

INTRODUCTION

Stable Isotopes and Archaeology in Southern South America. Hunter-Gatherers, Pastoralism and Agriculture: An Introduction

R. BARBERENA,^{a*} A. F. GIL,^b G. A. NEME^b AND R. H. TYKOT^c

^a CONICET – IMHICIHU, Saavedra 15, 5th (1083), Buenos Aires, Argentina

^b CONICET – Museo de Historia Natural de San Rafael, Parque Mariano Moreno (5600), San Rafael, Argentina

^c University of South Florida, Department of Anthropology, Tampa, Florida, USA

The introduction of stable isotopes in archaeological research beginning in the 1970s produced a revolution in the ways that several key anthropological issues were studied, including early hominin subsistence, hunter-gatherer spatial organisation, origins and history of farming and pastoralist societies, migrations, and intra- and inter-group social differentiation. As a tool suited for the quantitative reconstruction of palaeodiets, bone chemistry provided a new and independent line of evidence that was readily integrated into ongoing discussions based on archaeofaunal and palaeobotanical data (see van der Merwe, 1982; Ambrose, 1993). The impact that isotopic research has had in the field of archaeology is reflected in the ever-growing number of publications making use of isotopic analyses, and in the also growing number of volumes directed towards the integration of available results and perspectives of analysis (Sillen & Armelagos, 1991; Sandford, 1993; Bocherens *et al.*, 1999; Ambrose & Katzenberg, 2000; Ambrose & Krigbaum, 2003; Koch & Burton, 2003; Staller *et al.*, 2006).

The archaeology of South America was part of this process, presenting some early and excellent examples of isotopic research focused on the resolution of archaeological problems (e.g. Hastorf & De Niro, 1985; Burger & van der Merwe, 1990; Ubelaker *et al.*, 1995). However, most of the abundant research conducted during the last two decades below 20°S of latitude is not well represented in the international archaeological literature (although see Fernández *et al.*, 1999; Gil, 2003; Yesner *et al.*, 2003; Falabella *et al.*, 2008, among others). In this context, one of the main goals of this volume is to provide an updated review of the isotopic research conducted in southern South America, including cases from the Bolivian and Argentinean Puna or 'Altiplano', northwestern Argentina, the central-western Andean region of Argentina, the Pampas, Patagonia, and the Atlantic and Pacific marine coastlines (Figure 1). This set of papers is the product of a Workshop entitled 'Arqueología e Isótopos Estables en el Sur de Sudamérica: Discusión e Integración de Resultados' which was held in the city of Malargüe (Mendoza province, Argentina) in 2005.¹ This workshop was organised in the memory of Susana Valencio,

* Correspondence to: CONICET – IMHICIHU, Quintana 324, 7th Buenos Aires Capital Federal 1014, Argentina.
e-mail: ramidus28@fibertel.com.ar

¹The paper by Knudson was not presented in the original workshop, but was later included in this volume because of its relevance.



Figure 1. Regions included in the volume. *References:* 1, Bolivian altiplano (Knudson); 2, Argentinean altiplano (Yacobaccio *et al.*); 3 & 4, northwestern Argentina (Calo & Cortés; Izeta *et al.*); 5, central Chile (Tykot *et al.*); 6 & 7, southern Mendoza province (Gil *et al.*; Llano); 8, Sierras Centrales (Laguens *et al.*); 9, Dry Pampas (Berón *et al.*); 10, Humid Pampas (Politis *et al.*); 11, northeastern Patagonia (Martínez *et al.*); 12, 13, 14, southern Patagonia and Tierra del Fuego Island (Borrero *et al.*; Suby & Guichón; Tessone *et al.*).

a geochemistry researcher who had a substantial role in the introduction of stable isotopes into Argentinean archaeology, and who died unexpectedly in 2004, leaving a great void among her many friends and colleagues.

Current lines of research

Food availability, preparation and consumption are basic parts of ancient societies. This volume focuses on the southern cone of South America, where both agriculturalists and hunter-gatherers existed into modern times, and where stable isotope analysis has been widely used in recent times. Foremost is work related to the development of stronger approaches to regional isotopic

ecology (Llano; Yacobaccio *et al.*), methodological aspects regarding the application of stable isotopes to the reconstruction of subsistence and migrations (Tykot *et al.*; Knudson), introduction and impact of agriculture on Andean societies (Calo & Cortés; Gil *et al.*; Laguens *et al.*), adoption of pastoralist economies (Izeta *et al.*), spatial organisation and territoriality of hunter-gatherer groups from the Pampas and Patagonia (Berón *et al.*; Borrero *et al.*; Martínez *et al.*; Tessone *et al.*), and integration of isotopic and bioarchaeological data (Suby & Guichón). Overall, the systematic use of stable isotopes in archaeological research in South America has fostered a reevaluation of some widely-held views regarding, among other important subjects, the importance of maize in Andean societies and the amplitude of hunter-gatherer home ranges.

Research conducted from South America usually has to cope with severe budget restrictions that may impose limits on the size of the available isotopic sample. This has been variously tackled by developing long-term projects that allow gradual increases in the amount of information produced, or by integrating international research teams that provide external funding sources. Both strategies are represented in this volume. We believe that an exploratory framework of research provides the most productive strategy – in this or any other academic context – where specific questions are pursued even when we know that the factual basis is far from ideal. The key aspect is to be sensitive to the paths that need to be followed in order to identify stronger patterns and suggest more accurate explanations. We are confident that the set of 14 papers that make up this volume is successful in presenting original strategies to cope with old problems, as well as in raising questions not foreseen.

A main concern shared by these papers is the integration of isotopic data with other lines of evidence, including archaeofaunal studies, health conditions and palaeopathology as inferred from human remains, lithic distributions, palaeobotany, and mortuary practices. This is an important virtue that demonstrates the need to evaluate several theoretical and methodological levels in order to integrate data differing in terms of units of analysis, resolution, and formation history.

This task broadens the spectrum of the discussions developed, making them valuable beyond the limits of stable isotopic research and transcending the geographical scope of South America.

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