ANTES DE ORELLANA

Actas del 3er Encuentro Internacional de Arqueología Amazónica

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editor

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Este volumen corresponde al tomo 37 de la Colección
"Actes & Mémoires de l'Institut Français d'Études Andines" (ISSN 1816-1278)

Antes de Orellana.
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Edición: - Instituto Francés de Estudios Andinos
- Facultad Latinoamericana de Ciencias Sociales
- Embajada de EEUU

Diseño: Stéphen Rostain

Diagramación: Stéphen Rostain

ISBN: 978-9942-13-892-7

Impresión: Artes Gráficas Señal

Impreso en Quito, Ecuador, Mayo de 2014

The Cultivated Wilderness Project. Hinterland archaeology in the Belterra Region, Pará, Brasil

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Background

Few themes in archaeology have given rise to such a wide gamut of interpretations and understandings, as has that of the prehistory of the Amazon. Lack of substantial information has allowed considerable scope for speculation to the degree that many interpretations of pre-Columbian Amazonia have included a fair amount of "wishful thinking" of one kind or another. Historically – as has been the case with the Eurocentric images of other non-European societies, such as those of Africa or the Orient (e.g. Said 1978; Thomas 1994) – the conceptions of ancient Amazonian communities have been colored by the currents of thought that have flourished in Western thought at different times. This is a problem which undoubtedly will persist, but the importance of which, nevertheless, should be reduced through the emergence of new empirical bases and a decreasing of the dominance of Eurocentric historical research.

In spite of early historical information (particularly Carvajal 1942 [1549]) about the existence of large-scale and populous villages along the Amazon River, organized into chiefdom-like socio-political order, substantial and unequivocal archaeological support for such claims remained elusive for quite some time. Over the last few decades, however, this situation has drastically changed and there is now good empirical basis for claiming that ancient Amazonian societies may well have exhibited some forms of urbanity and socio-economic integration on a regional scale (e.g. Heckenberger 1996; Heckenberger *et al.* 1999; Petersen *et al.* 2001; Quinn 2004; Roosevelt 1980, 1991, 1999; Schaan 2012; Stenborg *et al.* 2012). This means that we are now able to discern the contours of communities, whose histories came to be obliterated following the European colonization. It also involves, however, a re-evaluation of the relevance of many concepts that were developed to describe societies and regions of other parts of the world (including terms such as "chiefdoms", "states", "agriculture" and even "landscape" (see also Neves; this conference and Descola; this conference).

The archaeological collections in Gothenburg

The early 20th century witnessed the establishment of numerous Western institutions and museums with the ambition to create a comprehensive representation of human history that covered every region of the Earth; a development that partially followed in the footsteps of colonialism (e.g. Thomas 1994). One such institution was the Gothenburg Museum in Sweden; particularly during the period of Erland Nordenskiöld's leadership (Muñoz 2011; Stenborg 2004). Under Nordenskiöld's guidance this museum gained a reputation as one of the leading centers for Latin American studies. Nordenskiöld quickly built up a wide network of contacts with leading researchers of the field in various parts of the world.

Nordenskiöld's Latin American focus also implied that the bulk of material acquired by the museum had South American origin. Of the approximately 95.000 items the present Museum of World Culture in Gothenburg inherited from the former Ethnographic Museum at the end of the 20th century, about

49.000 originates from South America.
Nordenskiöld came in contact with the surveyor and explorer Curt Unkel Nimuendajú in the early 1920's. Nimuendajú, who had migrated from Germany to Brazil in 1903, was by this time living in Belém and involved in both ethnographic and archaeological fieldwork in the Amazon region (Neves 2004:3f). During the years to follow Nimuendajú organized a number of expeditions to collect material for the museum in Gothenburg. The collections, consisting of both archaeological and ethnographic material, originated from various parts of the Brazilian Amazon, such as Rio Madeira, Rio Negro, Rio Xingu, Rio Tocantins, Amapá and the islands of Marajó, Caviana and Mexiana. The provenience of the largest number of objects was, nevertheless, the Santarém Region in the state of Pará (Stenborg 2009a).

The Cultivated Wilderness Project

The interdisciplinary Swedish-Brazilian research collaboration project "Cultivated Wilderness: Socio-economic development and environmental change in pre-Columbian Amazonia" is concerned with the archaeology of the Santarém Region in the State of Pará, Brazil. The area of investigation is located south of the Amazon River, covering parts of the eastern shore of its tributary Rio Tapajós as well as the Belterra Plateau further inland to the east (Figure 1). The project is funded by the Bank of Sweden Tercentenary Foundation. As mentioned above, the Museum of World Culture in Gothenburg holds large collections of archaeological material from the Santarém area collected by Nimuendajú in the 1920's. Although the material attracted much attention at the time it arrived in Gothenburg, only limited research has been done on it in the past. Santarém pottery (Figure 1) has been classified by Meggers and Evans (1961) as part of the Incised Punctate tradition, which has a widespread distribution on the lower Amazon. The ceramics contain a fluvial spongier called cauixi (Parmula batesii) as temper material, eventually a combination of cauixi and grog, and less often the caraipé (burnt and crushed tree ashes) temper. Vessel surfaces have a pale brown color, usually ornamented with incisions and punctuations applied in repetitive patterns inside bands that surround the vessel or plate. The diagnostic feature is the profuse use of anthropomorphic and zoomorphic adornos (sometimes with double heads), generally as handles or simply as decoration. The animals more commonly represented are king vultures, caimans, agoutis, monkeys, frogs, bats, common foxes, birds, and jaguars. The use of paint (mostly red, but also red and white slip) is present in some vessels, and especially on female figurines. Basketry impressions probably derive from the use of mats as supports for vessel shaping. The far-reaching stylistic and artistic specialization and the thematic diversity regarding motifs were pointed out already by early researchers such as Nimuendajú (1949, 2004) and Palmatary (1939, 1960).
In addition to the historical link between the Santarém region and Gothenburg, generated by the existing museum collections, a further incentive for intensified archaeological field investigations in this area is that parts of the Santarém region currently are subjected to various types of exploitation, including expanding agriculture and road construction. Therefore the archaeological record is rapidly being destroyed.
A general purpose of the Cultivated Wilderness-project is to combine new fieldwork in the Santarém region with studies of the material collected back in the 1920's. Through this work we hope to shed new light on the issue of how the relationships between humans and their environments developed through the pre- and early post-contact periods of the region. The project involves a bidirectional exchange with Brazilian universities. Apart from joint fieldwork in Brazil, Brazilian researchers and students have visited Gothenburg to study the material in the museum collections there, while – in a correlative way – Swedish students have been given opportunities to visit Brazil and the archeological field activities carried out by our project.
Apart from a rich archaeological material, mainly consisting of ceramics, the region also exhibits a type of local anthrosols, known as Terra Preta do Indio or Amazonian Dark Earth (ADE) – a product of past human occupation. In fact, the Terra Preta phenomenon was first identified in the Santarém region already in the late 19th century (Hartt 1874), but it was only later that its properties and potential for contesting cultural-ecology were aknowledged (Sombroek 1966, Smith 1980). In contrast to the otherwise poor soils, ADE are fertile soils – still highly coveted for agriculture (e.g. Glaser *et al.* 2004; Heckenberger *et al.* 1999;

Lehmann *et al.* 2003; Woods & McCann 1999).

To enable investigation of ADE occurrences in the field study area the research group includes both archaeologists and soil scientists and fieldwork activities involve soil mapping, sampling and analyses as well as archaeological excavation and surveying. Additionally, geomorphological studies have been linked-in with archaeological and pedological studies to enable a better understanding of the formation processes of landscape features that may have influenced pre-Columbian resource management strategies and settlement selection in the area.

Preparative fieldwork during 2006 - 2010 identified and located more than 100 archaeological sites of varying size (Schaan 2013; Stenborg 2009b; Stenborg & Bakunic 2011; Stenborg *et al.* 2012). Many of these settlements are situated far from the main rivers in forested and cultivated areas on the Belterra Plateau that are sparsely populated today. During the dry season water resources in these upland areas are sparse and the areas have generally been considered unable to support permanent human settlement. Therefore, the common assumption that permanent settlements, throughout Amazonia, essentially were associated with river environment is contradicted by these findings.

Our data from sites on the Belterra Plateau suggests that the common assumption that permanent settlements throughout Amazonia essentially were constricted to near-riverine environments is invalid in the case of the Belterra Plateau. On the contrary; we have found that many pre-Columbian settlements occur in upland areas where seasonal shortage of water should prevent the establishment of permanent residence.

Our surveying, however, also revealed a recurrent pattern of association between inland sites and particular landscape features – especially circular and elliptical depressions of widely differing dimensions that are found in many parts of the Belterra Plateau (Figure 2). In several cases these depressions have been found to preserve water throughout the dry season and some are used as source of water supply by the present population. Post-survey fieldwork has therefore included detailed investigations of two depressions at a site called Bom Futuro, located on the Belterra Plateau some 40 km south of the modern city of Santarém (Figure 3).

Field data from the Bom Futuro site

In 2011, two areas at the Bom Futuro site were investigated through excavation. A total of four 1 by 1m squares and a trench were excavated (see Figure 3): In area 1 a 1 by 1 m square was excavated in the slope of a depression and a 105 m long trench was dug with a power shovel, from the center of the depression to beyond its rim. I area 2, three 1 by 1 m squares were excavated, one in the bottom of a smaller depression, another on the berm of the smaller depression, and a third on a low platform associated with the smaller depression.

The test pit at the large depression was excavated in order to investigate the soil layer sequence on the slope of a large round depression (Area 1 on Figure 3, above). This area consisted of an open cleared field and had been under soy bean production for some years. Consequently it had been strongly affected by clearing and cultivation associated with mechanized agriculture. The layers of this test pit (1x1m) contained no thick cultural layers and almost no cultural material, and the excavation continued down only to approximately 0.3 m below ground surface, where a compact yellowish clayey layer entirely void of cultural impact appeared.

The depression was further investigated through the excavation of a trench in its northern part (Area 1 on Figure 3, above). The trench with a total length of 105 m was laid out in a south to north direction from the center of the depression towards its limit and ending some 10 meters past the edge of the depression. No berm was readily observed in the surface topography at this section of the rim, but a slight low rising at the western edge of the depression may indicate the remains of a berm.

Figure 4. Plan and cross-section of the trench excavated in a large depression at Bom Futuro. By Per Stenborg.

In this manner it was possible to document the stratigraphy down to a depth of approximately 3m along the extension of the trench. In the center of the depression excavation was continued to a depth of approximately 5m below the present soil surface level.

The excavation revealed significant differences concerning horizon sequences in different parts of the trench. In the center of the

depression the (ploughed) surface horizon darkened by organic matter was followed by a light yellow horizon overlying a compact whitish, clayey stratum, locally referred to as *Tabatinga* (see below). This layer was found to continue at least down to a depth of 5m. The whitish layer has been depleted in iron due to waterlogging and reducing conditions during the rainy season. Further upslope the color of the corresponding layer turned more orange – reflecting less influence from reducing conditions. In this part of the trench there was a thin plinthic layer in the subsoil. In the northernmost sector of the trench the soil had a reddish color throughout the entire section indicating a freely drained profile.

The excavation undertaken in the smaller walled depression about 0.5 km west of excavation 1 (Area 2 in Figure 3; see also Figure 5) revealed a pattern which contrasted sharply with that found in area 1. The square excavated in the center of this smaller depression (unit 1) and contained thick anthropogenic soil layers and relatively high amounts of cultural material. Artifacts consisted almost exclusively of coarse, undecorated pottery probably of utilitarian types. A particular observation was that most sherds were in horizontal position. Pottery was found down to a depth of 110 cm below present ground surface level. A second 1x1m test pit (unit 8) was excavated in the berm surrounding the depression. The material was in this case more varied and occurred as concentrations of pottery, charcoal and to some extent also lithics. Pottery types included fine, decorated pottery as well as coarse pottery. The pattern of horizontal positions of fragments observed in unit 1 was not repeated in unit 8. Cultural material was found down to a depth of 70 cm.

The archeological fieldwork revealed similarities as well as differences between the investigated settings. In the area of excavations 2 and 3 (the smaller depression and a low platform located c. 20 m east of the depression not discussed here) our investigations showed that this whole area has been considerably transformed by human action in the past. It is reasonable to consider that the area has been used as a settlement area. The depression may have served as a water supply at a sub-settlement level – covering the needs of a household or a group of households. In case this depression existed as a natural landscape formation prior to human settlement – it has been heavily modified through human action. The berm surrounding the depression contained refuse material (charcoal, potsherds, soot etc.) as well as lenses of clay material that probably had been moved from the bottom of the depression and deposited on the berm. This pattern seems to be in accordance with land modification processes such as the construction of a water reservoir, improvement of the capacity water holding of a water reservoir and the maintenance of a water reservoir. It is likely that the human transformation in this case involved at least the two last-mentioned activities. Material transported by rain water will accumulate at the bottom of the depression, necessitating periodic clearing out and maintenance of the reservoir.

Dates and temporal relationship between Upland and Riverine settlements

The largest settlement-area of the Santarém Region is that found at the location of the present Santarém city, by the confluence between the Tapajos and the Amazon rivers (cf. Schaan 2013; Stenborg *et al.* 2012). Dates from the Santarém-site suggest that this area was inhabited by human populations over several millennia. Notwithstanding, the majority of the dates from this site pointes to an increase in human presence over the centuries immediately prior to the European contact (Gomes 2002; Quinn 2004; Schaan 2012). In addition, analyses of samples from a riverine site (Fé em Deus) by the eastern bank of the Tapajós river points to an occupation of considerably time depth.

These results correspond well with previous dates of material from the Porto-site, situated in present-day Santarém-city, by the southern bank of the Amazon. Also in that case dates showed considerable spread, although the majority of the dates pointed to an increase in human presence over the centuries immediately prior to the European contact (Quinn 2004).

Less is hitherto known about the settlements of the upland/hinterland – although the existence of such settlements became known through the fieldwork of by Curt Nimuendajú in the 1920's (Linné 1928; Nimuendajú 1949, 2004; Nordenskiöld 1930; Palmatary 1939).

New radiocarbon and OSL dates, however, indicate that the occupation of settlements on the Belterra plateau was the most extensive during the centuries that preceded the European contact and that settlement may have remained inhabited into European contact-times.

Sample submitted by	Site	Sample	Type of dating	Lab. No.	Depth below surface (cm)	Ranges, 14C cal. 2 sigma (95.2% conf.)
Stenborg	Bom Futuro	BF-003 (CW2010:009)	OSL	Risø112307	22.5	A.D.1771 - A.D.1791
Stenborg	Bom Futuro	BF-004 (CW2010:010)	OSL	Risø112308	32.5	A.D.1521 - A.D.1581
Schaan	Bom Futuro	BFT-001	Radioc	Beta - 324178	20-25	A.D.1450 - A.D.1640
Stenborg	Bom Futuro	CW2011:014	Radioc	Ua-46302	41-51	modern carbon content
Stenborg	Bom Futuro	CW2011:015	Radioc	Ua-46303	91-98	modern carbon content
Stenborg	Bom Futuro	CW2011:016	Radioc	Ua-46304	47	A.D.1395 - A.D.1450
Stenborg	Bom Futuro	CW2011:017	Radioc	Ua-46305	58	A.D.1310 - A.D.1360 or A.D.1380 - A.D.1440
Stenborg	Bom Futuro	CW2011:018	Radioc	Ua-46306	68	A.D.1290 - A.D.1420

Table 1. Results of radiocarbon and luminescence dating of samples from the Bom Futuro-site, municipality of Belterra, Pará, Brazil

Analyses of samples from the site of Bom Futuro have yielded dates ranging from *c.* A.D. 1300 up to historical times. The majority of these dates point to human activity on this site during the late pre-contact and contact periods (Table 1).

Materials from two other sites situated somewhat further north on the Belterra Plateau have recently been dated. In the case of Amapá, the dates range from *c.* 1500 A.D. up to the early 18th century. Samples from the Cedro-site have yielded dates from the early 14th century up to modern times. This implies that consistent data points to a late establishment of settlements on the Belterra Plateau. The total number of dates is still limited, but will soon be complemented by results from samples already submitted for analysis.

Natural and artificial ponds

Our results suggest that techniques for management of water resources were developed by some populations the populations living on the Belterra plateau, particularly during the last centuries preceding the European colonization. These techniques included both the use of natural water-holding depressions and constructions of smaller structures for water storage. A previously little noted fact of decisive importance for allowing human settlement in the region is the frequent occurrence of *sinkholes* or enclosed depressions (also known as "swallow holes", "shakeholes", "swallets" or "dolines"). The large depressions described above are likely to be examples of sinkholes and dolines (e.g. Figure 2, above). These karstic landforms are the results of dissolution of subjacent rocks and transport of the solutes via subterranean drainage in pipes or macropores, which can undermine the bedrock and ultimately cause the collapse of porous layers (often referred to as *pseudokarstic* processes*)*. Our current interpretation, hence, is that the larger depressions found associated with remains of ancient settlements; often bordering on, rather than encircled by the Terra Preta patches on the Belterra plateau originally have been formed through such pseudokarstic processes. During the rainy season these depressions (sinkholes) are refilled through an inflow of surface water. Sizes vary, but depressions measuring more than 200 m across have been recorded, which means that large quantities of surface water is collected during the rainy season. According to the results of surveys carries out over the last few years, many of these formations are associated with archaeological sites and patches of Amazonian Dark Earth, or Terra Preta.

Percolation of water through the soil profile in the middle of such depressions result in a slow process of leaching and reduction of iron, and hence, to a formation of a superficial stratum of fine-grained sediment, locally known as *Tabatinga* (from Tupí – "tobatinga" or "tauá-tinga", name for a whitish or light grey-bluish clay (Souza 1939:383)), with low permeability. In this manner, the water-holding capacity of these depressions is likely to increase over time. Of significant importance here, thus, is that this process has produced natural water-holding depressions in an area with few other water sources. During the dry season, these sinkholes have constituted a resource in some sense analogous to that of oases in desert areas. These natural formations, hence, have undoubtedly had a significant impact on the

development of human land use and settlement on the Belterra Pplateau by– providing access to water between the rainy seasons. An overlay of the record of registered sites on a digital elevation model (DEM) of the plateau shows a greater incidence of sites situated in local lows as compared to the heights (Figure 6). For clarity, it should be noted that new sites are constantly being recorded and, therefore, that this mapped inventory obviously does not cover all sites in the area.

Of equally great importance are the findings of remains of clearly artificial constructions for water supply in association with uplands/ hinter-lands sites on the Belterra plateau, for instance the small depression investigated at Bom Futuro (Figure 5, above). These depressions are considerably smaller in size and often have elongated, rather than circular shapes. They are often found within the confines of the Terra Preta patches; hence they are enclosed by the anthrosol, rather than adjacent to it.

Summary and relevance

To sum up: The presence of sinkholes of large dimensions, as well as considerable carrying capacities, has probably been a most decisive factor for settlement location on the Belterra plateau. The settlement areas were usually established beside, or even at some distance from the depression. At the household or small group level the water supply may have been managed through the construction of small structures where water was collected during the periods of rain, although the use of these constructs has not yet been established and may have included several areas of use (proposes that have been suggested are cultivate of freshwater faunal anima; eg. Touted). These structures or ponds were generally situated inside the settlement and Terra Preta area. Being small in surface extension, these reservoirs are likely to have formed part of the intra-settlement activity areas.

Hitherto, our data suggest that the expansion of human settlement on to the Belterra Plateau was a comparably late development (possibly post 1100 A.D.) and one that continued up to the initial times of European contact.

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The Cultivated Wilderness Project. Hinterland archaeology in the Belterra Region, Pará

Per Stenborg, Denise P. Schaan, Christian Isendahl, Mats Söderström,
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Figure 1. Top: Map of the Santarém Region, by Per Stenborg. Bottom: Example of Santarém pottery collected by Curt Unkel Nimuendajú in 1920's. Photo by Ferenc Schwetz, Museum of World Culture

Figure 2. Two examples of large depressions at Ramal do Funil (left) and Bom Futuro (right). Photo by Per Stenborg

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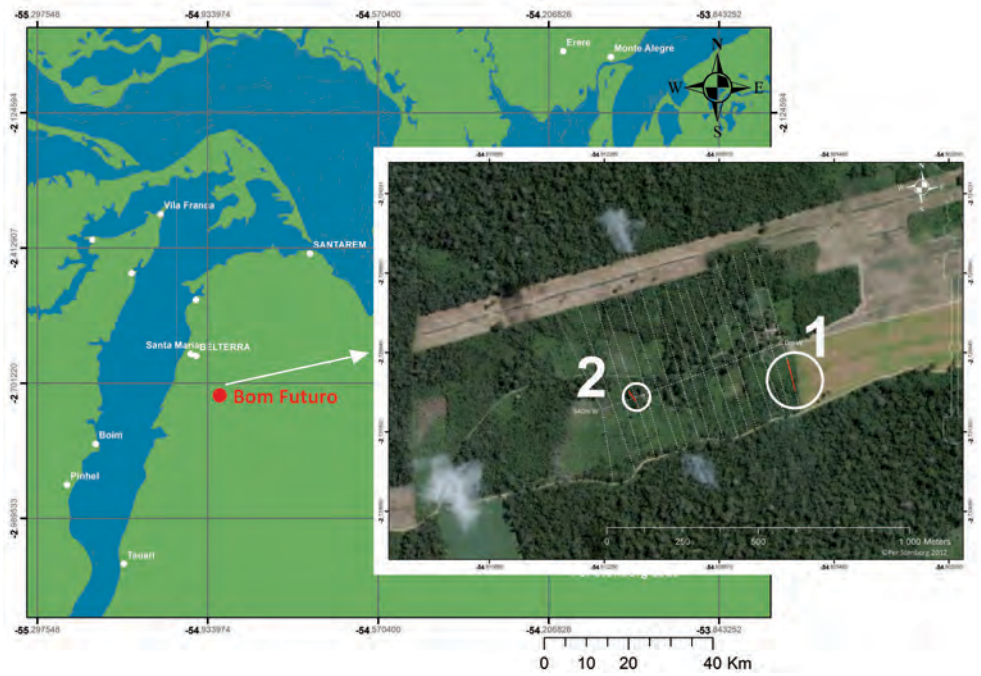

Figure 3. Location of the Bom Futuro site area & the position of the excavated units at Bom Futuro. By Per Stenborg

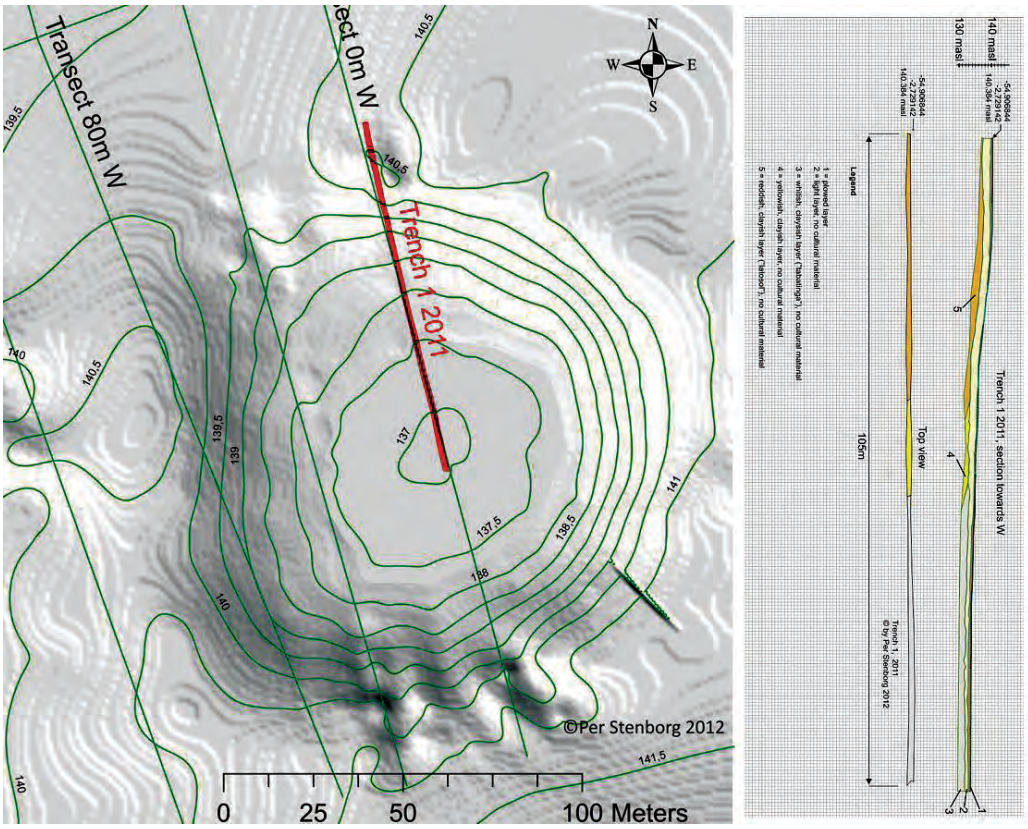

Figure 4. Plan and cross-section of the trench excavated in a large depression at Bom Futuro. By Per Stenborg

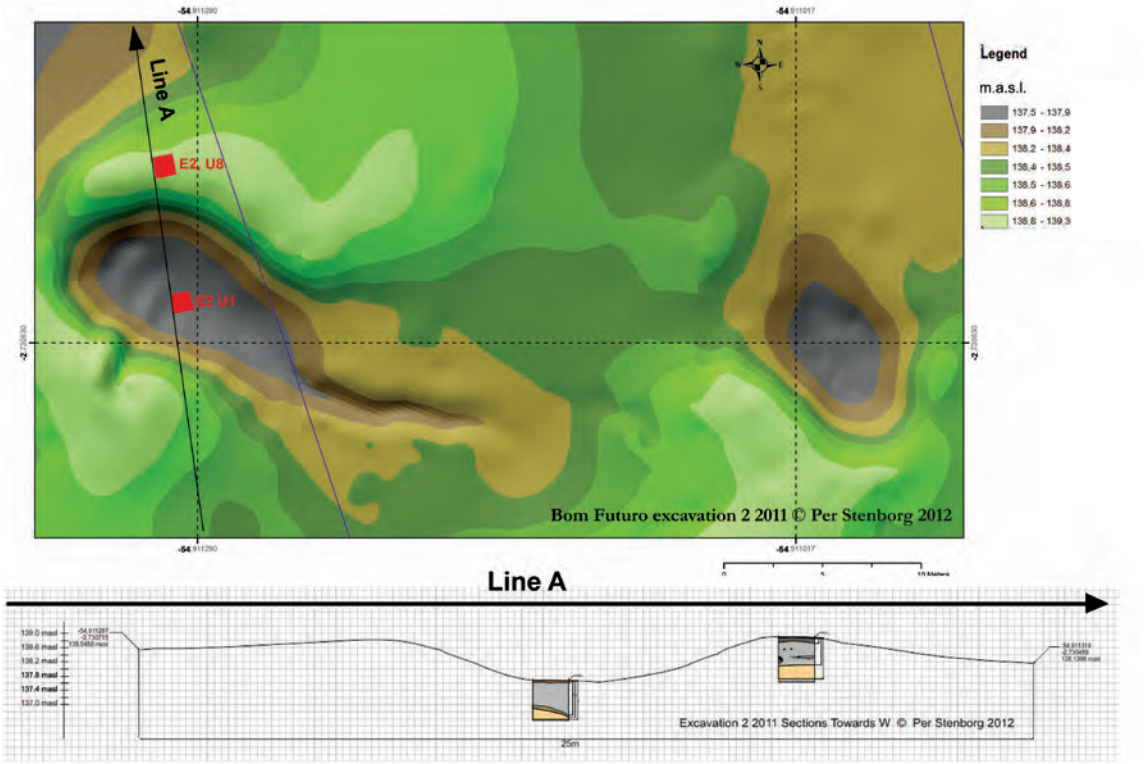

Figure 5. Position and sections of the squares excavated in a minor depression. By Per Stenborg

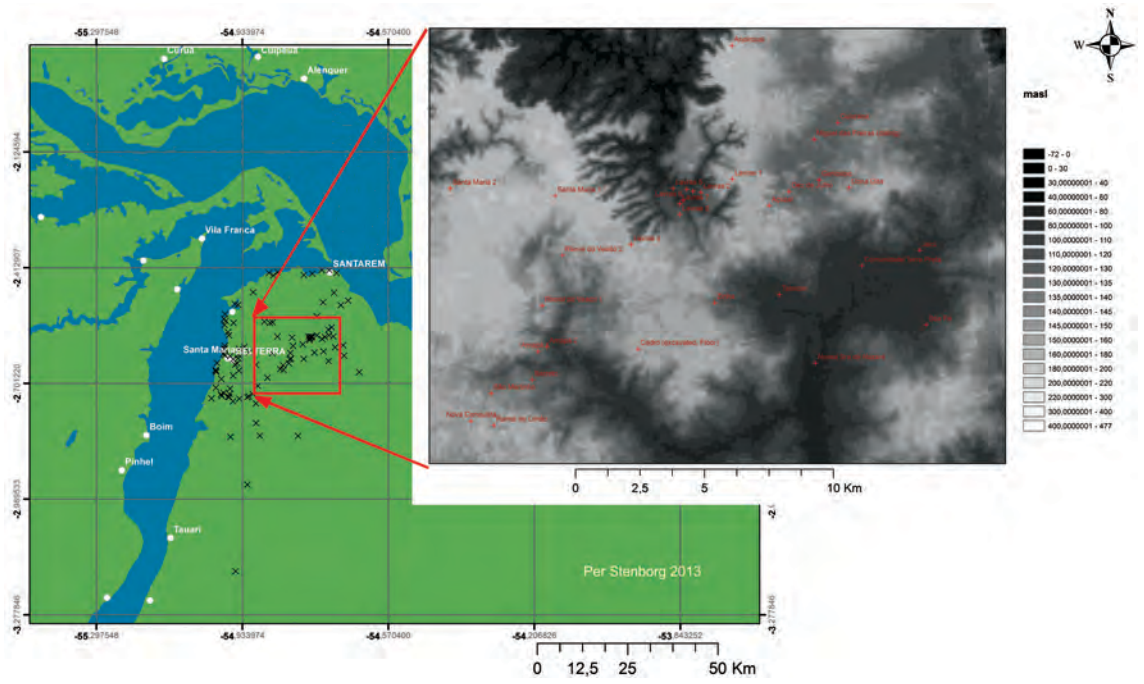

Figure 6. Map showing that the majority of sites are found in lower-lying sections of the Belterra Plateau where inflow of surface water is likely to occur during rains. By Per Stenborg