**Radiocarbon dates of shell beds and stranded coral at Kampung Gambut, Southeast Johor**

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*Abstract*

There is widespread evidence of Holocene high sea levels around Peninsular Malaysia in the form of erosional and depositional features. Some of these emerged features have been dated in an attempt to reconstruct the Holocene sea level history (Tjia et al, 1977, Streif, 1979, Kamaludin Hassan, 2001 ). This has been a difficult task and although there is general consensus that the Holocene sea rose to above its present level during the height of the marine transgression, the manner of its retreat to the present level is less clear. Part of the reason is the different types of materials used for dating and the method in which a particular sample is related to sea level. Those working around the coast will be familiar with the general absence of bench marks in which accurate levelling could be carried out to determine accurately the elevation in which a sample is derived. Those using subsurface materials have to content further which compaction after deposition. Ideally erosional surfaces which have largely maintained their original elevation should be used but unfortunately dataeble materials are very rarely found on such surfaces.

There are impressive coastal features that are clearly relicts from former high sea levels along the east coast of Peninsular Malaysia. The stranded oyster beds of Bukit Keluang and Tanjung Penunjuk, the high level beach rock of Pantai Buluh in Sedili and that in Tanjung Balau in Desaru and the dead coral heads extending up river Kemasik. Inland are the well-developed *permatang*, some cresting several metres higher than the beach ridges formed under present sea level (Teh 1980). But some are dune capped and extremely difficult to use their ridge heights as sea level indicator.

This paper forms part of our study on early mid-Holocene sea level fluctuation which used mainly subsurface materials in reconstructing the sea level curve (Bird et al, 2007). Three of the dates, however, are from Kampung Gambut in Southeast Johor (Figure 1)

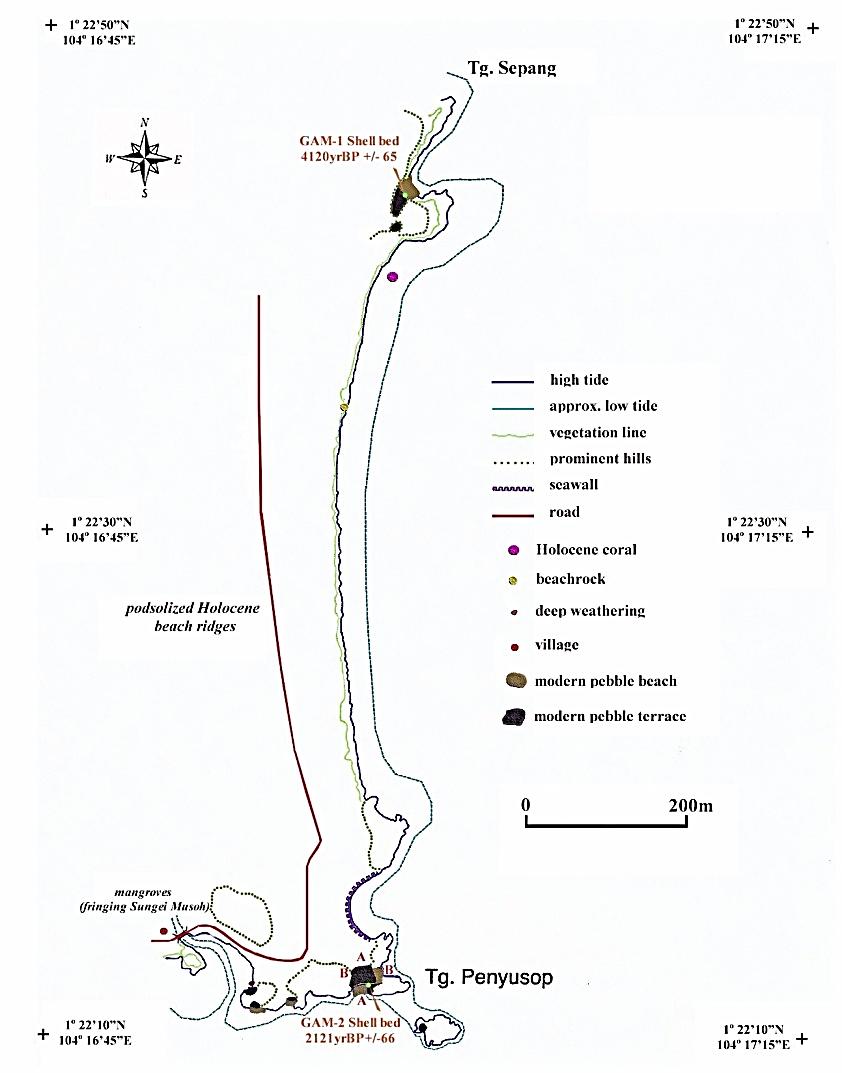


Figure 1. Study area from Tanjung Sepang to Tanjung Penyusup in Southeast Johor

Two of the dates were derived from shell beds and another from a stranded coral head (Figure 2). The elevations from which the samples were taken were determined using an automatic level and the elevations were tied to a bench mark along the main road. GPS were used to accurately pinpoint the location of the samples. Mapping of the coastal features and levelling across the backing *permatang* terrace and stratigraphic studies were also carried out to understand the deposition history.

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| --- | --- |
| C:\Users\Administrator\Desktop\Kampung Gambut radio carbon dates\High level embedded boulders.JPG | C:\Users\Administrator\Desktop\Kampung Gambut radio carbon dates\Student Michael trying to figure out what is it all about at Gambut.jpg |
| Lower shell bed | Upper shell bed |

Figure 2. Stranded shell beds used for dating to reconstruct the Late Holocene sea level in Southeast Johor

The results of the dates and elevation are shown in Table 1. The higher shell bed at elevation 2.30m reduced level was dated at 4120+/-80 years BP, the lower shell bed at 1.94m reduced level was dated at 2160+/-70years BP and the degraded coral head at -0.51 m reduced level dated at 6380+/-90 years BP.

Table 1. Results of Kampung Gambut radiocarbon dates and their elevation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Elev.**  **(m)** | **ANU number** | **14 C age (yrs BP)** | **+/-** | **Calibration curve** |
| GAM-1 shell | 2.30 | 11998 | 4120 | 80 | Marine98.14c |
| GAM-2 shell | 1.94 | 11999 | 2160 | 70 | Marine98.14c |
| GAM coral 2a | -0.51 | 12000 | 6380 | 90 | Marine98.14c |

These features are obviously emerged but it is also clear that ascribing a particular elevation to them would be extremely hazardous. Interpretation of their possible former sea levels will be discussed in the full paper.

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