The Archaeological Survey Of The Richards Bay Minerals Mining Lease: October 2004

For Richards Bay Minerals
&
Amafa aKwaZulu-Natali

Date: 15 October 2004

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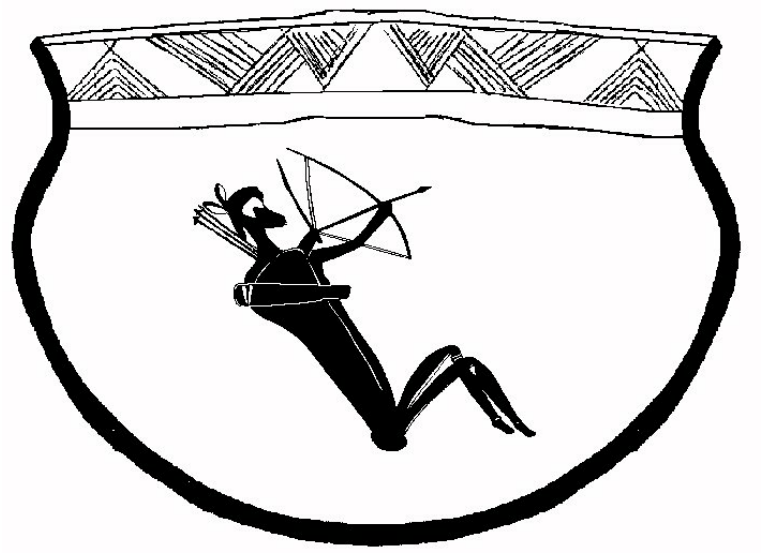

RBM October Survey

The October archaeological survey consisted of three main projects.

1. Undertake the monthly survey
2. Test-pit excavations of MPE56
3. Meeting with exploration department in relation to location of sites

Radiocarbon Dates And New Sampling Strategies

We have recently received a new set of radiocarbon dates from the CSIR that were submitted last year. Two samples from the same layer of four different sites were submitted. Each sample consisted of bone and marine shell. Marine shell and organic remains will yield two different dates from material from the same deposit: marine shell tends to give an older date. The dating was necessary as there is no radiocarbon correlation between marine shell and organic terrestrial remains for the southern African East Coast.

The CSIR and ourselves began an informal project to date both types of material to yield better, and more precise, radiocarbon dates from marine shell. This is important as organic material decomposes very quickly in the dune system, and is rare occurrences in most sites. The opposite occurs for marine shell: it is abundant and does not decompose as fast. Previous radiocarbon dates at RBM are from marine shell (Appendix A tabulates all of the dates; Appendix B is a copy of a letter from the CSIR).

The result of the new radiocarbon dates indicates that there is a range of variance between marine shell and organic remains (before and after calibration). This variance is not consistent. Moreover there are only four samples and this does not allow for statistical tests. The variance is also very different to the West Coast samples.

We need to sample sites with both marine shell and organic remains in the same layer. These types of sites can vary between multicomponent sites or single occupation sites. One of our new strategies is to target, sample, and/or excavate more shell middens that have the required material for radiocarbon dates.

This “new” strategy necessitated a meeting with the exploration teams who tend to locate several middens. The result of the meeting is that an on-site meeting will be held with RBM personnel and the contractors for:

- archaeological site awareness
- archaeological site significance[1]
- formulate a policy regarding the reporting of sites

We hope that this will allow us to sample more sites ahead of the actual mining program, and thus increase the sample size. A few sites have been damaged by the exploration department in the past, and we believe the above will counter further damage to archaeological sites.

Archaeological survey

The archaeological survey only recorded one new site, and revisited MPA33 for possible human skeletal remains. Other mining ponds were surveyed, however no new sites were recorded.

AMS3

AMS3 is located on the top of a tall dune along the first dune cordon from the side of Lake Nhlabane. The top of the dune consists of an extensive scatter of artefacts. These artefacts may have slumped and form part of AMS2 artefacts content. A few undecorated pottery sherds and a dagga pipe fragment (with rim and lip) were sampled from AMS2. The pipe is decorated with a double row of impressions.

AMS had a variety of artefacts. These included: decorated pottery, grinding stones, slag, and an iron armband/bracelet. The bracelet has oxidised and is a thin hollow tube of iron. Several decorated sherds were sampled. These are as follows:

- Circular impressions on (everted rim and) lip
- Oval impressions on (everted rim and) lip
- Lip notching

[1] That is, significant, or large, sites are worth noting, while small, insignificant sites are not worth reporting.

- Row of four horizontal circular impressions on the body
- Isumpa on body
- Horizontal row of rectangular impressions on the neck

We observed several marine shell fragments and faunal remains indicating that a deposit may exist.

Test-pit excavations should occur at this site.

MPA33

We revisited MPA33 to determine if more skeletal remains had eroded from the dune and if diagnostic sherds occurred. No diagnostic sherds were observed and only two human cranium fragments were collected. These fragments are probably from the first skeleton.

Test-pit excavations

MPE57 was marked for further excavations from a previous survey. The survey noted an area with shell deposit. The test-pit excavations were undertaken in the same area previously tested. Unfortunately, the area with shell was very small and it appears that most of the midden had been previously removed when the road / track was made.

We then targeted MPE56 that is located further up hill. The site had been exposed by bulldozer bush clearance, and several middens were visible. These middens were however very disturbed and were not sampled either. More in tact middens were observed in the bush area itself and these should be excavated at a later stage.

The final site marked for test-pit excavations was at MPD^2. This site had a potential midden that extended over a ±2m radius. We sampled a 1 m x 1 m square. The shell was on the surface and in partially *in situ.* Some *in situ* deposit occurred at the base of the shell midden. Very little bone occurred in this midden, although some charcoal was observed. The shell consists mainly of *Perna perna*.

[2] The location for this site will be given in the next report.

APPENDIX A

SUMMARY OF RADIOCARBON DATES FROM RBM

Pta No.	Accession No.	Site name	Square	Lens	Type of sample	□13C (‰ PDB)	Radio-carbon years BP	std dev	Cali-brated Date* max	Prob-able	min
7750	KZ97/9		1	1	Marine shell	1.3	790	20	1499	1515	1529
7753	KZ98/11		7	5	Marine shell	1.3	890	20	1441	1451	1461
7744	KZ96/37		13	1	Marine shell	1.3	985	20	1388	1401	1412
7758	KZ96/29		1	1	Marine shell	0.9	1095	20	1295	1303	1312
8537		MPE10	6.1	5c	Marine shell	1.0	1090	50	1398	1426	1451
8540		MPE10	4.1	3b	Marine shell	1.1	1515	20	1029	1040	1051
8543		MPE10	6.4	8	Marine shell	1.2	1100	50	1392	1421	1446
8548		MPE10	7.1	10	Marine shell	0.5	1000	50	1446	1473	1507
8532		STM		C	Marine shell	0.2	3840	60	1705	1638	1560
8533		MPE	4.5	SM2-3	Marine shell	1.0	990	50	1451	1479	1515
8534	KZ99/9	MPE99/7	4.9	SM4	Marine shell	1.1	1000	50	1446	1473	1507
8541	KZ2000/12	MPD245/00	3	2	Marine shell	1.2	860	50	1537	1634	1665
8539	KZ99/8	MPE99/6	15.1	BOL1A	Marine shell	1.3	850	20	1625	1642	1654
9222	KZ99/9	MPE99/7	Sa1	SM2	Marine shell	1.2	760	15	1681	1688	1695
9263	KZ99/9	MPE99/7	Sa1	SM2	Bone	-12.0	440	35	1445	1462	1492
9230	KZ2000/12	MPD245/00	Shell2	2A	Marine shell	1.3	1060	45	1418	1441	1464
9251	KZ2000/12	MPD245/00	Bone2	2A	Bone	-8.4	560	50	1403	1417	1433
9227		STM	/	20	Marine shell	0.4	3440	60	1253	1163	1075
GrA25943		STM	/	20	Bone	-20.2	2285	40	382	368	303
9232	KZ97/5		/	1	Marine shell	1.1	1390	50	1122	1189	1239
9241	KZ97/5		/	1	Bone	-15.6	830	50	12210	1256	1277
9238	KZ97/9		/	2	Marine shell	0.4	990	40	1456	1479	1507
9259	KZ97/9		/	2	Bone	-12.9	500	90	1409	1436	1487
9233	KZ98/13		4.2	3B	Marine shell	1.0	1590	60	913	990	1032
9264	KZ98/13		4.2	3B	Bone	-8.7	670	50	1293	1308	1400

* Dates are in AD, except for STM that is BC

APPENDIX B

Copy of email from the CSIR regarding the radiocarbon dates

Dear Gavin

I have just come from a meeting with Dr. Vogel and Siep Talma in which we discussed the implications of the recent set of radiocarbon dates that we analysed for you. The paired shell and bone samples allow us to calculate an offset for the marine reservoire effect which makes all marine radiocarbon dates appear older than they really are. Your results seem to suggest that this is a relatively constant value of 500 years. This is valuable data for us, and we spent some time comparing this to the West coast results that we have. Surprisingly they are in the same range. We anticipated that the W-coast offset should have been larger because of the upwelling of deeper, older water.

Unfortunately your samples provide 6 datapoints on the curve which is not sufficient to make any conclusive statements, especially as one or two of the results are obviously errors (probably becuase of the association between the shell and the bones). If we really want to advance the science we will require more samples that we hope can fill some of the gaps. We also need to re-analyse samples from the problem data in order to exclude bad data.

All of this work will help us to better understand the use of radiocarbon in dating E-coast samples. Obviously this is very important for archaeologists, but it is also directly relevant in some of the other research that I am involved in. This includes understanding dune dynamics where we use radiocarbon to date shell inclusions, and also our collaborative work with the council for geoscience in which we are using 14C to date subtidal geomorphological features. These link together to help us understand coastal morphology and sediment mobility in response to sea level changes.

I would be most appreciative if you could continue to look out for paired shell and bone/charcoal samples in the course of your work. What I can offer to do is to analyse the bone samples at my expense where this can be twinned with your own sampling strategy using shell. Although this is not really the way that it works - I would also like to try to fill the gaps in the current data set, particularly betweeen 1000 and 3000 years ago. I have no doubt that with a few more data points we will confidently be able to draw the appropriate conclusions. We would like then to go to print in a scientific journal and would obviously make you a co-author. If there is any other contribution we would acknowledge that appropriately.

Please will you let me know if you are able to help us further.

Regards
Stephan

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APPENDIX C

Site Record Forms

ARCHAEOLOGICAL SITE RECORD FORM

Umlando: Archaeological Tourism
& Resource Management
P.O. Box 491, Mkuze, 3965
Ph: 035-5958485 / 0836585362 / 0723481327

SITE CATEGORY:
Stone Age
Early Iron Age:
Late Iron Age: yes
Historical Period:

Recorder's Site No.: AMS3
Official Name: N/A
Local Name: N/A
Map Sheet: 2832BC KwaMbonambi
Map Reference:
GPS reading: S 28^0 32' 52.3" E 32^0 20' 26.5"

Directions to site: Sketch or description.
Site is located ahead of the AMS mine. Dunes are first dunes along the hinterland, and are relatively high. Site located on top of the dune on a flat area.

SITE DESCRIPTION:

Type of Site: Open
Merits conservation: yes: test-pits
Threats: Yes
What threats: RBM mining

RECORDING:
Details of graphic record: N/A
Colour slides Black & White photographs
Tracings Re-drawings

Recorder/Informant:
Name: Gavin and Louise Anderson
Address: PO Box 491, Mkuze, 3965
Owner State
References:

Description of site and artefactual content.
Site appears to have several homesteads, with archaeological deposit.
Stone: Lower and upper grinding stones
Metallurgy: Slag
Marine Shell: A few small middens beginning to slump. Mostly brown mussel.
Faunal Remains: Several large bovid bones near middens
Special Finds: Hollow/Tube iron bangle
Pottery: Variety of sherds some decorated. Decorations: Circular impressions on (everted rim and) lip. Oval impressions on (everted rim and) lip. Lip notching. Row of four horizontal circular impressions on the body. Isumpa on body. Horizontal row of rectangular impressions on the neck.