Journal of Pacific Archaeology – Vol. 1 · No. 2 · 2010

– RESEARCH REPORT –

Stone Disc Beads from Watinglo Shelter, Northern Papua New Guinea

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ABSTRACT

In 2005 the excavation of a new rockshelter in Papua New Guinea, Watinglo, unearthed the unusual find of four stone disc-shaped beads. Beads such as this have not hitherto been reported from Papua New Guinea. The context, age, technology of manufacture and petrography of the beads are described.

Keywords: Watinglo shelter, Papua New Guinea archaeology, stone disc beads

INTRODUCTION

Here we report the unusual find of four disc-shaped stone beads from a newly discovered rockshelter in Papua New Guinea, known locally as Watinglo. Beads such as this have not hitherto been found in Papua New Guinea although similar small beads made on slate have been reported from several caves in the Philippines (Fox 1970; Thiel 1986/87). Small disc beads made on shell are common in sites throughout this broad region. The context, technology of manufacture and petrography of the Watinglo stone beads are described.

Watinglo is located within a few hundreds of metres of the border between PNG and Papua (formerly Irian Jaya) near the modern coastal village of Wutung (Figure 1). This large shelter was discovered in 2005 during the course of an archaeological survey of the coastline between Vanimo and the border, and was excavated in the same fieldseason. It is less than one km from the coast and approximately 110 m asl. Two 1 m^2 test pits, Squares A and C, were opened in 2005, positioned one metre apart (Figure 2). Square A attained a depth of ca. 270 cm, at which point a deeply weathered limestone rubble that appeared to be culturally sterile was encountered and excavation was ceased. Excavation of Square C ceased at ca. 205 cm depth as large boulders were encountered across most of the plan of the excavation.

The stratigraphy at Watinglo shows a principal dichotomy between a surficial unit of fine silts and sands, containing very small quantities of cultural material, and the main body of the deposit with much more abundant shell and other cultural remains. A thin compact layer with broken shell and grit occurs between the surficial unit and the main cultural deposit. A date on charcoal within this crushed shell horizon was 445±30 BP (SSAMS ANU9419). A *Turbo* sp. shell from Spit 6 at approximately the same depth below surface returned an age of 865±25 BP (SSAMS ANU9418). Spit 9 at an approximate depth of 20–25 cm below surface in the upper part of the main cultural deposit was dated to 2178±38 BP (Wk-17254). A date of 5248±51 BP (Wk-17255) from spit 10, immediately underlying this, suggests that after 5000 BP there was a major slowing of the sedimentation rate, an erosional phase or both (Figure 2). As noted elsewhere the period between 5000 and 2000 years ago is poorly represented in

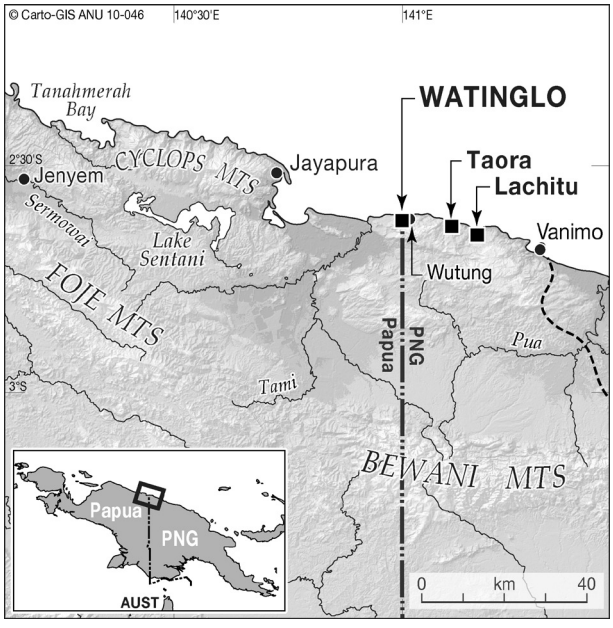

Figure 1. Location map showing location of Watinglo and other sites mentioned in the text.

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Received 23.3.2010, accepted 10.4.2010

Figure 2. Watinglo shelter showing 2005 test pits.

the chronostratigraphic record at other north coast shelters in PNG (O'Connor *et al.* in press). A marine shellfish in a block of brecciated sediment against the rear wall of the shelter returned an age of 6350±110 BP (OZ 1283). It is at a height of ca. 30 cm above the current floor level and supports the interpretation that the shelter has been subject to at least one phase of erosion in the mid to late Holocene. Radiocarbon dates from the lowest excavated levels in Squares A and C reveal that accumulation of the cultural sequence at Watinglo commenced in the terminal Pleistocene, about 11,000 years ago (O'Connor *et al.* in press).

Aside from shellfish, Watinglo contains a rich faunal assemblage which includes terrestrial vertebrates and fish. Lithic artefacts are found throughout the sequence and pottery occurs in the upper horizon in both squares (O'Connor *et al.* in press). One reason for the recovery of the beads is no doubt the fine-grained recovery techniques used on this excavation. With the exception of the bulk samples all of the excavated deposit from Watinglo was wet-screened through fine gauze before drying and sorting, ensuring recovery of even very small items (Fairbairn 2005).

Context and Dating of the Beads

All four stone disc beads were recovered from Square A and most likely date within the past 400 years. Although they were from four different excavation units, Spits 3, 4, 6 and 7; the possibility remains that they are all from a single strand and have been vertically dispersed as a result of local post-depositional disturbance (Figures 2 and 3). The upper 30 cm of the deposit provides ample evidence of bioturbation, and pig bone found in Square A Spit 10 was dated to less than 300 BP (O'Connor *et al.* in press).

Description of the Beads

Each bead has an outer diameter ~5 mm, a perforation in the center with a diameter of ~2 mm diameter, and a thickness of ~1.25 mm (Figure 3). The means by which the beads were made is uncertain but all surfaces have been made smooth by abrasion/grinding. The central perforations are very regular in size, shape and in diameter and appear to have been made by drilling from both sides of the bead. The edges of the discs are slightly irregular; particularly in the case of beads 6 and 7. Disc beads can be manufactured by threading the individual beads and grinding them as a continuous string, but the irregularity in the bead shape suggests that they were ground individually.

Petrography of Disc Beads from Watinglo

From megascopic appearance, it was judged that the beads might be ceramic, but such is not the case. Two of the beads were thin sectioned. These were glued flat to glass slides and ground to the standard thickness of 0.03 mm, effectively destroying both beads (artifacts W-A-6 and W-A-7). As the petrography of the two sectioned beads is identical, the assumption is made that the other two beads (artifacts W-A-3 and W-A-4), were made from the same material.

Both sectioned beads are made of limestone of identical lithology. The rock is a skeletal biomicrite, composed of fossils (in this case, molluscan) embedded in fine lime mud. The lime mud is now diagenetic microspar, coarser grained than micritic lime mud as initially deposited, and implies that the limestone was collected from sedimentary strata exposed by erosion, rather than from modern cemented reef material. The source of the limestone was probably beds or nodules in the Miocene Puwani Limestone, which is exposed over a wide area inland from the coast within multiple local drainages east of the border with Papua, but separated from the coast by only a narrow belt of Quaternary deposits.

DISCUSSION

Beads such as this have not hitherto been found in Papua New Guinea or the Pacific although similar stone disc beads are know from caves in the Philippines. Fox (1970: 107) reports flat shale beads from Leta Leta cave and Ngipe't Duldug in Palawan, which he thought were likely

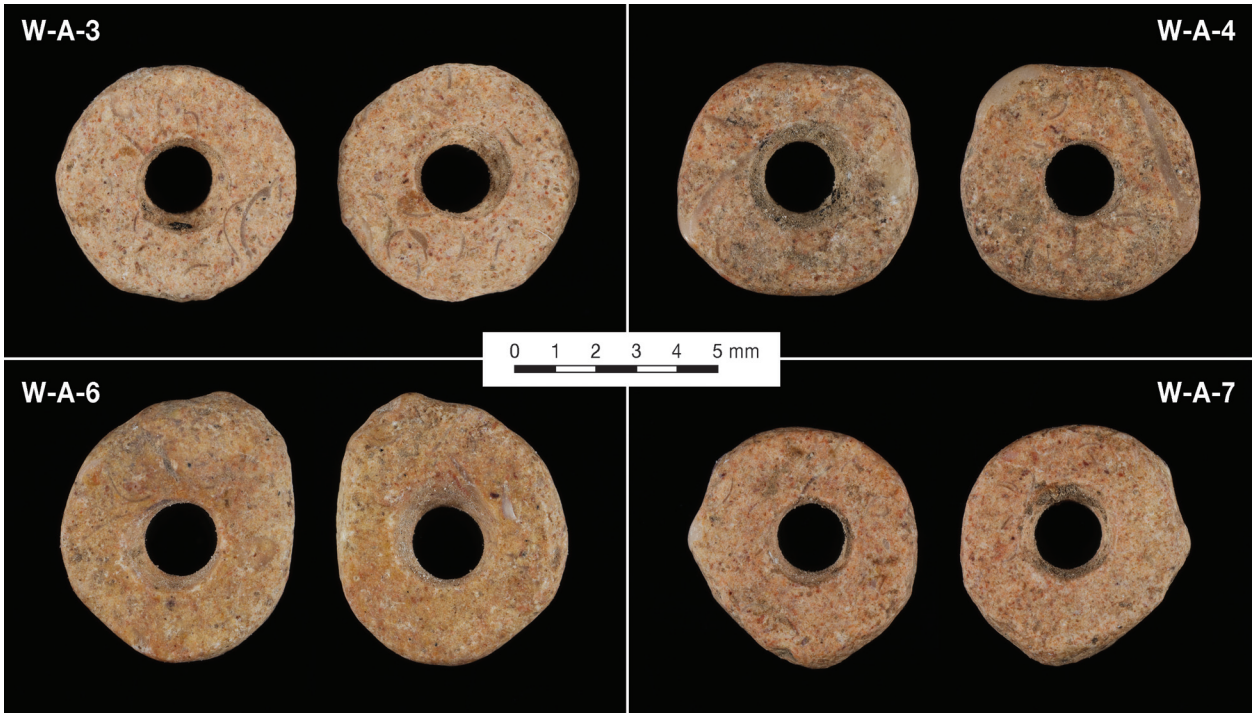

Figure 3. Stone beads from Watinglo photographed from both sides.

early Neolithic in age. Thiel (1986/87: 243, 250) also mentions and illustrates small slate disc beads from a mortuary context in Arku cave, however the dating of these is less certain, being between 3,500 BP and the late metal age.

Disc beads made on marine shell were not recovered from Watinglo or from the other mainland north coast cave and shelters sites Lachitu or Taora, but they occur in Lapita-age and later assemblages in Island Melanesia and the Pacific (Bedford and Spriggs 2002; Shutler *et al.* 2002; Summerhayes *et al.* 2010; Szabó and Summerhayes 2002; Szabó 2005) and in Neolithic and Metal age assemblages in mainland and Island Southeast Asia (Fox 1970; O'Connor in press; Szabó & Ramirez 2009; Thiel 1986/87). In East Timor where they are abundant in east coast cave and shelter assemblages, they have been directly dated as early as 9,500 BP (O'Connor in press). These shell disc beads range in size but many are small and similarly proportioned to the stone beads from Watinglo. The examples from Island Melanesia are usually made on the apical whorl of *Strombus* spp. or *Conus* spp. shells. These shell beads have some technological affinities with the stone beads from Watinglo as the faces of the beads are ground flat after the apical whorl is removed. In view of the abundance of suitable marine shell in the Watinglo shelter the choice of stone is a puzzling one, and one which presents significant technological challenges. It must have been a challenge for the bead-makers to select protolith limestone soft enough for abrasion but tough enough to hold shape as small objects. If they had been found in an inland site where marine shell was not available as a raw material, we might have been tempted to interpret the Watinglo stone beads as an example of mimicry of shell disc beads. The abundance of suitable shell at Watinglo shows that this clearly is not the case.

Acknowledgements

We would like to acknowledge the assistance of Herman Mandui, National Museum and Art Gallery of Papua New Guinea, John Sepi, University of Port Morseby and Ken Aplin, CSIRO Wildlife Division, ACT, Australia for assistance with the excavation of Watinglo. Dr Andy Fairbairn, University of Queensland is acknowledged for his patience and time in implementing the wet screening methods that resulted in the recovery of the beads. The people of Wutung are thanked for their assistance during fieldwork. The fieldwork was funded by a Discovery grant [DP0451043] from the Australian Research Council. Kat Szabó, University of Wollongong, is gratefully acknowledged for pointing us to the references on the Philippines stone disc beads.

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