FRESHWATER AMAZONIAN BIVALVE SHELLS AS ARCHIVE OF RIVER HYDROGEOCHEMISTRY VARIATIONS, INSIGHT FROM OXYGEN ISOTOPES

Gaillard, B.[1], Lazareth, C.E.[1], Lestrelin, H.[1], Dufour, E.[2], Santos, R.V.[3], Freitas, C.E.C.[4], Pouilly, M.[1]

[1]*Biologie des Organismes et Ecosystèmes Aquatiques (BOREA), Muséum National d'Histoire Naturelle, Sorbonne Université, Université de Caen Normandie, Université des Antilles, CNRS, IRD, 61 rue Buffon, CP 53, 75231 Paris, France*

[2]*Archéozoologie, Archéobotanique : Sociétés, Pratiques et Environnements (AASPE), Muséum National d'Histoire Naturelle, CNRS, 55 rue Buffon, CP 56, F-75231 Paris, France*

[3] *Instituto de Geociências, Universidade de Brasilia, Laboratório de Geocronologia, Campus Darcy Ribeiro, 70910-900 Brasilia, DF, Brazil*

[4]*Departamento de Ciências Pesqueiras, Universidade Federal do Amazonas (UFAM), Av. General Rodrigo Otávio, 3000, 69077-000 Manaus, AM, Brazil*

blandine.gaillard5@gmail.com

The river oxygen isotope ($\delta^{18}O_R$) variations, which characterize its hydrology (e.g., precipitation-evaporation balance, precipitation and river discharge patterns), can be retrieved from freshwater bivalve shell $\delta^{18}O_S$ analyses. We measured $\delta^{18}O_S$ variations across the hinge of South American unionid shells; *Anodontites elongates* collected in Peru and *A. trapesialis* in Brazil; and in the last secreted part of the ventral margin of *A. elongates* from Brazil. These last shells were grown in a homemade cage left for one year in a floodplain lake close to Manaus and collected in 2017 while the others were collected in the field from animals who died some month before. The isotopic signatures were reproducible between individuals coming from the same site. Brazilian *A. trapesialis* clearly showed a strong $\delta^{18}O_S$ cyclicity. In the *A. trapesialis* hinge $\delta^{18}O_S$ variations are in accordance with growth patterns which allow to confirm that hinge growth line corresponds to the wet season. In both shell parts, low $\delta^{18}O_S$ value corresponds to the wet season and reversely. The large amplitude of *A. trapesialis* shells $\delta^{18}O_S$ cycles are characteristic of a flood plain lake habitat, seasonally disconnected from the river and thus subjected to high seasonal fluctuations in water $\delta^{18}O$. Differently, the Peruvian *A. elongates* presented lower $\delta^{18}O_S$ amplitude which we suggest might indicate a habitat close to the river. Consequently, study of $\delta^{18}O_S$ variations as measured in Unionidae shells might provide an archive to reconstruct, on a seasonal scale, past and present hydrological and geochemical conditions of the Amazon and possibly other tropical freshwater environments.

II WORKSHOP LATINOAMERICANO DE OTOLITOS

Y OTRAS ESTRUCTURAS CALCIFICADAS

28, 29 y 30 de agosto de 2019
Buenos Aires, Argentina

Facultad de Ciencias Veterinarias Universidad de Buenos Aires

INPA CONICET UBA

Biologie des Organismes et Ecosystèmes Aquatiques BOREA

CETA

Institut de Recherche pour le Développement FRANCE
Instituto francés de Investigación para el Desarrollo

AGENCIA NACIONAL DE PROMOCIÓN CIENTÍFICA Y TECNOLÓGICA

FundaVet

Libro de resúmenes - Livro de resumos – Abstract book

II Workshop Latinoamericano de otolitos y otras estructuras calcificadas

28, 29 y 30 de agosto de 2019

Buenos Aires, Argentina

ISBN: 978-987-86-1584-4

Comité Organizador Internacional

Alejandra Volpedo. UBA, CONICET (Argentina)

Esteban Avigliano. UBA, CONICET (Argentina)

Nidia Fabré. UFAL, ICBS (Brasil)

Vandick Batista UFAL (Brasil)

Cristiano Queiroz de Albuquerque. UFERSA (Brasil)

Marc Pouilly. UMR BOREA (Francia)

Comité Organizador Local

Presidente: Alejandra V. Volpedo

Vicepresidente: Esteban Avigliano

Secretario: Gustavo A. Thompson

Roberta G. Callicó Fortunato

Sabina Llamazares Vegh

Fernanda Biolé

María Eugenia Rolón

Claudia Vargas

Ana Harrington

Karina Lemos

Pablo Fernández

Melisa Rodríguez

Fernando García Massini

Sponsors