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Southern Hemisphere Palaeobiogeography of Triassic-Jurassic Marine Bivalves

 Springer

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ISSN 2191-589X
ISBN 978-94-007-5097-5
DOI 10.1007/978-94-007-5098-2
Springer Dordrecht Heidelberg New York London

ISSN 2191-5903 (electronic)
ISBN 978-94-007-5098-2 (eBook)

Library of Congress Control Number: 2012944966

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Printed on acid-free paper

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Preface

The study of global biodiversity changes is a strong issue these days, as we become aware of the fragility of the Earth system and the urgent need to understand it better to keep it working. One of the key aspects of biodiversity is the distribution of organisms, and biogeography is the discipline which tries to recognize and characterize the causes of that distribution. It is closely linked to ecology, since the distribution of organisms is related to ecologic factors, but it cannot ignore other matters, such as species origin, dispersal, and extinction, and thus it becomes a historic science. Introducing the important time dimension, scientists are turning their interest to the past distribution of organisms, and paleobiogeography is now a complex subject which processes information provided by both Biology and Earth Sciences. It is conceptually and philosophically equivalent to neobiogeography. Nevertheless, its methods are somewhat different, since it is seriously limited by the incompleteness of the fossil record. On the other hand, it has direct access to the time involved, a key ingredient of organic evolution.

This book is a synthesis of many years of research on Mesozoic bivalve mollusks from South America. The task of updating and processing all the information was triggered by a Symposium on “Seaways and landbridges: Southern Hemisphere biogeographic connections through time”, organized by Dr. Silvio Casadío (CONICET and Universidad Nacional de Río Negro) and Dr. Miguel Griffin (CONICET and Universidad Nacional de La Plata), held at the Universidad Nacional de Río Negro, General Roca, Río Negro Province, Argentina, April 26–May 1, 2011, and who kindly encouraged us to complete this contribution. After that memorable meeting we put together our knowledge and skills to produce this book together, and present a picture of present-day knowledge on Triassic and Jurassic bivalve distribution in the Southern Hemisphere. Benthonic bivalves have been widely used in biogeography and paleobiogeography, but data from the Southern Hemisphere Mesozoic are still few and scattered. We trust this book will encourage future research on this subject to build better databases and allow the application of more sophisticated methodology. Through the book we analyze the subject from several viewpoints. From a merely descriptive perspective,

bivalve distribution shows latitudinal gradients and distributional patterns, both at regional and global scales, which are the basis for the recognition of biochoremas (i.e., paleobiogeographic units of different ranks). Moving forward toward a causal paleobiogeography, these organisms also provide interesting insight into particular biogeographic questions, such as bipolarity and its origin. The evolution in time of the recognized biochoremas can be discussed in relation to paleoclimates and paleogeography. Finally, some of the results obtained from the analysis of the distribution of past bivalve biotas were even used to propose and discuss the development of marine corridors and argue about the distribution of continents in the past.

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