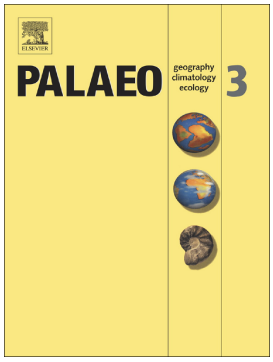
Shell sclerochronology and stable isotopes of the bivalve Anomalocardia flexuosa (Linnaeus, 1767) from southern Brazil: Implications for environmental and archaeological studies



André Carlo Colonese, Sérgio Antônio Netto, André Silva Francisco, Paulo DeBlasis, Ximena S. Villagran, Raquel de Almeida Rocha Ponzoni, Y. Hancock, Niklas Hausmann, Deisi Sunderlick Faria, Amy Prendergast, Bernd R. Schöne, Francisco William da Cruz Junior, Paulo César Fonseca Giannini

PII: S0031-0182(17)30010-X
DOI: doi: 10.1016/j.palaeo.2017.01.006
Reference: PALAEO 8142

To appear in: *Palaeogeography, Palaeoclimatology, Palaeoecology*

Received date: 3 August 2016
Revised date: 5 December 2016
Accepted date: 4 January 2017

Please cite this article as: André Carlo Colonese, Sérgio Antônio Netto, André Silva Francisco, Paulo DeBlasis, Ximena S. Villagran, Raquel de Almeida Rocha Ponzoni, Y. Hancock, Niklas Hausmann, Deisi Sunderlick Faria, Amy Prendergast, Bernd R. Schöne, Francisco William da Cruz Junior, Paulo César Fonseca Giannini , Shell sclerochronology and stable isotopes of the bivalve Anomalocardia flexuosa (Linnaeus, 1767) from southern Brazil: Implications for environmental and archaeological studies. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Palaeo(2017), doi: 10.1016/j.palaeo.2017.01.006

Shell sclerochronology and stable isotopes of the bivalve *Anomalocardia flexuosa* (Linnaeus, 1767) from southern Brazil: implications for environmental and archaeological studies

André Carlo Colonese[1], Sérgio Antônio Netto[2], André Silva Francisco[2], Paulo DeBlasis[3], Ximena S. Villagran[3], Raquel de Almeida Rocha Ponzoni[4], Y. Hancock[4,5], Niklas Hausmann[1,6], Deisi Sunderlick Faria[7], Amy Prendergast[8], Bernd R. Schöne[8], Francisco William da Cruz Junior[9], Paulo César Fonseca Giannini[9]

1 - BioArCh, Department of Archaeology, University of York, Environmental Building, Wentworth Way, York, YO10 5DD, UK.
2 - Marine Science Laboratory, Universidade do Sul de Santa Catarina (UNISUL), Av J. Acácio Moreira, 787, Dehon Tubarão, 88704-900, Brazil.
3 - Museu de Arqueologia e Etnologia, Universidade de São Paulo (USP), Av. Prof. Almeida Prado, 1466 - Butantã, São Paulo, 05508-070, Brazil.
4 - Department of Physics, University of York, Heslington, York, YO10 5DD, UK.
5 - York Centre for Complex Systems Analysis, University of York, York, YO10 5GE, UK.
6 - Institute of Electronic Structure and Laser, Foundation for Research and Technology - Hellas, P.O. Box 1527,GR-711 10 Heraklion, Greece.
7 - Grupep, Universidade do Sul de Santa Catarina (UNISUL), Av J. Acácio Moreira, 787, Dehon Tubarão, 88704-900, Brazil.
8 - Institute of Geosciences, University of Mainz, J.-J.-Becher-Weg 21, 55128 Mainz, Germany.
9 - Instituto de Geociências, Universidade de São Paulo (USP), R. do Lago, 562, Cidade Universitária, São Paulo, 05508-080, Brazil .

Corresponding author: Andre Carlo Colonese, andre.colonese@york.ac.uk

Abstract

We conduct the first stable isotopic and sclerochronological calibration of the bivalve *Anomalocardia flexuosa* (Linnaeus, 1767) in relation to environmental variables in a subtropical coastal area of southern Brazil. We investigate incremental shell growth patterns and $\delta^{18}O$ and $\delta^{13}C$ values of modern specimens collected alive from the Laguna Lagoonal System (LLS). As shells of *Anomalocardia flexuosa* are also the main components of pre-Columbian archaeological shell mounds and middens distributed along the Brazilian coastline, late Holocene archaeological specimens from a local shell mound (Cabeçuda) were selected to compare their stable carbon and oxygen isotopes with those of modern specimens. Shell growth increments, $\delta^{18}O$ and $\delta^{13}C$ values respond to a complex of environmental conditions, involving,