Declaration

The research presented here is based on original fieldwork, as well as analysis of macrobotanical assemblages excavated by the author and by other researchers in East Timor. I certify that except where it is stated otherwise, this dissertation is the result of my own original investigation.

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“A noite é a nossa dádiva de sol aos que vivem do outro lado da Terra.”
(The night is our gift of sun to those who live on the other side of the Earth)

Carlos de Oliveira

“When we arrived in Timor we took the boats to the hills, turned their keels to the sky and used them as if they were houses. The myth remained but the rite, the training, was lost, the memory was gone. Timor was the end of the world for us...”

Ruy Cinatti, in Um Cancioneiro para Timor

This work is dedicated to five persons: both my mother and my father, Ana Maria Vieira da Silva and Domingos Miranda de Oliveira, who have lasted the distance; my grandmother, Maria Adelaide Silva, from whom I gained a certain culinary appreciation that helped balance the long hours of work; my grandfather, Joaquim José Ramos da Silva, who insisted on supporting most of my higher education; and my brother and best friend, Nuno José Miguel Fontes, unexpectedly deceased in 2007. To them goes all my love and respect.
Abstract

The Archaeobotany of East Timor’s early subsistence practices has not previously been the target of systematic and comprehensive research, and this is the main purpose of this doctoral thesis. The project aims at investigating early plant food management and the introduction of agriculture in East Timor, using charred plant remains from archaeological sites as a direct line of evidence.

East Timor’s economy today relies mostly on subsistence farming practices, involving a diversified array of food products from different origins. Amongst the most widely distributed, maize (Zea mays) and cassava (Manihot esculenta), originated in the American tropics and are known to have been introduced after the XVI century, with the first European (Portuguese) colonial contacts. Rice (Oryza sativa) was most probably domesticated in eastern Asia, and is believed to have been introduced to Timor some time within the last 4000 years. Many fruits and nuts (such as Canarium sp., Artocarpus spp., the breadfruit, and Pandanus sp.), as well as different members of the Dioscoreaceae and Araceae families (Dioscorea alata and D. hispida yams, and taro, Colocasia esculenta), are also widely used and may have been so since the early- or the mid-Holocene.

The history of plant management and agricultural origins in the wider region has been mostly investigated through more indirect proxies, such as animal domesticates, pottery and pollen records. In East Timor, the first pottery and animal domesticates appear in the archaeological record around 3800-3600 BP and are generally accepted as being associated with the introduction of full agricultural practices. However, with the exception of Ian Glover’s seminal work in the 1960s, very few plant remains from archaeological sites have ever been reported.

The main corpus of this project is based on the recovery, identification, and interpretation of macrobotanical plant remains recovered during two archaeological fieldwork seasons, carried out by the author in East Timor in 2004 and 2005. Macrobotanical assemblages derived from excavations by Sue O’Connor, Matthew Spriggs and Peter Veth and not previously analysed, are also incorporated in the study, and plant remains reported by Glover reassessed. With one exception – which does not contradict the general picture – results obtained confirm the absence of rice or millets in any of the excavated assemblages, suggesting that none of these crops were introduced to East Timor with the first pottery or animal domesticates. They have arrived only in a later period, possibly within the last 2000-1500 years, when the caves
investigated were no longer being systematically used for habitation purposes. The macrobotanical analysis undertaken also suggests that a range of fruits and tubers have been in use in Timor since the early- to mid-Holocene, and that plant exploitation probably goes back as far as ca. 40 ky before present.

The method of recovery of plant remains used in the field, based on comprehensive flotation and wet-sieving techniques, shows that it is indeed possible to unearth macrobotanical assemblages from tropical and semi-tropical archaeological environments. Systematic comparison between archaeological specimens and a modern reference collection, based on morphological and anatomical binomial attributes and the use of both light-powered bifocal and scanning electron microscopes, allows for positive identification of charred plant remains. The adoption of these techniques by archaeologists needs to become standard research practice across the region if we are to successfully address issues of past plant management and agricultural origins.
Acknowledgments

Canberra, Dili and Lisbon – for the past four years, my life has been lived within this geographical and sentimental triangle. The following is an expression of gratitude to a number of individuals whose friendship helped in enduring the solitudes of this research.

In the end of 2002, two colleagues at the Portuguese Institute of Archaeology where I worked left a printed email on my desk, suggesting my name to join an archaeological project in East Timor. More than 18 months later, and after being granted a scholarship, I was on the plane that would take me from Lisbon to Canberra. To them, João Zilhão and Cidália Duarte, go my first thoughts as they were the original driving force behind this project.

In Australia, both my supervisors and advisors have been of invaluable support. Sue O’Connor has been as much a friend as a supervisor. Sue shared her experience in the field and always kept her office door open to my many enquires. Matthew Spriggs’ interest and knowledge on the region have granted many valuable insights into this research, either through formal meetings or in the warmth of Kava gatherings at his and Ruth’s place. Andy Fairbairn moved to Queensland in 2004 but he has not neglected his role as one my advisors. I was often welcomed at his, Amanda, Rowen and Jack’s place in Brisbane. Andy’s friendship and guidance in the archaeobotanical part of this thesis were worth all the lonely hours spent at the microscope. Peter Bellwood, another of my advisors, was of much support in all that relates to the archaeology of the broader region, giving advice and providing some of the most obscure references – not to be found, I am sure, in many libraries.

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Acronyms

AMS = Accelerator Mass Spectrometry
ANH = (Department of) Archaeology and Natural History
ANSTO = Australian Nuclear Science and Technology Organisation
ANU = Australian National University
ARC = Australian Research Council
BCU = Bui Ceri Uato (excavated by Ian Glover in the 1960s)
BCUM = Bui Ceri Uato Mane (the rock shelter test pitted in 2004 and excavated in 2005, next
to Ian Glover’s site, excavated in 1967)
CAR = Centre for Archaeological Research
CPA = Centro de Pré-história e Arqueologia (Centre for Prehistory and Archaeology)
EMU = Electronic Microscopy Unit
ETAP = East Timor Archaeological Project
FCT = Fundação para a Ciência e a Tecnologia (Science and Technology Foundation)
IICT = Instituto de Investigação Científica e Tropical (Tropical and Scientific Research Institute)
IPA = Instituto Português de Arqueologia (Portuguese Institute of Archaeology)
JCU = James Cook University
JIU = Junta de Investigações do Ultramar (Overseas’ Research Body)
MAT = Missão Antropológica de Timor (Timor Archaeological Mission)
RSPAS = Research School of Pacific and Asian Studies
SEM = Scanning Electron Microscope
UNTAET = United Nations Transitional Administration in East Timor
UW = University of Washington