Olifants river,(Wild and Fernandes 1967:47-52). The Acacia spp. tree savanna integrades very often with Themeda-Turbina (Ipomoea) grassland which offers the best grazing potential in Mozambique.
The present day agricultural potential is classified as M2, with 500-700 mm of irregular precipitation during a three to four month rainfall season. The most appropriate cultigen under these conditions is the pearl millet "mexoeira" (Pennisetum typhoides); it is also marginally suitable for sorghum "mapira" (Sorghum vulgare), (FAO/UNDP/MOZ 1980 b.).
The traditional agriculture of the region is classified by Carvalho (1969:46,app.III) as including both units R.23 (to the North of the Olifants river) and 116 (South of the river). The former region differs from the latter by the striking dominance of sorghum "mapira" (Sorghum vulgare): 69,5% compared to 7,5%, in the total area of cultivation. Maize (Zea mays L.) is less unbalanced, with 13% compared to 60% respectively. It also should be mentioned that cassava (Manhiot esculenta Grantz)is relatively well represented north of the river (10%),compared to south (3%). It seems reasonable to assume that whereas to the north the staple grain is sorghum "mapira", to the south the region is already part of the great southern Mozambique maize-dominated belt.

Data collection and the archaeological evidence:

A site report is published by Duarte (1976) from which we will summarize the most relevant evidence and, additionally, present a an account of the excavated pottery and comment on the C14 date which became available only after the publication of the report. A considerable part of the original deposit seems to have been subjected to redeposition by erosion. This should account for the fact that the daga structures were displaced and occurred intermixed with potsherds, beads, bones and charcoal (Duarte 1976:3). However, gradients of erosion were assessed by preliminary digging of some test pits, and the excavations later concentrated where the deposits seemed better preserved as well as deeper. Forty 1x1m trenches were excavated on a non-random basis. The pottery assemblage is discussed in relation to M.Evers's collections from Harmony in the Transvaal lowveld at Phalaborwa, which is seen as the closest parallel on typological grounds (Duarte 1976:5-13). Harmony is now part of Ever's Eiland phase from the lowveld, dated from the 10th to 12th centuries (Evers 1981:66, 71). All the shape categories occurring in Harmony are present in the 1/72 assemblage which, in addition to the former, has carinated bowls. In the categories of rim the Massingir 1/72 collection seems to be considerably more diverse, possessing all the ones from Harmony plus six other types. However, even among the similar rim forms, there are considerable differences in percentage. A striking example among these is the beaded rim with 32% and 4%, respectively for Harmony and Massingir 1/72. Comparative decoration in vessels is not presented quantitatively, but motifs are found to be similar, especially among the class of single band of incision. The collection was later reassessed by Sinclair (pers.comm.), and a more comprehensive view of the pottery assemblage is given in Table 5.10..

Table 5.10. ANALYSIS OF POTTERY SHERDS: MASSINGIR

DECORATION MOTIFS

SHAPE CATEG.	A Plain	B Burnish	C Graphite	D red ////// red	E BL1	F Grooved	G1 XXX	G2 XXX XXX	Total
1 (R, Bo, Bo/Ba, Ba)	-	-	-	-	-	-	-	-	0
2 (R/N, N)	43	2	1	-	-	-	-	-	46
3 (Sh, Sh/Bo, Sh Bo Ba)	-	-	-	-	-	-	-	-	0
4	-	-	-	-	-	-	7	1	8
5	3	-	-	-	-	-	1	-	4
6	-	-	-	-	-	-	-	-	0
7	74	5	-	7	8	3	63	17	184
Total	120	7	1	7	8	3	71	18	

SHAPE CATEG.	H1 irreg	H2	H3	I	J	K1	K2	K3	K4	L	
1 (R, Bo, Bo/Ba, Ba)	-	-	-	-	-	-	-	-	-	-	0
2 (R/N, N)	-	-	-	-	-	-	-	-	-	-	0
3 (Sh, Sh/Bo, Sh Bo Ba)	-	-	-	-	-	-	-	-	-	-	0
4	-	-	-	-	1	-	-	-	-	-	1
5	-	2	-	-	-	-	-	-	-	-	2
6	-	-	-	-	-	-	-	-	-	-	-
7	3	6	6	1	2	12	1	6	13	3	53
Total	3	8	6	1	3	12	1	6	13	3	295

The 43 counts at shape category 2 of plain sherds could be derived from both dependent or independent restricted vessels (thus being either shape 2 or 4). In general, the decoration on category 4 is very low on the shoulder of tall-necked vessels. All of the recorded bowls are deep, except for 1 plain shallow. In the assemblage it is often difficult to distinguish long-necked category 4 vessels from category 7 bowls.

No evidence for slag was found at Massingir 1/72.
Most of the bead collection from the site consists of small cylindrical copper beads, which suggests trading contacts with the neighbouring copper region of Phalaborwa. The sample contrasts markedly with the larger, biconical and more perfectly fashioned copper beads occurring at another site in the vicinity (Massingir 2/75), which also displays a considerable number of glass beads, conspicuously almost absent from the 1/72 site. A number of ostrich eggshell, mussel shell and stone beads of local manufacture are mentioned, but no frequencies are given.
An osteological sample of the site 1/72 was the first in Mozambique ever to be processed. A small report is provided by R. Welbourne (Duarte 1976:15) and a list of specimens is given. These should be seen as preliminary indications, as most of the evidence is listed as the minimum number of species present. The listing includes mussel, achatina, ostrich egg, winkle snail, sea snail, turtle, leguan, impala, small to medium antelope, Zebra, large antelope, domestic fowl and a large ox.

Radiocarbon chronology:

The first radiocarbon date processed for an early farming site in Mozambique was obtained from Massingir 1/72. A sample from charcoal gave a reading of 920+-40 AD (Pta-1640) (Hall and Vogel 1980:442), which should be corrected to 980+-40 after Ralph et al.(1973). As no stratigraphic description is given, we do not know were the sample belongs.

Discussion.

Further reassessment of the Massingir 1/72 pottery assemblage using attribute analysis (Sinclair pers.comm.), indicates a 70% affinity level with the Klingbeil phase assemblage from eastern

Transvaal dated to early ninth century, which evolves from the previous seventh century local Lydenburg phase (Evers 1980: 56; 1981:94-5). Huffman (1978: 19-20) claims a geographically broad set of relationships between pottery traditions by suggesting that Klingbeil is the product of a direct continuum from the so called Bambata to the Kutama traditions. As put forward by Huffman (Id.:19) " Klingbeil was related to an AD 500 cluster of Bambata in Rhodesia, Lydenburg in the Transvaal and NC3 in Natal but not Silver Leaves in the Eastern Transvaal and Mozambique or Gokomere in Rhodesia (...)". In terms of the local eastern Transvaal sequence, Klingbeil evolves into the Eiland phase, which is part of the Kutama cluster, from about 900 ad onwards (Evers 1981: 95). We will not comment upon the views in regards to developments of the early farming communities from the beginning of the second millennium, which seem to be, for the time being, rather blurred (Maggs 1984: 344).

Evers (1981:95) comparing the Klingbeil phase with the Natal coastal pottery traditions suggests Ndondondwana as the closest equivalent. The site is dated to the eighth century (Hall and Vogel 1980:442) and is described by Maggs (1979:3). However, Ndondondwana is used by the latter author to reinforce the concept of a continuum of ceramic tradition in Natal from the earliest to the final expressions of the early farming community (Maggs 1980:4). As Evers rightly points out (1981:92), this makes it impossible to reconcile his and Huffman's views requiring a break between the Matola tradition and styles that followed it, which is interpreted as the product of the immigration of a new population which submerged and assimilated the previous Matola populations (Evers 1981: 71,94).

It seems to the present writer that Massingir should be considered an expression of a late period of the Lydenburg cluster in the southern Mozambique coastal plain. No comparison was yet carried out between Mozambican sites of the same cluster, and no generalities seem to be desirable before the data is allowed to grow with future work. The available picture from Massingir suggests that a wider set of regional exchange contacts were being established as documented by the occurrence of copper beads at the site, a trend that we can see to develop in the region by the farming communities during the first millennium (Morais 1978: 15). Cattle become regular part of the village economy, which should have determined, together with availability of good agricultural alluvial soils,the preference for settlement location in river terraces. Comparative evidence of the importance of domestic animals upstream in the Limpopo valley from at least 800 AD is provided by Voigt (1982 b.: 7). Hunting of wild animals was additionally carried out. All these elements are present at Massingir.

5.3. Towards an interpretation of the early farming communities in southern Mozambique.

As a general point of departure, the writer indicated above in chapters 3 and 4 the circumstances which determined the research methodologies applied during the implementation of the archaeological survey programme. Flowing from the need for historical reconstruction of aspects of farming communities of the last two millenia, and affected by severe constraints in carrying out the project, priority had to be given to a restricted number of goals. This factor accounted for the particular emphasis on the chrono-stratigraphic framework for identification of cultural variability of farming communities sites. Fieldwork was limited to a number of study areas aiming at illustrating the nature and potential of the archaeological evidence in four distinct environmental zones. Furthermore, only a limited set of data could be processed, and priority was given to the analysis of ceramic assemblages as a means by which to suggest degrees of similarities and differences of occurrences in space and time.

In chapter 5, the set of available evidence is presented mostly in a descriptive form (see also table 5.6). It is our aim to bring together in this sub-chapter most of such information in order to suggest ways of interpreting the data, and to complement it, whenever possible, with relevant information. Whenever possible (as in 5.3.1.) we derived descriptive data from early Portuguese documents which may add an historical insight to the farming communities in time (Theal 1964). However, these are to be seen as a number of interpretative propositions that should be later reassessed in the light of new research.

5.3.1. The environment and resources.

Recent changes in sea level are expected to have influenced geomorphic and ecologic dynamics of the Mozambican sea shore, but there are no detailed studies of the local effects. Tinley (1971: 132) mentions that the present sea level was reached about 6.000 years ago, and since then it has oscillated up to 3 meters above and below present level, with a world-wide trend to slowly rising at 1,12 mm/year due to general glacial retreat.

Considering that no paleo-climatological evidence is yet available for the regions under study for the period before the eighteenth century, general information should be drawn from South Africa (Hall 1981: 33,38) as a means of illustrating possibly similar ecological implications for southern Mozambique. According to recent metereological and dendroclimatological evidence observed in Natal, a 20 year cycle of variations in rainfall totals beyond the annual cycle occurs from at least about 600 years ago. These oscillations of the summer rainfall patterns showed a steady increase in precipitation, culminating in a peak in the late eighteenth century and a subsequent marked decline, accounting for a series of recorded droughts which occurred in the nineteenth century. Correlatively, these cycles were mirrored by inverse variations in annual temperature regimes. Further support for these patterns comes from a study of variations in runoff as reflected in the changing volumes of some major rivers (Id.:33).

Historically recorded evidence for Mozambique from the early eighteenth century is presented by Liesegang (1978: 2-4, 1982:3), and seems to confirm the above mentioned general pattern (see also subchapter 2.2 above and especially p.29). However, the intervals of regular precipitation seem to have an overall shorter cycle than the 20 year cycle recorded for Natal, especially for central Mozambique from 1744 ,and southern

Mozambique from 1776. From the set of the data presented by Liesegang (1982: 3), it also seems that the phenomenon fades away in the north, where droughts occur later in time (from 1831), and at more irregular intervals.

Apart of the implications of the above mentioned factors for the abiotic components (e.g.climate and landscape) of the coastal ecosystem, the overall physical structure was essentially static for the last two thousand years (Id.: 139).

The biogeographic divisions of the marine littoral south of Beira are regarded as part of the Southern Africa Region, but the major part of the marine fauna is Indo-Pacific (Tinley 1971: 135; Day 1969:1).Tinley (Id:135-9) lists some of the most important marine flora and fauna. The osteological finds from the littoral sites do not include evidence for marine fauna other than mollusca. However,documentary sources describing the Vilanculos archipelago in the 16th century point to the regular fishing or trapping of dugong (Dugong dugon) (Theal 1964,vol.VII: 63) and turtles, the latter occurring all along the Mozambican coast (Id.: 139-141; vol.2: 464), and abundant at Maputo Bay until as late as the 19th century (Id., vol.2: 474). Four species of turtles are positively identified in the region: Caretta caretta, Chelonia mydas, Eretmochelys imbricata, and Dermochelys coriacea (Dias et al. 1971: 17; Tinley 1971: 136). Turtle eggs also constitute a highly praised food item, especially during November and December, being layed in the foredune cordon of most of the Vilanculos Bay islands to further South (Dias et al. 1971: 15; Martinez 1976: 3). Common fishes along the shores and estuaries such as shrimp (Caridea spp.), bream (Rhabdosargus spp.), eel (Conger spp.), and mullet (Mugilidae spp.) are also mentioned as being fished in Maputo Bay in the late 18th century (Theal, vol.2: 464; Day 1969: 103,216,222,235). Regular fishing methods, such as thrust baskets, valved baskets and W-shaped barriers on tidal flats and shoals along the coast, are reported from Benguerua Island

(Vilanculos archipelago) to Maputo Bay (Dias et al. 1971: 17; Tinley 1964: 33; 1971: 142; Junod 1962,vol.2: 84-9). Historical accounts from the mid 16th and late 18th centuries for Maputo Bay (Theal 1964, vol.1: 269,vol.2: 464) and early 17th century for Natal (Id., vol.8: 113) describing similar fishing procedures, suggest to us that those methods might have been in use by littoral populations from an early date. Most of the fish were probably cooked immediately or dried, but there are also accounts of their being eaten raw (Theal 1964: 218). The largest number of marine fish are littoral species (Tinley 1971: 136), and a great number of them occurring along the Mozambican coast are listed by Day (1969: 206-238). More recent surveys were carried out by Aubray (1977), and complementary ones are being followed up (Instituto Nacional de Pescas, Maputo, pers.comm.).

A list of identifications of the shells occurring in the Vilanculos bay sites will be published later (P.Sinclair, pers. comm.). Documentary evidence regarding the area mentions the intensive collection by diving of one of the oysters (Theal 1964,vol.VII: 65). Arguably these may belong to Crassostrea cucullata (Born), judging from their present geographic distribution on open shores and on mangrove-roots and trunks in estuaries (Day 1969: 141). A detailed list of the malocological species from Xai-Xai and Chongoene middens is listed by Martinez (1976: appendix 1). The shell present in Matola belongs to Crassostrea cucullata (Born)(Cruz e Silva 1980: 349). Present-day evidence points to the intensive utilization, as food, of the mussel Perna perna which occurs all year around in profusion, attached to rocks from mid-tide down, at the southern Mozambique coastal sandstone barrier exposed at low tides (Martinez 1976: 1,11). Junod (1962,vol.2: 338) mentions bivalve and oyster shells being collected in considerable numbers by the Thonga near the sea, in littoral lagoons and at the Tembe river mouth. Day (1969: 135-179) also lists a number of molluscan occurrences along the

Mozambican coast.

The coastal consolidated dunes with shrubby and forest vegetation also contain a number of plants bearing edible fruits such as Diospyrus rotundifolia, Carissa bispinosa (L.), Mimusops caffra (which defines flora Zambeziaca type 14b), Epinetrum delagoense, Strychnos sp., and Vangueria tomentosa (V.infausta Hochst), (Martinez 1976: 11; Wild and Fernandes 1967: 16). A number of these fruits are described as being regularly eaten in two late 16th century Portuguese documents concerning the Natal, and north at Sofala and Tete (Theal 1964, vol.2: 295; vol.7: 188-9, 269). Earthy (1933: 28-32) also describes a good number of wild plants being regularly in use by the modern Lenge (Chopi) in the Bilene region, which is part of the sublittoral tree savanna (Flora Zambeziaca type 43, Wild 1967: 41-2). We confronted her data with details provided by Wild (1972). The selected flora includes the highly appreciated Sclerocarya caffra Sond.("marula, makanye") with fruits available in the beginning of the year and also used for making beer, Trichilia emetica Vahl ("banket mahogany, nkuhlu, mafurreira") from which fruits are collected in December-January and edible oil extracted from the seeds from March to May, Plectronia ventosa L. ("tindove") and Landolphia petersiana Dyer ("dokomela") bearing edible fruits early in the year, and Garcinia livingstonei T.Anders ("african mangosteen, muhimbe") with fruits available in September. Junod (1962,vol.2: 15-9) also enlarges the information providing a number of trees and fruits available among the Thonga in the sublittoral woodland and savanna woodland (Flora Zambeziaca type 34, Wild 1962: 33-4). These comprise Strychnos madagascariensis Poir. ("monkey orange, kwakwa") and Strychnos spinosa Lam ("sweet monkey orange, sala") which both bear fruits that ripen about June-August. In drought years the ripe grain of indigenous grasses such as Panicum maximum and some others might also be gathered and used as grain foods (Tinley 1977: 80).

The terrestrial fauna, mainly occurring on the old consolidated dunes, as well as at Bazaruto and Benguerua islands, includes small mammals such as monkeys (Cercopithecus mitis and C. ethiopicus), the bush-baby (Galago crassicaudatus), red and blue duiker (Cephalophus natalensis and C.monticola), bushpig (Potamochoerus porcus), several types of rats and squirrels, and reptiles (e.g. Python sebae, Varanus niloticus), (Dias et al.1971: 18-20; Martinez 1976: 3; Smithers and Tello 1976). Monkeys of different sorts seem to be conspicuously present along all the Mozambique coast at least from the 16th century (Theal 1964, vol.7: 278). A detailed reference to mammal habitats in Mozambique is provided by Smithers and Tello (1976).

Hunting methods observed by the earlier travellers are reported for Sofala (Theal 1962, vol.7: 225,259,321), and Maputo Bay (Id., vol.2: 483). They all refer group hunting using spear, bow and arrow, and dogs, either trailing or trapping the game. A recurrent hunting trap being mentioned is formed by a simple dug-out pit.

Present-day domestic animal distribution and grazing strategies are inadequate for making projections into the past, considering the ignorance concerning the spread of Glossina before the 19th century. The eventuality of Nagana, or animal sleeping sickness, still operates as the determinant factor, together with pasture and water availability, in preventing or restricting herding (see p.24-6). Judging from recent studies (Dias 1961: 58, Summers 1967), and from observation of the isolated pockets of its present-day distribution in southern Mozambique (Figure 2.2), the spread of Glossina should have been even wider in the past. Portuguese references to cattle and goat are very general, and do not allow us to draw relevant information as to areas of preferential distribution from the sixteenth century onwards (Theal 1964, vol.9: 331,383). We should however briefly consider the existing grazing potentials in the most representative regions of southern Mozambique. According to Myre and Antao (1972: 29), the Colophospermum mopane of the southern Mozambique interior (Figure 1.7) provides in general good pastureland, which is the case for the site of Massingir where cattle bones were identified. In the alluvial soils the mopane integrades very often with Themeda-Turbina (Ipomoea) grassland (Wild and Fernandes 1967: 49). Good quality grazing areas also extend to south, along the interior Transvaal and Swaziland- Mozambique border through the Acacia tree savanna and especially the grassland. In the latter vegetational type the grass association is described as Themedo-Turbinetum oblongatae (Myre 1971: 163) which incorporates the site of Caimane, and marginally, the site of Matola. This gramineae type qualified with first class grazing potential has a regular production of pastures for about 7 months from October to April, with an annual carrying capacity of 2 to 3 hectares per head of cattle (Myre 1971: 150,152). Between this interior region and the coast, interrupted by the Tembe River mouth in Maputo Bay, and north to the Incomati River alluvia, the gramineae association is dominated by Andropogoneto-corchoretum junodii which provides the poorest pastures, being the fifth of a five grade pastureland production classification (Myre 1971: 154,163,map). Forage is only available in this region for about two months in October and November, with an annual carrying capacity of 16 to 20 hectares per head of cattle. The sites of University Campus and Tembe are comprised in this low quality pastureland. The Maputo littoral region, with exclusion of the littoral thicket and forest of recent dunes, is formed by the gramineae association Themedo-Salacietum (Kraussiae), of fair to poor grazing potential, mainly due to grasses of limited nutritive value and palatability, as well as for the occurrence of toxic plants (Myre 1971: 153). These pastures are normally available for five months from September to February, having a carrying capacity of 11 to 14 hectares per head of cattle. Sites such as Zitundo and Mamoli belong to this grazing region (Id.: 82). The grazing potentials in the littoral north from the Limpopo River to Vilanculos Bay are not systematically studied. However, from the picture of the survey carried out by Myre and Antao (1972), the dominant gramineae community in the sublittoral region is formed by Andropogon schirensis, which has a grazing potential of an average of 12 hectares per head of cattle. This potential might increase slightly in cases where locally predominant species such as Digitaria, Panicum or Urochloa occur (Id.: 135-6). The site of Chibuene is located in this region, and southwards the sublittoral region of Xai-Xai and Chongoene should also be included in this category. A general model for cattle keeping further inland from the littoral and sublittoral Vilanculos Bay is provided by Barker, who postulates that owing to the Glossina distribution (littoral and Sabi River valley) and availability of dry season surface water inland, the stock movement was more likely directed to the latter than to the former region (1978: 93-4). However, considering that cattle and sheep have been positively identified in the upper early farming community layers of Chibuene (Sinclair 1982: 161-2), it remains to be determined to what extent the presence of Glossina was a deterrent factor for keeping domestic stock on the coast in earlier times.

Bee-keeping is common in the sublittoral miombo savannas to which Chibuene belongs, and is practised throughout the miombo areas in southern Mozambique as far as the Limpopo River (Tinley 1977: 81-2). The writer has observed hives being removed for purposes of honey collection and wax molding in early winter in the region from Vilanculos to inland Muabsa. Historical accounts mentioning honey and bee-keeping can also be found from the late 16th century for regions extending from Natal (Theal 1964, vol.2: 320) to Maputo Bay (Id.: 479,488), and further into the Save River (Ibid., vol.7: 379).

There are only very general references to the manufacture of iron tools and regular mining sources. One source from the late 16th century points out for the Zambezi valley the regular mining of gold and copper, as well as the occurrence of very good quality iron which was exported at the time by the Portuguese to India (Theal 1964, vol.7: 285). The source adds that with these metals, which they "extract from the earth and smelt them", they make hoes, arrows, assagai heads, swords, small axes and "other implements". " (...) With the copper they make bracelets, which both men and women wear round their arms and legs" (Id.). Another reference from the late 18th century for Maputo Bay, while confirming the good quality of the iron, adds that the spears and hoes are forged by working them with a "hammer upon a stone" (Ibid., vol.2: 463).

An example of a calendar of economic activities complementing a southern Mozambique riverine/littoral ecosystm can be drawn from information given by Earthy (1933: 28-32), and is used here to provide a general idea of resource availability in a specific region (Table 5.11). Good harvest is dependent on a rainy season set in the right time, and times of drought are not unkown. When this occurs every food plant resource is fully utilized (Id.: 31). A number of historically recorded droughts for Mozambique from the early 18th century were presented by Liesegang (1978, 1982), who states that during these there is a marked emphasis for gathering at the expense of agriculture (Id. 1978: 9). During these hardship periods poisonous or untasty roots and fruits might be eaten, together with a number of items which otherwise would not be used as food, such as bark of trees and palmstems (Ibid.1978: 9; Junod, 1962, vol.2: 89-90). A recent example of the side-effects of such critical droughts in traditional dietary practices in North Mozambique has been shown by Rosling (1986). The most important food plants among the Lenge are maize (Zea mays L.), ground-nuts (Arachis hypogea),manioc (Manihot esculenta

Table 5.11. Calendar of economic activities at the Limpopo River mouth/ littoral region (derived from Earthy 1933: 28-32).

Seasonal resource			-food plenty-					-food scarce-				
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Ag.	Set.	Out.	Nov.	Dez.
Wild fruits	---CL---									------CL-----		
Hunting					-------							
Pumpkin		-W-	-------CL--			--P---						
Gourd		-W-	-------CL--			--P---						-H-
Maize	-P-	------------H--									------P-	
Sorghum		-W-			------H-----						-----P-	
Beans	-P-										---P-	
Earth peas	-P-		---CL?--								---P-	
Ground-nut		-W-	--------H----								-P---	
Manioc				---H----			-HPC+P-			-H-	-P-	
Sweet potato				---CL--						-CL-		
New fields					Bush firing			Clearing &			Planting	
Fishing										----		
Mussels										----		
Tree fruits											--Cl---	
Beer	marula			sorghum		manioc			palm		Cashew-nut	

Keys: C= clearing; CL= collecting; H= harvest; HPC= harvest of previous crop; P= planting; W= weeding. Storage follows harvest and collecting for most of the preservable cultigens.

Grantz), followed by pumpkins (Momordica clematidea), beans (Vigna sp.) and sweet potatoes (Ipomaea batatas). Among the most important of a good number of utilized wild plants are Sclerocarya caffra used for beer, and Amaranthus paniculatus, a spinach-like weed common on fallow lands and gardens (Earthy 1933: 32). From the economic calendar derived from Earthy it is clear that most of the agriculture inputs pay off from January to August, the months of affluence being generally March - April. Towards the end of the year food becomes scarce, and gathering of wild fruits, tree fruits, as well as fishing and mussel collecting complements dietary needs. However, work should also proceed in the fields for the preparation of the next season, and both cultivation and gathering are proverbially complementary (Id.: 32).

Data regarding storage procedures are scant,as earlier Portuguese documentation ignores this question. Some general ethnographic information is provided by Junod (1962) and Earthy (1933). Among the Valenge, granaries are smaller huts located at the side of the compound near the bush. Temporarily,maize or ground-nut might also be stored inside the woman's hut on a kind of a secondary ceiling (Earthy 1933:24,26), the latter type also been observed by Sinclair (1985 b.:20) in the lower Sabi valley. Among the Ronga, a diversity of store houses seems to prevail: mealies are kept in little huts with reed walls and moveable roof, which have otherwise plastered walls when built to contain ground-nuts or sorghum. Additional ways of drying or storage of agricultural products is provided by palm-tree floors resting on short poles, or suspended to the branches of trees (Junod 1962, vol 1: 315). The best sorghum and maize grains are preserved in the end of each harvest to be later used as seed. The only estimates of conservation for cultigens are provided by Sinclair (1985 b.:20) for the Tswa of the lower Save River valley. In that region, sorghum can be kept for one year, beans and manioc for two, and the excess production of maize is usually sold. There is as yet no data available regarding post-harvest storage losses.

5.3.2. Agricultural potentials and site location.

The predominant soils of the sites belonging to the littoral environmental system are formed by Eutric Regosols (Re2, Figure 5.1), which are typical at the shifting dunes and juvenile soils formed from sands of aeolian origin, in areas with a mean annual precipitation of 800-1000 mm. These soils occur at Bazaruto, Chibuene, Bilene, Chongoene and Xai-Xai, and bear extremely limited agricultural potential (Table 5.6. and Figure 5.1). They are also similar in terms of vegetation (littoral thicket and forest of recent dunes, flora zambeziaca type 14b), present-day agricultural potential (small risk of drought and approximately five months of precipitation) and traditional agriculture patterns (overall predominance of cultivation of maize). The littoral and estuarine regions are bordered in the sublittoral zone by a woodland and savanna woodland type 34 (as in the case of University Campus), formations on alluvium type 54 (occurring in Chongoene, Xai-Xai, Matola and Tembe) or miombo woodland type 20 (as in the case of Chibuene), generally damaged by the occurrence of relatively intensive human settlements. Documented evidence for this phenomenon at an earlier date may be found at least in the case of the Maputo Bay about two hundred years ago, where already very little wood was to be seen (Theal 1964,vol.2: 479).

The only exception to the general littoral soil pattern occurs at the University Campus site where Cambic Arenosols (Qc7, Figure 5.1) predominate, which offer relatively higher agricultural potential. This factor, in addition to available data regarding present-day agricultural potentials (600-1000 mm precipitation during a period of four months of rainfall and subject to eventual periods of drought) and traditional agriculture (predominance of sorghum and millet cultivation) relates the University Campus site more closely to those belonging to the estuarine system (Matola and Tembe), than to its shoreline counterparts. This is further influenced by the fact that the Maputo bight interrupts the Mozambican plain at this point and receives a lower precipitation than the northern littoral pattern (Figure 1.4) (Tinley 1971: 135), which also affects soil patterns along the coast (Figure 5.1). Another important environmental feature associating sites of estuarine or littoral character is the proximity to formations of alluvium occurring in the major lower river basins. This factor brings together the sites of Chongoene and Xai-Xai, located near the Limpopo River mouth, and Matola and Tembe, at the estuaries of the rivers of the same name. Further south the dune cordon sites of Zitundo and Mamoli, like the littoral and estuarine sites, also associate littoral and sublittoral environmental formations (thus having in common the coastal dune forest). However, the dune cordon site locations differ by having towards the interior the marshland formations and predominant secondary grassland as a substitute for the formations on alluvium with a woodland/tree savanna component which occurs further north. Inland at the riverine sites, the situation is charaterized by an overall pattern of low or irregular precipitation and poor soil (see Figure 1.5 and Table 5.6). This is the case at Hola Hola, Massingir and Caimane, and strongly suggests that the proximity to river alluvia and regular water would have played a determinant role in the location of the sites.

On the basis of these observations it becomes possible to infer probable patterns of land-use in earlier times. Agriculture would have been primarily carried out in areas with overall higher rainfall patterns, such as the sublittoral zone, and secondarily in association with the alluvial and marshland soils occurring close to perennial rivers and pans. In the littoral zone the compacted red sands and the primary forest are the ones bearing the most preferred soils for cultivation. Shifting cultivation should be seen as a rational production and conservation practice, considering the fact that it constitutes the only method of obtaining high productivity from a leached soil. All this accounts for the reduction of the areas of forest, replacing it with open communities or with thicket, and ultimately to man-induced vegetation selection. It is interesting in this respect to observe that the sublittoral woodland and savanna woodland (type 34), typical at most of the mentioned sites, includes large areas in which only wild trees providing edible fruits or perennial shade are left from the original vegetation (Wild and Fernandes 1967: 33; Tinley 1977: 83; Junod 1962, vol.2: 15-6,21). However, the agricultural cycle might have been disrupted during particularly heavy droughts affecting the critical growth period of crops such as maize and sorghum, today predominant in the region under study, which is at high risk especially for the areas north of Lake St. Lucia (Hall 1981:39). According to estimates by Tinley (1971: 142), the coastal sand soils require a fallow of a minimum of 12 years, which means that a family unit of 5 people using 2 ha per 3 year period would require 24 ha for shifting cultivation before re-opening the first plot. The rotation of the crops may vary according to the humic soil content. In the riverine Gorongoza region in central Mozambique where one hectare is the general size cleared and planted per year by a family, sorghum and maize are planted in the first year, followed by sorghum and cassava in the second year, and only cassava in the third year when the soils are at their poorest (Tinley 1977: 81). However, this case should be used only as a particular illustration of two land management schemes, as there are as yet no agricultural carrying capacity assessments available for southern Mozambique. It should also be productivity for agriculture (see Figure 1.5) (FAO/INIA 1980 a.: report 1, p.2, and figs.7 and 9). It is also very interesting to notice, in comparing the agro-climatic suitability of pearl millet in southern Mozambique, that all the sites included in this thesis, with the exception of the riverine Massingir, are within the regions of moderately suitable to suitable agricultural potentials (id: fig.9). Matola and University Campus are furthermore located in a region with the highest annual growing pattern (region 2.3.1., Figure 1.5). In contrast, according to the thermal zone location (Wm-Cm), the sites of Bilene, Chongoene and Xai-Xai are located in one of the limited regions in southern Mozambique where pearl millet is considered to be a sub-optimal crop with losses of approximately 25% (see Figure 1.5) (FAO/INIA 1980 a.: report 5, p.2).

5.3.3. Settlement patterns and economy.

The farming communities sites included in our survey present a range of economic practices. These include agriculture, metal work, animal husbandry, hunting, as well as gathering of shellfood and most probably wild plants. We consider that these should have generated a number of food production strategies which seem to be well established from the outset. This means that there is no evidence of a transitional economic pattern, and that the new forms of production were probably introduced from elsewhere in an already developed form. However, we discussed in earlier papers (Morais 1978: 3-5; Sinclair, Morais and Bingen 1979) evidence which suggests the coexistence of hunting and gathering communities with agriculturalists during the first millennium. No matter how logically acceptable these contacts are, in a general cultural and historical perspective, the indications are very scant and require further investigation. Only at Hola Hola (Sinclair 1985 b.: 16, and pers.comm.) is there positive association of lithic technology still being incorporated into the new form of production, a situation that also occurs in Natal (Maggs 1980 b.: 136), the Transvaal (Mason 1969),Zimbabwe (Walker 1983:88) and Zambia (Phillipson 1985:180). This set of relevant questions relating to transitional forms of production, are beyond the scope of our work. We should therefore concentrate our efforts in interpreting the data available from southern Mozambique, as we proceed with the analysis of the relationships between specific environmental zones and particular variations of settlement pattern and economy.

Based in the present-day agro-ecological data mentioned above, it is within the Matola sites that a wider range of unequal agricultural potentials are to be found. The sites are located either in the littoral, estuarine or dune cordon regions, and include a wide variety of agro-climatic variations, such as soil types and vegetation, thermal zones, length of growing period, and growing period pattern (see Figure 1.5 and Table 5.6) (FAO/INIA 1980 a.). All the Matola sites surveyed included among its finds pottery, shell and charcoal (the two latter only missing at Mamoli, but especially conspicuous in the overall majority of the littoral sites). Matola, University Campus and Zitundo additionally have slag, which is especially numerous at the latter site. In regards to the fauna, only wild animals are seen to occur, and the osteological finds are presently limited to Matola, Chongoene and Xai-Xai. The only plant remains recovered, but unidentified, come from Matola. We have presented some of the implications of this set of evidence in the section dealing with the discussion of Matola. These suggest, for the whole tradition, an overall low level of economical specialization probably mostly based in food collecting, apparent in the size and heterogeneity of settlement pattern, physical setting and the nature of the archaeological findings. Based on the archaeological evidence recovered so far, the Matola tradition seems to be the oldest and most widely spread of all the early farming communities which were present in southern Mozambique (see figure 4.1). As discussed above in the presentation of the archaeological data, the Matola early farming communities are represented in southern Mozambique from the 1st/3rd to the 5th/6th centuries, evolving gradually into new expressions of which Lydenburg is most probably one of them.

The sites identified with the earlier expression of the Lydenburg tradition in southern Mozambique, are possibly to be correlated with a period of gradual drifting of the early farming community settlements away from the littoral, which eventually played for this tradition a less significant role than that of the Matola period. As a matter of fact, there are for the time being no clear indications of pottery of the Lydenburg tradition in coastal middens, or in the regions north of the latitude of the Maputo Bay. The only exception to this limited geographical distribution of sites is a small surface pottery collection from a shell midden at Inhaca Island in Maputo Bay (Martinez 1976: 13), and the late Lydenburg expression as represented at Massingir. In regard to the littoral, it is however conceivable that the region was also marginally used as an alternative source of subsistence, which might have left little, and still undisclosed, archaeological traces. The interruption of the agricultural cycle, or failure in its productivity, might have determined the preference for exclusive or complementary exploitation of the coastal dunes for purposes of shellfish collecting and wild plant gathering. This is however a statement that could also be generalized to all of the early farming communities period, and for that matter even until some of the present-day subsistence economies. Most significant is that the overall settlement pattern seems to indicate that the early farming communities of the Lydenburg tradition would have achieved a higher degree of selectivity of areas of farming potential, which additionally would also allow animal husbandry. In this respect it is interesting to notice that all the early farming community Lyndenburg sites occur in patches of the most suitable pearl millet production areas in southern Mozambique (FAO/INIA 1980 a.: fig.9), and in association with two of the most predominant soils (Chromic luvisols and Cambic Arenosols) which also bear, well, suitable grazing potentials (see Figure 5.1). Together with pottery, metallurgy is especially one development that might prove to be among the earliest forms of specialized production of the Lydenburg early farming communities, an important production sector which is suggested by extensive evidence from Zitundo. This seems however to grow from the early Matola tradition period. The 7th century AD Lydenburg tradition site of Msuluzi Confluence in Natal displays similar evidence, which is postulated by Maggs (1980 b.: 138) to indicate overproduction for purposes of exchange. Unfortunately not much can be said at this stage in terms of settlement size, which judging from the case of Zitundo, becomes larger and displays evidence of prolonged occupation. This factor, plus a more significant output of potential trade items such as iron, suggests a growing pattern of regional contacts that are already display at a later period in Massingir, where copper beads and shell are present. Chronologically the tradition is seen to span from the 4th/5th centuries at Zitundo to later in the first millennium, the upper limit being still unclear due to the deceptive dates at Caimane and Massingir.

The third of the early farming communities traditions represented in southern Mozambique is related to Gokomere/Ziwa. The sites related to this tradition are confined to north of Vilanculos Bay, towards the Save River and further into the eastern Zimbabwe escarpment, at the sites of Bazaruto, Chibuene, Hola Hola and Mavita. The chronological expression of this tradition ranges from the 6th century at Chibuene to the 9th century at Hola Hola.

As we mentioned above (see p.86-7 and 141-2), the picture for the whole of the area is nevertheless yet unclear, as there is for the time being one pottery assemblage unclassified (P.Sinclair, pers.comm), present at least in the 6th/8th centuries at sites like Nachengwe and basal Chibuene. Minor coastal pottery occurrences showing some affinities with the Matola or Lydenburg traditions, which would on chronological grounds precede the local Gokomere/Ziwa facies, are matters to be further evaluated with additional fieldwork (see p.82 and 86). From what is known, the inception of the early farming communities north of the Limpopo River seem to be comparatively later than the ones occurring to south, and displaying a higher level of regional differentiation as discussed above (see p.86). It is however interesting to notice that, as discussed for Hola Hola the pottery assemblage seems to be closer to phase 1 than to the roughly contemporary phase 2 of the Gokomere/Ziwa tradition, which might indicate a slower pace of change of aspects of the tradition towards the Mozambican coastal plain, a situation that requires further investigation. Aspects of a farming economy are provided by the occurrence of iron smelting at Mavita and Hola Hola, sheep and cattle at Chibuene, and suitable agro-ecological location of the sites of this tradition for agriculture, all especially confined to the regions of adequate production of pearl millet and sorghum (FAO/INIA 1980 a.: figures 7 and 9). A most distinct feature is that long-distance trade seems to start to play a relevant part in the economy of the societies of the period, especially among the ones settled near to the coast. At Bazaruto and Chibuene glazed ware occurred indicating contacts with Kilwa, Manda, and Persia, and at Chibuene glass fragments and glass beads are also present. The latter were also recovered from Hola Hola, but being surface finds they should only be considered as preliminary indications. We discussed elsewhere some of the growing indications of an Indian Ocean trade network which most certainly included the Mozambican coast from late in the first millennium (Morais 1978:7-9). Settlement size varies from large (as in Mavita and Hola Hola) to small occupation (Ponta Dundo 1 and 2 at Bazaruto island, and Chibuene), and on preliminary indications the occupation of the sites on the coast seem to last for longer.

The overall interpretation of the archaeological data calls for the concept of a social group using a selection of branches of production of which agriculture would have been predominant; therefore our preference for a terminology expressing this factor such as "farming communities". Additionally the evidence provided by the extensive occurrence of pottery, and on a more limited level by pole and daga houses, testifies a growing pattern of living settlements of at least of a semi-permanent nature, in villages rather than in camp-sites. The limited evidence for cultivation is a consequence of the lack of application of flotation techniques as the most efficient way to retrieve plant remains from archaeological sites, which has not regularly been implemented in Mozambique. Nevertheless the invariable location of the sites with regard to available agricultural potential seems significant. Details in regard to techniques of cultivation and organizational aspects of the production, such as the implications of the social division of labour for this particularly important economic sector, are unfortunatly not available. During the 16th century in central Mozambique and the Zambezi the agricultural work was carried out by women (Theal 1964, vol.2: 75; vol.7: 306), a situation that also occurs in Maputo Bay in the early 19th century (Id.,vol.2: 471,481), and further south in the Natal coast early in the 17th century (Ibid., vol.8: 205). These are merely indications based on recent evidence and might be very different from those applying during the early farming community period.

Animal husbandry should have closely followed the importance of agriculture at least from the Lydenburg tradition period onwards. But again, archaeological evidences for herding of cattle and ovicaprines are rather limited owing to the bad state of preservation of bones, a situation that also affects the interpretation of the ratio ovicaprines/ cattle and animal husbandry/ hunting.

Metal production is another important aspect of the farming economy, as a means to provide the necessary technological support to achieve higher outputs. Unfortunately not much detail of the craft is yet known, as the first furnaces constructed might have been dismantled after each firing (Maggs 1984: 341) or of a rudimentary nature such as in the form of pits. Iron artefacts are also suprisingly absent possibly owing to poor preservation. It is however clear from sites like Zitundo that the outputs were considerable, and surplus production for exchange purposes should not be ruled out, especially from the beginning of the Lydenburg period.

The food collecting branch of production is the best evidence for complementary forms of the early farming economy, which are to be related with predominant activities of the pre-agricultural stage. The most representative archaeological expression of it is found in the numerous shell middens occurring along the southern Mozambique coast. From the nature of the scatters we postulate that they are the product of short term occupation. Wild flora should have also been an important dietary and medicinal source. The best evidence for its systematic utilization is the historical and contemporary record for the selection of the vegetation, a factor that is still visible in modern settlements as well as in the cultural modification of the present-day landscape.

With the paucity of osteological finds and analysis it is difficult at this stage to assess the significance of hunting for the early farming communities economy. Roughly half of the sites surveyed displayed osteological evidence of the presence of wild animals. Given that the occurrence of domesticated animals is much more limited both in the number of sites and in preliminary species counts, we would suppose wild fauna to have formed the most important source of meat.

No matter what we infer from our sources, there is as yet no sound theory to explain the actual processes of social formation of farming communities in southern Mozambique. It is a fact that the nature of the archaeological evidence allows more detailed insight into the technical and material aspects of the production process than into other more interpretative historical categories such as the social relations of production. As we have postulated elsewhere (Morais 1984:125),this factor determined the preference given to a more heterogenous concept like social formation, using it as a theoretical object of archaeological study, within particular limitations that we are aware (id.; Morais 1978: 10; Sinclair, Morais and Bingen, 1979: 13).

The practice of agriculture entails a more complex organization than in a hunting and gathering society. Forms of cooperation are based on a series of cycles of reproduction of the energy and resources invested in agriculture as the predominant means of production. Also somehow determined by that factor are the social relations and the organization of the labour force essential in the case of African cultivation. In contrast with a hunter-gatherer economy, the longer duration of the agricultural cycle and the need to rely on previous production until maturation of the new crop necessitates more lasting forms of cooperation between producers and a centralized administration of the territory (Meillassoux 1977: 21; Pouillon 1978: 120).

In the early farming communities period with their relatively low development of productive forces, the agricultural outputs appear to have been small scale, oriented toward subsistence and use values,and carried out on the basis of relatively self sufficient units by a limited number of producers. This suggests that, in the earlier stage of the farming economy that we are considering, those involved in craft specialization of iron smelting and handicrafts were probably integrally involved in the agricultural cycle. Accepting this general model and considering a range of ethnographic parallels, it is not unreasonable to postulate that social relations of production were expressed in kinship terms and probably based in communal ownership of land. Meillassoux has suggested that the organization and management of the agricultural cycle in the domestic community entails social relations of production which are based on a hierarchical structure of control, resting on age differentiation (In Pouillon 1978: 121). It remains to be seen to what extent archaeological evidence can contribute towards the testing of such an assertion. In general, appropriation of the product of the labour processes in the early farming communities period was likely to have been on a communal basis. Each community appears to have been relatively self sufficient and able to reproduce its means of subsistence. Circulation of goods was probably primarily within the community, but intercommunity exchange should have also taken place judging from the known uneven distribution of necessary resources such as iron and salt, and the remarkable similarity of ceramics over larger areas during particular periods. Decentralized control of production processes seems to be a notable feature of the early farming communities and should have been accompanied by a tendency towards fragmentation and the relieving of the internal contradictions through the setting up of new communities. The regional social and economic patterns do not appear to have reached a critical level until internal potential means of some form of accumulation of wealth (cattle? iron?) was more strongly developed, and the penetration of commodities with their virtual capacity to stimulate production of exchange values became more widespread. As a matter of fact there is no evidence for social differentiation in the architectural remains for the sites we have surveyed, in contrast to what is clearly noticeable later during the second millennium (Morais and Sinclair 1980: 351). There are however indications from later in the early farming community period from Vilanculos Bay of an increasing presence of exotic trade goods typical of the earliest phase of the East African Islamic trade network. It would therefore appear necessary to envisage, at least from the 8th/9th centuries onwards,a considerable growth of the production capacity of some early farming communities in southern Mozambique. The merchandise present on the coast should already be part of an exchange trade allowed by the production originated from the interior gradually becoming more able to satisfy both subsistence and surplus. This particular development of the farming communities in relation to wider patterns of merchantile trade will soon be presented in detail (Sinclair in prep.).

Theoretical aspects of the current work and proposals for further methodologies to be applied in the archaeological survey programme in Mozambique are discussed elsewhere (Morais 1984: 125-6; Sinclair forthcoming c.).

CHAPTER 6

A DISCUSSION OF THE NATURE OF RESEARCH AND EVIDENCE REGARDING THE ARCHAEOLOGY OF THE EARLY FARMING COMMUNITIES OF EASTERN AND SOUTHERN AFRICA.

6.1. Extant research, strengths and weaknesses.

For more than half a century now, the origin the Bantu speaking peoples has been the most polemic of the subjects in the study of the african past. The word had since the days of W.H.Bleek, who first coined it in 1862, the specific purpose to connotate the apparent relationship of the languages spoken in eastern,central and southern Africa. In the quest for its roots in time, Meinhof in 1889 established its affiliations with the Western Sudanic languages of West Africa (Posnansky 1981:537). Since the early days of the linguistic academic hegemony, a number of eclectic approaches have also been postulated, from the more naive concepts of invasion (Johnston 1913, Wrigley 1960), population explosion (Oliver 1966), to the more recent theories that we will be considering below.

It has been recently assumed that, in general, most of the sub-continent was occupied during the first millennium BC by hunter-gatherers with some dispersed pastoral neolithic groups in parts of East Africa, and several semi-settled communities in the Cape with pottery, sheep and microlithic tools, by,or soon after, the end of the millennium (Schweitzer 1974: 75, Inskeep 1976: 35, Robertshaw 1978: 122). This picture would have been considerably altered with what is interpreted as a sudden takeover by fully settled societies having agriculture, cattle and metallurgy as regular or potential part of their economy. The archaeological record of this transition is so poorly studied that it has been related to rapid migration, and consequently, attributed to the ancestors of the modern Bantu speaking peoples. Only recently has a more critical reassessment of the evidence been applied, and more demanding empirical and theoretical frames of reference for future research advocated (Inskeep 1976: 35-6, Gramly 1978: 112, Eggert 1981: 322-4; Maret 1984: 54-7).

6.1.1. The linguistic argument.

It was on linguistic grounds that the word Bantu first made its appearance. This explains in part the considerable ascendancy that the linguistic theories have had upon the subject, inducing most of the archaeological research to test its assumptions and be dependent on its guide-lines.
Greenberg published in 1955 a lexical comparison of 50 common Western Sudanic and Bantu words that he had undertaken, deriving the conclusion that the latter had relations with the Western Sudanic language group having its origin from near the Cameroon-Nigeria border, (Oliver 1966: 145). For this combination of languages (Western Sudanic and Bantu) he proposed the name Niger-Congo, a larger language-family which is now widely accepted. These events were later on to be timed by Ehret when suggesting that Central Sudanic speaking populations were migrating from a "pre-Bantu" center to parts of central Africa as early as, or before, the Bantu settlement of the region (Ehret 1974:1).A major contribution with wider geographical implications was made by Guthrie (1962), who aimed at defining the pattern of linguistic contacts from the study of sets of common word roots from a sample of approximately 200 Bantu languages. The analysis led him to postulate a cluster of general roots with an elongated elliptic shape from the mouth of the Congo to the Rovuma rivers, with its epicentre in an "nucleus" located in the Luba region of northern Katanga. Furthermore,Guthrie defends the incompatibility of his theory in regard to the origin of the Bantu with the

position defended by Johnston, to whom the ancestor language was to be found in the Lake Victoria region, and Greenberg's theory locating the cradle of the Bantu in the Camaroon-Nigeria border. However, Guthrie accepts that there was some "...amount of evidence from language features from West Africa that could suggest the source of the nuclear "proto-Bantu" South of the Equatorial Forest". The earlier center proposed by Greenberg is called "Pre-Bantu" by Guthrie, and located in the region of Lake Chad (1962: 281). Additionally the same author recognizes two language groups, one in the forest areas of Gabon, Congo and Zaire (the "forest Bantu"), and another further south (the "savanna or eastern Bantu").

Oliver (1966: 367) considers Greenberg's and Guthrie's conclusions not contradictory but complementary, being stage 1 and 2 of the same formative process. Further, according to Phillipson (1977:212) modern linguists would agree with the relevance of considering a primary dispersal centre from the Ubangi-Chari region in West Africa where, as he puts it "... there is found the greatest diversity among the modern Bantu languages (and) also a marked degree of similarity (...) between the Bantu languages and other non-Bantu tongues spoken in (that) area. (...) There is now a substantial consensus of agreement that any centre of dispersal in this region (Guthrie's nucleus south of the forest) must have belonged to a relatively late stage of Bantu language development, and have been responsible for the diaspora of only a restricted number of those languages, notably those spoken today over the eastern half of the Bantu area" (vide also Ehret 1982 a.: 58). It has been assumed that after the Ubangi-Chari north of the forest, secondary and tertiary dispersal centres of the Savanna Bantu were derived respectively in the western and eastern regions south of the Equatorial Forest, (Phillipson 1977: 213). Nevertheless, in regard to the supposition that early Bantu expansion went around the fringes of the forest (Phillipson 1977: 213, fig. 78), there is clear contradiction: Ehret strongly disagrees with it on linguistic (and related environmental) grounds which we will detail further below (Ehret 1982 a.: 59), in which he is seconded by David (1982: 95), whereas Heine (1984: 25) seems recently to maintain this point of view. Useful contributions for the topic in question may be made using general culture history reconstructions. It seems though that most of the end-product of linguistic studies is much more culturally than historically conclusive, even if linguists claim to have a "chronological foundation" for their research. This factor is partly shown by Ehret (1974). Probably taking this bias into consideration and the need for an overview accommodating wider historical implications, Ehret (1982 a.:58) enlarges the chronological frame of the Bantu expansion to eastern and southern Africa to the first millennium BC. This would have happened after a slow spread from their far northwest corner of modern distribution which should have already started at least 4,000 to 5,000 years ago. All the present linguistic evidence seems to support the idea of initial forest settlement along rivers, followed by slow penetration to the southern savannas. As Ehret put it (1982 a.: 61) "... Bantu expansion, apparently gradual in the forest, did not immediately take off upon encounter with a woodland savanna environment around the southern and eastern edges of the rain forest". Interesting information is provided by early Bantu subsistence vocabulary: its interpretation suggests a high-rainfall tropical environment for the proto-Bantu homeland, with the occurrence of some words for fishing and boating, the oil palm, African yams, cucurbits, and other plants that could be effectively grown there, in opposition to the cultivation of grains which is absent from their vocabulary. This seems therefore to point to a highly productive forest economy requiring different cultigens and techniques, compared to the ones practiced further north comprising cereal farming and cattle herding. The word for goat is present, but that for cattle seems to have been dropped by those who expanded into the equatorial rain forest. The later emergence of Bantu communities out of the southern and eastern fringes of the forest set off a new period of adaptation, reflected in gradual addition to the vocabulary of savanna crops (Ehret 1982 a.: 61-2). This would have happened during the 1st millennium BC, when the areas between the Lualaba River, Lake Victoria and Lake Tanganyika were occupied by Bantu speaking communities. The author states that (Id.: 64) "...it is somewhere in this region and period that the ancestral language of most of the modern languages of the eastern half of the Bantu area should best be located on linguistic grounds". Other relevant information is that the knowledge of iron working cannot be reconstructed for the proto-Bantu period, which therefore means that the earliest stages of Bantu expansion are to be associated with communities using stone tools (Ibid.: 62). In this respect the archaeological evidence supports the existence of a Ceramic Later Stone Age in western Cameroon, and most probably in Gabon, Kinshasa and Bas-Zaire (David 1982: 92-3). Iron would have only become available during the period of the ancestral Eastern Bantu communities, "on linguistic grounds most probably during the last millennium BC", on which Ehret does not elaborate (Ehret 1982: 62). This question is further discussed by David (1982: 93-5) who sees it being introduced to south and to East Africa through the Congo Basin, an alternative to the source area (stage 2a) in the northern fringes of the Equatorial Forest first proposed by Phillipson (1977: 227). We should nevertheless stress that a crucial lack of chronological substance seems to make difficult a fully influential role for the linguistic contributions regarding this topic. Another problem was also raised in a recently published paper (Heine 1984: 28-9). There the author points out the fact that a number or "borderline cases" make difficult the definition of the relationships between non-Bantu and Bantu languages, which furthermore have in common a lack of a reliable internal classification. The latter factor contradicts the optimism of archaeological and linguistic correlations when assuming that "ceramic and settlement evidence demonstrates a strong and positive correlation between the Early Iron Age and the Bantu language family" (Huffman 1982: 133-4). Considering the present state of different disciplinary developments within Bantu studies, I would advocate the need to proceed further in exploring particular methodologies, empirical data and source criticism, rather then aiming at cross-disciplinary comparisons based on unequal levels of empirical and theoretical evaluations. As was pointed out in section 3.3., the present state of linguistic studies in Mozambique does not permit a meaningful synthesis. Accordingly, it is premature to embark upon detailed correlations with the archaeo-linguistic models mentioned above and in the mean time, the need for the independant development of both linguistic studies and the archaeological framework is clear.

6.1.2. The archaeological interpretation.

As pointed out by Inskeep (1976: 35), archaeological research has been almost entirely based in the study of ceramic typology obtained from a very limited number of early sites dated to the crucial period 1500-2500 bp (500 BC to 500 AD). This tendency seems however slowly being corrected, as from 188 sites documented with radiocarbon dates, 103 have pre- 1500 bp dates (see Appendix 2, Table 1). But it is still a fact that, owing to the insufficient number of relevant sites, the misuse of radiocarbon dates, and different criteria of pottery analysis, there are considerable difficulties in achieving a clearer understanding of the problem.

In terms of the early farming community pottery three authors in particular have been aiming at ordering the chaos: Huffman (1970, 1979, 1982), Soper (1971, 1982) and Phillipson (1975, 1977,1985). Huffman (1970: 17-9), based on linguistic research conducted by Guthrie, suggested two branches of an "early iron age co-tradition". This would have taken the form of a migration of Bantu speakers radiating from a common centre "...like pellets bursting from a shotgun"(sic, ibid.: 17): the northern tradition (comprising several industries like the so-called Dimple-based ware, Kwale, Sandaweland), and the southern tradition (Kumadzulo, Gokomere-Ziwa, Happy Rest and Castle Peak), both traditions being the result of the Bantu dispersion from Guthrie's Eastern Bantu (proto-Bantu B), a later split than PB-A or Western Bantu, and both originally derived from Guthrie's nuclear area (PB-X) (Huffman 1970: 17-8; 1979: 235-6). This co-tradition source area was formulated to allow the accommodation of roughly contemporary "branches" over the entire area originating from one point. More recently (Huffman 1982: 134) reaffirms the principle of people spreading rather than ideas as forming the basis for his linguistic-archaeological correlations. But now he realizes that time and space distributions of sites within three major style divisions show that each was introduced separately into the region (Id.: 135). From the new developments of his work he seems to correlate the expansion of the previously characterized northern tradition with the coastal region of Phillipson's eastern stream, which would have first appeared at about AD 200 (Ibid.: 135). The eastern Bantu would have also been responsible for the spread of the knowledge of the iron to the south (Huffman 1979: 236). This stream would have been followed shortly after at about AD 250 by a movement of people which formed a central stream incorporating most of the sites previously classified by him as belonging to the southern tradition. This central region corresponds to the highland facies of Phillipson's eastern stream. Huffman seems not to have any objections to the assumption of both coastal and highland facies of the eastern stream having been originated from Urewe (Huffman 1982: 135). An innovation within his postulations is related to the extension of a third and slightly later movement through Zambia and the western parts of Zimbabwe to Transvaal, Natal and southern Mozambique which he calls the western stream (Ibid.:135-7). His proposition involves the reclassification of Kumadzulo and Gokomere as "mergers" of central and western stream, having their source in western Zambia and Bambata respectively (Ibid.: 135-6). He also proposes the reclassification of the "common expression" (Lydenburg tradition) sites of Natal as belonging to the western stream (Ibid.; Maggs 1980 b: 135). This view is clearly in opposition to the classification of a local evolution versus unidirectional diffusion, first discussed by Maggs for Natal (Maggs 1980 b: 139). Sites with similar evidence have more recently been firmly characterized as part of the Lydenburg tradition and related to the coastal eastern stream (Maggs 1984: 334) and ultimately with Matola (Id.: 338), a view with which the present writer concurs. Further proposals based on recent evidence suggesting a Matola-Lydenburg evolution in southern Mozambique were presented elsewhere (Morais 1984: 119), as well as discussed above by the present writer (see p.133-4).

Since the beginning of the discussions regarding the origin of the early farming communities of southern Africa, Soper (1971, 1982) takes more cautious points of view. Starting from a methodologically distinct pottery analysis, he comments on the lack of evidence to "prove the directions of spread of the Early Iron Age and the interelationships of the various geographical variants", therefore accepting Huffman's original co-tradition hypothesis "... as the most reasonable explanation of the overall similarities and local differences within the early iron age complex" (Soper 1971: 28-9). Rejecting an independent indigenous invention of iron metallurgy, Soper suggests alternatively a source from the Sudan belt North of the Equatorial Forest, or via the East African coast (Id.1971: 30-1). Pointing emphatically to relations in decorative techniques and motifs of the Southern Africa early iron age complex with the late Neolithic early iron age pottery styles of Southern Sahara and Sudan belt, the author suggests that "... the early iron age complex springs either directly from the early iron age of the Chad area, or from a related co-lateral source (Soper 1971: 32). In later publications (Id. 1982:228-30), Soper provisionally suggests Urewe and related Buhaya as the origin of the early iron age for the rest of East Africa, establishing as the most reliable chronological framework for its inception the 1st or 2nd century AD dates from Katuruka and Makongo (Ibid.: 225). In discussing the chronology he points out the celerity of the migration process based in the assumption that the early dates in the north do not seem to be significantly earlier than the ones from Kwale and further south to the Transvaal (Ibid.: 228). These movements, establishing an "eastern stream" of a wide amplitude, would have reached the limits of their primary expansion at least around 400 AD or earlier (Ibid.: 231). The author concludes by stating that his interpretation explicitly favors the migration of pottery styles rather than people, even if these are subsumed as the carriers (Soper 1982: 238).

Phillipson (1977:227-8) argues that between 100-200 BC proto-Bantu speakers went from the Cameroon area eastwards to the Great Lakes in East Africa (stage 2-a) while others went through the forest into northern Angola (stage 2-b), giving rise to a two-stream dispersal into southern Africa. The western stream was formed when Urewe populations converged with 2-b groups at circa 200 BC, and later (about 450 AD) into Shaba and western Zambia; the eastern stream moved south along the east coast into Mozambique around 150 AD, while slightly later between 300-400 AD other groups moved also south, but this time along the interior to the Transvaal. Sometime around 1000 AD groups from the western stream moved to east, central and southern Africa, replacing the eastern stream populations, (Phillipson 1977: 227-230). In a later publication which summarizes previous and more recent evidence (Id. 1985), the same author, replaces the early terminology of early iron age complex by Chifumbaze complex, associating it with the physical movement of substantial numbers of iron-using and food producing communities with origin in the area around Lake Victoria during the last few centuries BC (Ibid.: 171). In chronological grounds, an eastern facies is possibly derived directly from one of those communities -the Urewe group- whereas a western facies emerges from the ones only marginally connected to the Urewe source area (Ibid.: 173). A 2nd century AD coastal expression of the eastern facies is represented by the Kwale ware of south-eastern Kenya and adjacent north-eastern Tanzania. From here the facies follows a rapid 3rd and 4th centuries dispersal of farmers southwards through Mozambique, Malawi, eastern Zambia, Zimbabwe, Transvaal and Swaziland. According to Phillipson (Ibid.: 175) two distinct manifestations may be recognized in the eastern facies, a coastal variant derived from Kwale and extending to the regions of southern Mozambique and eastern Transvaal where Matola occurs, and another with a more general distribution inland including Nkope and Gokomere/Ziwa. A clear distinction between Phillipson's early and recent views is the reclassification of the post-Matola Transvaal and Natal sites (Lydenburg tradition) from eastern to Western facies (Phillipson 1977: 105; 1985: 174, 177). However, the author acknowledges the fact that the latter facies is far less known and where metallurgy is not demonstrable before the fifth century AD (Id.1985: 175). On linguistic grounds the boundary between the eastern and western archaeological facies of the Chifumbaze complex does not coincide with the modern Bantu language groups, but in overall terms Phillipson (Ibid.: 179) assumes the Eastern Highland Bantu group to have been of significantly later dispersal than the Western Highland group. A detailed description of this event summing up archaeological and linguistic evidence is first elaborated (Phillipson 1977: 220-225, and 227-30) and more recently abridged or questioned when separate disciplinary developments seem not to coincide (Id. 1985: 177-8), and pitfalls liable to be encountered through too direct archaeological-linguistics correlations (Id. 1981: 464). This applies in particular to the attribution of the Eastern Highland languages to a later population dispersal which cannot be stated before much more is known from the archaeology of the central and especially western areas, which are in obvious imbalance with the archaeology carried out further east (see appendix 2, Figure 1; Maret 1984: 41).

6.2. Source criticism: the little we know.

A provocative example of critical reassessement of the data regarding the question of the origin of the early farming communities in southern Africa is provided by Inskeep (1976, 1978 a.), who criticizes the use of inferential synonyms of "Bantu", "Iron Age" and "negroid physical type" which for a number of years were commonly assumed on a pure diffusionistic base. His plea is to examine other possibilities "away from the old hypothesis that has proved so unsatisfactory in so many ways" (Id.: 35). The language/culture/race association seems to be an objective result of at least two ways of reasoning: deduction of the past based in the observation of the material culture of the latest stages of the farming communities in sub-equatorial Africa, and the induction that owing to unknown wild ancestors of animal and plant domesticates, the later presence of those, co-existing with modern hunter-gatherers, would also imply the spread of other cultural traits such as pottery and metallurgy brought by racially distinct newcomers (Inskeep 1978 a.: 120). Concerning the question of assumed racial distinctions between Khoi, San and Negroes these are now disregarded as all of them are seen to belong to the same general African family, thus rendering obsolete the application of concepts expressed in terms of "Khoisan" or "Bantu" physical types. As the author put it, "the only basis for distinction (of the Bantu) from other African Negroes is culture, including language" (Id.: 121-2; Gramly 1978: 109).

Judging from the rather complex picture presented above in relation to the mainstream of archaeological reconstruction of the process behind the development of the early farming communities in south-eastern Africa, it seems most sensible to allow, for the time being, a number of alternative formation propositions. These are best expressed in a four-model variation suggested by Inskeep (1978 a.: 125-8). We will not present them here in detail, but will comment upon some of the contributions provided by its reasoning, complemented by a number of other references.

The linguistic evidence suggests a Benue-Congo proto-Bantu homeland dating to at least the 3rd millennium BC in Central Nigeria (Ehret 1982 a.:58,65). We will not advance comments in regard to this early formative stage, as archaeological data seems for the time being rather limited (David 1982: 91). The second and first millennium BC is an important point of departure for the regions of the rivers of the Congo Basin and south of the Equatorial Forest, where it is generally agreed the proto-Bantu speakers gradually become established during the period. In the course of time, patterns of economical transition of pre-existing proto-Bantu hunter-gatherers / immigrant proto-Bantu neolithic communities using the river systems of the Congo Basin seems to start to show in the archaeological record. Towards the end of the first millennium BC the predominant communities (and eventual dominant economy) are most probably already formed by agriculturalists, herders at least of sheep/goat (Ehret 1982 a.: 61; Maret 1982 a.: 64; Van Noten 1982 a: 65-7), makers of a stone industry which would include polished and ground-stone tools (Maret 1982 a.: 64; 1982 b.: 77) and pottery users at least from the 3rd century BC (Id.; Ehret 1982 a.:63; Inskeep 1978 a.: 125). Inskeep (1976:35) cites interesting palaeo-environmental evidence of transformation induced by agriculture from the Lake Victoria region about 3,000 years ago. Combined elements of iron metallurgy are only later gradually being introduced by newly arrived Bantu speakers (Van Noten 1982 a.: 66; David 1982: 93-4; Ehret 1982 a.: 62), details being however controversial at this point in time. On the basis of recent radiochronology (Maret 1985:135,143) the Yaounde region of Cameroon provided 4th century BC dates which are in line with the beginning of ironwork further into West Africa, but processes of transmission of the new technology to south of the forest are not yet known. In Congo the earliest date for iron is firmly established in the fifth century AD (Id.:136) and in the Shaba region of Zaire in the fourth century AD (Ibid.: 138). Further east into Central Africa, in the Rwanda and Burundi region, the iron metallurgy seems to be dated at least from the late first millennium BC (Ibid.: 139), of roughly equivalent antiquity to the beginning of metal work in the Bantu source area north of the Equatorial Forest. As the Interlacustrine area of East Africa is much more central to the later developments of the farming communities in south-eastern Africa, and relatively better known than the south-western region, we will concentrate our attention in the former region.

During the last millennium BC, the neolithic food producing Savanna-Bantu groups moving eastwards towards Lakes Tanganyika and Victoria, as well as Central Sudanic farmers spreading southwards, should have encountered a diversity of settlements, languages and cultural traits to be related with previous historical processes. The most archaic of them were represented by earlier groups of hunter-gatherers, possibly Khoisan speakers (Ambrose 1982: 111,139). But these communities could as well have been formed by early established groups of Central Sudanic hunter-gatherers (Inskeep 1976: 35; 1978: 127; Gramly 1978: 110). However relevant to the issue these questions are, there is as yet no solid archaeological ground to demonstrate positive responses. This is due to the fact that not much is known in regard to pre-Iron Age food producing groups established in the Lake Victoria Basin. Some indications exist that the newly arrived farming communities would have encountered in the southern and eastern sides of Lake Victoria the makers of the Kansyore ware, which are seen as groups of hunter-gatherers and perhaps fishers related to a wider geographical distribution from further east and north to the Lake Rudolf Basin and the Nile Valley (Phillipson 1977:81; 1985:145; Ambrose 1982:134), based on a late stone age technology and pottery manufacture (Robertshaw and Collett 1983: 299). There are however preliminary indications that domestic cattle could have been used in one of the sites (Id.: 1983: 300). It is therefore unclear whether this evidence will suggest further interpretative reassessments, considering earlier views on the subject which pointed out that "...pastoralism in pre-Iron Age times is not yet attested in the Lake Victoria basin where the archaeological associations of Kansyore ware remain imperfectly known, although stone bowls are markedly absent" (Phillipson 1977: 82) . This makes even more arguable that Kansyore could represent the arrival of Central Sudanic speakers in that area (David 1982: 82), a question strongly suggesting further work (Phillipson 1985:146). A similar situation occurs further south in Southern Africa. In linguistic terms Ehret (1982 b.: 171) suggests the possibility, archaeologically unconfirmed, of the influence of Central Sudanic for the pre-Bantu transmission of livestock, at least of sheep, to the proto-Khoikhoi. Therefore, no matter how tempting it is to suggest that the Central Sudanic speakers were involved in the diffusion of animal domesticates, details regarding the adoption of cattle in the ancestral area of the Eastern Bantu are still to be substantiated. Another set of evidence of more advanced economical patterns of food production in East Africa near to the region where the late first millennium BC Bantu were to settle, are provided by findings near to Lake Turkana, which provide the earliest securely dated evidence for domestic animals present in the region from about 4,000 BP (Robertshaw and Collett 1983: 295). The tradition for stock- keeping of cattle, sheep and goat, lithic industries and pottery prevail during all the first millennium BC in the central Rift Valley (Mgomezulu 1981: 443), but remains of agricultural activities subsumed in indirect evidence of cultivation provided by querns and pottery remain rare (Robertshaw and Collett 1983: 296). The relationship of these "early pastoral communities" (Id.; Phillipson 1985: 144) with the Urewe early farming communities in the Lake Victoria region are still being questioned, and should probably for the time being be best seen as independent processes. On linguistic grounds Phillipson (1985: 146) suggests as a possibility the origin for the early East African pastoral communities being related to the Nilo-Saharans (Central and Eastern Sudanic subfamilies) (Phillipson 1985: 146; David 1982: 81; Ehret 1982 a.: 65).

Especially relevant to the archaeology of the early farming communities in Eastern Africa is that no firm indications exist of agriculture and herding being practiced in the first millennium BC in the regions south of the Serengeti Plains in northern Tanzania (Phillipson 1985: 147). However, this concept might be reassessed considering the pre-farming community dates of pottery and sheep in the Cape and Namibia at around 2,000

years ago (Inskeep 1976: 36; Robertshaw 1978: 117), and in the Kalahari (Denbow 1986:3), which are seen to have been introduced by pre-Bantu hunter-gatherers. The above mentioned economic indicators could have been indirectly influenced by either the early pastoral communities of East African, or eventually the "western facies" Early Iron Age Bantu peoples of Angola (Robertshaw 1978: 124; Phillipson 1985: 186). The historical process is interpreted, in linguistic terms, as requiring a population movement sometime after 500 BC for the first spread of sheep, and only later diffusion of cattle from people to people. The interpretation of the mechanism of both cultural transfers, one by migration and the other by diffusion, is based on Central Sudanic loanwords which also show the simultaneous adoption of pottery-making by the Proto-Khoikhoi societies (Ehret 1982 b.: 167-8,170). Another hypothesis, equally not yet tested by the archaeologist, is that the sheep might have been introduced by way of south-east-coast trading contacts (Inskeep 1976: 36). The pottery could also either follow the pattern suggested above, or alternatively being a product of local invention (Id.; Phillipson 1985: 186); or even influenced by an external "prototype" (Robertshaw 1978: 125). It is also arguable that a number of agricultural food-productions should have been already practiced, a question that requires particular investigation, since "...it is clear from ethnographic accounts that no pastoral society could survive indefinitely without acess to agricultural produce" (Robertshaw and Collett 1983: 296). Again, linguistic interpretation points to the existence of borrowed terms for cultivated food, and probably for "pot" (Ehret 1982 b.: 170).
This issue therefore suggests the evaluation of earlier patterns of economy and settlement in Eastern and Southern Africa, having in mind the need to explain historical processes of hunting-gathering to food-production transitions of communities which coexisted in time. Inskeep (1978 a.: 126-8) proposes in one

of his alternative models the existence of two major social formations in the areas south of the Equatorial Forest, presumably late in the 1st millennium BC: one being formed by proto-Bantu (or Central Sudanic)hunter-gatherers widely dispersed across most of the central savanna and related vegetation, and the other constituted by similar groups of Khoisan speakers further south in the areas that we mentioned above. Sometime around the beginning of the Christian era Central Sudanic-speaking groups, possibly related with Phillipson's "eastern stream", introduce through the eastern Africa region new branches of production represented by agriculture, livestock and metallurgy. The timing and sequence of the transmission of these new traits might have varied, as well as the subsumed routes and cultural mechanisms. They should have comprised either diffusion of ideas or migration of communities -by land, river and by boats along the coast- depending on environmental constraints or particular subsistence strategies. This might, for instance, have accounted for the earlier presence of sheep in Botswana and the Cape, as well as for the particular selection and adoption of some economical practices and not others. The complex set of criteria determined by the specific level of technological development of the communities involved in the process could for instance account for the manifestation in the Matola tradition of agriculture and metallurgy, but not of cattle. It is interesting to notice that Ehret (1982 b.: 163,167) strongly suggests the early farming Matola communities as part of a proto-Southeast Bantu centered in Eastern Transvaal and southern Mozambique, who would have adopted cattle from the Limpopo Khoikhoi at an early date. However, the Matola tradition has not held as yet any evidence for animal domesticates, which might indicate that the cultural borrowing only takes effect in the region from the Lydenburg period onwards. The processes of eventual cultural interfaces in relation to particular language groups are obviously not possible to discuss at this point in time, but strongly suggests further research topics for archaeologists. From what has been said above, it seems clear that the possible interpretations still hang on chronology and well articulated historical interpretation.

Especially relevant in Inskeep's models (1978 a: 125-8) are a number of alternatives which allow the illustration of formative processes for the early farming communities in southern Africa, which do not exclude the contribution to it of previous social formations in the region. In this sense, the possibility of a local development of language traits and economical patterns among the proto-Southeast Bantu is an interesting point, a model which had already been proposed by Gramly (1978: 112). The cutting point of this first millennium AD period of cultural adjustments involving different patterns of economies and societies in transition seems to be represented by the rapid spread of dialects and social homogeneities represented from the inception of the later farming communities period at the turn of the present millennium.

It is premature to summarize the contributions derived from the present state of knowledge of the archeology of southern Mozambique. We should however comment on some of the questions that it suggests. One of the interesting achievements is that it indicates that the inception of food-producing, iron-using communities are proving to be an early event in the region. We do not want to make much from the present chronology on a wide comparative basis, as examined by Collett (1982: 191-5). We cannot fail to realize the fragility of models aiming at describing the "spread" of a particular mode of production which, historical as it is, cannot be represented as a single uniform process, or as a sum of minor ones. The apparent bias seems to be expressed not only in the generation of particular nomenclature and concepts of order and time/space (e.g. spread,"early iron age complex") but generally built from a limited empirical and theoretical data-base. In view of the very early dates now available for the Matola Tradition in southern Mozambique, and processes of local cultural development as represented in the Matola-Lydenburg continuum, it seems to us obvious that there is a need to cautiously to reassess the question of their origins within the theoretical frame discussed above. From available sources we have prepared a comparative table and distribution of radiocarbon dates related to the occurrence of the early farming communities in eastern and southern Africa (appendix 2, Figure 1 and Table 1).

APPENDIX 1

ANALYSIS OF IRON REDUCTION SLAG FROM ZITUNDO (2632-Db-09), IN SOUTHERN MOZAMBIQUE.

by Mille Törnblom, Technical department of the Central Board of National Antiquities, Stockholm.

Morton and Wingrove (1969) have drawn up a method to determine the compositions and the fusion temperatures of slags formed in primitive reduction furnaces. According to this method, the slags are chemically analysed and from the results the original compositions are calculated, and the corresponding fusion temperatures are determined. Accordingly, it is possible to get some information about the process of reduction in the furnace.
From the site of Zitundo, where a joint team of Eduardo Mondlane Univerisity and R.A.Ä. have been conducting a programme of excavations, eight samples of slag have been examined at the request of J.M.Morais.

Sample 1: is a dark grey, rounded to rather flat piece of slag. The top face shows a solidified sticky slag, blue-grey and metal lustrous in colour. The size is 10.0 x 7.5 cm, 1.0 cm in thickness. The weight is 274.4 g.

Sample 2: consists of 17 fragments of different sizes, two of which are relatively large. One is 4.0 x 3.5 x 2.0 cm, with an even thikness, and is porous and grey-brown in colour. The other is 4.0 x 3.0 x 1.5 cm, also with an even thickness. The top face has a sticky and metallic appearence. The other fragments are rather small, porous and grey-brown in colour. The total weight is 180.2 g.

Sample 3: consists of 11 fragments of different thickness. Most of them are porous and grey-brown in colour. Three small pieces have a blue-gray surface with metallic lustre. Total weight is 16.0 g.

Sample 4: consists of 51 small fragments of varying thickness. The majority are grey-brown in colour and porous. Three of them, however, show a sticky top face and are blue-grey in colour. Total weight is 29.2 g.

Sample 5: consists of 42 slag fragments of varying thickness, grey-brown in colour and porous. Total weight is 33.8 g.

Sample 6: consists of 6 fragments of different size and thickness. Some of the smallest pieces are blue-grey in colour with a sticky lustruous metallic surface. Remaining fragments are grey-brown in colour and with a porous structure. Total weight is 28.1 g.

Sample 7: consists of 35 small fragments most of wich are grey-brown in colour and porous. Two of them have a lustrous metallic surface and are blue in colour. The upper surface shows a sticky slag. Total weight is 24.8 g.

Sample 8: consists of 32 small fragments, rather even in size, 0.5 X 1.0 x 0.5 cm. Total weight is 21.9 g.

Method of analysis.

In order to calculate the composition of the slag when it was formed in the furnace, the following compounds must be determined: Fe tot, Fe met, FeO, Fe_2O_3, SiO_2, Al_2O_3, CaO, MnO,

MgO, P2 O5, as well as the loss on ignition.
Fe tot, Fe met and Fe2+ are determined by titrimetric analysis. FeO and Fe2 O3 are calculated from the above mentioned Fe-analysis.
SiO2, CaO, MgO, Al2 O3, and NiO are determined by atomic absorption spectrometry using a Perkin-Elmer model 460 instrument. P2 O5 has been determined by spectrophotometry.

Results.

The results from the eight analysed samples are presented in table I. In table II are listed the three phases that are necessary to know before determining the temperature in the furnace during the process. Anortite is a phase with the composition CaO x 2Al2 O3 x 2SiO2 and can be calculated from the results in table I.

sample	1	2	3	4	5	6	7	8
Fe tot	40.19	38.33	39.96	40.42	40.31	42.51	40.19	45.07
Fe 2+	18.20	19.49	29.94	26.18	24.97	26.10	25.02	28.67
Fe met	0.60	0.60	0.53	0.45	0.60	0.53	0.45	0.45
Fe2 O3	31.41	26.91	14.31	20.34	21.91	23.44	21.67	23.43
FeO	22.63	24.29	37.81	33.08	31.33	32.88	31.63	36.28
SiO2	42.86	41.94	42.92	36.67	40.65	38.72	40.49	38.36
CaO	2.09	2.63	1.92	2.28	1.97	2.30	2.28	2.31
MgO	0.08	0.35	0.08	0.43	0.36	0.23	0.29	0.33
MnO	0.03	0.04	0.03	0.03	0.09	0.04	0.09	0.05
Al2 O3	4.10	6.54	5.99	4.33	4.88	6.65	6.75	5.14
NiO	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
P2O5	0.08	0.09	0.08	0.10	0.10	0.10	0.10	0.08
Loss on ignition	2.05	1.49	1.25	1.73	1.96	1.48	1.63	1.09

Table I: results of analysis

sample	% FeO	% SiO2	% Anortite	total	fusion temp.C
1	51.24	33.88	9.88	100.00	1070-1100
2	50.91	36.10	12.99	100.00	1100-1150
3	52.72	38.58	9.71	100.01	1250-1300
4	54.95	33.99	12.06	100.00	1100-1150
5	52.49	37.48	10.03	100.00	1200-1250
6	54.41	34.07	11.53	100.00	1100-1170
7	52.14	36.31	11.55	100.00	1100-1170
8	56.10	32.67	11.23	100.00	1100-1170

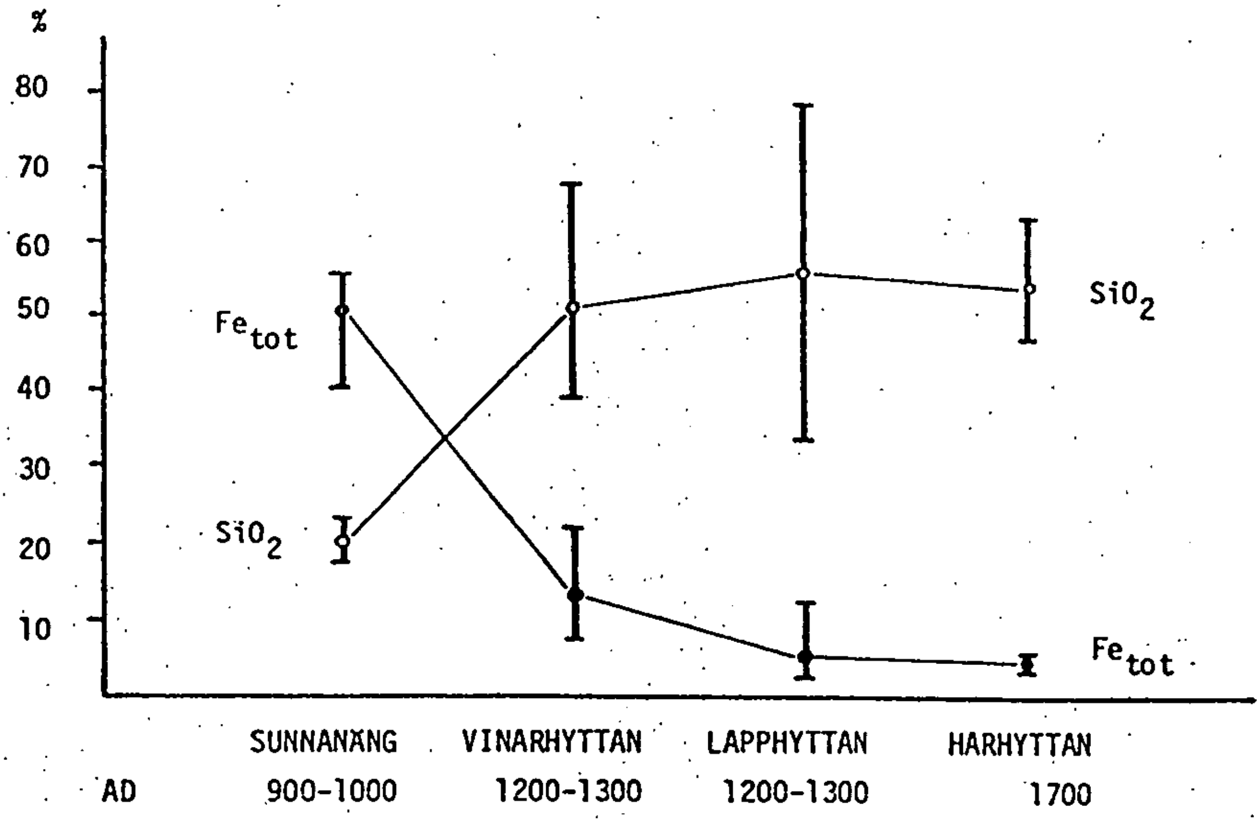
Table II: calculated slag composition and fusion temperatures.

In calculating the FeO content in the slag, it has been assumed that all the Fe2 O3 content has been formed by oxidation of the FeO from the reduction process, as Morton and Wingrove presume (1969). Other possible explanations to the Fe2 O3 content are that it either was formed in the furnace, or that it was added as a fluxing agent. All of these possibilities have been discussed by Morton and Wingrove (1969).

Serning et al. (1982) have another explanation. In the slag from Vinarhyttan they have found that the Fe2 O3 was formed by oxidation of the metallic iron inclusions, and thus do not belong to the slag at all.

In the present investigation, however, it has been assumed, as mentioned above, that all Fe2 O3 has been formed from FeO after tapping of the slag.

Serning et al. (1982) have compared some investigated furnaces from iron production sites. One of them, Sunnanäng, was in use circa 900-1000 AD, and of a direct reduction type. the other three were early blast furnaces: Vinahyttan 1200-1300, Lapphyttan 1200-1300, and Harhyttan 1700.



The diagram shows the connection between the total iron content and the SiO2 content. From the diagram it is obvious that the relation between these two slag components is of great importance, and related to the furnace type. However, the figures for the Mozambique slags do not fit into this diagram. the mean value for the Fe tot content is 40.33%. The two values are almost the same. From the type and the fusion temperatures of the slag,it is however obvious that it must be the result of a primitive, direct reduction furnace, probably with rather good efficiency as indicated by the rather low content of iron in the slag.

References.

Morton,G.R. and Wingrove,J. 1969. Constitution of bloomery slags: Part I- Roman, J.Iron and Steel Inst., 207.

Serning,I ; Hagfeldt,H.; Kresten,P. 1982. A Late Medieval iron production site at Lake Haggen, Norrbärke, Dalarna, Sweden. Jernkontorets forskning, serie H:21.

Svärdh, A. 1984. Analys av slagger från Mozambique, Riksantikvarieämbetet, ATA, Rapport RAÄ- T 24/84.

APPENDIX 2

DISTRIBUTION MAP AND RADIOCARBON LIST OF EARLY IRON AGE AND RELATED SITES IN EASTERN AND SOUTHERN AFRICA.

The computer-aided distribution map shown in Figure 1 was obtained by digitizing location data from the sites listed in Table 1. The method used is described above in page 57.

Figure 1. Distribution map of Early Iron Age and related sites in Eastern and Southern Africa.

Table 1. Radiocarbon list of Early Iron Age and related sites in Eastern and Southern Africa.

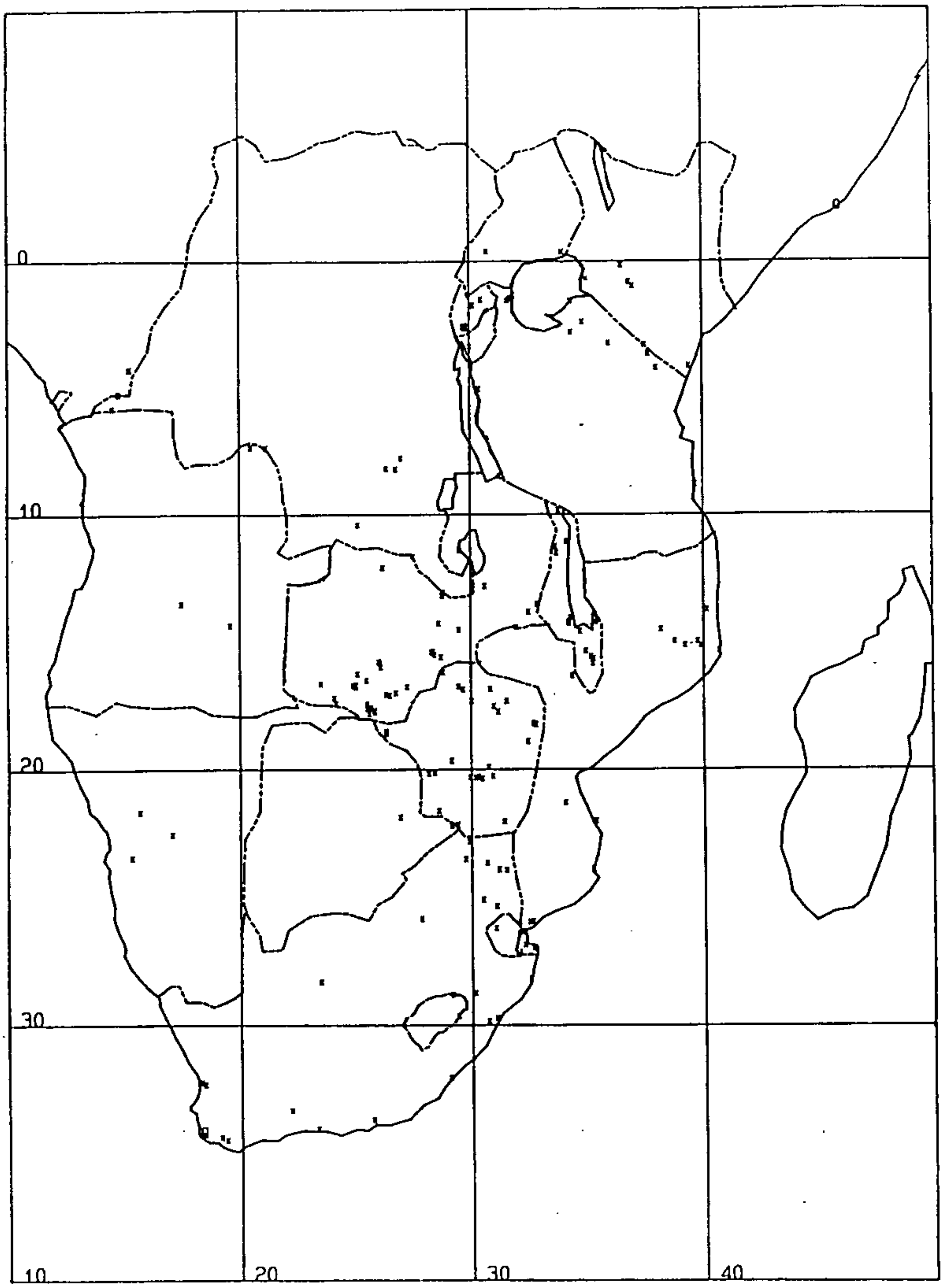


Figure 1. Distribution map of dated Early Iron Age and related sites in Eastern and Southern Africa (data drawn from Appendix 2, Table 1).

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Angola	Benfica	9	30	13	15		140	+-50	Pta-212		Jones 1983
Angola	Benfica	9	30	13	15		180	+-55	?		Jones 1983
Angola	Dundo	7	22	20	30	Ricoco?	760	+-80	UCLA-716		Jones 1983
Angola	Feti la Choya	13	30	17	30	Mbundu Kingdom?	710	+-100	Y-587	till 1250+-65 (Y-588)	Jones 1983
Angola	Furi	7	23	21	10		70	+-80	UCLA-170		Jones 1983
Botswana	Tankome	21	53	26	56		685	+-80	I.11407		Jones 1983
Botswana	Tankome	21	53	26	56		995	+-75	I-11409		Jones 1983
Burundi	Mirama I	0	0	0	0	Urewe	160	+-120	Hv-10874	pottery site	Grunderbeek et al 1982
Burundi	Mirama III	0	0	0	0		-530	?	Hv-11142	iron furnace	Grunderbeek et al 1982
Burundi	Mubuga	3	24	30	1	Rwanda sites (sic)	405	+-50	GrN-9687		Jones 1983
Burundi	Mubuga IX	0	0	0	0	Urewe	240	+-55	Hv-11140	pottery site	Grunderbeek et al 1982
Kenya	Deloraine	0	10	36	30	Iron Age "UP"	-40	+-80	N-2313	unnamed pottery tradition	Jones 1983,Ambrose 1982
Kenya	Deloraine	0	10	36	30	Iron Age "UP"	650	+-40	GX-5543	" " "	Jones 1983
Kenya	Deloraine	0	10	36	30	Iron Age "UP"	880	+-110	N-652	" " "	Jones 1983,Ambrose 1982
Kenya	Genga,GJja 17	0	0	34	0	Urewe	190	+-160	Gx-8748		Robertshaw 1984
Kenya	Gatare	0	50	36	50	Kwale	650	+-130	N-650		Jones 1983
Kenya	Kisii	0	40	34	40	IA "Kaw"	-140	+-170	N-1234	Iron Age "Kaw"	Jones 1983,Ambrose 1982
Kenya	Kisii	0	40	34	40	IA "Kaw"	760	+-75	N-1235	Iron Age "Kaw"	Jones 1983, " "
Kenya	Kwale	4	11	39	25	Kwale	260	+-115	N-292	Kwale	Jones 1983
Kenya	Kwale	4	11	39	25	Kwale	270	+-115	N-291	Kwale	Jones 1983
Kenya	Kwale Ditch site	4	11	39	25	Kwale	160	+-115	N-484		Phillipson 1970
Kenya	Kwale forest site	4	11	39	25	Kwale	120	+-115	N-483		Phillipson 1970
Kenya	Urewe,Ulore II	2	50	34	20	Urewe	270	+-110	N-435	Urewe	Jones 1983,Ambrose 1982
Kenya	Urewe,Ulore II	2	50	34	20	Urewe	390	+-95	Gx-1186	Urewe	Jones 1983, " "
Kenya	Yala Alego	1	35	34	19	Urewe	400	+-235	N-437	Urewe	Jones 1983 " "
Malawi	Changoni	14	12	34	11	Nkope,Kapeni	700	+-30	Pta-2028		Jones 1983
Malawi	Changoni	14	12	34	11	Nkope,Kapeni	700	+-80	Har-2332		Jones 1983
Malawi	Kambari	11	30	33	40	Mwabulambo	540	+-50	Pta-2744		Jones 1983
Malawi	Lumbule	11	4	34	6	Mwabulambo,Phopo	565	+-100	Sr-147		Jones 1983
Malawi	Madede 1	0	0	0	0	Mwabulambo	480	+-50	Pta-2740	geog.loc.lat/long.?	Jones 1983,Robinson 1982
Malawi	Madede 2	0	0	0	0	Mwabulambo	270	+-50	Pta-2743	geog.loc.lat/long.?	Jones 1983,Robinson 1982
Malawi	Matope Court	15	22	34	56	Nkope	610	+-55	Pta-795	Nkope level	Jones 1983
Malawi	Matope Court	15	22	34	56	Nkope	780	+-80	Sr-237	c.f.Sr-75	Robinson 1973
Malawi	Midima	15	51	35	13	Kapeni,Longwe	640	+-50	Pta-2803		Jones 1983
Malawi	Mitongwe	14	35	34	40	Nkope	220	+-90	Sr--226		Jones 1983
Malawi	Mitongwe/Luwadzi	14	35	34	40	Nkope	370	+-60	Sr=207		Robinson 1973
Malawi	Mtuzi	14	16	34	11	Pre-Nkope:Khoi?	-130	+-70	Har-2402	with pottery	Jones 1983
Malawi	Mtuzi	14	16	34	11	Nkope	270	+-50	Pta-2030		Jones 1983
Malawi	Mtuzi	14	16	34	11	Nkope	370	+-80	Har-2335		Jones 1983
Malawi	Munga	0	0	0	0	Nkope	200	+-60	Pta-2756	geog.loc.lat/long.?	Jones 1983
Malawi	Mwabulambo	9	50	33	45	Phopo,Gok.,Kalambo	1250	+-80	UCLA-1242	too late for type-site!?	Jones 1983
Malawi	Mwala Wa Chitseko	14	12	34	11	Nkope	930	+-80	Har-2403		Jones 1983
Malawi	Mwalawolemba	15	35	35	9	Longwe	765	+-80	I-11852		Jones 1983
Malawi	Namichamba	15	22	34	55	Nkope	995	+-60	Sr-242	Term.ante quem date	Jones 1983
Malawi	Namitambo	15	40	35	15	Nkope,Longwe	100	+-130	R-4098	Term.post quem date	Jones 1983
Malawi	Nkope	14	12	35	2	Kw./Zw(bowls)	360	+-120	Sr-174	Pots=Phopo and Mwabulam.	Jones 1983
Malawi	Nkope	14	12	35	2	Kw./Zw(bowls)	775	+-100	Sr-175	Pots=Phopo and Mwabulam.	Jones 1983
Malawi	Phopo Hill	11	15	33	37	Mwabulambo variant	205	+-170	Sr-148		Jones 1983

Table 1. Radiocarbon list of Early Iron Age and related sites in Eastern and Southern Africa (pages 209-216).

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Malawi	Phopo Hill	11	15	33	37	Mwabulambo variant	505	+-120	Sr-161		Jones 1983
Malawi	Phopo Hill	11	15	33	37		295	+-95	Sr-128	similar to E.Africa pott.	Phillipson 1970
Malawi	Phwadzi	16	20	34	20	Nkope	500	+-50	Pta-798		Jones 1983
Malawi	Tambala	14	2	34	15		590	+-50	Pta-927		Jones 1983
Mozambique	Chakota	14	36	38	51		490	+-100	St-9198		C14 file,Arch.dept,Maputo
Mozambique	Chakota	14	36	38	51		295	+-110	St-9200		C14 file,Arch.dept,Maputo
Mozambique	Aeroporto-Nampula	15	9	39	18		575	+-100	St-9770		Adamowicz 1984
Mozambique	Aeroporto/Nampula	15	9	39	18		670	+-100	St-9704		Id.1984,Sinclair 1985
Mozambique	Aeroporto/Nampula	15	9	39	18		630	+-170	St-9705		Ibid.1984,1985
Mozambique	Caimane II	26	19	32	8	to be assessed	1070	+-210	St-8873	scatterd char.frags	Morais 1984
Mozambique	Caimane II	26	19	32	8	to be assessed	1235	+-210	St-8874	burned seeds	Morais 1984
Mozambique	Chibuene	22	2	35	19		680	+-80	St-8494	in C14 file as Chib.4	Sinclair 1982
Mozambique	Chibuene	22	2	35	19		550	+-85	St-8495	in C14 file as Chib.5	Sinclair 1982
Mozambique	Chibuene	22	2	35	19		795	+-85	St-8496	in C14 as Chib.6	Sinclair 1982
Mozambique	Chibuene	22	2	35	19		770	+-50	R-1325	trench 9N4E,spits 8+9	Sinclair 1982
Mozambique	Namolepiwa	15	9	39	54		315	+-80	St-9449		C14 file,Arch.dept,Maputo
Mozambique	Namolepiwa	15	9	39	54		755	+-140	St-9450		C14 file,Arch.dept,Maputo
Mozambique	Namolepiwa	15	9	39	54		705	+-90	St-9451		C14 file,Arch.dept,Maputo
Mozambique	Hola-Hola	21	19	34	1	Gokomere-Ziwa	890	+-50	R-1326	trench 127S113N spit 1	Morais 1984,Sinclair 1982
Mozambique	Massingir 1/72	23	54	32	4	Eiland	920	+-40	Pta-1640		Hall and Vogel 1980
Mozambique	Matola	25	57	32	27	Matola	70	+-50	R-1327	75-85 layer	Cruz e Silva 1976,1980
Mozambique	Matola	25	57	32	27	Matola	830	+-50	R-1328	75-85 layer	Cruz e Silva 1976,1980
Mozambique	Matola	25	57	32	27	Matola	230	+-110	St-8546	basal unit btw pot sherds	Morais 1984
Mozambique	Matola	25	57	32	27	Matola	480	+-80	St-8547	basal unit	Morais 1984
Mozambique	Matola	25	57	32	27	Matola	75	+-80	St-8548	from shell,loc.as St-8547	Morais 1984
Mozambique	Muaconi	15	27	40	35		920	+-100	St-9771		Adamowicz 1984,Morais 1984
Mozambique	Nakwaho	14	58	39	45		690	+-105	St-8194	inc.,in C14 file	Adamowicz 1983
Mozambique	Namolepiwa	15	9	39	54		770	+-165	St-9773		Morais 1984
Mozambique	Namolepiwa	15	9	39	54		725	+-165	St-9774		Morais 1984
Mozambique	Namolepiwa	15	9	39	54		515	+-100	St-9775		Morais 1984
Mozambique	Nhachengue	23	53	35	12		715	+-80	St-8497	in C14 file as Chib.7	Sinclair 1985
Mozambique	Riane	13	44	40	9		465	+-170	St-9021	inc.,Riane 9 in C14 file	Adamowicz 1983
Mozambique	University Campus	25	56	32	36	Matola	175	+-85	St-9836	Trench 1470E200N /50-60	C14 file,Arch.dept,Maputo
Mozambique	University Campus	25	56	32	36	Matola	595	+-100	St-9837	trench 2402E120N/60-70	C14 file,Arch.dept,Maputo
Mozambique	University Campus	25	56	32	36	Matola	360	+-75	St-9838	trench 3530E285N/ 60-70	C14 file,Arch.dept,Maputo
Mozambique	Zitundo	26	44	32	49	Matola	175	+-105	St-8909	9N16E trench w thick slag	Morais 1984
Mozambique	Zitundo	26	44	32	49	Lydenburg	515	+-105	St-8910	upper unit at NE section	Morais 1984
Mozambique	Zitundo	26	44	32	49	Matola	190	+-105	St-8911	basal unit at NE section	Morais 1984
Mozambique	Zitundo	26	44	32	49	Matola	265	+-105	St-8912	in 0N16E dating Matola Ph	Morais 1984
Mozambique	Zitundo	26	44	32	49	Lydenburg	375	+-105	St-8913	in 0N16E dating early Lyd.	Morais 1984
Namibia	Big Elephant shelter	21	41	15	40	Khoi?	-650	+-50	Pta-1556		Jones 1983
Namibia	Big Elephant shelter	21	41	15	40	Khoi?	870	+-50	Pta-1558	sequence 650 bc/ 870 ad	Jones 1983
Namibia	Eros shelter	22	33	17	5		205	+-35	GrN-5297		Jones 1983
Namibia	Marabib shelter	23	27	15	19		400	+-50	Pta-1535	dates sheep	Jones 1983
Rwanda	Butare	0	0	0	0		295	+-60	GrN-5753		Maret 1982
Rwanda	Butare	0	0	0	0		-230	+-50	GrN-5752	iron furnace	Maret 1982
Rwanda	Cyamukuza	2	34	29	48		300	+-80	B-758	iron furnace	Grunderbeek et al 1982
Rwanda	Cyamukuza	2	34	29	48	Urewe	740	+-50	GrN-9669		Jones 1983

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Rwanda	Dahwe I	2	37	29	51		240	+-25	GrN-9668	iron furnace	Grunderbeek et al 1982
Rwanda	Gahondo	2	38	29	51		295	+-25	GrN-8849		Jones 1983
Rwanda	Gahondo III	2	38	29	51	Urewe	525	+-35	GrN-8850	pottery site	Grunderbeek et al 1982
Rwanda	Gasize	0	0	0	0		-685	+-95	Hv-11143	iron furnace	Grunderbeek et al 1982
Rwanda	Gisagara	2	35	29	49		255	+-30	GrN-9666		Jones 1983
Rwanda	Kabuye I	2	36	29	48		355	+-30	GrN-7673	iron furnace	Maret 1982
Rwanda	Kabuye II	2	36	29	48		545	+-35	GrN-7904		Jones 1983
Rwanda	Kabuye III	2	36	29	48		400	+-30	GrN-8219	iron furnace	Maret 1982
Rwanda	Kabuye IV	2	36	29	48		225	+-30	GrN-7905		Jones 1983
Rwanda	Kabuye VIII	2	36	29	48	Urewe	285	+-50	GrN-9665	pottery site	Grunderbeek et al 1982
Rwanda	Kabuye XV	2	36	29	48	Urewe	460	+-55	GrN-9667	pottery site	Grunderbeek et al 1982
Rwanda	Kabuye XXXV	2	36	29	48		320	+-75	B-758	iron furnace	Grunderbeek et al 1982
Rwanda	Mucucu	1	32	30	30	Urewe(Ulore)	-430	+-270	Ly-2235	sequence 430 bc to 70 ad	Jones 1983
Rwanda	Mucucu	1	32	30	30	Urewe(Ulore)	70	+-170	Ly-2236	sequence 430 bc to 70 ad	Jones 1983
Rwanda	Ndora	2	35	29	50	Urewe	250	+-100	B-755		Jones 1983
Rwanda	Ngoma I	2	36	29	43		665	+-30	GrN-9686	iron furnace	Grunderbeek et al 1982
Rwanda	Ngoma III	2	36	29	43		285	+-75	Hv-10876	iron furnace	Grunderbeek et al 1982
Rwanda	Nyaruhengeri I	2	40	29	47		380	+-50	GrN-9670	iron furnace	Grunderbeek et al 1982
Rwanda	Rambura	1	45	30	9		295	+-60	GrN-5753		Jones 1983
Rwanda	Rambura,Rutare	1	45	30	9	Urewe	295	+-60	GrN-5753	pottery site	Grunderbeek et al 1982
Rwanda	Remera	2	39	29	51		220	+-30	GrN-9663,4		Jones 1983
Rwanda	Remera I	2	39	29	51		220	+-30	GrN-9663	iron furnace	Grunderbeek et al 1982
Rwanda	Remera III	2	39	29	51		220	+-30	GrN-9664	iron furnace	Grunderbeek et al 1982
Rwanda	Rurembo	1	46	30	9		-230	+-50	GrN-5752		Jones
Rwanda	Rurembo,Rutere	1	46	30	9	Urewe	230	+-50	GrN-5752	pottery site	Grunderbeek et al 1982
South Africa	Bonteberg shelter,Cape	34	19	18	25	Khoi	-100	+-95	Sr-166		Jones 1983
South Africa	Boomplaas,Cape	33	22	22	11		250	+-55	UW-338		Jones 1983
South Africa	Boomplaas,Cape	33	22	22	11		320	+-35	UW-337		Jones 1983
South Africa	Boomplaas,Cape	33	22	22	11		440	+-74	UW-307		Jones 1983
South Africa	Broederstroom	25	50	27	50		430	+-170	RI-351		Jones 1983
South Africa	Broederstroom	25	50	27	50		490	+-50	UCLA-1791		Jones 1983
South Africa	Die Kelders,Cape	34	32	19	22		-70	+-95	GX-1686		Jones 1983
South Africa	Diepkloof,Cape	32	22	18	27	Khoi?	360	+-85	?		Jones 1983
South Africa	Doornkop	0	0	0	0	Eiland	810	+-50	Pta-2536		Evers 1981
South Africa	Doornkop	0	0	0	0	Eiland	740	+-50	Pta-2535		Evers 1981
South Africa	Driel,Natal	28	49	29	9		175	+-40	Pta-1381		Jones 1983
South Africa	Eiland saltworks	23	39	30	40	Matola	270	+-40	Pta-1524		Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Matola	320	+-40	Pta-1608		Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Matola	390	+-40	Pta-1607		Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Matola	490	+-40	Wits-764	stratified bellow Pta1524	Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Eiland	950	+-45	Pta-1668		Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Eiland	1100	+-50	Pta-1522		Evers 1981
South Africa	Eiland saltworks	23	39	30	40	Eiland	1125	+-40	Pta-1745		Evers 1981
South Africa	Elands Bay,Cape	32	17	18	18	Khoi?	430	+-80	Gak-4337		Jones 1983
South Africa	Enkawazini,Natal	28	10	32	30	Matola,Lydenburg	300	+-50	Pta-1847		Jones 1983
South Africa	Enkawazini,Natal	28	10	32	30	Matola,Lydenburg	450	+-60	Pta-1977		Jones 1983
South Africa	Good Hope shelter,Natal	29	39	29	25		210	+-40	Pta-838	undecorated pottery	Jones 1983
South Africa	Hawston,Cape	34	25	19	8		50	+-40	Pta-835	pottery and sheep	Jones 1983

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
South Africa	Hawston,Cape	34	25	19	8		90	+-60	Pta-834	pottery and sheep	Jones 1983
South Africa	Klein Afrika	22	50	29	55		330	+-45	Pta-1168		Jones 1983
South Africa	Klein Afrika	22	50	29	55		540	+-50	Pta-2420		Jones 1983
South Africa	Klingbeil	25	5	30	29	Eiland	790	+-50	Pta-1663		Evers 1981
South Africa	Klingbeil	25	5	30	29	Eiland	830	+-50	Pta-2160		Evers 1981
South Africa	Limerock,Cape	28	20	23	30		330	+-50	Pta-1621		Jones 1983
South Africa	Limerock,Cape	28	20	23	30		520	+-50	Pta-1759		Jones 1983
South Africa	Lolwe,Transvaal	23	55	31	10		770	+-80	Y-1636		Jones 1983
South Africa	Lydenburg,Transvaal	25	6	30	29	Eiland	490	+-50	Pta-328		Evers 1981
South Africa	Lydenburg,Transvaal	25	6	30	29	Eiland	540	+-50	Pta-1634		Evers 1981
South Africa	Matokoma (Happy Rest)	23	30	29	45		350	+-50	Pta-2421		Jones 1983
South Africa	Matokoma (Happy Rest)	23	30	29	45		470	+-50	Pta-2414		Jones 1983
South Africa	Mpame,Cape	32	6	29	3	Lydenburg	640	+-60	Pta-2019		Jones 1983
South Africa	Mpame,Cape	32	6	29	3	Lydenburg	720	+-40	Pta-2045		Jones 1983
South Africa	Mhluzi,Natal	28	45	30	8		580	+-30	Pta-2197		Jones 1983
South Africa	Mhluzi,Natal	28	45	30	8		640	+-40	Pta-2195		Jones 1983
South Africa	Mzonjani,Natal	29	44	31	3		280	+-40	Pta-1980		Jones 1983
South Africa	Ndumu,Natal	26	50	32	15		630	+-40	Pta-0020	smelting site	Jones 1983
South Africa	Nelson Bay Cave	34	5	23	20	Khoi?	20	+-60	GrN-5703	with pottery	Jones 1983
South Africa	Plaston	25	20	31	4	Lydenburg	635	+-50	Pta-1635		Jones 1983
South Africa	Pont Drift	22	13	29	9	Zhizo	810	+-50	Pta-1959		Jones 1983
South Africa	Pont Drift	22	13	29	9	Zhizo	1110	+-50	Pta-1818		Jones 1983
South Africa	Schroda	22	11	29	25	Zhizo	790	+-50	Pta-1967		Jones 1983
South Africa	Scott's Cave	33	44	25	43		760	+-100	Sr-82		Jones 1983
South Africa	Shongweni	29	51	30	43		180	+-60	Pta-821		Jones 1983
South Africa	Shongweni	29	51	30	43		780	+-50	Pta-1059		Jones 1983
South Africa	Silver Leaves	23	56	30	90	Matola	250	+-40	Pta-2459		Klapwijk 1974,Jones 1983
South Africa	Silver Leaves	23	56	30	90	Matola	330	+-50	Pta-914		Klapwijk 1974,Jones 1983
South Africa	Silver Leaves village	23	56	30	90	Matola	270	+-55	Pta-901		Evers 1981
Swaziland	Ngwenya (Castle Cavern)	26	12	31	2		400	+-30	GrN-5315		Jones 1983
Swaziland	Ngwenya (Castle Cavern)	26	12	31	2		520	+-100	Y-1995		Jones 1983
Swaziland	Ngwenya (Castle cavern)	26	12	31	2	Channel dec.(sic)	400	+-60	Y-1212		Phillipson 1970
Swaziland	Ngwenya (Castle cavern)	26	12	31	2	Channel dec.(sic)	415	+-30	GrN-5022		Phillipson 1970
Tanzania	Bombo Kaburi	4	15	38	0	Kwale	220	+-115	N-347		Jones 1983,Ambrose 1982
Tanzania	Buyozi	1	34	31	37		340	+-130	RL-1008		Jones 1983
Tanzania	Katuruka	1	22	31	52	Urewe	-60	+-115	N-891	sequence 60 bc to 170 ad	Jones 1983
Tanzania	Katuruka	1	22	31	52	Urewe	170	+-100	N-898	sequence 60 bc to 170 ad	Jones 1983
Tanzania	Kemondo	1	28	31	44		-200	+-210	RL-1013	sequence 200 bc to 540 ad	Jones 1983
Tanzania	Kemondo	1	28	31	44		10	+-150	RL-1012	sequence 200 bc to 540 ad	Jones 1983
Tanzania	Kemondo	1	28	31	44		540	+-110	RL-1014	sequence 200 bc to 540 ad	Jones 1983
Tanzania	Kemondo site,Kibarama	1	29	31	44		-150	+-230	?	dates pottery & smelting	Schmidt 1980
Tanzania	Kibarama	1	29	31	44		150	+-130	?		Jones 1983
Tanzania	Kilwa	8	50	39	40		630	+-110	Sr-77	sequence 630 to 1060 ad	Jones 1983
Tanzania	KM2,Kibarama	1	28	31	44		-200	+-210	?	dates pottery & smelting	Schmidt 1980:85
Tanzania	KM3,Kibarama	1	29	31	44		-20	+-140	?	dates smelting	Schmidt 1980:85
Tanzania	KM3,Kibarama	1	29	31	44		0	+-140	?	dates steel bloom	Schmidt 1980:90
Tanzania	Kwamboo	1	0	37	0	Kwale	220	+-130	Gx-7020		Robertshaw 1984
Tanzania	Kwamboo	1	0	37	0	Kwale	190	+-120	Gx-7021		Robertshaw 1984

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Tanzania	Makongo	0	0	0	0	Urewe	40	+-100	N-902	sequence 40 to 985 ad	Jones 1983
Tanzania	Makongo	0	0	0	0	Urewe	985	+-100	N-900	sequence 40 to 985 ad	Jones 1983
Tanzania	Mwika	3	16	35	57	Kwale/Maore	250	+-330	N-883	NB! error factor	Jones 1983,Ambrose 1982
Tanzania	Nyamaunga	5	6	30	23	Kwale/Maore	590	+-200	N-465	till ad 1690+-110(N-464)	Jones 1983
Tanzania	Nyamaunga	5	6	30	23	Sandaweland (sic)	590	+-200	N-465		Phillipson 1970
Tanzania	Old Moshi	3	20	37	30		-250	+-430	N-884	NB! Error factor	Jones 1983
Tanzania	Pwaga	5	4	30	23	Sandwaland (sic)	420	+-160	N-463		Jones 1983
Tanzania	Seronera	2	25	34	50	Kansyore,Gumban A	-70	+-115	N-1067		Jones 1983
Tanzania	Usangi	3	41	37	39	Kwale/Maore	520	+-270	N-648		Jones 1983,Ambrose 1982
Tanzania	Usangi	3	41	37	39	" "	920	+-130	N-646		Jones 1983,Ambrose 1982
Uganda	Nsongezi shelter	1	4	30	45	Rwanda sites (sic)	1025	+-150	GrN-9687	Terminus ante quem?	Jones 1983
Zaire	Dimba cave	5	15	14	45		-85	+-130	Hv-6257		Jones 1983
Zaire	Gombe,Kinshasa	4	17	15	16		350	+-100	OxTL-209c	TL date	Maret 1982
Zaire	Gombe,Kinshasa	4	17	15	16		-1575	+-35	GrN-7279	iron furnace	Van Noten 1982
Zaire	Ile des Mimosas	4	20	15	14	Gombe	410	+-100	Lv-168		Jones 1983
Zaire	Kamilamba	7	47	27	1	Chondwe	305	+-160	Hv-8492		Jones 1983
Zaire	Kamilamba	7	47	27	1	Chondwe	715	+-360	Hv-7497	NB! error factor	Jones 1983
Zaire	Kamilamba,Shaba	7	47	27	1	EIA copperbelt	520	+-115	Hv-7512		Maret 1982
Zaire	Kamoa	10	24	25	9		770	+-30	GrN-6285		Jones 1983,Maret 1982
Zaire	Malemba-Nkulu	8	13	26	47	Kisalian e Kabambian	590	+-60	Hv-9073		Jones 1983,Maret 1982
Zaire	Naviundu	11	39	27	32		385	+-55	Hv-10591		Jones 1983,Maret 1982
Zaire	Ngovo cave	5	17	14	47	DB,Ntadi Ntadi	-195	+-45	Hv-5258		Jones 1983
Zaire	Ngovo cave	5	17	14	47	DB,Ntadi Ntadi	-85	+-65	Hv-6258		Jones 1983
Zaire	Ntadi Ntadi	5	50	14	30	Ngovo,Dimba	-205	+-60	Hv-6250		Jones 1983
Zaire	Sanga,Shaba	8	12	26	23	Kisalian	710	+-120	B-263		Jones 1983
Zaire	Sanga,Shaba	8	12	26	23	Kisalian	880	+-200	B-264		Jones 1983
Zaire	Sanga,Shaba	8	12	26	23		710	+-120	B-263	pottery	Van Noten 1982
Zaire	Sanga,Shaba	8	12	26	23		880	+-200	B-264	pottery	Van Noten 1982
Zaire	Sanga,Shaba	8	12	26	23	early Kisalian	995	+-40	Hv-6611	pottery	Van Noten 1982
Zambia	Basanga	15	50	26	5	Kalundo	510	+-105	GX-1425	sequence 510-750 ad	Jones 1983
Zambia	Basanga	15	50	26	5	Kalundu	750	+-120	N-594	sequence 510-750 ad	Jones 1983
Zambia	Chilaka	14	90	28	26	? Muteteshi	385	+-65	R-9083/1		Jones 1983
Zambia	Chondwe	13	11	28	46	Chondwe	510	+-160	N-998	sequence 510 to 1155 ad	Jones 1983
Zambia	Chondwe	13	11	28	46	Chondwe	1155	+-85	GX-1330	sequence 510 to 1155 ad	Jones 1983
Zambia	Chondwe	13	11	28	46		815	+-130	GX-1009		Phillipson 1970
Zambia	Chondwe	13	11	28	46		890	+-95	GX-1010		Phillipson 1970
Zambia	Chundu	17	35	25	41	Kamangoza e Kumadzu.	660	+-100	N-1138	sequence 660 to 790 ad	Jones 1983
Zambia	Chundu	17	35	25	41	Kamangoza e Kumadzu.	790	+-100	N-1139	sequence 660 to 790 ad	Jones 1983
Zambia	Dambwa	17	45	25	51		600	+-100	Sr-106	sequence 600 to 860 ad	Jones 1983
Zambia	Dambwa	17	45	25	51		860	+-95	Sr-96	sequence 600 to 860 ad	Jones 1983
Zambia	Fibobe	14	16	28	37		500	+-110	R-9083/7	sequence 500 to 870 ad	Jones 1983
Zambia	Fibobe	14	16	28	37		870	+-65	R-9083/11	sequence 500 to 870 ad	Jones 1983
Zambia	Gundu	16	46	27	15	Kalundu e Kapwirimbe	440	+-85	GX-1114	sequence 440 to 985 ad	Jones 1983
Zambia	Gundu	16	46	27	15	Kalundu e Kapwirimbe	985	+-100	N-428	sequence 440 to 985 ad	Jones 1983
Zambia	Ingombe Ilede	16	12	28	48		680	+-40	R-908	sequence 680 to 985 ad	Jones 1983
Zambia	Ingombe Ilede	16	12	28	48		985	+-100	Q-720	sequence 680 to 985 ad	Jones 1983
Zambia	Isamu Pati	17	4	26	20		100	+-100	Sr-20	sequence 100 to 955 ad	Jones 1983
Zambia	Isamu Pati	17	4	26	20		955	+-60	R-974	sequence 100 to 955 ad	Jones 1983

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Zambia	Kabondo	17	41	25	50	Shong.Kamang.Kumadz.	520	+-80	N-1918	sequence 520 to 930 ad	Jones 1983
Zambia	Kabondo	17	41	25	50	Shong.Kamang.Kumadz.	930	+-95	N-1917	sequence 520 to 930 ad	Jones 1983
Zambia	Kalala	15	46	26	2		770	+-75	N-2770		Jones 1983
Zambia	Kalambo	8	30	31	15		345	+-40	GrN-4646	sequence 345 to 870 ad	Jones 1983
Zambia	Kalambo	8	90	31	15		870	+-180	L-395b	sequence 345 to 870 ad	Jones 1983
Zambia	Kalongola	16	0	25	0	"western stream"	810	+-50	Pta-3250		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	640	+-50	Pta-3251		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	480	+-50	Pta-3249		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	780	+-65	Pta-9429-1		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	670	+-60	Pta-9429-2		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	645	+-40	Pta-9429-3		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	970	+-90	Pta-9429-4		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	530	+-65	Pta-9429-6		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	690	+-50	Pta-9429-7		Robertshaw 1984
Zambia	Kalongola	16	0	25	0	"western stream"	445	+-85	Pta-9429-8		Robertshaw 1984
Zambia	Kalundu	17	0	26	45		300	+-90	Sr-75		Jones 1983
Zambia	Kalundu	17	0	26	45		790	+-90	Sr-41	sequence 300 to 790 ad	Jones 1983
Zambia	Kamangoza	17	37	25	32		800	+-110	N-420	sequence 800 to 1040 ad	Jones 1983
Zambia	Kamangoza	17	37	25	32		1040	+-105	N-421	sequence 800 to 1040 ad	Jones 1983
Zambia	Kamnama	13	31	32	50		350	+-110	N-908		Jones 1983
Zambia	Kandanda	17	26	24	12	San e Bambata	-180	+-55	Sr-198		Jones 1983
Zambia	Kandanda	17	26	24	12	San e Bambata	115	+-50	Sr-199		Jones 1983
Zambia	Kangonga	13	4	28	49	Chondwe	340	+-115	GX-1328		Jones 1983
Zambia	Kangonga	13	4	28	49	Chondwe	765	+-85	GX-1327		Jones 1983
Zambia	Kansanshi	12	5	26	13		700	+-110	RL-1390		Jones 1983
Zambia	Kansanshi	12	5	26	13		860	+-120	RL-1394	sequence 700 to 860 ad	Jones 1983
Zambia	Kapwirimbe	15	23	28	22		410	+-85	GX-1013	sequence 410 to 505 ad	Jones 1983
Zambia	Kapwirimbe	15	23	28	22		505	+-95	GX-1012	sequence 410 to 505 ad	Jones 1983
Zambia	Kazindu	16	46	25	1		800	+-75	N-2315		Jones 1983
Zambia	Kazindu	16	46	25	1		820	+-75	N-2316		Jones 1983
Zambia	Kumadzulu	17	27	25	32		430	+-110	N-409	sequence 430 to 690 ad	Jones 1983
Zambia	Kumadzulu	17	27	25	32		690	+-105	N-414	sequence 430 to 690 ad	Jones 1983
Zambia	Leopard's hill	15	36	28	43	Kapwirimbe	535	+-125	Sr-126		Jones 1983
Zambia	Makwe	14	25	31	56		220	+-110	GX-1551	sequence 220 to 980 ad	Jones 1983
Zambia	Makwe	14	25	31	56		980	+-70	Sr-206	sequence 220 to 980 ad	Jones 1983
Zambia	Matobo	17	6	26	29	Kalundu e Kalomo	800	+-115	N-597		Jones 1983
Zambia	Matobo	17	6	26	29	Kalundu e Kalomo	890	+-115	N-597		Jones 1983
Zambia	Mondake	14	20	19	35	Kapwirimbe	395	+-105	R-9083/5	sequence 395 to 775 ad	Jones 1983
Zambia	Mondake	14	20	19	35	Kapwirimbe	775	+-70	R-9093/4	sequence 395 to 775 ad	Jones 1983
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	180	+-70	NZ-4515	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	360	+-70	NZ-4517	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	140	+-80	NZ-4518	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	480	+-90	NZ-4519	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	-80	+-90	NZ-4520	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	420	+-70	NZ-4521	slag,daga,much pottery	Mgomezulu 1981
Zambia	Muteteshi	14	0	29	0	"Roan Antilope"type?	-90	+-70	NZ-4522	slag,daga,much pottery	Mgomezulu 1981
Zambia	Mwanamaimpa	15	59	26	7	Kalundu	540	+-115	N-585		Jones 1983
Zambia	Mwanamaimpa	15	59	26	7	Kalundu	750	+-115	N-586		Jones 1983

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Zambia	Nakapapula	12	49	30	37	Kalambo	770	+-100	GX-0535	sequence 770 to 1040	Jones 1983
Zambia	Nakapapula	12	49	30	37	Kalambo	1040	+-85	GX-0769	sequence 770 to 1040	Jones 1983
Zambia	Namakala (Namakele)	16	42	24	55		550	+-100	Birm-838		Jones 1983
Zambia	Namakala (Namakele)	16	42	24	55		590	+-80	N-2317		Jones 1983
Zambia	Nanga	16	41	25	2	Machili (Situmpa?)	710	+-150	Birm-836		Jones 1983
Zambia	Nanga	16	41	25	2	Machili (Situmpa?)	850	+-120	Birm-837		Jones 1983
Zambia	Salumano	17	12	24	7	Kamangoza 1 and 2	840	+-80	N-3427		Jones 1983
Zambia	Salumano	17	12	24	7		650	+-75	N-3428		Mgomezulu 1981
Zambia	Salumano	17	12	24	7		530	+-95	N-3429		Mgomezulu 1981
Zambia	Samfya	11	24	29	32		430	+-80	N-1934		Jones 1983
Zambia	Simbusenga	17	35	25	35		750	+-110	N-735		Jones 1983
Zambia	Sioma	16	38	23	32		-40	+-80	N-1501		Jones 1983
Zambia	Sioma	16	38	23	32		590	+-75	N-1499		Jones 1983
Zambia	Situmpa	16	15	25	7		-310	+-60	N-2314	unexpectably early	Jones 1983
Zambia	Situmpa	16	15	25	7		240	+-100	Sr-40		Jones 1983
Zambia	Situmpa	16	15	25	7		-160	+-50	Pta-2486	unexpectably early	Mgomezulu 1981
Zambia	Thandwe	13	49	32	28		890	+-110	N-906		Jones 1983
Zambia	Thandwe	13	49	32	28		1060	+-110	N-905	Final E.I.A.	Jones 1983
Zambia	Twickenham Road	15	24	28	18	Kapwirimbe	730	+-105	Gx-1422		Jones 1983
Zambia	Twickenham Road	15	24	28	18	Kapwirimbe	805	+-105	Gx-1423		Jones 1983
Zambia	Zambezi Farm	17	49	25	37	Dambwa and Chundu	540	+-130	N-1140		Jones 1983
Zambia	Zambezi Farm	17	49	25	37	Dambwa and Chundu	1240	+-100	N-1144		Jones 1983
Zimbabwe	Bambata Cave	20	40	28	30	Bambata	-190	+-60	Pta-3072	no structures,cf Sr-75	Walker 1983
Zimbabwe	Bambata Cave	20	40	28	30	Bambata	-200	+-100	Sr-75	Walker relates w Pta-3072	Walker 1983
Zimbabwe	Chitope	16	51	30	50	PhII Lanlory(Sinoia)	1110	+-95	Sr-163		Huffman 1980
Zimbabwe	Coronation Park	17	45	31	10	Ph.II Coronation-Zwa	710	+-100	N-978	Ziwa	Huffman 1980
Zimbabwe	Coronation Park	17	45	31	10	Ph.III Maxton (Ziwa)	980	+-100	N-979	site #2245 in Zimb.files	Huffman 1980
Zimbabwe	Dombozanga	22	0	30	0	Bambata	750	+-100	Sr-15	LSA + 1 stamp. dec. rim	Robinson 1964
Zimbabwe	Gokomere	19	55	30	45	Phase I Gokomere	530	+-120	Sr-26		Huffman 1980
Zimbabwe	Kapula Vlei	18	30	26	20		810	+-90	Sr-73		Jones 1983
Zimbabwe	Khami waterworks	20	10	28	10	L.Kopje R1	700	+-100	Sr-55		Jones 1983
Zimbabwe	Kinsale	20	18	30	18	Phase I Gokomere	585	+-95	Sr-117		Huffman 1980
Zimbabwe	Lanlory	16	45	29	28	PhII Lanlory(Sinoia)	820	+-50	Pta-6067	1 other site	Huffman 1980
Zimbabwe	Lanlory	16	45	29	28	PhII Lanlory(Sinoia)	1030	+-50	Sr-245	1 other date	Huffman 1980
Zimbabwe	Leopard's Kopje	20	8	28	25	Phase II Zhizo (Gok)	670	+-90	Sr-225	2 other dates available	Huffman 1980
Zimbabwe	Leopard's Kopje	20	8	28	25	Phase II Zhizo (Gok)	700	+-110	Sr-55	2 other dates available	Huffman 1980
Zimbabwe	Leopard's Kopje	20	8	28	25	Phase II Zhizo (Gok)	820	+-95	I-4862	2 other dates available	Huffman 1980
Zimbabwe	Mabveni	20	22	30	28	Bambata	180	+-120	Sr-43	Bambata (ex-Gokomere)	Huffman 1980
Zimbabwe	Mabveni	20	22	30	28	Phase I Gokomere	570	+-110	Sr-79		Huffman 1980
Zimbabwe	Makuru	20	19	29	58	Phase II Zhizo (Gok)	690	+-65	N-1275		Huffman 1980
Zimbabwe	Malapati	22	3	31	25	Gokomere	840	+-100	Sr-33		Jones 1983
Zimbabwe	Masuma river	18	36	26	20	Gokomere	90	+-90	Sr-73		Jones 1983
Zimbabwe	Naba (Ndaba)	16	52	29	40	Sinoia?	690	+-50	?Pta-1193		Jones 1983
Zimbabwe	Nyattokwe	18	15	32	46	Zimbabwe 1	850	+-100			Jones 1983
Zimbabwe	Ritual Pit, Ziwa Farm	18	12	32	40	Ph.II Coronation-Zwa	850	+-100	Sr-32	under Ziwa	Huffman 1980
Zimbabwe	Shamara	18	55	32	25	Ph.II Coronation-Zwa	660	+-75	N-1547	1 other date available	Huffman 1980
Zimbabwe	Shamara	18	55	32	25	Ph.II Coronation-Zwa	800	+-75	N-1548	1 other date available	Huffman 1980
Zimbabwe	Sighwa	20	20	30	11	Phase I Gokomere	410	+-95	Sr-119		Huffman 1980

COUNTRY	NAME	LATDEG	LATMIN	LONGDEG	LONGMIN	CULTURE	AD	ERROR	LABNO	COMMENTS	REFERENCES
Zimbabwe	Sinoia Caves	17	20	30	2	Ph.I Naba (Sinoia)	650	+-95	Sr-118		Huffman 1980
Zimbabwe	Surtic Farm	17	31	31	02	Ph.III Maxton (Ziwa)	1005	+-35	Pta-1842		Huffman 1980
Zimbabwe	Taba Zikamambo	19	31	29	04	Phase II Zhizo (Gok)	870	+-100	Sr-68		Huffman 1980
Zimbabwe	Tafuna	17	20	31	32	Ph.II Coronation-Zwa	880	+-105	N-1148	now Ziwa (ex Sinoia site)	Huffman 1980
Zimbabwe	Tshangula	21	38	28	36	Bambata	830	+-90	Sr-69		Jones 1983
Zimbabwe	Zimbabwe	20	16	30	56	Bambata	320	+-150	M-913	Bambata (prev. Gokomere)	Huffman 1980
Zimbabwe	Zimbabwe	20	16	30	56	Period I	730	+-80	Gl-19		Jones 1983
Zimbabwe	Zimbabwe	20	16	30	56	Period II	440	+-350	C-917	NB! error factor	Jones 1983
Zimbabwe	Zimbabwe	20	16	30	56	Period II	660	+-80	Gl-19		Jones 1983
Zimbabwe	Zimbabwe	20	16	30	56	Period II	440	+-350	C-917	NB! error factor	Jones 1983
Zimbabwe	Zimbabwe	20	16	30	56	Period II	660	+-80	Gl-19		Jones 1983
Zimbabwe	Ziwa	18	12	32	40		300	+-100	Sr-17		Jones 1983
Zimbabwe	Ziwa	18	12	32	40		900	+-100	Sr-38		Jones 1983
Zimbabwe	Ziwa	18	12	32	40		300	+-100	Sr-17		Jones 1983
Zimbabwe	Ziwa	18	12	32	40		900	+-100	Sr-38		Jones 1983

APPENDIX 3

POTTERY DRAWINGS FROM SELECTED EARLY FARMING COMMUNITY SITES OF SOUTHERN MOZAMBIQUE.

The drawings are only intended to illustrate the basis for general remarks on affinities or contrasts between assemblages.
The pottery series is incomplete owing to the fact that during the writing of the thesis the rest of the material has resided beyond the writer's reach in Maputo.
The pottery illustrations from Ponta Dundo 1 and 2,and Hola Hola, are derived from Sinclair (1985 a and b).

Figure 1. Pottery illustrations from Ponta Dundo 1.

Figure 2. Pottery illustrations from Ponta Dundo 1.

Figure 3. Pottery illustration from Ponta Dundo 2.

Figure 4. Pottery illustrations from Ponta Dundo 2.

Figure 5. Pottery illustrations from Zitundo.

Figure 6. Pottery illustrations from Hola Hola.

Figure 7. Pottery illustration from Caimane.

Figure 8. Pottery illustration from Caimane.

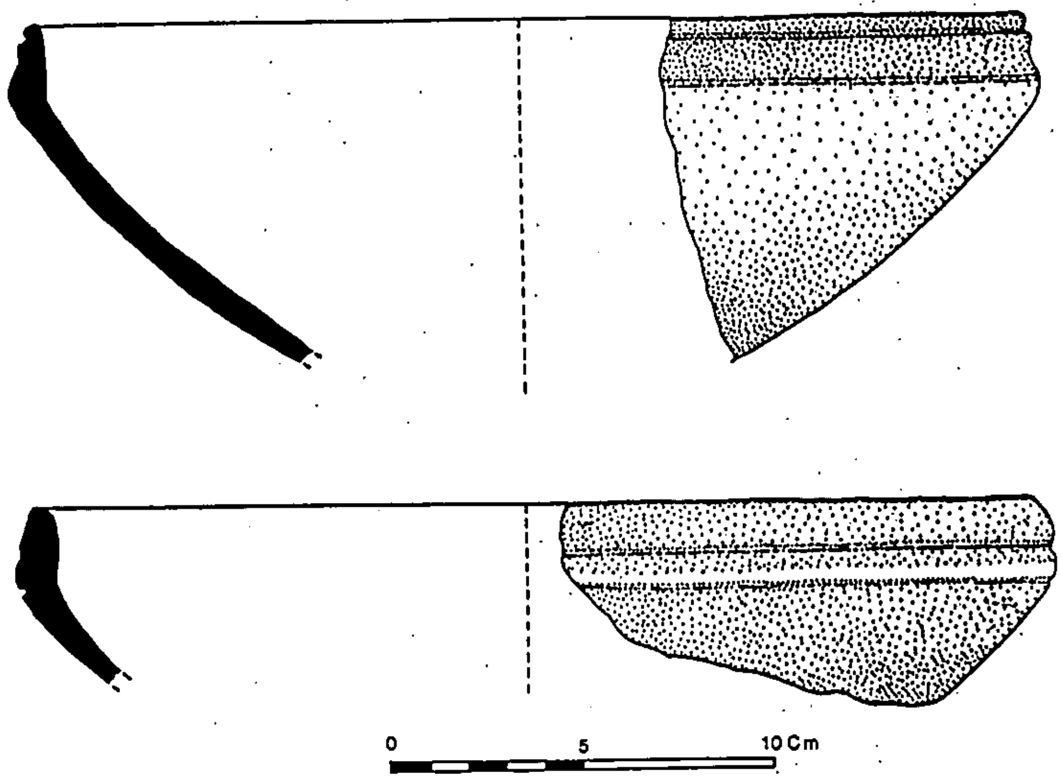


Figure 1. Pottery illustrations from Ponta Dundo 1.

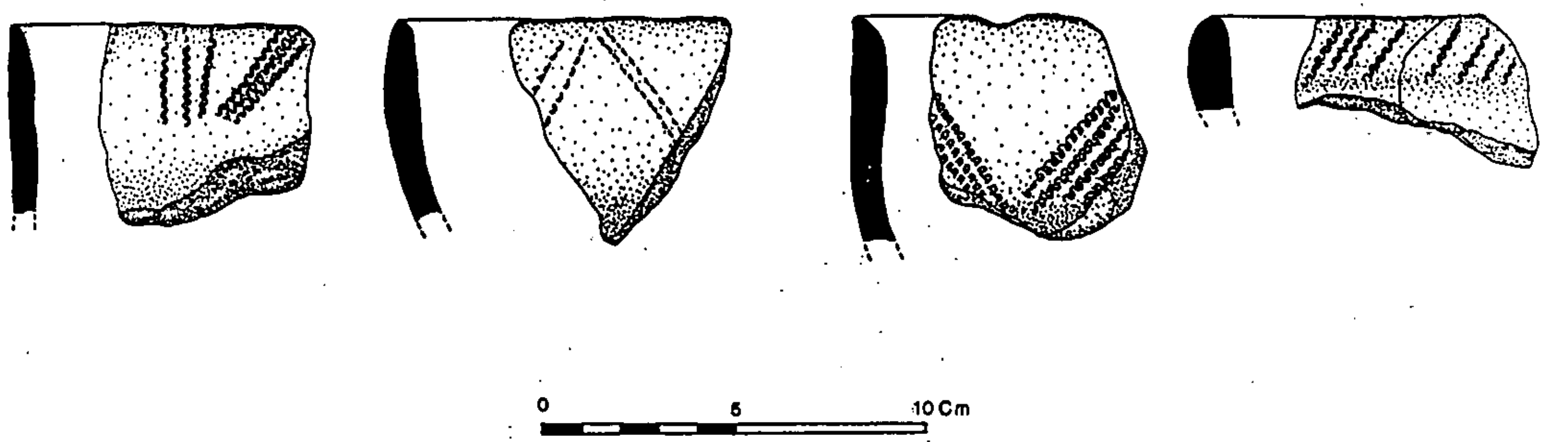


Figure 2. Pottery illustrations from Ponta Dundo 1.

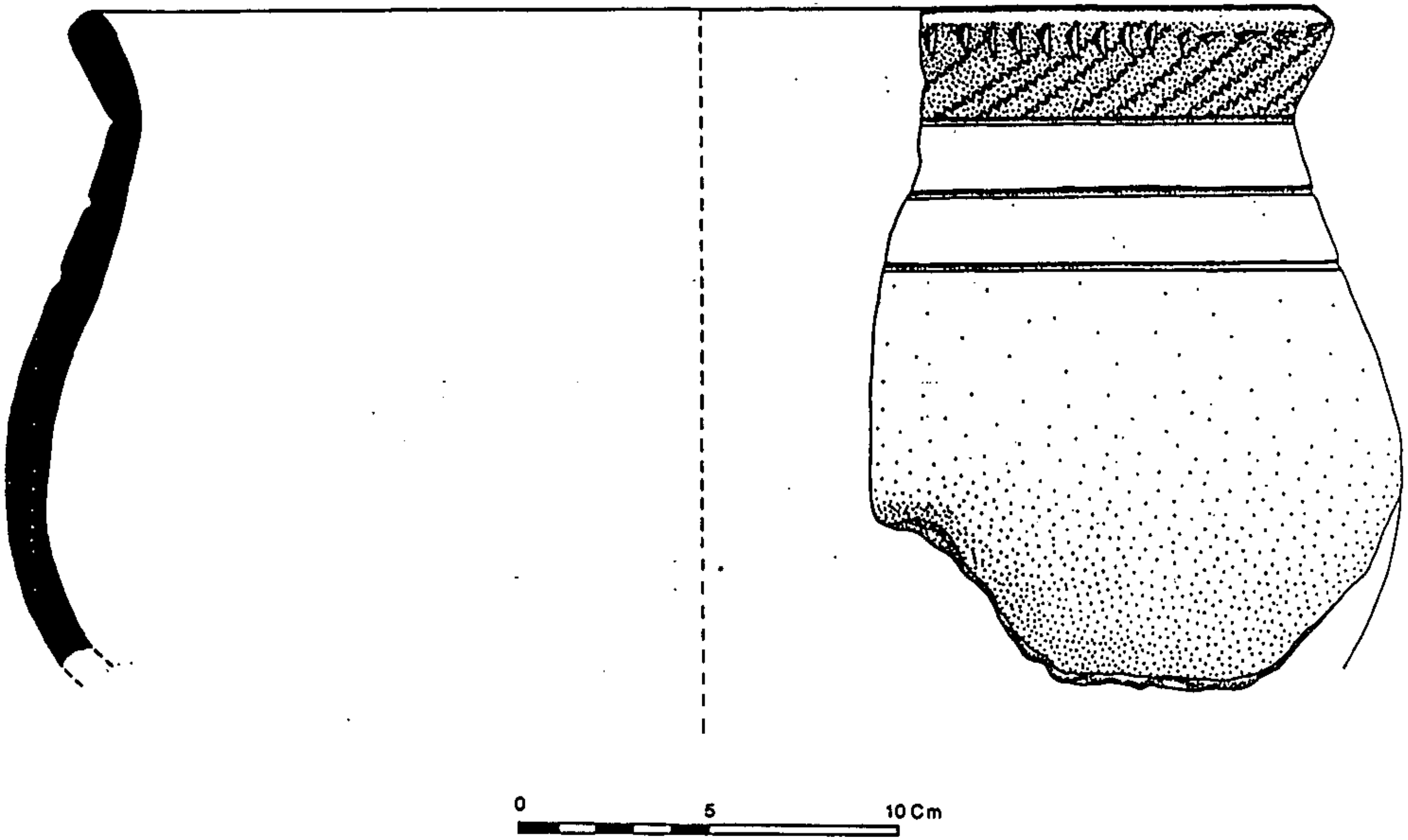


Figure 3. Pottery illustration from Ponta Dundo 2.

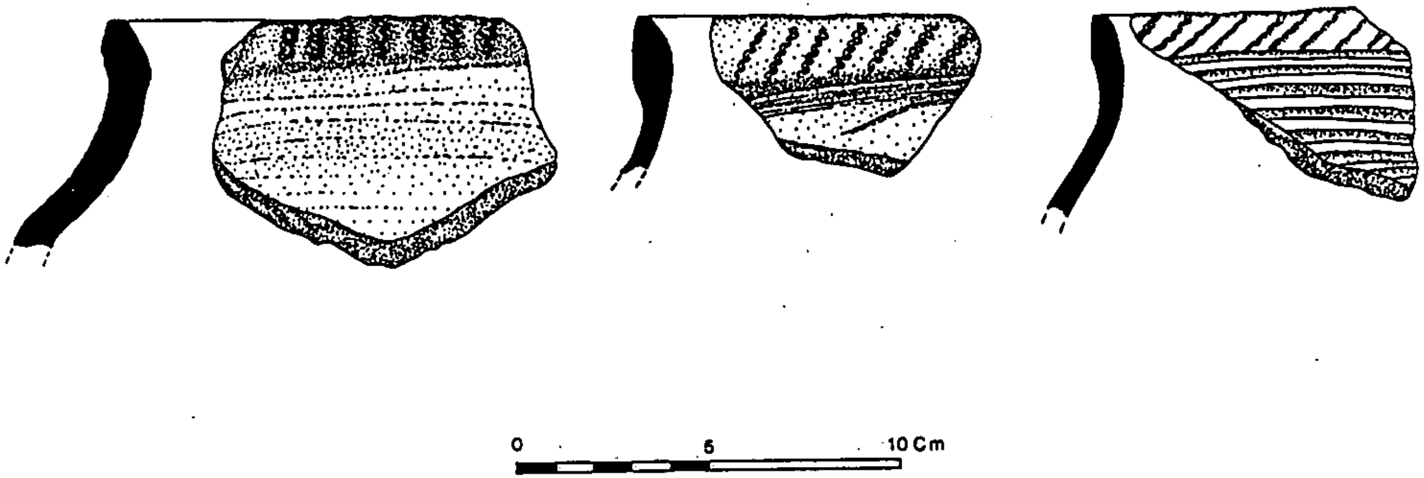


Figure 4. Pottery illustrations from Ponta Dundo 2.

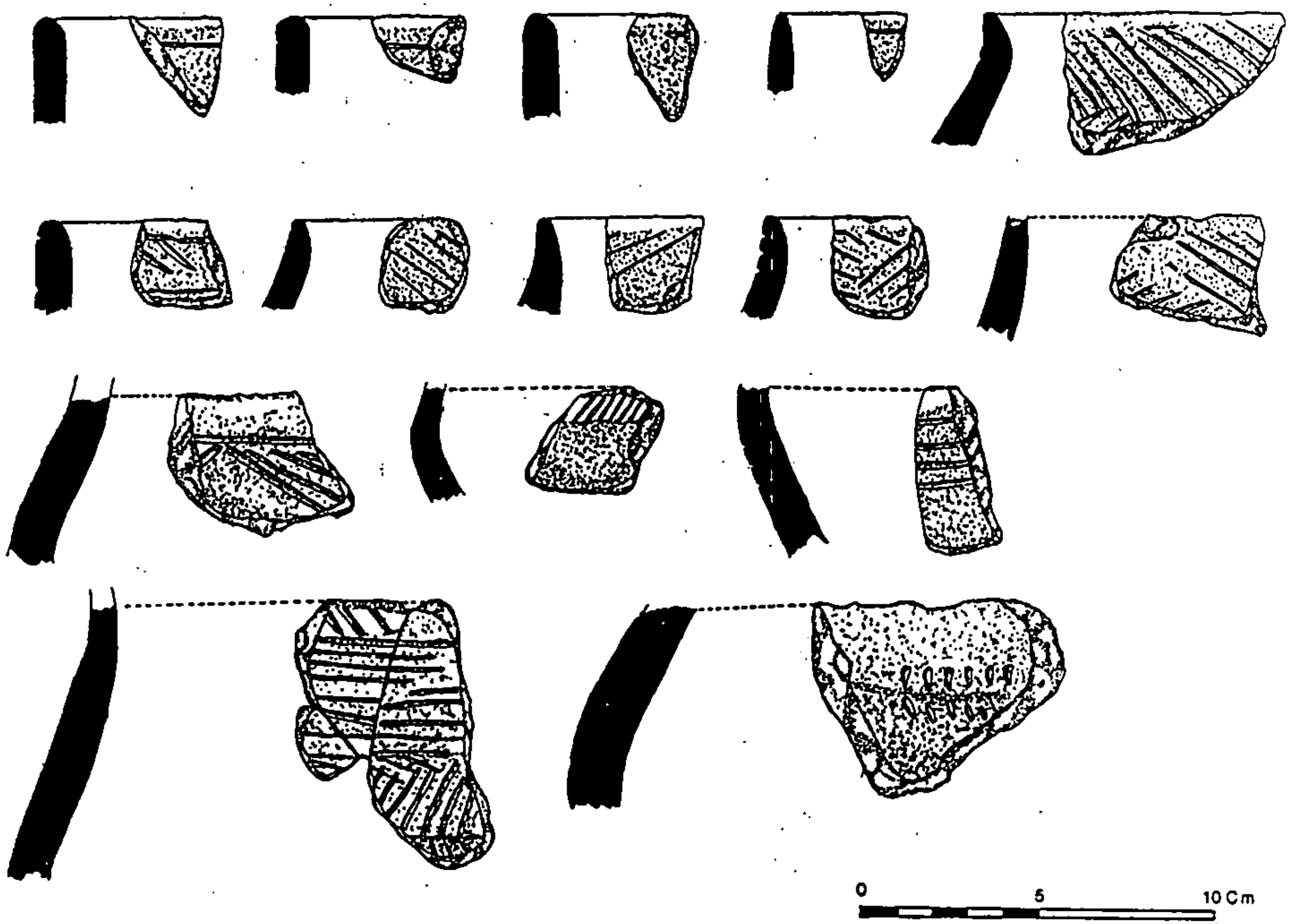


Figure 5. Pottery illustrations from Zitundo.

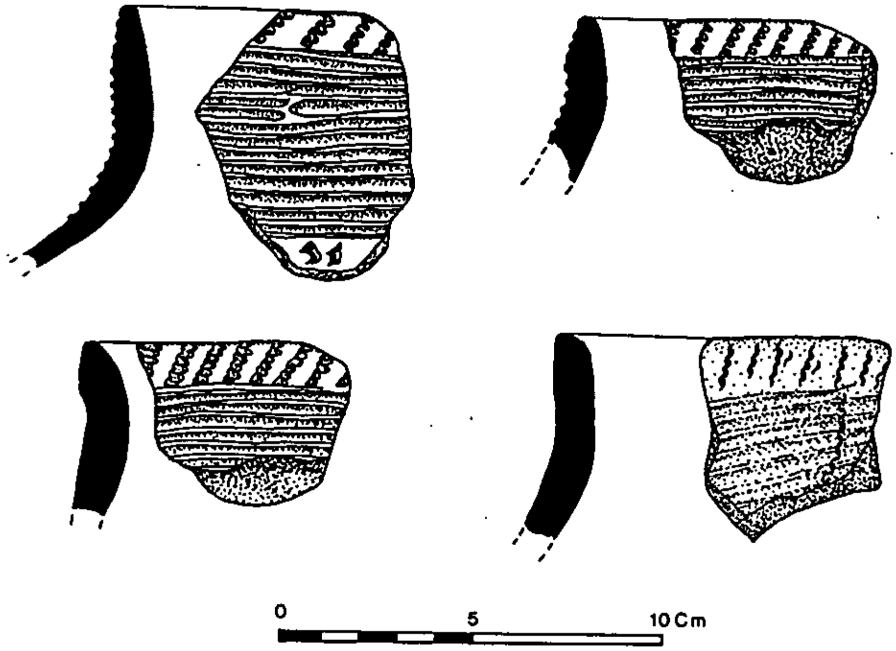


Figure 6. Pottery illustrations from Hola Hola.

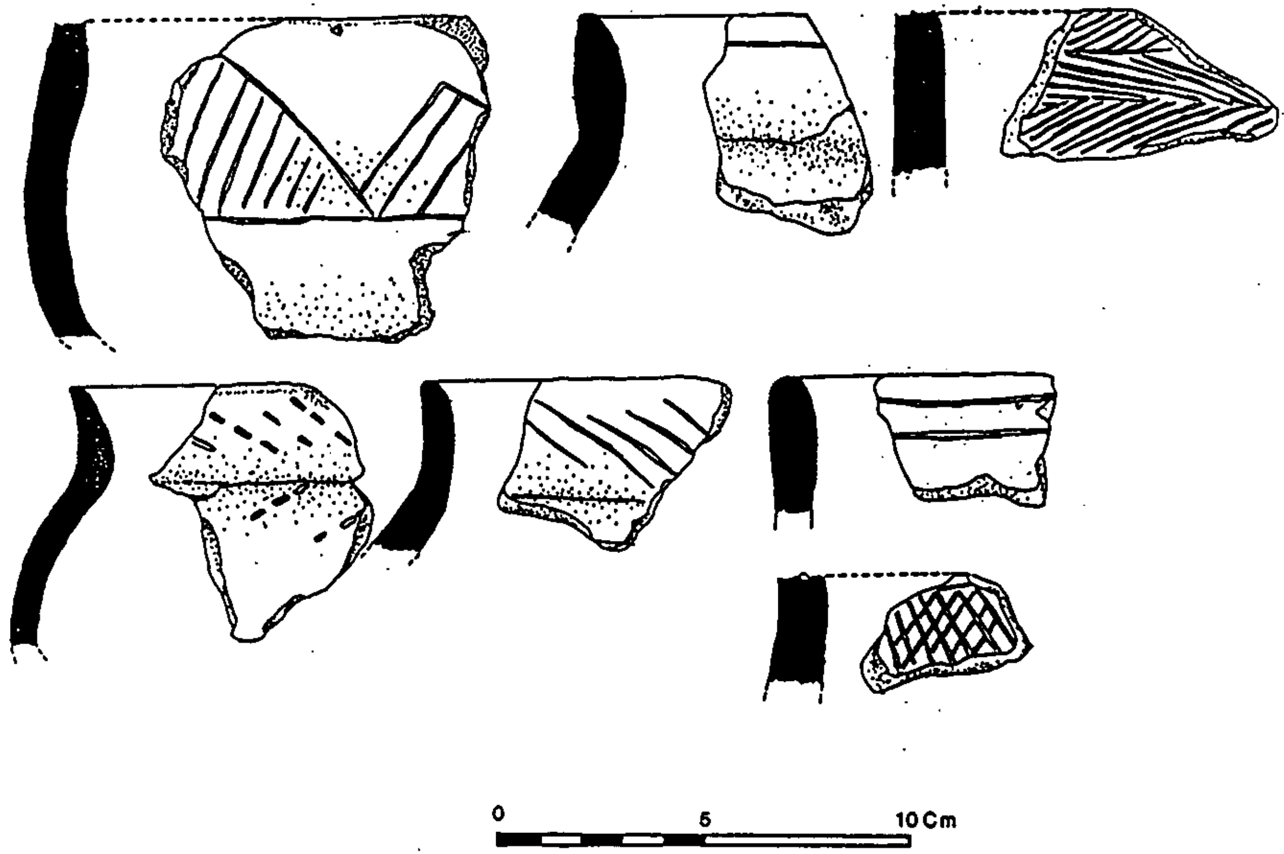


Figure 7. Pottery illustrations from Caimane.

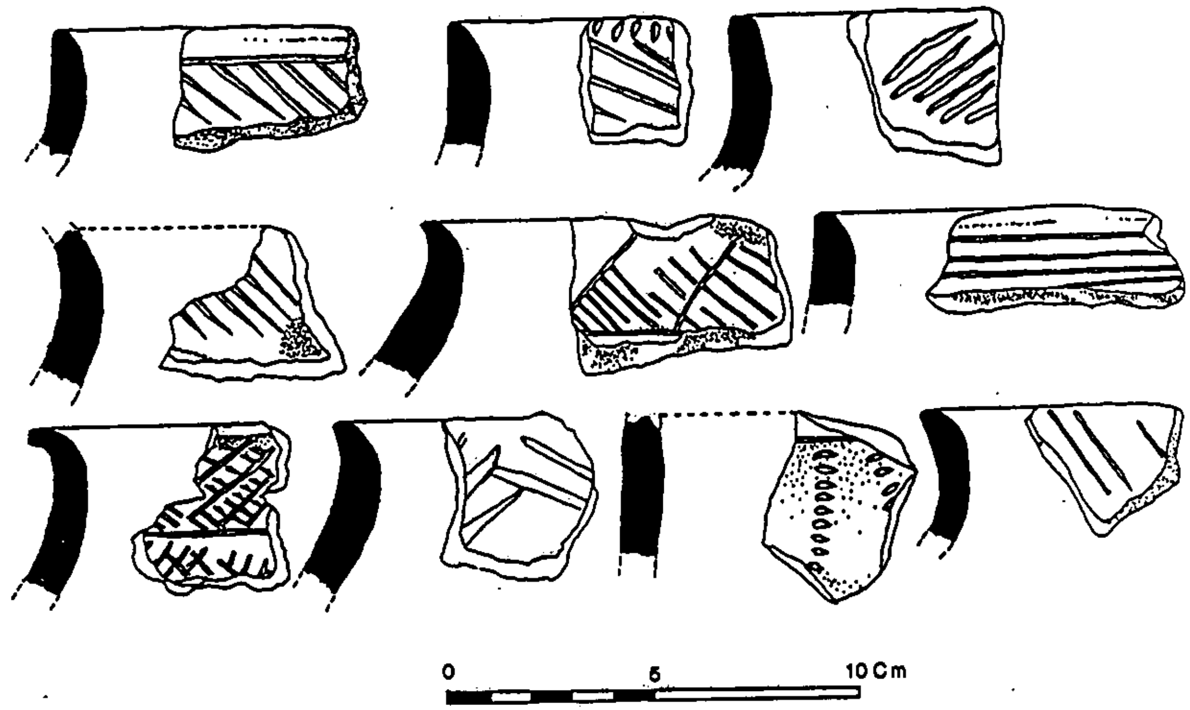


Figure 8. Pottery illustrations from Caimane.

APPENDIX 4

PHOTOGRAPHS FROM SELECTED EARLY FARMING COMMUNITY SITES OF SOUTHERN MOZAMBIQUE.

The photographs illustrate general views of the character of some of the sites mentioned in the text.
Not having had direct access to the photographic collections stored in Maputo, the author is grateful to Ricardo Duarte as well as to Gustaf Trotzig and David Damell from the Central Board of Swedish Antiquities (R.A.Ä.), for making available some of the negatives.

Plate 1. Ponta Dundo 1: View from the sea as approaching the site coming from Vilanculos (compare with Figure 5.3).

Plate 2. Ponta Dundo 1: Close-up of one of the eroded scatters.

Plate 3. Chibuene: View from the sea.

Plate 4. Chibuene: Erosion cut and shell midden horizons.

Plate 5. Bilene: R. Inskeep collecting charcoal from an eroded shell midden horizon at the 2533-Ac-3 site.

Plate 6. Xai-Xai: Shell midden erosion at site VII.

Plate 7. Xai-Xai: Perna perna shell horizon at site VII.

Plate 8. Xai-Xai: Matola potsherd being washed away from the shell midden at site VII.

Plate 9. Matola: T.C.Silva surveying at the site, which slopes down toward the Matola river bank in the background.

Plate 10. Matola: The main horizon interface is dotted by some shell fragments.

Plate 11. Matola: Pottery fragments occurring in the 75-85 cm living floor.

Plate 12. Duna Massingane: The white shades mark numerous erosions of shell middens derived from blown-away dunes.

Plate 13. Duna Massingane: The author examines one of the pottery scatters.

Plate 14. Zitundo: View from the site towards the northeast, with a seasonal pool and the extensive grassland in the background.

Plate 15. Zitundo: View of the horizons as exposed in the sand pit area. The in situ grey layers reveal middens. The darker patches within the layers are slag concentrations.

Plate 16. Caimane: General view of the main shelter.

Plate 17. Massingir: The site lies in the terrace shown in the background.

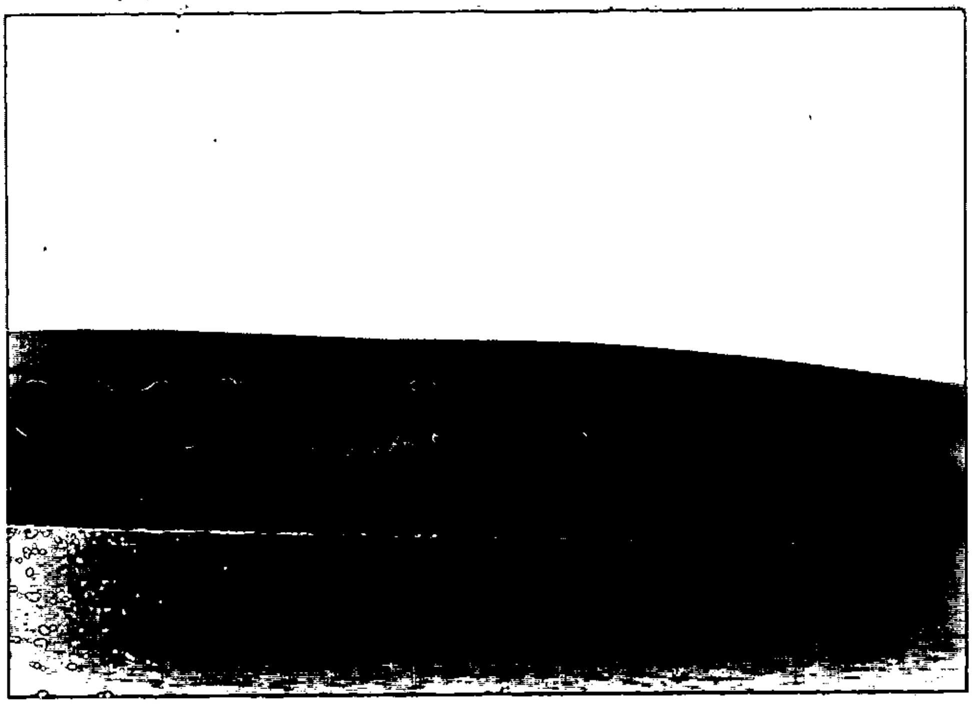


Plate 1. Ponta Dundo 1: View from the sea as approaching the site coming from Vilanculos (compare with Figure 5.3).

Plate 2. Ponta Dundo 1: Close-up of one of the eroded scatters.

Plate 3. Chibuene: View from the sea.

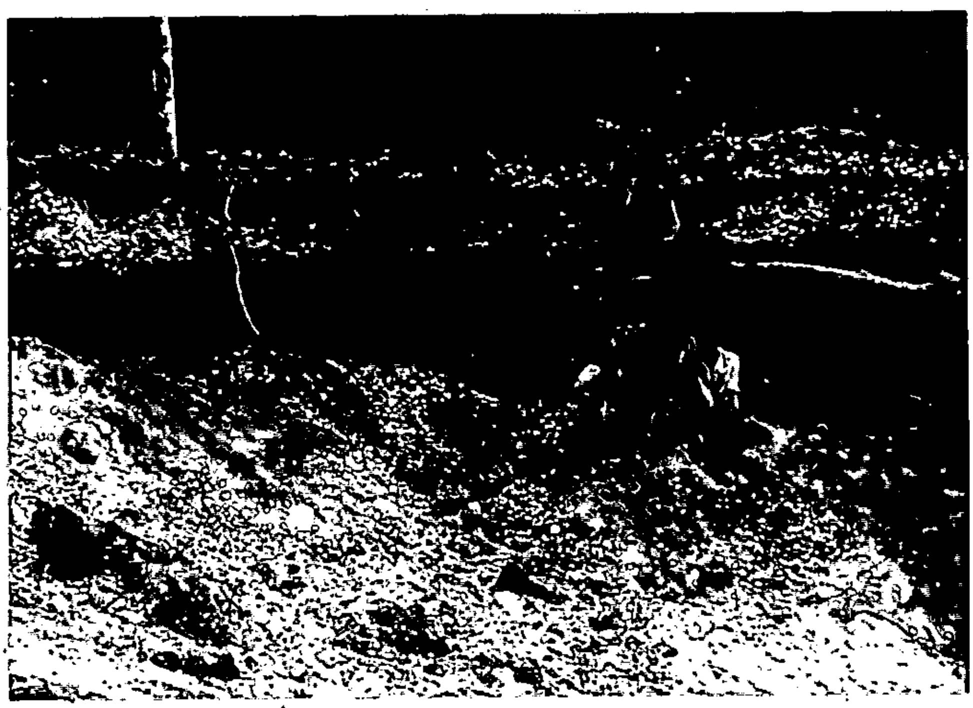


Plate 4. Chibuene: Erosion cut and shell midden horizons.

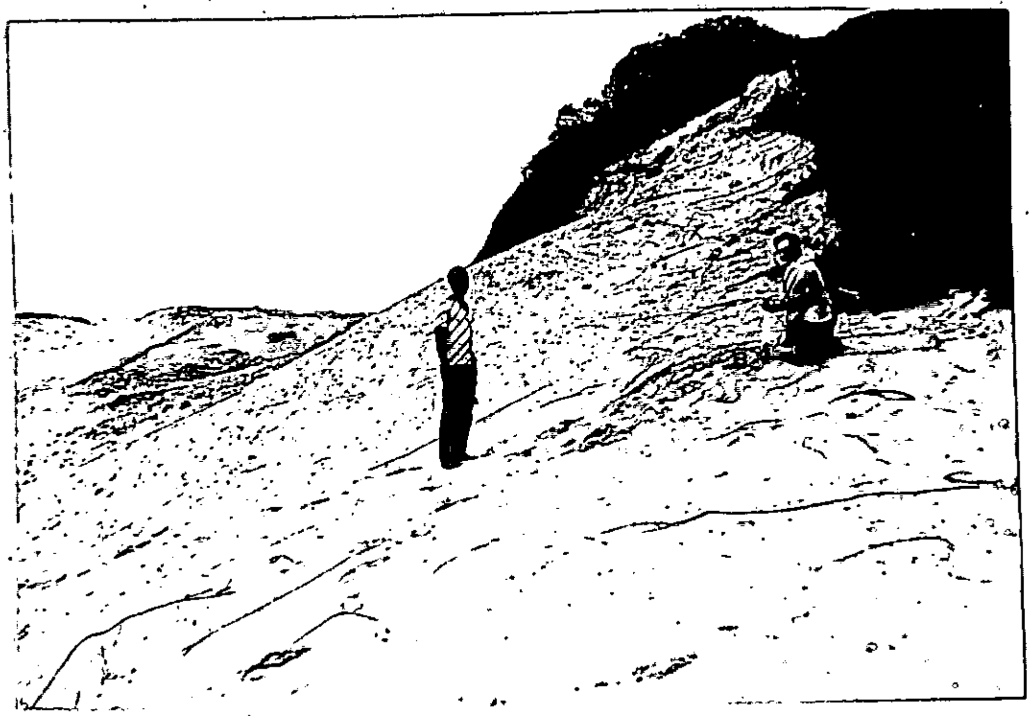


Plate 5. Bilene: R. Inskeep collecting charcoal from an eroded shell midden horizon at the 2533-Ac-3 site.

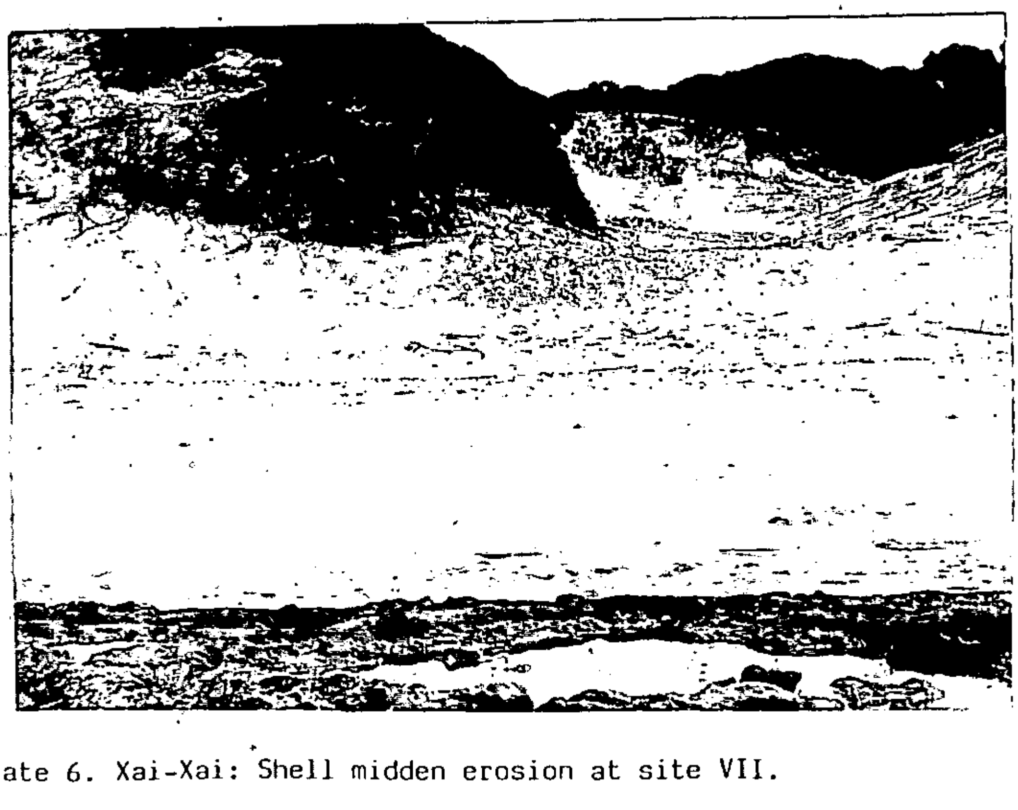


Plate 6. Xai-Xai: Shell midden erosion at site VII.

Plate 7. Xai-Xai: Perna perna shell horizon at site VII.

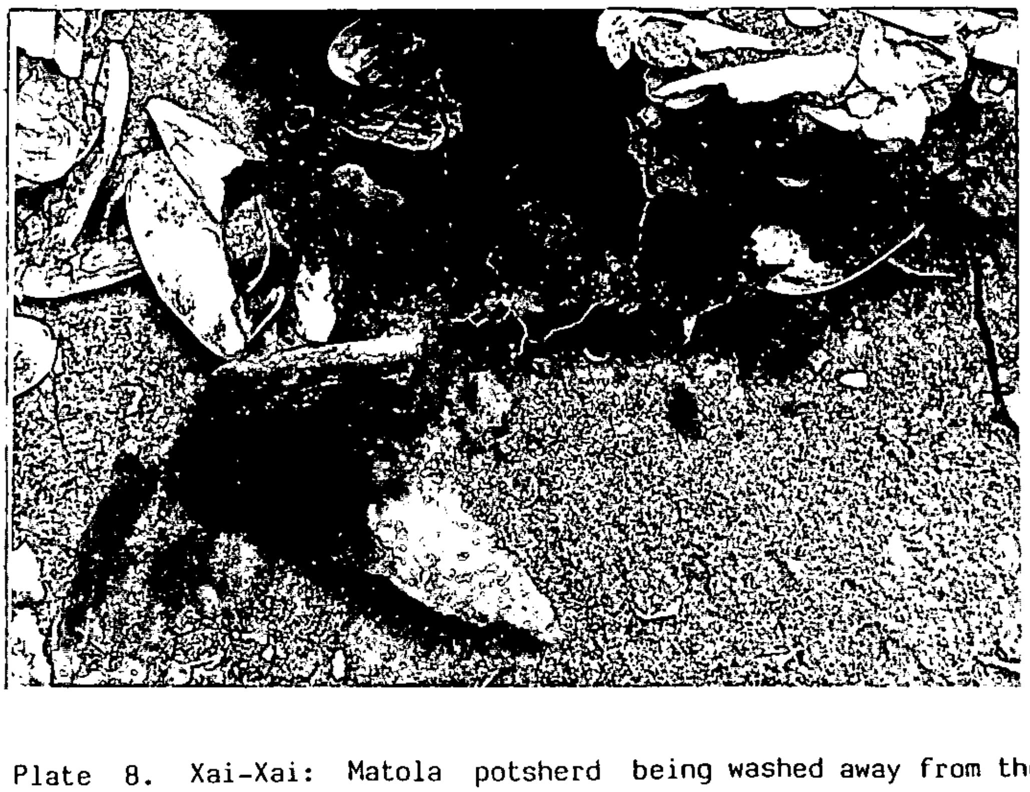


Plate 8. Xai-Xai: Matola potsherd being washed away from the shell midden at site VII.

Plate 9. Matola: T.C.Silva surveying at the site, which slopes down toward the Matola river bank in the background.

Plate 10. Matola: The main horizon interface is dotted by some shell fragments.

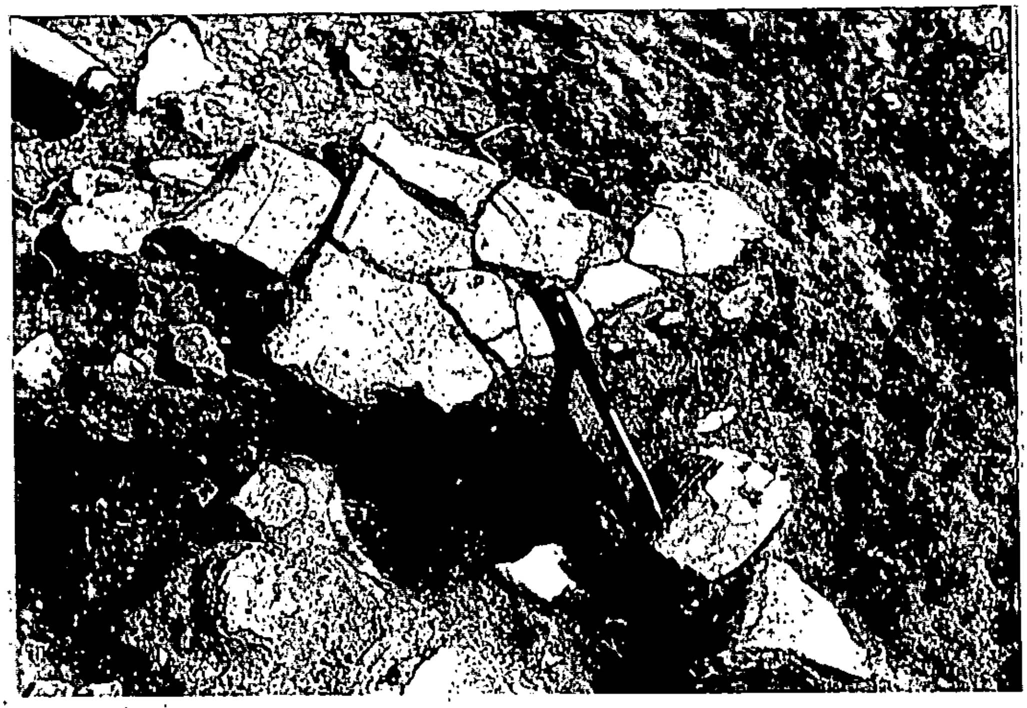


Plate 11. Matola: Pottery fragments occurring in the 75-85 cm living floor.

Plate 12. Duna Massingane: The white shades mark numerous erosions of shell middens derived from blown-away dunes.

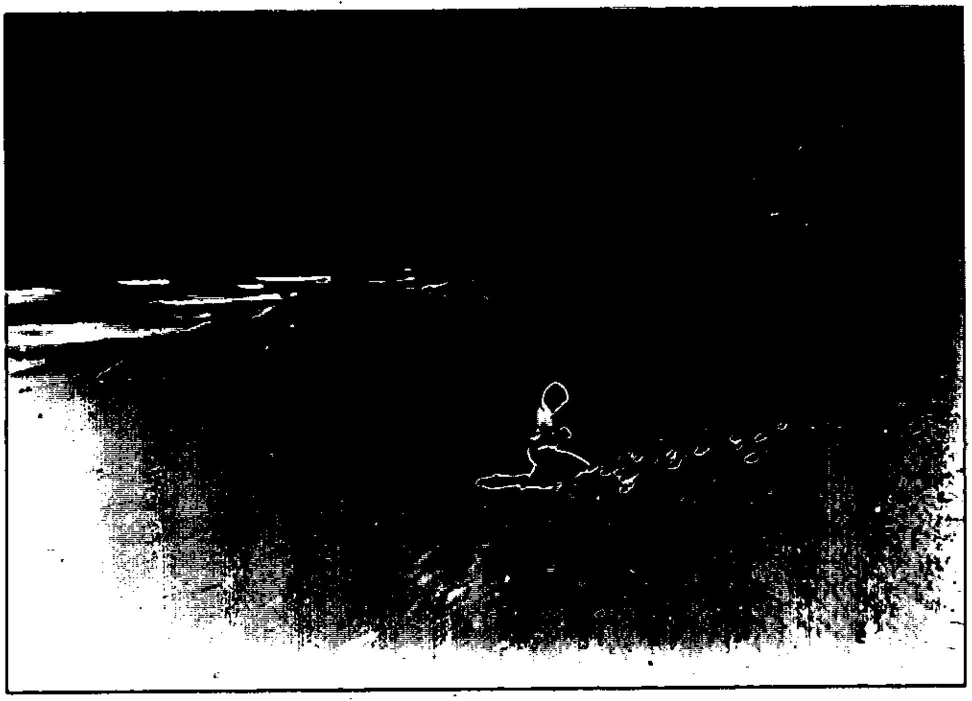


Plate 13. Duna Massingane: The author examines one of the pottery scatters.

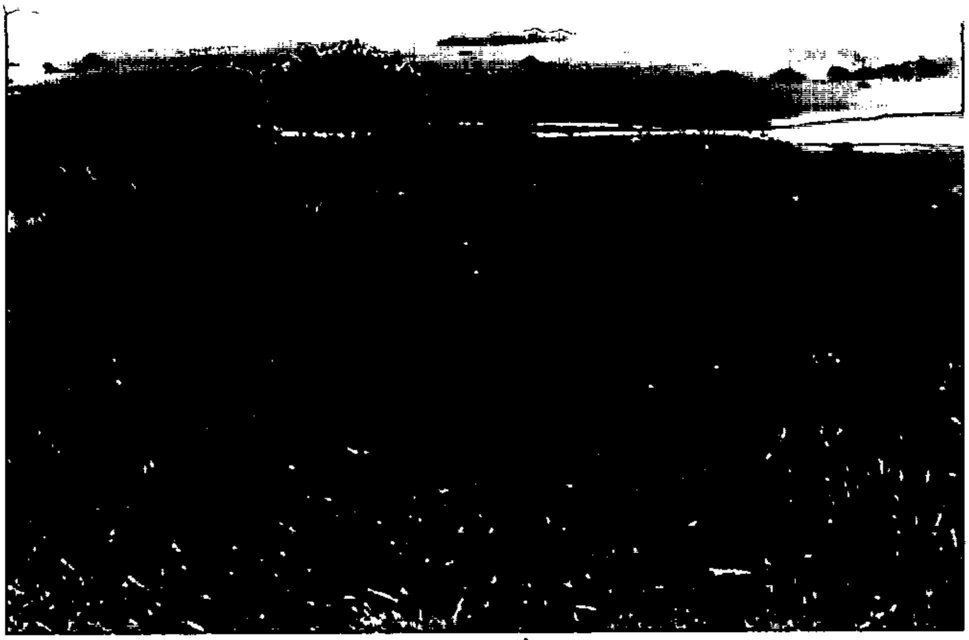


Plate 14. Zitundo: View from the site towards the northeast, with a seasonal pool and the extensive grassland in the background.

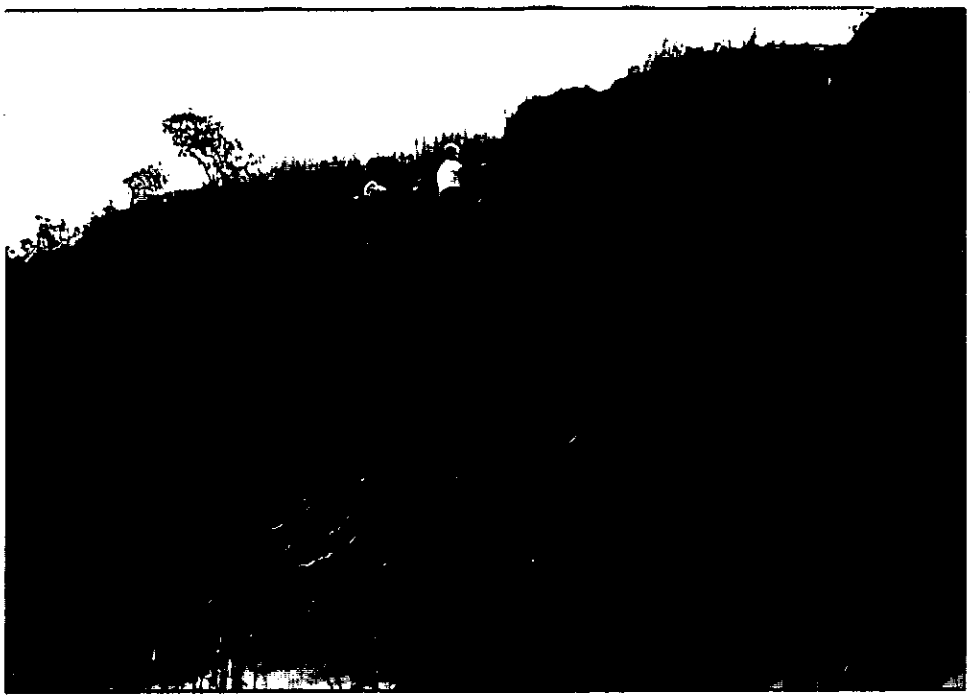


Plate 15. Zitundo: View of the horizons as exposed in the sand pit area. The in situ grey layers reveal middens. The darker patches within the layers are slag concentrations.

Plate 16. Caimane: General view of the main shelter.

Plate 17. Massingir: The site lies in the terrace shown in the background.

REFERENCES

Adamowicz, L. 1983. An investigation of residential patterns in Nampula Province viewed from an archaeological perspective:a progress report. Textos Para Debate. 3, Maputo, Departamento de Arqueologia e Antropologia, Universidade Eduardo Mondlane.

Adamowicz, L. 1985. Report and comments on the progress of "Cipriana 81/85" research project, Nampula Province. Textos Para Debate. 6, Maputo, Departamento de Arqueologia e Antropologia, Universidade Eduardo Mondlane.

Allan, W. 1965. The African Husbandman. Edinburgh.

Alpers, E.A. 1969. Trade, state and society among the Yao in the 19th century. Journal of African History (London), 10(3):405-420.

Afonso, R.S. 1976. A Geologia de Moçambique. Notícia explicativa da carta geológica de Moçambique 1:2,000,000. Maputo: Imprensa Nacional.

Ambrose, S.H. 1982. Archaeology and Linguistic reconstructions of History in East Africa. In The Archaeological and Linguistic Reconstruction of African History (Eds. C.Ehret and M.Posnansky), Berkley: University of California Press, pp.104-157.

Andrada, J.C. Paiva de 1885. Relatório de uma viagem à terra dos Landins. Lisboa: Imprensa Nacional.

Andrada, J.C. Paiva de 1886. Relatório de uma viagem às terras do Changamira. Lisboa: Imprensa Nacional.

Aubray, R. 1977. the fishery of Mozambique. F.A.O. Documentation DC 77/R 3 (Jan-Dec 77), FAO acess. number 33977, 1976, Rome: Food and Agriculture Organization.

Bailey, H.P. 1979. Semi-arid climates: their definition and distribution. In Agriculture in Semi-arid Environments (eds A.E. Hall et al.) Ecological Studies, 34, Berlin: Springer-Verlag, pp.73-97.

Barker, G. 1978. Economic models for the Manekweni Zimbabwe, Mozambique. Azania (Nairobi). 13: 71-100.

Barradas, L.A. 1962. Esboço agrológico do sul de Moçambique. Instituto de Investigação Científica de Moçambique, II Plano de Fomento, Lourenço Marques.

Barradas, L.A. 1967. A primitiva Mambone e as suas imediações, Monumenta (Lourenço Marques).3.

Barradas, L.A. 1968. Povos da Pré-História de Moçambique, Monumenta (Lourenço Marques). 4: 27-44.

Barradas, L.A. 1977. Kassimatis. In Catalogue of fossil hominids. Part I: Africa, (eds. K.P.Oakley, B.G. Campbell and T.I. Molleson), London: Trustees of the British Museum (Natural History), pp. 77- 78.

Beach, D.N. 1980. The Shona and Zimbabwe, 900-1850. Gwelo: Mambo Press.

Birmingham, D. 1977. Central Africa from Cameroun to the Zambezi. In The Cambridge History of Africa (ed. R.Oliver), Cambridge: Cambridge University Press, pp. 519-566.

Boas, F. 1923. Ethnographische Bemerkungen über die VaNdau. Zeitschrift für Ethnologie (Braunschweig), 55: 6-31.

Boletim Oficial 1943. Diploma Legislativo número 825. Boletim Oficial da Colónia de Moçambique. I série. Lourenço Marques: Imprensa Oficial, 8:59-61.

Breuil, H. 1944. II Parte das primeiras impressões duma viagem de estudos arqueológicos no Sul de Moçambique. Moçambique Documentário Trimestral (Lourenço Marques), 40: 39-48.

Brito, B.G.de (Ed.) 1971. História Trágico-Marítima. Lisboa: Edição Afrodite, (1st Edition 1904-09,12 vols.).

Cabral, A. 1910. Raças, usos e costumes dos indígenas do distrito de Inhambane. Lourenço Marques: Imprensa Nacional.

Cabral, A. 1925. Raças, usos e costumes dos indígenas da Província de Moçambique. Lourenço Marques: Imprensa Nacional.

Carvalho, M. 1969. A Agricultura Tradicional de Moçambique. A distribuição geográfica das culturas e a sua relação com o meio. Missão de Inquérito Agrícola, Lourenço Marques.

Castanheda, F.L.de 1924. História do Descobrimento e Conquista da Índia pelos Portugueses. Coimbra: Imprensa da Universidade.

Centro de Estudos Históricos Ultramarinos 1962-1971. Documentos sobre os Portugueses em Moçambique e na África Central. Centro de Estudos Históricos Ultramarinos and the National Archives of Rhodesia, vols. I-VII. Lisbon and Salisbury.

Clark, D.L. 1978. Analytical Archaeology. London: Methuen (1st edition 1968).

Collett, D.P. 1982. Models of the spread of the Early Iron Age. In The archaeological and linguistic reconstruction of African History (eds. C.Ehret and M.Posnansky), op.cit., pp.182-198.

Cope, A.T. 1971. A consolidated classification of the Bantu Languages, African Studies (Johannesburg). 30 (3-4): 213-236.

Correia, A.A.E.M. 1934. As ruínas de Zimbabwe e a Arqueologia de Moçambique. Trabalhos do I Congresso Nacional de Antropologia Colonial, 2: 498-500, Porto.

Costa, A.N.da 1978. O caso do Monomotapa. Maputo: Tempográfica.

Cruz e Silva,T. 1976. A preliminary report on an early iron age site: Matola IV/68. In Iron Age research in Moçambique: collected preliminary reports (eds J.Morais et al.), report 2,33 pp. .

Cruz e Silva,T. 1980. First indications of early iron age in southern Moçambique: Matola IV 1/68. In Proceedings,VIIIth Panafrican Congress of Prehistory and Quaternary Studies (eds R.E.F.Leakey and B.A.Ogot), pp. 349-50. Nairobi,TILLMIAP.

David, N. 1982. Prehistory and Historical Linguistics in Central Africa: points of contact. In The archaeology and linguistic reconstruction of African History (eds. C.Ehret and Posnansky), op.cit., pp.78-95.

Day, J.H. 1969. A guide to the marine life on South African shores. Cape Town: A.A.Balkema.

Denbow, J. 1986. A new look at the Later Prehistory of the Kalahari. Journal of African History (London), 27: 3-28.

de Voos, A. 1975. Africa,the devasted Continent? The Hague: W. Junk b.v..

Derricourt, R.M. 1975. Some coastal shell middens in southern Mocambique. Azania (Nairobi).10: 135-9.

Dias, B. 1947. Relatório da campanha de reconhecimento geo-arqueológico feito na região de Goba, na área entre os rios Umbeluzi e Changalane, Lourenço Marques, unpublished manuscript.

Dias, J.A.T.S. 1961. Qual seria o status glossínico no território de Moçambique ao Sul do Limpopo anteriormente à grande panzootia de peste bovina, de 1896? Bol.Soc.Est.Moc (Lourenço Marques).128: 55-65.

Dias, J.A.T.S.; Rafael,G; Alcântara,P. 1971. Relatório de visita às ilhas do Arquipélago de Vilanculos. Faculdade de Veterinária, L.Marques, unpublished report, 27 pp..

Dias, J. 1964. Os Macondes de Moçambique. Lisboa, Junta de Investigações do Ultramar, vol.I&II.

Dias, J. 1970. Os Macondes de Moçambique. Lisboa,Junta de Investigações do Ultramar, vol. III.

Dias, M. 1960. Aspectos técnicos e sociais da olaria dos Chopes. Garcia de Orta (Lisboa),8: 779-785.

Dickinson, R.W. 1971. Archaeological investigations at Nova Mambone, Mocambique, May 22nd- June 4th 1971. Monumenta (Lourenço

Marques),7: 23-33.

Dickinson, R.W. 1976. Surface survey of archaeological sites on Angoche Island, 28-29 May 1975. Salisbury, The Central African Historical Association, local series,31, 11 pp.

Doke, C.M. 1931. Report on the Unification of the Shona Dialects. Printed for the Government of Southern Rhodesia, Austin, Hertford, Salisbury.

Doke, C.M. 1954. The Southern Bantu Languages. London: Oxford University Press.

Duarte, R.T. 1976. Three Iron Age sites in Massingir area, Gaza Province, Moçambique, and their importance in the southern Moçambique Bantu settlement. In Iron Age research in Moçambique: collected preliminary reports (eds J.Morais et al.), report 5,21 pp.

Earthy, E.D. 1933. Valenge Women. The social and economic life of the Valenge women of Portuguese East Africa. London: Oxford University Press.

Eggert, M. 1981. Historical linguistics and prehistoric archaeology: trend and pattern in early iron age research of Sub-Saharan Africa. In Beiträge zur Algemeinen und Vergleichenden Archäologie. Band 3, Munchen: C.H. Beck'sche Verlagsbuchhandlung, pp. 277-324.

Ehret, C. 1974. Patterns of Bantu and Central Sudanic settlement in Central and Southern Africa (ca 1000 bc-500 ad). transafrica Journal of History, 3: 1-27.

Ehret, C. 1982 a. Linguistic inferences about early Bantu history. In The archaeological and linguistic reconstruction of African History (eds. C. Ehret and M. Posnansky), Berkeley: University of California Press, pp. 57-65.

Ehret, C. 1982 b. The first spread of food production to Southern Africa. In The archaeological and linguistic reconstruction of African History (eds. C. Ehret and M. Posnansky), Berkeley: University of California Press, pp. 158-181.

Ehret, C. and Posnansky, M. 1982. The archaeological and linguistic reconstruction of African History. Berkeley: University of California Press.

Ehrich, R.W. and Henderson, G.M. 1968. Culture Area. In International Encyclopedia of the Social Sciences (ed. David L. Sills), Macmillan Co & The Free Press, vol.3: 563-566.

Evers, T.M. 1980. Klingbeil Early Iron Age sites, Lydenburg, eastern Transvaal, South Africa. South African Archaeological Bulletin (Cape Town). 35:46-57.

Evers, T.M. 1981. The Iron Age in the eastern Transvaal, South Africa. In Guide to archaeological sites in the northern and eastern Transvaal (ed E.A.Voigt), Pretoria: Transvaal Museum, pp. 65-109.

F.A.O. Food and Agriculture Organization 1974. Production Year Book. Rome.

F.A.O. Food and Agriculture Organization 1978. Report on the Agro-Ecological Zones Project, vol.1 (Methodology and results for Africa), World Soil Resources Report, 48, Rome.

FAO/ INIA 1982 a. Agro-Climatic resources survey, Ministério da Agricultura, relatórios 1-5, Maputo.

FAO/ INIA 1982 b. Soil resources inventory map, scale 1:2.000.000, Ministério da Agricultura, Maputo.

FAO/UNDP/MOZ 1980 a. Carta 2: Vegetação e aproveitamento potencial, Ministério da Agricultura, Maputo.

FAO/UNDP/MOZ 1980 b. Carta 3: Esboço das Zonas Agro-Climáticas, Ministério da Agricultura, Maputo.

FAO/UNDP/MOZ 1980 c. Carta 4: Zonas com certas limitações do terreno para a agricultura em sequeiro, Ministério da Agricultura, Maputo.

FAO/UNDP/MOZ 1980 d. Preliminary pasture map of northern Urrongas region (Inhambane), scale 1:250.000, Ministerio da Agricultura, Maputo.

F.A.O and UNESCO 1973. Soil map of the world, sheet VI-3, Africa, UNESCO, Paris.

F.A.O. and UNESCO 1974. Soil map of the world, 1:5.000.000, vol.I- legend, UNESCO, Paris.

F.A.O. and UNESCO 1977. Soil map of the world, 1:5.000.000, Volume VI: Africa, UNESCO, Paris.

Garlake, P.S. 1976. An investigation of Manekweni, Mozambique. Azania, 11:25-47.

Gouveia,G. and A.S.M.Marques 1980. Carta dos solos de Moçambique, Ministério da Agricultura, Maputo.

Gramly, R.M. 1978. Expansion of Bantu-speakers versus development of Bantu language and African culture in situ: an archaeologist's perspective. South African Archaeological Bulletin, 33: 107-112.

Gregersen, E.A. 1977. Language in Africa: an introductory survey. New York: Gordon and Breach.

Griffiths, J.F. 1972. Climates of Africa. World Survey of Climatology, vol.10, Amsterdam: Elsevier.

Grove, A.T. and Klein, F.M.G. 1979. Rural Africa. Cambridge: Cambridge University Press.

Guthrie, M. 1962. Some developments in the Prehistory of the Bantu languages. Journal of African History, 3: 273-82.

Guthrie, M. 1971. Comparative Bantu, vol.2, Gregg International Publishers.

Hall, M. 1981. Settlement patterns in the Iron Age of Zululand. Cambridge Monographs in African Archaeology, 5, Oxford: BAR International Series 119.

Hall, M. and Vogel, J.C. 1980. Some recent radiocarbon dates from southern Africa, Journal of African History (Cambridge). 21: 431-455.

Heine, B. 1984. The dispersal of the Bantu peoples in the light of linguistic evidence. Muntu (Libreville), 1: 21-35.

Heine,B.; Hoff,H.; Vossen,R. 1977. Neuere Ergebnisse zur Territorialgeschichte der Bantu. In Zur Sprachgeschichte und Ethnohistorie in Afrika. Neuere Beiträge Afrikanistischer Forschungen. (eds W.J.G. Möhlig, F.Rottland and B.Heine). Berlin: Dietrich Reimer Verlag.

Huffman, T.N. 1970. The Early Iron Age and the spread of the Bantu. South African Archaeological Bullentin. 25: 3-21.

Huffman, T.N. 1971. A guide to the Iron Age of Mashonaland, Occasional Papers of the National Museums of Rhodesia (Salisbury), 4 (1): 20-44.

Huffman, T.N. 1979. Review of "The later prehistory of eastern and southern Africa" by D.W.Phillipson. South African Journal of Science. 75: 233-37.

Huffman, T.N. 1980 a. Ceramics, Classification and ceramic entities. African Studies (Johannesburg). 39(2):123-174.

Huffman, T.N. 1980 b. Corrected radiocarbon date for the Iron Age of Rhodesia. In Beach,D.N. The Shona and Zimbabwe 900-1850, Gwelo: Mambo Press, pp. 321-25.

Huffman, T.N. 1982. Archaeology and Ethnohistory of the African Iron Age, Annual Review of Anthropology, 11: 133-50.

Hulthen, B. 1982. Identification of clays and its application to investigations of ancient ceramics. Second Nordic Conference on the application of scientific methods in Archaeology, PACT (Strasburg), 7: 393-400.

I.I.C.M. 1979. Museu Arqueológico de Manyikeni. Maputo: Instituto de Investigação Científica de Moçambique.

Inskeep, R.R. 1976. The problem of "Bantu origins". In Problems in Economic and Social Archaeology, (eds. G.de G. Sieveking, et al.). pp. 25-37.

Inskeep, R.R. 1978 a. The peopling of Southern Africa. Cape Town: David Philip.

Inskeep, R.R. 1978 b. The Bushmen in Prehistory. In The Bushmen (Ed.P.V.Tobias). Cape Town: Human & Rousseau, pp.33-56.

Isaacman, A. 1972. The origin, formation and early history of the Chikunda. Jornal of African History (London), 13(3): 443-461.

Johnston, H.H. 1913. A survey of the ethnography of Africa: and the former racial and tribal migrations of that continent. Journal of the Royal Anthropological Institute, 43; 391-2.

Jones, P.A. 1983. A Net Cast Wide: The Social Geography of Initial Agriculture and the Early Iron Age South of the Equator. D.Phil. thesis, University of Sheffield.

Junod, H.A. 1913. the condition of the natives of South-East Africa in the sixteenth century, according to the early Portuguese documents. South African Journal of Science (Johannesburg), 10(6): 137-161.

Junod, H.A. 1962. The Life of a South African Tribe. New York: University Books, 2 vols. (1st edition 1912/3, Neuchatel).

Klapwijk, M.A. 1974. A preliminary report on pottery from the north-eastern Transvaal,South Africa. S. African Archaeological

Bulletin (Cape Town). 29(113-114): 19-23.

Kuper, A. and Van Leynselle, P. 1978. Social Anthropology and the Bantu expansion, Africa (London). 48(4):335-352.

Lanham, L.W. 1979. Language and World-View: new evidence from Africa, African Studies (Johannesburg).38:81-86.

Lawton, A.C. 1967. Bantu pottery of Southern Africa,Annals of the S.African Museum. 49, pt.I.

Liesegang, G. 1976. Produktion, Vertrieb und Formen der töpferwarem des sudlichen Mocambique in den jahren 1969/ 1971. Baessler-Archiv, Neue Folge, Band XXIV: 249-300.

Liesegang, G. 1978. Famines and Smallpox in South Eastern Africa, 18th to 20th centuries. Departamento de História, Universidade Eduardo Mondlane, Maputo, mimeographed paper, 12 pp..

Liesegang, G. 1982. Famines, Epidemics, Plagues and long periods of warfare, their effect in Mozambique 1700- 1975. Conference on Zimbabwean History: Progress and Development, University of Zimbabwe, Harare, mimeographed paper, 8 pp..

Lupi, E.do C. 1907. Angoche- Breve memória sobre uma das Capitanias-Mores do Distrito de Moçambique. Lisboa: Ministério dos Negócios da Marinha e Ultramar.

Maggs, T.M.O'C. 1979. Some thoughts on classification and the Natal Iron Age sequence. Paper presented to the Southern Africa Association of Archaeologists Conference, Cape Town (June 1979), mimeographed.

Maggs, T.M.O'C. 1980 a. Mzonjani and the beginning of the Iron Age in Natal. Ann.Natal Mus. (Pietermaritzburg). 24: 71-96.

Maggs, T.M.O'C. 1980 b. Msuluzi Confluence: a seventh century Early Iron Age site on the Tugela river. Ann.Natal Mus.(Pietermaritzburg). 24: 111-145.

Maggs, T.M.O'C. 1980 c. The Iron Age sequence South of the Vaal and Pongola rivers: some historical implications. Journal of African History (Cambridge). 21: 1-15.

Maggs, T.M.O'C. 1984. The Iron Age south of the Zambezi. In Southern African Prehistory and Paleoenvironments (ed. R.Klein), Rotterdam: A.A.Balkema, pp.329-395.

Maggs, T.M.O'C. and Michael, M.A. 1976. Ntshekane: an Early Iron Age site in the Tugela Basin, Natal. Ann.Natal Mus. (Pietermariztburg). 22(3): 705-40.

Malaisse, F. et al. 1975. Litter fall and litter breakdown in Miombo. In Tropical Ecological Systems (eds F.B.Golley and E.Medina). Ecological Studies, 11, Berlin: Springer-Verlag, pp.137-152.

Malaisse, F. 1978. The Miombo ecosystem. In Tropical Forest Ecosystems, Natural Resources Research (eds UNESCO/UNEP/FAO) 14, Paris, pp. 589-606.

Maret, P. 1982 a. The "Neolithic" problem in the West and South. In The Archeology of Central Africa (ed. F.Van Noten), op.cit., pp. 59- 65.

Maret, P. 1982 b. The Iron Age in the West and South. In The

Archaeology of Central Africa (ed. F.Van Noten), op.cit., pp. 77-96.

Maret,P. de 1982 c. New survey of archaeological research and dates for West-Central and North-Central Africa. Journal of African History (Cambridge). 23: 1-15.

Maret, P. 1984. L'archeologie en zone bantu jusq'en 1984. Muntu (Libreville), 1: 37-60.

Maret, P. 1985. Recent archaeological research and dates from Central Africa. Journal of African History (London), 26: 129-148.

Martinez, J.C.S. 1975. Algumas notas para o estudo das populações do litoral da África Sul-Oriental à chegada dos Portugueses. Universidade de Lourenço Marques, Curso de História, Lourenço Marques, mimeographed.

Martinez, J.C.S. 1976. A preliminary report on two early Iron Age pottery traditions from southern Moçambique coastal plain, in Iron Age research in Moçambique: collected preliminary reports (Eds J.Morais et al.), report 3, 48 pp.

Mason, R.J. 1969. Iron Age stone artefacts from Olifantspoort, Rustenburg District and Kaditshwene. South African Journal of Science (Johannesburg), 65(2): 41-44.

Matos, M.L.C.de 1973. Origens do Povo Chope Segundo a Tradição Oral. In Mems. Inst Invest. Cient. Mocamb. (Maputo), 10(C):1-104.

Mauny, R. 1959. Notes on the Zimbabwe-Sofala problem, South African Archaeological Bulletin (Cape Town). XVI (53):18-20.

Meillassoux, C. 1977. Mulheres, Celeiros e Capitais. Lisboa: Afrontamento.

Mgomezulu, G.G.Y. 1981. Recent archaeological research and radiocarbon dates from eastern Africa. Journal of African History (Cambridge). 22: 435-56.

Micro Data Base Systems. 1984. KnowledgeMan reference Manual. Lafayette: Micro Data Base Systems, Inc..

Ministério da Agricultura 1977. Breve Monografia Agrária. Ministério da Agricultura, Maputo.

Ministério da Educação e Cultura 1980. Atlas Geográfico. vol.1, Maputo.

Mkanganwi, K.G. 1972. The relationship of coastal Ndau to the Shona Dialects of the interior, African Studies (Johannesburg). 31(2):111-137.

Moçambique, 1983. Primeiro recenseamento geral da população, Maputo, Conselho Coordenador de Recenseamento.

Moçambique, Missão de Inquérito Agrícola 1973. Estatística Agrícola de Moçambique. Lourenço Marques.

Morais, J.M. 1976. Prehistoric research in Moçambique. In Iron Age research in Moçambique: collected preliminary reports (eds J.Morais et al.), Maputo, Instituto de Investigação Científica de Moçambique, report 1, 21 pp.

Morais, J.M. 1978. Tentativa de definição de algumas comunidades em Moçambique de 0 a 1500. Universidade Eduardo Mondlane, Curso de História e Centro de Estudos Africanos, Maputo, mimeographed.

Morais, J.M. 1984. Mozambican Archaeology: past and present. The African Archaeological Review (Cambridge). 2:113-128.

Morais, J.M. in prep. The early farming communities sites of Matola, Caimane and Zitundo. International Report Series, Central Board of National Antiquities (Sweden) and Eduardo Mondlane University (Mozambique).

Morais, J., Cruz e Silva, T., Martinez, J.C.S., and Duarte, R.T. 1976. Iron Age research in Moçambique: collected preliminary reports. Maputo, Instituto de Investigação Científica de Moçambique.

Morais, J.M. and Ferrão, L. in press. Bibliografia arqueológica de Moçambique até 1984. Leba (Lisboa),6.

Morais, J.M. and Sinclair, P.J.J. 1980. Manyikeni, a Zimbabwe in southern Mozambique. In Proceedings, VIIIth Panafrican Congress of Prehistory and Quaternary Studies (Eds R.E.F. Leakey and B.A. Ogot), Nairobi, TILLMIAP, pp. 351-4.

Moura, A.R. 1969. Contribuição para o conhecimento dos grés costeiros do Sul do Save (Moçambique). Bol.Serv. Geol.Min., Moçambique (Lourenço Marques), 35,pp.1-78.

Myre, M. 1971. As pastagens da região do Maputo, Memórias. Instituto de Investigação Agronómica de Moçambique, 3, Maputo.

Myre,M & Antão, L.R. 1972. Reconhecimento pascícola ao vale de Save. Comunicações, 75, Instituto de Investigação Agronómica de

Moçambique, Lourenço Marques, 180 pp..

Newitt, M.D.D. 1972. The early history of the sultanate of Angoche. Journal of African History (London), 13(3): 397-406.

Oliver, R. 1966. The problem of the Bantu expansion. Journal of African History, 7(3): 361-376.

Phillipson, D.W. 1970. Notes on the later prehistoric radiocarbon chronology of eastern and southern Africa. Journal of African History (Cambridge). 11 (1): 1-15.

Phillipson, D.W. 1976. The Prehistory of Eastern Zambia. Memoir 6, Nairobi: British Institute in Eastern Africa.

Phillipson, D.W. 1977. The later prehistory of eastern and southern Africa. London: Heinemann.

Phillipson, D.W. 1981. Early food-producing communities in East Africa: problems of recognition. In African Historical Demography vol. II, Proceeding of a seminar held in the Centre for Arican Studies, Edinburgh: University of Edinburgh, pp. 457-464.

Phillipson, D.W. 1985. African Archaeology. Cambridge: Cambridge University Press.

Pires, J.A. 1921-22. Subsídios etnográficos acerca da população indígena do Distrito de Quelimane, circunscrição de Moebaze (resposta a um questionário oficial), Anuário da Escola Superior Colonial (Lisboa), 3: 131-213.

Pouillon, F. 1978. A determinação de um modo de produção: as forças produtivas e a sua apropriação. In A Antropologia

Económica (ed. F.Pouillon), Lisboa: Edições 70, pp. 101-149.

Posnansky, M. 1981. The societies of Africa south of the Sahara in the early iron age. In General History of Africa II: Ancient civilizations of Africa (ed. G. Mokhtar). Heinemann/ Unesco, pp. 718-731.

Prata, A.P. 1960. Gramática da Língua Macua e seus dialectos. Cucujães: Sociedade Portuguesas das Missões Católicas.

Ralph,E.K.; Michael,H.N. and Han,M.C. 1973. Radiocarbon dates and reality, MASCA Newsletter. 9: 1-20.

Ramos, M.da F. 1979. Contribution Portugaise à l'étude archéologique de la vallée du Zambeze. Leba (Lisboa), 2: 45-52.

Ramos, M.da F. and Rodrigues, M.C. 1978. Notas acerca de achados de cerâmica chinesa no Zumbo (Moçambique). Leba (Lisboa), 1: 59-66.

Randles, W.G.L. 1981. The Empire of Monomotapa. Gwelo: Mambo Press, Zambeziana Series,7.

Rita-Ferreira, A. 1961. Bibliografia Etnológica de Moçambique (das origens a 1954). Lisboa: Junta de Investigações do Ultramar.

Rita-Ferreira, A. 1975. Povos de Moçambique: História e Cultura. Porto: Afrontamento.

Rita-Ferreira, A. 1982. Fixacão Portuguesa e História Pré-Colonial de Moçambique. Lisboa, Instituto de Investigação Científica Tropical, Colecção Estudos,Ensaios e Documentos, 142.

Robertshaw, P. 1978. The origin of pastoralism in the Cape. South African Historical Journal (Bloemfontein), 10: 117-133.

Robertshaw, P. 1984. Archaeology in Eastern Africa: recent developments and more dates, Journal of African History (Cambridge). 25: 369-393.

Robertshaw, P. and Collett, D. 1983. A new framework for the study of early pastoral communities in East Africa. Journal of African History (London), 24: 289-301.

Robins, P.A. and Swart, E.R. 1964. Southern Rhodesian radiocarbon measurements, Radiocarbon. 6: 31-36.

Robinson, K.R. 1965. The Leopard's Kopje culture: a preliminary report on recent work, Arnoldia (Rhodesia), 1 (25): 1-7.

Robinson, K.R. 1982. The Iron Age of Northern Malawi: an archaeological reconnaissance. Publication 20, Department of Antiquities, Malawi.

Rodrigues, M.C. forthcoming. Contribuição para o estudo da cerâmica "local ou regional" da Idade do Ferro do Norte de Moçambique. Leba (Lisboa),6.

Rosling, H. 1986. Cassava, Cyanide, and Epidemic Spastic Paraparesis. A study in Mozambique on dietary Cyanide exposure. Acta Universitatis Upsaliensis. Uppsala, Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine, 19, 52 pp.

Rzewuski, E. 1979. State of Research on classification of the Bantu languages of Mozambique., Departamento de Letras Modernas, Maputo, unpublished paper, 6 pp.

Sallade,J.K. and Braun,D.P. 1978. Spatial organization of peasant agricultural subsistence territories: distance factors and crop location. In Ethnography by Archaeologists (ed. E.Tooker), 1978 Proceedings of the American Ethnological Society. The American Ethnological Society. pp. 19-41.

Sampson, R.J. 1978. Surface III graphics system. Series on spatial analysis, 1, Kansas Geological Survey (1st edition 1975).

Santos Junior, J.R. 1941. On the prehistory of Moçambique. Moçambique Documentário Trimestral (Lourenço Marques), 28: 23-88.

Schmidt, P.R. 1980. Early Iron Age settlements and industrial locales in West Lake, Tanzania Notes and Records (Dar-es-Salaam). 84-85: 77-94.

Schweitzer, F.R. 1974. Archaeological evidence for sheep at the Cape. South African Archaeological Bulletin, 29: 75-82.

Sheppard, J.G. and Swart, E.R. 1966. Rhodesian radiocarbon measurements II, Radiocarbon. 8: 423-429.

Sinclair, P.J.J. 1982. Chibuene: an early trading site in southern Mozambique. Paideuma (Wiesebaden). 28:149-64.

Sinclair, P.J.J. 1985 a. Ethno-Archaeological surveys of Vilanculos bay, south-central Mozambique. Working Papers in African Studies. 13,Department of Cultural Anthropology, Uppsala University.

Sinclair, P.J.J. 1985 b. Ethno-archaeological surveys of the Save river valley, south-central Mozambique, Working Papers in African Studies. 11, Department of Cultural Anthropology, Uppsala

University.

Sinclair, P.J.J. 1985 c. An archaeological reconnaissance of northern Mozambique,(part I: Nampula Province; part II: Cabo Delgado Province). Working Papers in African Studies. 12, Department of Cultural Anthropology, Uppsala University.

Sinclair, P.J.J. 1986. Some theoretical and methodological aspects of ceramic studies in Mozambique. Working Papers in African Studies, 20, Department of Cultural Anthropology, Uppsala University.

Sinclair, P.J.J. in press. A method for accessioning and comparing ceramic assemblages, In Proceedings of the IXth Panafrican Congress of Prehistory and Quaternary Studies, Jos, 1983.

Sinclair, P.J.J. forthcoming a. Spatial simulation studies on finds from the University Campus Early Iron Age site 2532 Dc 1,southern Mozambique. International Report Series, Central Board of National Antiquities (Sweden) and Eduardo Mondlane University (Mozambique).

Sinclair, P.J.J. forthcoming b. Technical report on slag occurrences from Zitundo, Southern Mozambique. International Report Series, Central Board of National Antiquities (Sweden) and Eduardo Mondlane University (Mozambique).

Sinclair, P.J.J. forthcoming c. Developing the material framework for archaeological contributions to Mocambican history and culture. International Report Series, Central Board of National Antiquities (Sweden) and Eduardo Mondlane University (Mozambique).

Sinclair, P.J.J. in prep.. Space, Time and Social Formation. Aspects of the archaeology of Zimbabwe and South-Central Mozambique, 0 - 1700 AD.. Ph.D. thesis, Uppsala University, Department of Cultural Anthropology.

Sinclair, P.J.J., Morais, J.M. and Bingen, B. 1979. The Archaeology of Mozambique and Zimbabwe. TILLMIAP Workshop for Eastern,Central and Southern Africa,Nairobi (1979), mimeographed.

Sinclair, P.J.J., Nydolf, N. and G.W. 1986. Excavations at the University Campus site 2532 Dc 1, Southern Mozambique, Working Papers in African Studies, 15, Department of Cultural Anthropology, Uppsala University.

Smith, A. 1973. The peoples of Southern Mozambique: an historical survey. Journal of African History (London), 14(4): 565-580.

Smithers, R.H.N. and Tello, J.L.P.L. 1976. Check list and atlas of the mammals of Mocambique. Trustees of the National Museums and Monuments of Rhodesia, Museum Memoir 8, Salisbury.

Smolla, G. 1976. Archaeological research in the coastal area of southern Mozambique. In Proceedings of the VIIth Panafrican Congress of Prehistory and Quaternary Studies, (eds B.Abebe, J. Chevaillon and J.E.G.Sutton), Addis Ababa (1971), Ministry of Culture, pp. 265-270.

Soares de Carvalho, G., Prata Dias, M.L., Morais, J.M. and Teixeira Duarte, R. 1974. The quaternary deposits and the stone artefacts of the fluvial terraces (Olifants River) on the earth dam site at Massingir (Gaza Province,Moçambique). Memórias do Instituto de Investigação Científica de Moçambique (Lourenço

Marques), 10, série B, pp.:73-182.

Soper, R.C. 1971. A general review of the early iron age in the southern half of Africa. Azania, 6: 5-37.

Soper,R. 1982. Bantu expansion into Eastern Africa:archaeological evidence. In The archaeological and linguistic reconstruction of African History (eds. C. Ehret and M. Posnansky). Berkeley: University of California Press, pp. 223-238.

Strange, L.R.N. 1980. An introduction to African pastureland production, with special reference to farm and rangeland environments of Eastern Africa. F.A.O. Pasture and Fodder Crop Studies, 6, F.A.O. Rome.

Theal, G.M. 1896. The Portuguese in South Africa, with a description of the native races between the river Zambezi and the Cape of Good Hope during the 16th century. London: T. Fisher Unwin.

Theal, G.M. 1919. Ethnography and condition of South Africa before A.D. 1505: being a description of the inhabitants of the country South of the Zambezi and Kunene Rivers in A.D. 1505. London: George Allen & Unwin Ltd.

Theal, G.M. 1964. Records of South Eastern Africa. Cape Town: C.Struik, 9 vols (1st.edition by the Cape Colony Goverment, 1898-1902).

Theal, G.M. 1969. The Portuguese in South Africa. New York.

Thorp, C. 1979. Cattle from the Early Iron Age of Zimbabwe-Rhodesia. South African Journal of Science

(Johannesburg). 75: 461.

Tinley, K.L. 1964. Fishing methods of the Thonga tribe in northeast Zululand and southern Mocambique, Lammergeyer (Pietermaritzburg).3,1, pp.9-39.

Tinley, K.L. 1971. Determinants of Coastal Conservation, SARCCUS Proceedings. Pretoria, pp.125-153.

Tinley, K.L. 1977. Framework of the Gorongoza Ecosystems. unpublished D.Sc. thesis, University of Pretoria.

Trapnell, C.G. and Clothier, J.N. 1957. The Soils, Vegetation and Agricultural Systems of North Western Rhodesia. Lusaka: Government Printer.

Trewartha, G.T. 1961. The Earth's problems climates. London: Methuen & co.

Trimingham, J.S. 1975. The Arab geographers and the East African coast. In East Africa and the Orient (ed.H.N.Chittick and R.I. Rotberg). New York: Africana Publishing Co., pp. 115-146.

Universidade Eduardo Mondlane 1978. Bibliografia linguística de Moçambique (versão provisória). Departamento de Letras Modernas, compiled by Eugeniusz Rzewuski, Maputo, mimeographed, 27 pp.

Uppsala University, 1985. Department of Quaternary Geology Annual Report, Kvartärgeologiska avdelningen, 13pp., Uppsala.

Van der Merwe, N. 1983. Iron smelting by induced draft in Malawi, Nyama Akuma (Alberta), 23: 16.

Van Grunderbeek, M.C. and Doutrelepont, E.R.H. 1982. L'Age du Fer Ancien au Rwanda et au Burundi. Archeologie et environment. Journal des Africanistes (Paris). 52 (1-2): 5-58.

Van Noten, F. 1982 a. The Bantu expansion problem. In The Archaeology of Central Africa (ed. F.Van Noten), op.cit., pp. 65-67.

Van Noten, F. 1982 b. The Archaeology of Central Africa. Graz: Akademische Druck-und Verlagsanstalt.

Van Riet Lowe, C. 1943. Subsídio para a Pré-História de Moçambique. Moçambique, Documentário Trimestral (L.Marques). 36: 7-12.

Velho, A. 1940. Roteiro da Primeira Viagem de Vasco da Gama (1497-1499) por Alvaro Velho. Lisboa: Fontoura da Costa.

Vogel, J.C. 1969. The radiocarbon time-scale. South African Archaeological Bulletin (Cape Town). 24 (3-4): 83-7.

Voigt, E.A. 1980. The faunal sample from Msuluzi Confluence. In Msuluzi Confluence: a seventh century Early Iron Age in Natal, Ann.Natal Mus. (Pietermaritzburg), 24: 140-5.

Voigt, E.A. 1982 a. Faunal report on the Ludenburg Heads site, 2530 Ab 4, The South African Archaeological Bulletin (Cape Town), 27: 31-32.

Voigt, E.A. 1982 b. Iron age herders of the Northern Transvaal, South Africa, in the first millennium A.D.. Paper delivered at the 4th International Conference on Archaeozoology, London, 14th-24th April 1982, mimeographed.

Walker, N.J. 1983. The significance of an early date for pottery and sheep in Zimbabwe. South African Archaeological Bulletin (Cape Town), 38: 88-92.

Webster, D.J. 1973. Chopi classification kinship terminology, formal analysis and the sociology of knowledge: a syntetic approach. In Assa: Sociology in Southern Africa (ed.F. Meer), Durban, pp. 293-324.

Wells, L.H. 1943. Relatório sobre objectos encontrados em restos de cozinha, perto da foz do Limpopo, Moçambique, Documentário Trimestral (L.Marques). 36: 13-23.

Werger, M.J.A. ed. 1978. Biogeography and Ecology of Southern Africa. The Hague: W.Junk, 2 vols.

Werger, M.J.A. and Coetzee, J.A. 1978. The Sudano-Zambezian Region. In Biogeography and Ecology of Southern Africa (ed M.J.A. Werger), The Hague: W. Junk, p.301-462.

White, F. and Moll, E.J. 1978. The Indian Ocean Coastal Belt. In Biogeography and Ecology of Southern Africa (ed M.J.A. Werger) The Hague: W. Junk, p.563-598.

Wieschoff, H.A. 1941. The Zimbabwe-Monomotapa Culture, General Studies in Anthropology. Wisconsin, p.1-115.

Wild, H. 1972. A Rhodesian botanical dictionary of African and English plant names. Salisbury: Government Printer (1st ed.1953).

Wild,H. and Barbosa, L.A.G. 1968. Vegetation Map of the Flora Zambeziaca area.In Flora Zambeziaca (eds H.Wild and A.Fernandes).

Salisbury: M.O.Collins.

Wild, H. and Fernandes, A. 1967. Flora Zambeziaca, Supplement to the Vegetation map of the Flora Zambeziaca area, Salisbury: M.O.Collins.

Winner, I.P. 1979. Ethnicity, Modernity, and Theory of Culture Texts. In Semiotics of Culture (eds I.P.Winner and J.Umiker-Sebeok). Paris: Mouton, p.103-147.

Winner, T.G. 1979. Some fundamental concepts leading to a Semiotics of Culture: an historical overview. In Semiotics of Culture (eds I.P.Winner and J. Umiker-Sebeok). Paris: Mouton, pp. 75-81.

Wrigley, C.C. 1960. Speculations on the economic prehistory of Africa. Journal of African History, 1: 201.

Zwernemann, J. 1983. Culture History and African Anthropology. Uppsala Stud. in Cult. Anthr. 6 (Acta Univ. Ups.), Uppsala.