THE PREHISTORIC SETTLEMENT AT JAMBU HILIR, SOUTH KALIMANTAN PROVINCE, INDONESIA

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ABSTRACT

This report details new research funded by the Granucci Fund on the site of Jambu Hilir in southern Kalimantan, Indonesia. This site has produced evidence for iron working in association with sherds, crucibles and iron slag, with initial occupation dating from c.3000 BP. This report lists the materials found.

INTRODUCTION

Prehistoric settlement sites in the Indonesian archipelago have been researched only in a very limited way. Most evidence so far has come from surface finds, and only a small number of sites have been excavated. So far, much information has come from the caves of Pacitan in East Java, from the Gunungkidul region on the southern coast of Central Java (Simanjuntak 2002), and from open sites in the interior regions of the archipelago, such as the Kamasi and Minanga Sipakko sites in West Sulawesi (Simanjuntak 1994-95) and Kendeng Lembu in East Java (Heekeren 1972).

Another prehistoric settlement at Jambu Hilir, Kecamatan Kandangan, Kabupaten Hulu Sungai Selatan, Kalimantan Selatan Province, was first reported in 1989 (Mahlan Umar *et al.* 1989). The site is situated on the border between Jambu Hilir village and Jambu Hulu village, which lies in neighbouring Kecamatan Padang Batung (Fig. 1).

The Jambu Hilir site was found by Achmad Djuhdar (pers. comm., June 2007), who found iron slag and a small piece of gold while digging in the bank of the Sungai Rangas-Tatau in March 1989. He also found plain and decorated potsherds, a pottery crucible, fragments of iron, a brass belt buckle, a cupreous pendant, beads of baked clay, stone and glass, and quadrangular stone adzes. These artefacts were reported to the branch office of Departemen Pendidikan dan Kebudayaan, Kalimantan Selatan (Mahlan Umar *et al.* 1989). However, the gold objects encouraged treasure hunting, and lots more gold and porcelains were recovered. A local legend states that a "Kerajaan Bakaling" was once located along the Sungai Rangas, led by one Raja Bagalung, of Indian descent. The inhabitants of this kingdom are believed to have been expert in producing iron objects and earthenware cooking pots (Mahlan Umar *et al.* 1989).

The Jambu Hilir site was investigated by Nasruddin and his team from Balai Arkeologi at Banjarmasin, in October 1996. The excavations produced more decorated and undecorated potsherds, terracotta beads, stone artefacts (e.g. anvils and grinding stones, fragments of stone adzes, flakes), and small pieces of charcoal (Nasruddin 1996/7). One of the sherds was identified as fragment of a crucible, important for recognising the existence of copper or bronze working. There were also boat-shaped pottery stoves and earthenware plates. Nasruddin suggested that the site was probably occupied from the Neolithic to the early Metal Age.

The materials found by Ahmad Juhdar and the Nasruddin team at Jambu Hilir are now stored in the Lambung Mangkurat Museum in Banjarbaru, South Kalimantan, and in Balai Arkeologi in Banjarmasin. The local government has prohibited the continuation of treasure hunting activities. However, since 1996 there has been no continuing research on the site, and it is necessary to reassess existing discoveries with new survey and excavations carried out with specific questions in mind. When was the site first occupied? What kinds of activities were undertaken by the inhabitants?

THE CURRENT RESEARCH AT JAMBU HILIR

Jambu Hilir is situated about 45 km west of the Meratus Mountains, where the source of the Sungai Amandit is located. The site lies on the partly abandoned Rangas-Tatau riverine plain, about 23 m above sea level. The former Sungai Rangas-Tatau was a tributary of the Amandit (Nasruddin 1996/7), but today its course is much diminished, perhaps due to geomorphological processes (Fig. 2). The river used to be about 50-100 m wide according to the contours of its bed, and the local people do not know when the water disappeared. Today, the upper stream which flows through Jambu Hulu village is known as the Sungai Rangas, while downstream it is the Sungai Tatau, and flows through Jambu Hilir.

The Jambu Hilir site is also known as Padang Rasau, named after the *rasau* plant. Most of it is covered by an

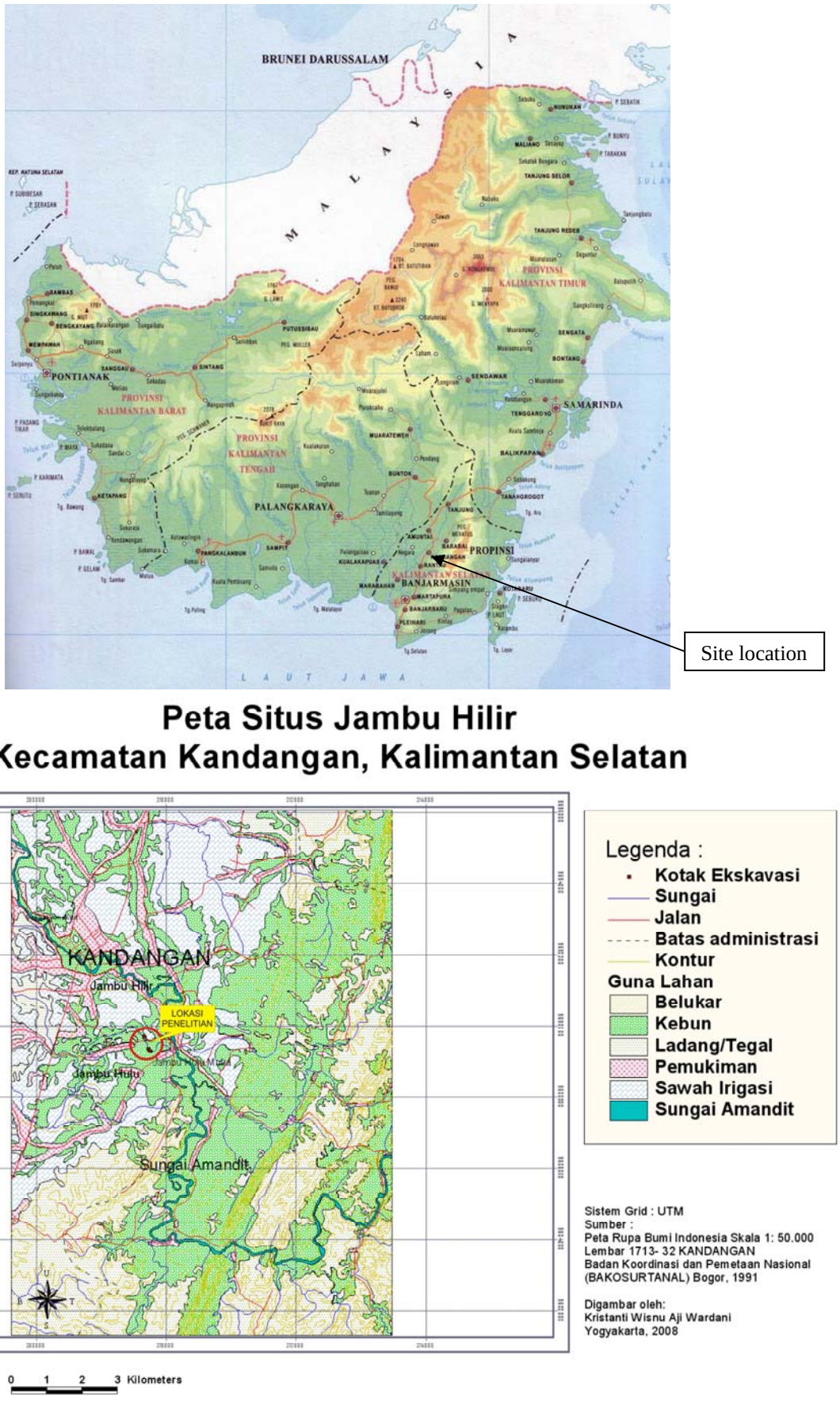

Figure 1. The location of Jambu Hilir, South Kalimantan.

economic forest of bamboos, sugar palms (*Arenga pinnata)*, sago palms *(Metroxylon rumphii)*, breadfruit (*Artocarpus communis*), rambutan (*Nephelium lappaceum*) and citrus trees, and some rubber trees (*Ficus elastica*). Nearby fields grow cassava (*Manihot utilissima*), sweet potato (*Ipomoea batatas*), taro (*Colocasia esculenta*), pineapple (*Ananas comosus*) and dry rice (*Oryza sativa*), the latter being main staple. Arenga palm, sago and bamboo grow wild along the river bank are also used by the villagers for food and housing material.

The investigation described here was conducted from 28 June to 12 July 2007 at the two villages, Jambu Hilir and Jambu Hulu. An excavation connected with irrigation works had been started 50 m south of the 1996 excavation area, along the bed of the Sungai Rangas-Tatau for about 30 m long. This excavation cut into the upper layer (30-50 cm depth) of the Jambu Hilir site and exposed cultural remains from what was once presumably an ancient settlement on the river bank (Fig. 3).

Figure 2.The now-dry Rangas stream bed at Jambu Hulu village.

The remains uncovered in the irrigation project area consist of iron slag, charcoal, ochre, red and blue glass beads, ceramic sherds (Figs 4 and 5), and sherds of plain and decorated pottery (Fig. 6). More ceramic sherds were found on the surface of rubber plantation east of the 1996 excavation area, more again about 500 m to the north of the 1996 excavation area, and again on the western bank of the old Sungai Amandit, one km to the southeast. Most of the archaeological remains were found along the east bank of the Sungai Rangas-Tatau, covering a total area greater than 1 km^2 along the old courses of the Sungai Rangas-Tatau and Amandit.

Identification of the ceramics indicates Chinese sources from Tang through to Ming, with some from Thailand, Vietnam and Holland. In general, the ceramics at Jambu Hulu were younger than those from Jambu Hilir.

THE EXCAVATION AT JAMBU HILIR

Our team excavated 5 test pits, 1x1 m^2 each, in three sectors on the eastern bank of the old Sungai Rangas-Tatau. Sector I was situated in the 1996 excavation area, east of the Tatau, at coordinates 2°48’34.6”S and 115°16’53.4”E (Fig. 1). Two test pits (KX and FXII) were excavated to recover evidence for metalworking activities and to find charcoal for dating.

Figure 3. The irrigation works on the Sungai Rangas.

Figure 4. Vietnamese porcelain bowls, found by the villagers in the west bank of the Sungai Rangas.

Sector II was situated surrounding the irrigation channel, on the east bank of the Sungai Rangas. A test pit (A1) inside the irrigation channel was excavated to get more information about the depth of the cultural layer. The upper cultural layer in the irrigation area had been cut by a bulldozer down to about 30-50 cm. The test pit was located at 2°48’36.3”S and 115°16’56.2”E. Another test pit (w16) was placed outside the irrigation channel, about 16 m southeast of A1.

Sector III was situated 500 m north of Sector I, at 2°48’24.3”S and 115 ° 16’47.4”E. A test pit (BV) was excavated in an area of previous looting. All test pits in the three sectors were excavated by spits, the first being 20 cm, then 10 cm thereafter.

Figure 5.A monochrome ceramic bowl from the west bank of the Sungai Rangas (photos from above and below).

Figure 6. Fragments of decorated earthenware from the irrigation project.

SECTOR I

Test Pit KX

Test pit KX was excavated to 70 cm. The stratigraphy consists of three layers, from top to bottom brown silty clay (10 YR 4/6), dark yellow-orange sandy clay (10 YR 6/4) and yellowish brown silty clay (10 YR 6/6). Sherds, four iron haft fragments, part of an iron blade, iron slag, two baked clay beads, charcoal, red ochre, and unworked siliceous pebbles were found in layers 1 and 2, to 60 cm depth. The nature of the soil and the distribution of the cultural remains indicated that the deposit had been disturbed, thus the sample of charcoal taken from the upper layer was not suitable for dating.

Test Pit FXII

This test pit, located 4 meters southwest of KX, was excavated to 40 cm. Similar to KX, the soil and the distribution of cultural remains suggested disturbance. Sherds were dominant in the upper layer, and other finds included iron slag (Fig. 7), charcoal, red ochre and pebbles.

Potsherds from the two test pits consist of red, yellow and black body sherds, carinations, rims, bases, foot rings, lids and handles. Several vessel shapes can be identified, such as round-based vessels with everted rims, and dishes with or without ring feet. The lids have rounded or loop handles. Decoration includes red-slipped, incised (e.g. crosses, and vertical or horizontal lines), impressed (net, woven and mat-impressed), and notched motifs.

Iron slag, fragments of iron objects and charcoal were few in this sector. Nevertheless, we assume that such finds, along with a crucible fragment uncovered from the same location by Nasruddin and his team in 1996, suggest the existence of iron working in the past.

SECTOR II

Test Pit A1

Figure 9. Test pit A1 before excavation.

The upper part of this test pit was removed by the bulldozer for about 30 cm. Sherds, charcoal and pebbles were found on the exposed surface (Fig. 7), thus our first spit was already in the initial cultural layer. However, the densest cultural layer was only 15 cm deep, thus mostly destroyed, and archaeological remains ceased at 50 cm. Excavation continued to 130 cm to obtain information

about the overall stratigraphy of the site. The soil throughout is clay, with a gradation in colour from brown at the top to yellowish brown at the base.

Types and decoration of pottery from test pit A1 are similar to those from KX and FXII. Body sherds are 2-16 mm thick, and mostly plain. In addition, we found neck fragments of earthenware water pitchers and a fragment of a possible crucible.

Test Pit w16

The stratigraphy of w16 consists of four layers (Fig. 8):

1. Layer I (0-20 cm): humus, brown silty clay (10 YR 4/6);
2. Layer II (20-40 cm): bright brown silty clay (7.5 YR 5/6);
3. Layer III (40-60 cm): yellowish brown loamy sand (10 YR 5/6);
4. Layer IV (60-90 cm): bright yellowish brown sandy clay (10 YR 6/8).

Figure 10. Stratigraphy of w16, southern wall (parallel to the Sungai Rangas).

The stratigraphy shows that the w16 deposit is undisturbed. The results of conjoining sherds support this assumption. Based on the stratigraphy of w16, the vertical distribution of the artefacts and comparison with the stratigraphy of A1, we presume that the cultural layer at Jambu Hilir was situated about 40-70 cm under the surface.

Only two sherds were found on the surface of this pit. Layers 1 and 2 (0-40 cm) were sterile. Archaeological remains commenced in layer 3, at 40-60 cm. They consisted of sherds, a baked clay pellet perhaps for a blowpipe, iron slag, charcoal, red ochre and pebbles. Artefacts continued to layer 4 (60-80 cm), and excavation stopped at 90 cm (Table 1).

The sherd fabrics are similar to sherds from the other test pits, and most of are plain, 5-15 mm thick. They consist of rims, bodies, carinations, bases and handles. Only one sherd has impressed decoration on its surface. Vessel shapes include rounded-base vessels with everted rims, and bowls on foot rings.

Table 1. Distribution of artefacts by depth in Test Pit w16

Spit	Depth cm	Finds	No.	Weight (gr.)
1	0-20	Body sherds	2	10
2	20-30	nil		
3	30-40	nil		
4	40-50	Body sherds	179	430
		Carinations	1	15
		Rim sherds	20	210
		Decorated sherds	20	100
		Ochre	26	260
		Charcoal		15
5	50-60	Body sherds	354	1205
		Carinations	4	40
		Rim sherds	32	300
		Ring feet/handles	6	20
		Ochre		890
		Charcoal concentration		50 (Wk-22009)
		Scattered charcoal		100 (Wk-22010)
		Clay pellet	1	10
		Iron slag	2	50
6	60-70	Foot sherds	3	20
		Body sherds	83	540
		Rim sherds	2	35
		Ochre	12	85
7	70-80	Foot sherds	1	10
		Ochre	1	100

Two kinds of charcoal were obtained from spit 5. The first was concentrated under sherds at 58.5 cm, while the second was scattered and collected at 50-60 cm. The samples were sent to the Waikato Radiocarbon Dating Laboratory in New Zealand. The first came back as 2922±45 bp (Wk-22009), calibrated to 3160 (68.2 %) 2990 BP or 3220 (95.4 %) 2920 BP (OxCal v.3.10). The second came back as 19,427±97 bp (Wk-22010).

The first date (Wk-22009) is fairly close to the expected date for the lower part of the site, although is seems a little old, perhaps because the sample had an inbuilt age depending on the species. The second date (Wk-22010), however, is too old, perhaps because of redeposition by the river.

Samples of sediment from w16 were analysed for pollen by Ratna Susandarini. She suggests that layer 1 differs from the other three layers. It has 14 groups of pollen and spores, while the numbers in the lower layers were very small. The cultural layer (layer 3) contains only four types of pollen and spores. Susandarini states that layer 1 is dominated by fern (Pteridophyta) or cycad (Cycadophyta) spores, of *Filicales* sp., Polypodiaceae, *Blechnum* sp., *Lycopodium* sp. and *Dryopteris* sp. Palms and rattan (Arecaceae) were also present in layer 1, together with Poaceae. Overall, layer 1 shows shrubs dominant over trees.

The pollen and spores from layers 2-4 cannot be used to describe the nature of the vegetation because the sample is too small. But, the presences of wood cells and fungus spores, and the clay sediment, all suggest that layers 2, 3 and 4 supported humid and inundated forest.

Phytolith analysis undertaken by Nia Marniati confirmed the results of the pollen analysis. The numbers of phytoliths in layer 1 were much greater than in layers 2-4. Most identifiable phytoliths are Poaceae. Marniati also found many wood cells and small number of starch grains and raphides in layer 1, which seem to be of *Colocasia* sp. The sedimentation processes in unstable inundated areas close to rivers means that microfossils such as pollens, spores, phytoliths, starch grains and raphides are unlikely to survive in layers 2-4. Such a situation agrees with the existence of the scattered redeposited charcoal sample in layer 3 of w16.

The artefacts from Jambu Hilir w16 are of types commonly found in Indonesian early Metal Age sites. Such sites usually date back to between 500 BC and the early centuries AD (Heekeren 1958:51). If the date of c.3000 BP for spit 5 in Jambu Hilir w16 can be accepted, this is become the oldest date for a Metal Age site in Indonesia. The dates for other sites with iron, such as Gilimanuk, Pasir Angin, Pejaten and Plawangan, are all younger than this (see Anggraeni 1999; 2001).

SECTOR III

The upper layer of test pit BV was loose humic soil. Most of the archaeological remains were found in this layer, which is only 20 cm thick. They consist of earthenware and ceramic sherds, large lumps of charcoal, iron slag, and lumps of baked clay. The sherds from this test pit were blackish-yellow in colour and harder than the sherds from the other test pits. The number of sherds dropped significantly below 20 cm and the soil become more clayey. The distribution of the artefacts and the nature of the soil show that the cultural layer has been disturbed.

PREHISTORIC SETTLEMENT AT JAMBU HILIR

The results of surface survey and excavation at Jambu Hilir in 2007 show that the Sungai Rangas-Tatau plain has been occupied since c.1000 BC. The prehistoric materials in Sector II were located at 40-70 cm depth. The pottery was all hand made, using paddle and anvil and possibly a slow wheel. At least vessel shapes can be recognized: the first type with a rounded base or low ring foot, with or without an everted rim. Vessel diameters are from 14-18 cm, and body sherds are from 0.3-0.7 cm thick. Some sherds come from carinations and lids. The second vessel shape is a dish with a rounded or ring foot bottom. A fragment of small bowl-like crucible was also found, perhaps for metalworking (although our excavations only found iron, villager have found cupreous metal and gold artifacts in the past). Another vessel form could be a flask or water pitcher, since spouts were found during the survey.

Decoration on the Jambu Hilir sherds includes red-slip, impression, incision, and notching. Red or yellow surface colours are dominant. Hardnesses on the Mohs scale (Sutton and Arkush 1996:123) average 3, with a few at 5. Inner sections of most of the red and yellow sherds are dark and carbonaceous, suggesting low firing temperatures (see Shepard 1980). However, the Rangas-Tatau communities were able to produce much higher temperature for iron working, to judge from the existence of iron slag, fragments of iron objects, crucibles and charcoal. The smelting of iron requires a temperature as high as 1535^{o}C, in order to separate the iron from the slag. So the evidence for iron working at Jambu Hilir is very important for reconstructing the distribution of early metallurgical activity in Indonesia, especially in Kalimantan. Staff of Balai Arkeologi in Banjarmasin have also found lots of iron slag and iron working equipment at Nagara, about 25 km southwest of Jambu Hilir. The community at Nagara still produce high quality iron tools today. Therefore, the sources of the iron ores used at Jambu Hilir should be searched for.

The presence of pebbles of siliceous stone without any indication of working at Jambu Hilir is also interesting. Such pebbles do not occur near the site today, but they can be found in the mineral-rich region of Cempaka, near Banjarbaru, about 145 km to the south, where traditional mining for diamonds and gold still occurs. In the case of Jambu Hilir, such pebbles and alluvial gold sand may have been available in the upstream portion of Sungai Amandit, where gold panning still occurs today.

Riverine settlements that exist nowadays in South Kalimantan have traditional houses raised off the ground on stilts of strong water-resistant Borneo ironwood (*Eusideroxylon zwageri*). Perhaps such houses once existed at Jambu Hilir. The rivers serve as important arterial routes for human interaction (Fig. 11). As demonstrated by the traces of hardwoods in the w16 sediments (above), we suggest that the prehistoric settlement of Jambu Hilir was not so different from current settlements along the river.

CONCLUSIONS

The archaeological evidence suggests that Jambu Hilir was occupied for a long period, from 1000 BC through to the Dutch period. We assume that the early settlement was occupied by Metal Age people who produced iron tools and earthenwares locally. The large numbers of imported ceramics from the Tang Dynasty onwards, along with the glass beads, reflect some degree of interaction with other communities, probably through riverine exchange systems. Long-distance exchange may have started earlier as suggested by the appearance of possible Han ceramics (206 BC - AD 220), claimed at Jambu Hilir by Nasruddin (1996/7).

In relation to the early date of 3000 BP from Jambu Hilir, the existence of a Neolithic occupation at the base of the site needs to examined further. Therefore, continuing research is important for a greater understanding of the beginnings of the occupation and the sources of the materials used for making the pottery and the metal objects.

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