

Ana Crespo Solana  
Filipe Castro  
Nigel Nayling *Editors*

# Heritage and the Sea

Volume 2: Maritime History and  
Archaeology of the Global Iberian World  
(15th-18th centuries)

 Springer

# Heritage and the Sea

Ana Crespo Solana • Filipe Castro  
Nigel Nayling  
Editors

# Heritage and the Sea

Volume 2: Maritime History and  
Archaeology of the Global Iberian World  
(15th–18th centuries)

 Springer

*Editors*

Ana Crespo Solana  
Instituto de Historia  
Consejo Superior de Investigaciones  
Científicas (CSIC)  
Madrid, Spain

Filipe Castro  
História, Territórios e Comunidades  
Center for Functional Ecology  
Universidade Nova de Lisboa (UNL)  
Lisboa, Portugal

Nigel Nayling  
Institute of Education and Humanities  
University of Wales Trinity Saint David  
Lampeter, Ceredigion, UK

ISBN 978-3-030-86463-7      ISBN 978-3-030-86464-4 (eBook)  
<https://doi.org/10.1007/978-3-030-86464-4>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Preface

At the core of this book, a collection of chapters from a diverse range of authors, is a desire to draw on a wide array of perspectives and disciplinary approaches to renew our understanding and appreciation of Iberian maritime heritage of the Early Modern Period. Its catalyst is the ForSEADiscovery Project – a multi-disciplinary endeavour which brought together established and emerging researchers to investigate Iberian shipbuilding and particularly its relationship to forests and timber supply through the lenses of archaeology, history and earth sciences. Many of the chapters draw directly on the project’s research results. Other chapters come from collaborations and research associations beyond and encouraged by ForSEADiscovery.

Our hope is that this collection will be of interest to scientists, academics and students of history and archaeology in the broadest sense, but also accessible to a broad audience seeking a current overview of research into the phenomenon of Iberian seafaring during a period of technological and social transformation. A period in which European horizons expanded to encompass global dimensions through maritime enterprise. Our ambition has been to seek and present new insights and research directions particularly through multi-disciplinary collaboration.

We owe a debt of gratitude to a wider research community than solely the contributors to this collection. To our ForSEADiscovery family: Aoife Daly, Ute Sass-Klaassen, Jan Willem Veluwenkamp, Ignacio García González, Tomasz Wazny, Garry Momber, Christin Heamagi, Brandon Mason, and so many other members of the ForSEADiscovery consortium, colleagues and friends who accompanied us in this incessant search for answers in the forest and in the sea of the history of the Iberian empires.

We dedicate this book to our beloved Fadi, lost to us too young, always in our hearts.

Madrid, Spain  
Lisbon, Portugal  
Lampeter, UK

Ana Crespo Solana  
Filipe Castro  
Nigel Nayling

# Contents

<b>1</b>	<b>Dendroarchaeology of Shipwrecks in the Iberian Peninsula: 10 Years of Research and Advances</b> . . . . .	<b>1</b>
	Marta Domínguez-Delmás, Sara A. Rich, and Nigel Nayling	
<b>2</b>	<b>Hauntography of an Ordinary Shipwreck: Paradox, Appellation, Provenance, Apparition</b> . . . . .	<b>59</b>
	Sara A. Rich	
<b>3</b>	<b>Archaeological Perspectives in Galicia During the Age of Religious Wars: The <i>Capitana</i> and <i>Almiranta</i> of the Illyrica Squadron</b> . . . . .	<b>73</b>
	Miguel San Claudio Santa Cruz	
<b>4</b>	<b>Can We Identify the Ship Through a Multidisciplinary Approach? The Case of the Ribadeo 1 Wreck (c. 1597)</b> . . . . .	<b>97</b>
	Beñat Eguiluz Miranda, Marta Domínguez-Delmás, Koldo Trápaga Monchet, Miguel San Claudio Santa Cruz, and José Luis Gasch-Tomás	
<b>5</b>	<b>The Belinho 1 Shipwreck, Esposende, Portugal</b> . . . . .	<b>119</b>
	Ana Almeida, Tânia Casimiro, Filipe Castro, Miguel Martins, Alexandre Monteiro, and Rosa Varela Gomes	
<b>6</b>	<b>Shipwrecks of the Iberian Tradition in the Bay of Cádiz (Andalucía, Spain)</b> . . . . .	<b>145</b>
	Milagros Alzaga García, Lourdes Márquez Carmona, Nuria Rodríguez Mariscal, Josefa Martí Solano, Aurora Higuera-Milena Castellano, Mercedes Gallardo Abárzuza, and José Manuel Higuera-Milena Castellano	
<b>7</b>	<b>Iberian Shipwrecks in the Americas: The Case of the Highbourne Cay Wreck</b> . . . . .	<b>169</b>
	Nicholas Budsberg, Charles Bendig, Filipe Castro, and Nigel Nayling	

<b>8</b>	<b>Spanish Shipwrecks on the Dominican Republic’s Coasts</b> . . . . .	197
	Carlos León Amores	
<b>9</b>	<b>The Timbers of the Frigate <i>Santa María Magdalena</i> (Eighteenth Century): A Spanish Warship in History and Archaeology</b> . . . . .	211
	Ana Rita Trindade, Marta Domínguez-Delmás, Mohamed Traoré, Nathan Gallagher, Sara A. Rich, and Miguel Martins	
<b>10</b>	<b>The Manila Galleons in Perspective. Notes on the History and Archaeology of the Transpacific Trade</b> . . . . .	235
	José Luis Gasch-Tomás	
<b>11</b>	<b>Ploughing Through Global Seas: Maritime Routes and Hydrographic Knowledge in the Eighteenth-Century Spanish Navy</b> . . . . .	249
	Pablo Ortega-del-Cerro	
<b>12</b>	<b>Technology of Iron Anchor-Frame Production in the Age of Exploration</b> . . . . .	273
	Gregory Votruba	
<b>13</b>	<b>A Shared Sailing: Artillery and Ocean Warships</b> . . . . .	297
	Francisco Javier López Martín	
	<b>Index</b> . . . . .	339

# Contributors and Editors

## Editors

**Ana Crespo Solana** Instituto de Historia, Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain

**Filipe Castro** História, Territórios e Comunidades – CFE NOVA FCSH Universidade Nova de Lisboa (UNL), Lisbon, Portugal

**Nigel Nayling** Institute of Education and Humanities, University of Wales Trinity Saint David, Lampeter, UK

## Authors

**Ana Almeida** Câmara Municipal de Esposende, Esposende, Portugal

**Milagros Alzaga García** Instituto Andaluz del Patrimonio Histórico, Centro de Arqueología Subacuática, Cádiz, Spain

**Charles Bendig** TAMU Anthropology, Texas A & M University, College Station, TX, USA

**Nicholas Budsberg** St. Augustine Lighthouse & Maritime Museum. Lighthouse Archaeological Maritime Program, St. Augustine, FL, USA

**Tânia Casimiro** Universidade Nova de Lisboa, Lisbon (UNL), Lisbon, Portugal

**Marta Domínguez-Delmás** University of Amsterdam (UA), Amsterdam, The Netherlands

**Beñat Eguiluz Miranda** Murua, Spain

**Nathan Gallagher** Indianapolis, IN, USA



- Mercedes Gallardo Abárzuza** Tanit Gestión Arqueológica, Cádiz, Spain
- José Luis Gasch-Tomás** Universidad Pablo de Olavide, Sevilla, Spain
- Aurora Higuera-Milena Castellano** Instituto Andaluz del Patrimonio Histórico. Centro de Arqueología Subacuática, Cádiz, Spain
- José Manuel Higuera-Milena Castellano** Tanit Gestión Arqueológica, Cádiz, Spain
- Carlos León Amores** Instituto Nauta, Real Academia de la Mar, Madrid, Spain
- Francisco Javier López Martín** Madrid, Spain
- Lourdes Márquez Carmona** Instituto Andaluz del Patrimonio Histórico. Centro de Arqueología Subacuática, Cádiz, Spain
- Josefa Martí Solano** Instituto Andaluz del Patrimonio Histórico. Centro de Arqueología Subacuática, Cádiz, Spain
- Miguel Martíns** Universidade Nova de Lisboa (UNL), Lisbon, Portugal
- Alexandre Monteiro** Universidade Nova de Lisboa (UNL), Lisboa, Portugal
- Pablo Ortega Del Cerro** Universidad de Cádiz (UCA), Madrid, Spain
- Sara Rich** Coastal Carolina University, HTC Honors College and Center for Interdisciplinary Studies, Conway, SC, USA
- Nuria Rodríguez Mariscal** Instituto Andaluz del Patrimonio Histórico. Centro de Arqueología Subacuática, Cádiz, Spain
- Miguel San Claudio Santa Cruz** Institute of Nautical Archaeology (INA), College Station, TX, USA  
Archeonauta SL, La Coruña, Spain
- Mohamed Traoré** Ecole Nationale d'Ingénieurs Abderhamane Baba Touré, Bamako, Mali
- Koldo Trápaga Monchet** Universidad Rey Juan Carlos, Campus de Vicálvaro, Madrid, Spain
- Ana Rita Trindade** Instituto de Historia, Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain
- Rosa Varela Gomes** Universidade Nova de Lisboa (UNL), Lisbon, Portugal
- Gregory Votruba** Lyon, France

# Chapter 6

## Shipwrecks of the Iberian Tradition in the Bay of Cádiz (Andalucía, Spain)



Milagros Alzaga García, Lourdes Márquez Carmona,  
Nuria Rodríguez Mariscal, Josefa Martí Solano, Aurora Higuera-  
Milena Castellano, Mercedes Gallardo Abárzuza,  
and José Manuel Higuera-Milena Castellano

**Abstract** The objective of this work is to analyze through documentary and archaeological sources the shipwrecks of the Iberian tradition in the Bay of Cadiz. It supposes the evidence of the commercial redistribution activities between Europe and America that took place in that area of the south of Spain during modern times, in the course of the *Carrera de Indias*, where ships of Iberian–Atlantic construction played a key role in allowing transoceanic navigation. Nowadays, these historic shipwrecks are part of the Underwater Archaeological Heritage of Andalusia. Its analysis and systematization are the two objectives of the Underwater Archaeology Centre (CAS) of the Institute of Historical Heritage of Andalusia (IAPH), created in 1997 to investigate the Underwater Archaeological and Maritime Cultural Heritage of the Andalusian autonomous community. The research and protection of this heritage has led to the location and scientific study of the two shipwrecks of the Modern Age and Iberian–Atlantic tradition described throughout these pages.

### 1 Geographical Framework

Together with the Portuguese and the Cantabrian areas, the Gulf of Cádiz is one of the most important geographical spaces in the Iberian Peninsula, with a great maritime projection in modern times (Casado 1991). In its area of influence, there are two subareas of vital importance for the commercial activities that Spain developed

---

M. Alzaga García (✉) · L. Márquez Carmona · N. Rodríguez Mariscal · J. Martí Solano ·  
A. Higuera-Milena Castellano  
Instituto Andaluz del Patrimonio Histórico, Centro de Arqueología Subacuática (IAPH-CAS),  
Cádiz, Spain  
e-mail: [milagros.alzaga@juntadeandalucia.es](mailto:milagros.alzaga@juntadeandalucia.es)

M. Gallardo Abárzuza · J. M. Higuera-Milena Castellano  
Tanit, Gestión Arqueológica, Cádiz, Spain