EARTHWATCH INSTITUTE
FINDING SOLUTIONS FOR A SUSTAINABLE FUTURE

To all the Earthwatch Volunteers on *Fiji's Ancient Seafarers*, November 2007 to February 2008:

How the time flew! A sure sign that we were all occupied with what we were doing and thoroughly enjoying it. But we achieved what we set out to do: we took out the insides of Fiji's earliest settlement and, in doing so, have discovered far more than I even dared anticipate. I think of Mata's find of an earthenware jewellery pot, packed with the things the Lapita princess wore, and Rosie's incredible hunk of pottery with the eyes that stared out at her – the first time they had seen daylight for more than 3000 years.

We have still not issued a Press Release – that will be in the next few weeks after everything is properly cleaned and photographed. We brought back 97 boxes of samples to the University, and Kali, Poonam, Ledua, Christy, Naca (Nathan) and the redoubtable Tammy spent six weeks washing and re-bagging them.

We have sent off 11 samples already for radiocarbon dating, and are about to send 500 decorated potsherds to Paris, a box of non-human bones to Birmingham (Alabama), a box of shell valuables to Guam, and the remains of seven humans to Kyoto. Ledua and Marian have started their Master's degree research with me on the Bourewa samples, Christy expects to start in a few months time. Rosie has got a scholarship to do her PhD on the Bourewa pottery and shells (seeing whether climate change changed where the Lapita people sourced their sand and clay for pot-making). Petra has started proper school and still tells everyone that, when she grows up, she is going to be a doctor in the morning and an archaeologist in the afternoon. No word yet on the evenings!

Vusama is now back to normal: kava every other night, not every night. The chief has given up smoking, Dido (the headman) wants to do it all again, and the ladies pretend the same (although I suspect they are quite relieved!). They still cut the grass in the village every week, and say prayers for all the great friends they made last (southern-hemisphere) summer.

So, as I said to you all when I first briefed you in the air-conditioned comfort of the Mercure Hotel's conference room, "Thank you all for having chosen *Fiji's Ancient Seafarers* because you have made the project possible". Indeed!

My warmest personal regards to you all.

Patrick Nunn

EARTHWATCH INSTITUTE ANNUAL FIELD REPORT

Project title: Fiji's Ancient Seafarers
Completed by: Dr. Patrick D. Nunn
Period covered by this report: November 2007 **to** February 2008

Reporting on research objectives

Provide a summary of progress this year towards each of the objectives stated in your most recent research proposal.

Objective 1: Selective excavation at Bourewa Beach and other Lapita-era sites on or near the Rove Peninsula

Completed successfully. We excavated a large area of the central part of the Bourewa site (see Map 1 in Appendix 1) and now calculate that we have exposed 80% of the earliest part of this ancient settlement. We also completed test excavations at all of the satellite sites we had intended to excavate, namely Jugendar's Farm, Waikereira, Qaramatatolu and Matelita Tree.

Objective 2: Surface collection of stone tools and pottery fragments from selected coastal flats and caves on or near the Rove Peninsula

Completed successfully. We collected stone tools and pottery fragments from all targeted sites, namely Qaramatatolu, Matelita Tree, Hardeo's Cave, Qaranibourewa, Jugendar's Farm, Covularo and Waikereira.

Objective 3: Use GPS and GIS and surveying to construct maps of both the modern and Lapita-era environments of the Rove Peninsula

Not fully completed. GPS and GIS were used to extend the survey of the original Bourewa site map, but we could not complete this owing to instrument failure and the non-availability of qualified personnel.

Objective 4: Conduct offshore coral reef survey to try and reconstruct the form and ecology of the reef that existed in Lapita times, and its subsequent development

Not fully completed owing to a lack of time and appropriately qualified personnel. This objective could have been achieved, but because of the incredible discoveries we were making during excavations the PI decided to focus on these rather than this peripheral objective.

Objective 5: Core mangrove swamp sediments with a view to understanding climate change as revealed through environmental proxies such as vegetation type and sedimentation rate

Not fully completed. This objective could have been achieved, but because of the incredible discoveries we were making during excavations the PI decided to focus on those discoveries rather than this peripheral objective.

Objective 6: In-field analysis in order to generate a large quantity of data without carrying all samples back to the University laboratory

Completed fully. We built a field laboratory in Vusama Village and processed as anticipated 90% of all the samples collected. The remainder were processed within two weeks of the end of the project.

Project development

If there is another field season, I would add an objective to do with measuring ocean-surface salinity along the coast in order to map the freshwater upwelling area that may have been critical to the Lapita people here.

Non-technical summary of results

1. Give an account of the data collected and results (inputs and data) for the period covered by this report, mentioning any emerging trends.

The evidence that Bourewa is the earliest human settlement in the Fiji Islands archipelago continues to accumulate. One of the main things that led us to this conclusion during the 2007-2008 season was the numbers of decorated potsherds having designs that were indicative not of Fiji but of the islands far to the west. It seems likely that the first Bourewa settlers had come far more recently than we had originally supposed from the Lapita heartland in Papua New Guinea (see the February 2008 issue of *National Geographic Magazine*). This is an extraordinary discovery because it suggests that, for some reason, the Lapita colonizers of Bourewa sailed past islands in between, perhaps because they were infested with malaria.

We have gained important insights into the organization of the 3200-year old Bourewa settlement. These are:

- The earliest site was raised on stilts above a sand spit that was submerged at high tide. The thickest area of shell midden (shell heap, a dump for kitchen waste) lies along the edges of the stilt platforms (as delimited by the presence of postholes), suggesting that shell refuse (and other trash) was deliberately dumped (by Lapita kids?!) off the edges of the stilt-house platforms, which suggests a degree of societal organization we had not suspected (see Map 2 in Appendix 2).

- The earliest stone tools that were worked on the site come from chert-like (chert is a fine grained type of sedimentary rock) concretions in the bedrock limestone at Waikereira, the bay adjoining Bourewa.

- The clay used in the manufacture of pottery was obtained from the other side of the Rove Peninsula at the site named Matelita Tree (excavations there found Lapita

pottery – a great surprise). The clay was probably brought by small boat from there to the Bourewa site where pot manufacture took place.

The major discovery of this season's fieldwork was undoubtedly that of a pottery "jewellery box" (discovered by Sepeti Matararaba of the Fiji Museum). This was a deliberate burial – we saw an upturned pot with three *Conus* shells laid along each side. When we lifted the pot, out tumbled nine shell rings, five items that appeared to be bracelets, and five long-units (drilled shell pieces) that must have formed a necklace. Nothing like this has ever been found before in a Lapita site.

We also found drilled shell and seed beads. The abundance of shell jewellery discovered during this season suggests that (at one point in its 500-year history) Bourewa was a manufacturing centre for shell jewellery.

We found an additional 11 skeletons during the last season. All appear to be recent, post-Lapita burials, indicating a time when the Bourewa area was used as a cemetery. The preferential burial orientation (see Map 3 in Appendix 3) lends weight to the suggestion that all these burials were contemporaneous (occurred at the same time), perhaps the result of an epidemic or conflict. Only one burial was face-down, and he (Vuda) had a hole in the back of his head, the only sign of trauma in any of the skeletons.

2. How do these data contribute to achieving **conservation impacts?** (e.g. actions based on results, management plans, site protection)

We have convinced the legal landowners to preserve this site. We have left last season's excavations open for this purpose and discussions will begin in a few months about how to best preserve the site for the benefit of humanity. It will be the only Lapita site that has been preserved in this way.

3. What is/ are the **significance**/ **benefits** of your research at the following levels?

- Local (to the area of the research site)

We had three Open Days during this season's fieldwork, which attracted around 250 people in total (the weather was not as supportive as we would have hoped). Many people were fascinated by what they saw, and the students from the University of the South Pacific were professional in their guidance and explanations.

We lived in Vusama Village where the traditional landowners live, and interacted with them on a daily basis, informing them about our discoveries. One evening we organized an information briefing targeting the women of Vusama, who are commonly marginalized when it comes to such interactions. We also held briefings in other settlements and villages in the local area.

- National / Regional

The research we have completed will be of great interest to Fiji and the wider Pacific Islands region as it is putting flesh on to the skeleton of what we know about the earliest Pacific Islanders and the ways they lived. We are yet to issue a Press Release.

- International

The research will be of interest internationally because it fills in a gap in our understanding of neolithic voyagers and their ways of life.

Communication of results

We only returned from fieldwork six weeks ago. We have only just finished pre-analysis of the samples we collected. We shall issue a Press Release within the next two weeks.

Educational Opportunities

1. Does your project directly or indirectly involve the following groups in your research topic?
- Local communities YES
- Students YES
- Early career scientists YES
- Other groups YES – NGOs, government employees (Museum)

2. How does your research help these groups better understand and act towards the conservation of a sustainable environment? (Please provide specific examples of any activities you are aware of.)

Yes. It raises awareness about the imperative of conserving cultural heritage.

3. Has your project contributed to the completion of Masters' or PhD theses or degrees, or other educational research findings?

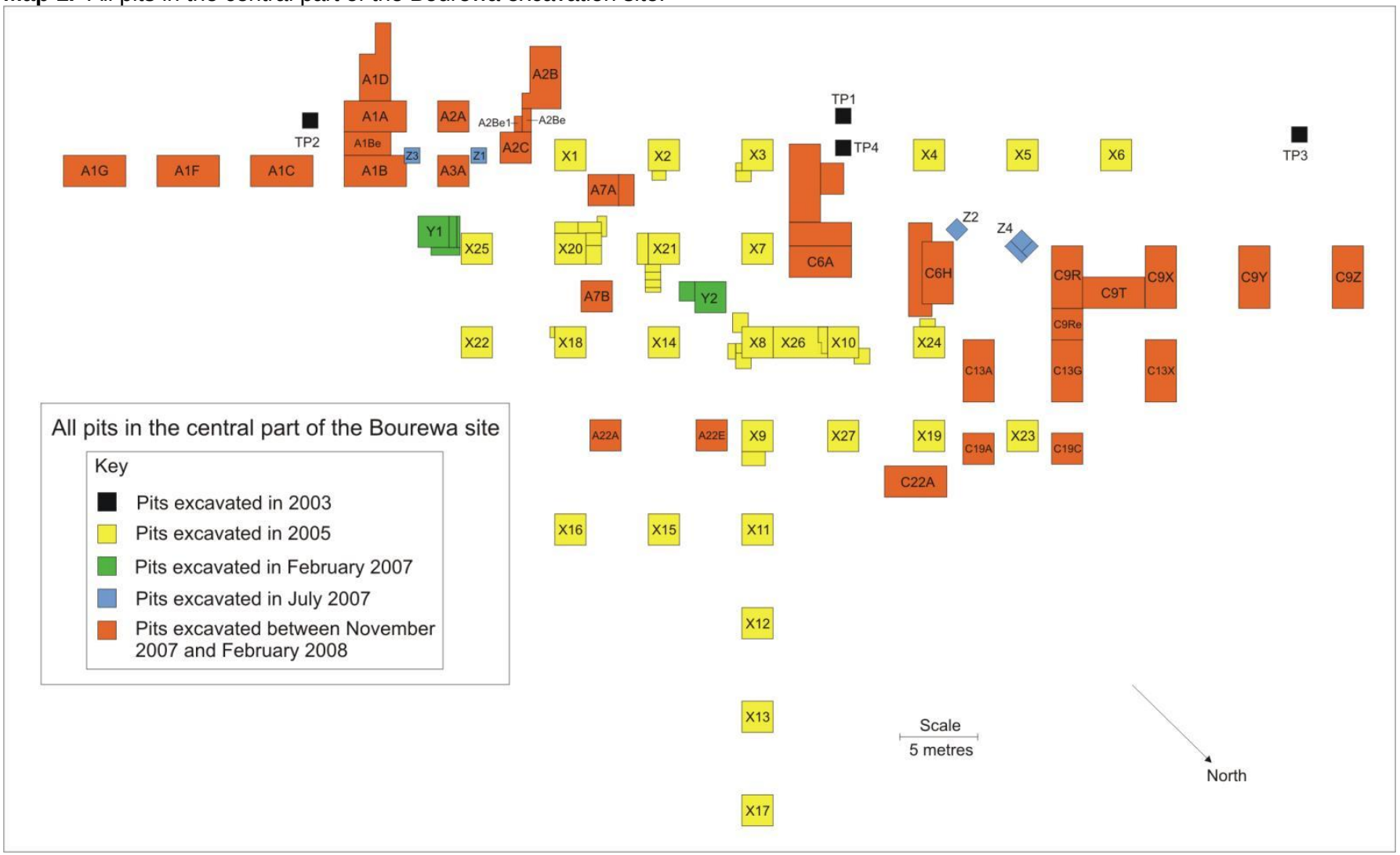
No – this is the first season, but three Masters degrees and one PhD are underway working with the samples collected.

Acknowledgements

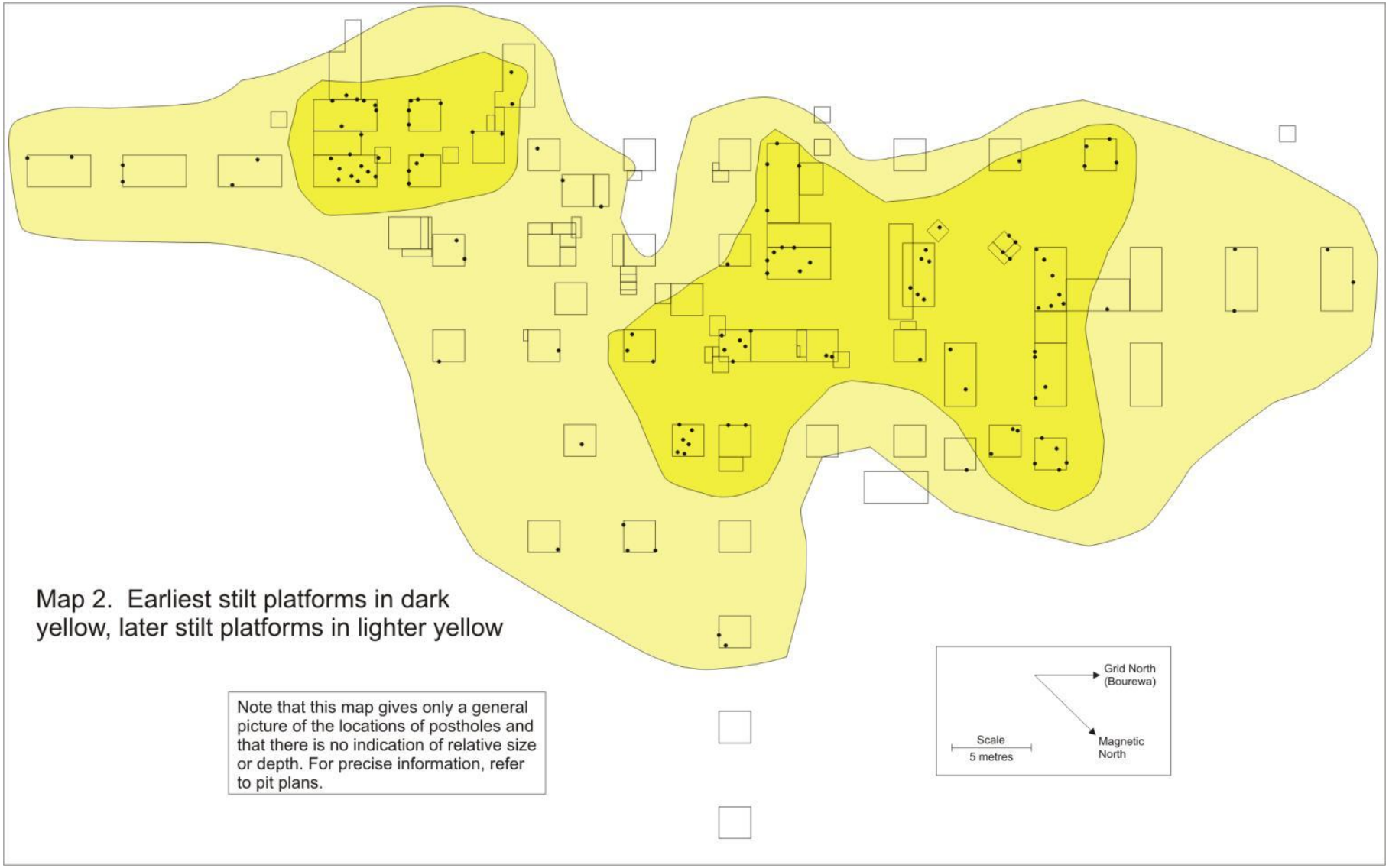
Thanks, Earthwatch!

Appendix 1

Map 1. All pits in the central part of the Bourewa excavation site.



Appendix 2


Map 2. Earliest stilt platforms in dark yellow, later stilt platforms in lighter yellow
Note that this map gives only a general picture of the locations of postholes and that there is no indication of relative size or depth. For precise information, refer to pit plans.
Grid North (Bourewa)
Magnetic North
Scale
5 metres

Appendix 3

Map 3. Rose Diagram of the Head Orientations of the Bourewa Skeletons