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Fishing at Arapus-Mangaasi, Efate, Vanuatu (2800–2200 BP): New methodological approaches and results

Laurie Bouffandeau[a,*], Philippe Béarez[a], Stuart Bedford[b], Frédérique Valentin[c], Matthew Spriggs[d], Émilie Nolet[e]

[a] UMR 7209, Archéozoologie, Archéobotanique: Sociétés, Pratiques et Environnements, CNRS, MNHN, Sorbonne-Universités, 55 Rue Buffon, 75005 Paris, France
[b] School of Culture, History and Language, College of Asia & the Pacific, Australian National University, Canberra, ACT 2601, Australia
[c] UMR 7041, ArScAn - Ethnologie Préhistorique, Maison de l'Archéologie et de l'Ethnologie René Ginouvès, CNRS, 21, Allée de l'Université, 92023 Nanterre Cedex, France
[d] School of Archaeology and Anthropology, College of Arts and Social Sciences, Australian National University, Canberra, ACT 2601, Australia
[e] UFR 03, Histoire de l'Art et Archéologie, Université Paris 1 Panthéon-Sorbonne, 3, Rue Michelet, 75006 Paris, France

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ABSTRACT

The Arapus-Mangaasi site, located on the north-west coast of the island of Efate, Vanuatu, and first settled around 2800 BP, was excavated between 1999 and 2003 within the framework of a joint Australian National University-Vanuatu National Museum research and training program. The site yielded not only a range of cultural material that allowed the re-interpretation of the Central Vanuatu ceramic sequence but also well-preserved faunal remains, including a substantial number of fish bones. The present study focuses on the analysis of the ichthyofauna recovered in the area of Arapus and on the assessment of the most efficient identification protocol with a view to obtain precise faunal data leading to the characterisation of the fishing economy. Out of a total of 8080 fish remains, 2387 were taxonomically identified. The general assemblage is composed of 23 families of marine fishes, belonging to the Teleostei and Elasmobranchii groups, and dominated by surgeonfishes (Acanthuridae), parrotfishes (Scaridae), and groupers (Serranidae). The study of vertebrae allowed the identification of most acanthurids and hence proved to be essential in obtaining a detailed inventory of the fish spectrum. The assemblage composition highlights the presence of a large variety of inshore and reef-associated taxa, likely to have been caught by means of polyvalent and broad-spectrum fishing gear, possibly mass capturing devices, such as nets or traps, combined with angling and/or spearing. The results also suggest an opportunistic exploitation of ichthyofaunal resources during the Arapus period (2800 BP) and a probable decrease in the consumption of fish from the beginning of the Erueti period (2800–2200 BP) onwards.

1. Introduction

In Remote Oceania (Green, 1991, 1997), the archipelagos of Southern Melanesia, Vanuatu, New Caledonia and Fiji (Fig. 1A) were initially settled around 3000 BP (Sheppard et al., 2015) by human groups of seafarers and bearers of a Neolithic-type culture now known as Lapita. Marine resources foraging and fishing are said to have occupied an important place during the colonisation of Pacific Islands (Bellwood, 1978; Green, 1986; Walter, 1989; Kirch, 2000; Leach and Davidson, 2000; Sand and Bedford, 2010) and they remain integral in the economy and daily life of many of the present-day inhabitants.

Hypotheses concerning the subsistence strategies adopted by these first settlers, ranging from a strictly littoral exploitation of indigenous marine and terrestrial resources (Groube, 1971) to the introduction of crops and domesticated animals, along with the establishment of horticulture (Green, 2003; Kirch, 1997, 2010), have long been debated (Spriggs, 1997; Butler, 1988, 2001; Davidson and Leach, 2001; Allen, 2003; Leach, 2006; Jones, 2011). Recent biogeochemical analyses (Valentin et al., 2010; Field et al., 2009; Jones and Quinn, 2010; Kinaston et al., 2014, 2015) have revealed a large diversity of economical approaches, and the subsistence behaviours of Lapita and Post-Lapita groups could have been far more heterogeneous than previously assessed.

The present study focuses on the well-preserved fish remains recovered at the site of Arapus-Mangaasi, on the island of Efate, Vanuatu (Fig. 1B), with the aim of conducting a detailed study of the ichthyofauna of the site and identifying the most suitable protocols for the taxonomic determination and the interpretation of fishbone

* Corresponding author.
E-mail addresses: laurie.bouffandeau@doctorant.upf.pf (L. Bouffandeau), bearez@mnhn.fr (P. Béarez), stuart.bedford@anu.edu.au (S. Bedford), frederique.valentin@mae.u-paris10.fr (F. Valentin), matthew.spriggs@anu.edu.au (M. Spriggs), emilie.nolet@univ-paris1.fr (É. Nolet).

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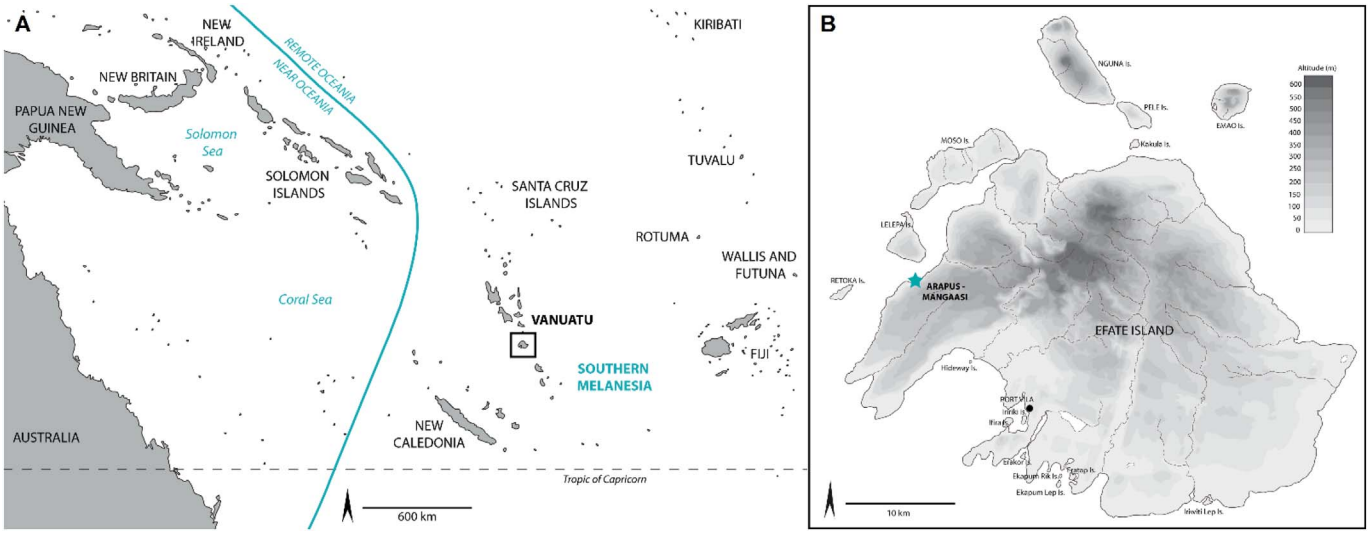

Fig. 1. A: Map of Melanesia with the boundary (blue line) between Near and Remote Oceania indicated;
B: Topographic map of Efate Island, Vanuatu and location of the Arapus-Mangaasi site (data NASA, SRTM v.2, 2005). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

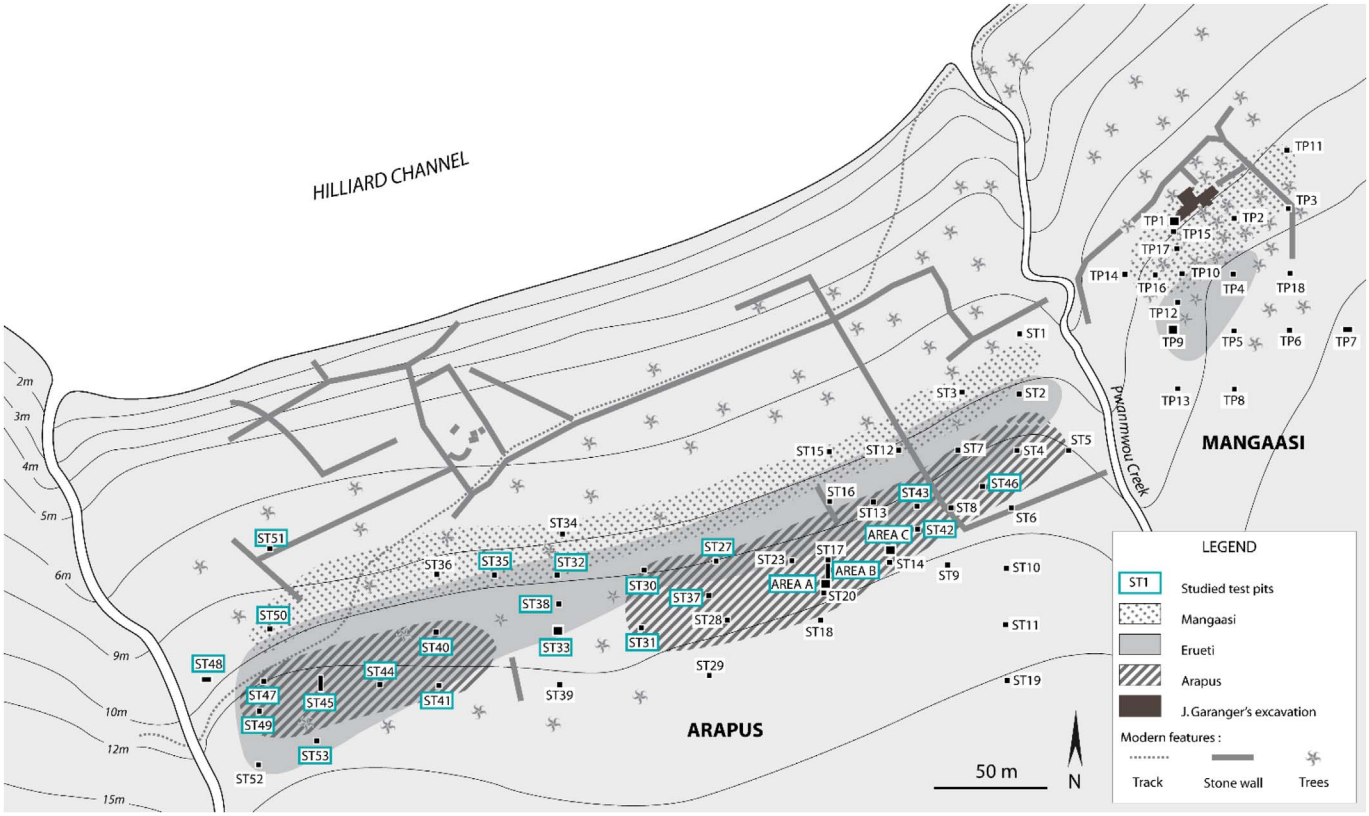

Fig. 2. Map of the site of Arapus-Mangaasi with the test pits studied for this project (blue rectangles) and the horizontal distribution of the remains associated with the Arapus, Erueti and Mangaasi periods (modified from Bedford, unpub.). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

assemblages. It offers a rare opportunity to provide new data liable to enrich our current knowledge on fishing activities and subsistence economies. Presentation of detailed results will provide a better understanding of the strategies used by islanders to exploit fish stocks during the Post-Lapita phase and enable future local and regional comparisons.

During the initial phase of settlement in Vanuatu, the exploitation of shellfish and terrestrial resources, such as birds, reptiles and mammals, was substantial and opportunistic (Spriggs and Bedford, 2001; Bedford, 2006), and frequently led to the extinction or extirpation of some local species (Steadman, 1999; Anderson, 2002; Mead et al., 2002; White et al., 2010; Hawkins, 2015; Worthy et al., 2015). The analysis of botanical remains discovered at several sites shows that introduced plants were also present during this colonising Lapita phase (Horrocks and Bedford, 2005, 2010; Horrocks et al., 2009). From 2500 BP during the Post-Lapita phase, a possible shift in the subsistence economies took place, with an increase of horticultural production and a decrease of the dietary importance of marine products (Spriggs, 2003; Valentin et al., 2014; Nunn and Carson, 2015).

Zooarchaeological studies and syntheses relating to Vanuatu sites in