

Coastal Research Library

Volume 26

Series Editor

Charles W. Finkl

Department of Geosciences

Florida Atlantic University

Boca Raton, FL, 33431, USA

The aim of this book series is to disseminate information to the coastal research community. The Series covers all aspects of coastal research including but not limited to relevant aspects of geological sciences, biology (incl. ecology and coastal marine ecosystems), geomorphology (physical geography), climate, littoral oceanography, coastal hydraulics, environmental (resource) management, engineering, and remote sensing. Policy, coastal law, and relevant issues such as conflict resolution and risk management would also be covered by the Series. The scope of the Series is broad and with a unique cross-disciplinary nature. The Series would tend to focus on topics that are of current interest and which carry some import as opposed to traditional titles that are esoteric and non-controversial. Monographs as well as contributed volumes are welcomed.

More information about this series at <http://www.springer.com/series/8795>

Nelson Rangel-Buitrago
Editor

Coastal Scenery

Evaluation and Management

 Springer

Editor

Nelson Rangel-Buitrago
Departamentos de Física y Biología
Universidad del Atlántico
Barranquilla, Atlántico, Colombia

ISSN 2211-0577

ISSN 2211-0585 (electronic)

Coastal Research Library

ISBN 978-3-319-78877-7

ISBN 978-3-319-78878-4 (eBook)

<https://doi.org/10.1007/978-3-319-78878-4>

Library of Congress Control Number: 2018944257

© Springer International Publishing AG, part of Springer Nature 2019

This work is subject to copyright. All rights are reserved 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, express 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.

Printed on acid-free paper

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature.

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Timeless scientific knowledge goes into the core of all natural phenomena and unites us across cultures, continents, and centuries. We dedicate this book to scientists who work for the benefit of mankind.

Foreword

The aesthetics of landscape, in this particular case coastal seascapes and shore, is difficult to tackle. The general subject area of “beauty” along the coast is considered in this volume in terms of methodological approaches to evaluation of coastal scenery. To some, this topic is esoteric and yet to others it has very specific practical applications to tourism. With increasing numbers of tourists visiting the coast, many shorefronts and beaches with densely populated hinterlands reel under the effects of overuse through density impacts associated with overpopulated beaches, for example, in China and elsewhere. The evaluative process is complicated by cultural norms of what is acceptable from environmental and socioeconomic points of view along different shores. Beach crowding in China or other Southeast Asian countries may locally be considered normal, whereas in other regions with more sparsely populated inland regions the beach space utilized by beach goers might appear to be under utilized. Cultural perception is conditioned by floating data points that make up impressions of what is beautiful or ugly. Whatever perceptual conditioning is extent along a particular coast, most beach users regard various aspects of pollution, on the shore or in the water, as unacceptable environmental conditions, but the range of acceptance is variable depending on the geographic region.

With this backdrop in mind, it is laudable that the authors of the seven chapters posit new methods for evaluating perceptions of beauty as part of scenic assessment techniques. Suggesting approaches to the study of landscape or scenery is based in the first instance on a review of prior efforts to describe the critical factors that are involved in the perception of what is beautiful or scenic. Determining the elements of the landscape that are involved here turns out to be a difficult task that is fraught with many difficulties.

Nonetheless, chapters in this book advance our understanding of how to better understand social mores associated with tourism and assess different approaches to evaluating and quantifying what is beautiful and desirable along the shore. As explained in this volume, it often is a delicate balance between sustaining scenic coastal landscapes and economics when the sheer volume of tourists strains coastal resources to the breaking point of land and water degradation. Such despoliation by the pressure of human bodies in limited spaces such as provided by beach berms is

a very real problem in high user areas. Exploited here in various discussions are considerations of methods for achieving maximum use that provide reasonable economic returns without destroying the quality of that which was originally sought. Sustainability is a common buzzword these days, but the intensive use of many coastal environments is not possible, and limitations or restraints of human activities are required to conserve what is regarded as aesthetically desirable coastal segments.

Many advances in landscape assessment are supported by evaluation of maps, aerial photographs, and satellite images in digital formats that are amenable to study using GIS and computer modeling programs. These tools are critical resources that aid decision-making and natural resource planning at various levels where landscape characteristics, qualities, and influences on the landscape are recorded and evaluated. Landscape character assessment is, however, a complicated process that requires different levels of expertise in several endeavors such as geology, biology, environmental science, history, and socioeconomics. All of these approaches can be accommodated in modern GIS frameworks that help to classify landscape into areas of distinct visual and sensory character. These seascape character assessments are now maturing into codified approaches that help coastal managers suggest or adjust the fair and reasonable use of coastal resources for the benefit of stakeholders, tourists, and the environment itself that must be protected from uncontrolled human pressures. Readers of this book are thus introduced to the most up-to-date approaches for evaluating coastal scenery that include but which are not limited to descriptive inventories, public preference models, and quantitative holistic techniques that include psychophysical and surrogate component models.

This work is a requirement of coastal scenery evaluation because human pressure on coastal marine resources has reached the breaking point where once beautiful seascapes are now being loved to death. The virtual pressure of human body space along the coast and support resources for tourism (e.g., food and bathroom facilities, shops, motels and hotels, concession stands, travel agencies, emergency assistance, etc.) can adversely impact the coastal scene unless managerial positionalities are implemented according to the societal norms of the region. The authors provide here multi-pronged insights into the factors that make up coastal landscapes that are in turn evaluated in terms of their role in determining what constitutes scenic beauty.

Asheville, NC, USA

Charles W. Finkl

Preface

Countries with superb coastal scenery have an invaluable “plus effect” because the coast is an ideal place for tourism. It is necessary to remember that a well-managed coast is a perfect space in which social and economic activities can be done on a multiplicity of spatial and temporal scales obtaining an endless number of beneficiaries.

This book describes an easy to apply methodology to determine scenic value of the coast. As one of the most critical aspects of beach user choice, the determination of coastal area scenic quality is of primordial importance stated later.

This work is the first book to present a semiquantitative analysis of coastal scenery based on more than 4000 interviews about people’s desired coastal preferences. Twenty-six parameters can be used to identify any coastal scene, which has been then subdivided into five attribute categories, weighted and subjected to fuzzy logic mathematics to obtain a decision number (D). This D number represents coastal scenery at that point, and five D classes are then presented (I – excellent to V – poor). Heritage areas and national parks should lie in Class I, which infers top scenic quality.

This book contains 7 chapters written by 6 authors from different parts of the world (Colombia, Italy, Malta, Turkey, and Wales), which between them, and over a time span of a decade or so, have assessed more than 952 global locations using the technique given in this book. One of the main aims of this method is to point out how scenic areas may be improved by judicious intervention relating to parameters, mainly anthropogenic, chosen for assessment.

The content of this book wants to open perspectives for analysis of the potential for coastal tourism development in natural areas together with landscape quality improvement in current coastal tourist developed areas. It will be a helpful tool for coastal lovers that include users, teachers, researchers, and managers.

Barranquilla, Colombia

Nelson Rangel-Buitrago

Acknowledgments

This book is a contribution from research groups: “Geology, Geophysics and Marine – Coastal Process,” Universidad del Atlántico (Barranquilla, Colombia); “Coastal and Marine Research Group,” University of Wales Trinity Saint David (Swansea, Wales, UK); “Department of Civil Engineering, Coastal Engineering Division,” Middle East Technical University (Ankara, Turkey); “RNM-328,” Universidad de Cadiz (Andalusia, Spain); “Euro-Mediterranean Centre on Insular Coastal Dynamics”; and “Institute of Earth Systems,” University of Malta (Msida, Malta).

Thanks to British Council in Ankara, Turkey, and Valetta, Malta, for proving the financial support necessary to carry out the fieldwork of CSES throughout the British Council Project.

Thanks to Professors Andrew Short (University of Sydney) and Carlos Pereira da Silva (New University of Lisbon) for their useful comments and suggestions.

We also thank the following persons:

Nelson Rangel-Buitrago: Thanks to those individuals who have contributed in different ways during the development of this book: Adriana Gracia C., Magdalena Buitrago, Nelson Rangel Diaz, Fanny Rangel, William Neal, Jarbas and Carla Bonetti, Carolina Martinez, Manuel Contreras, and Victor de Jonge.

Allan Thomas Williams: Many people have contributed to my understanding of coasts but three in particular deserve mention. First, Prof. W.C. (Bill) Bradley (University of Colorado, USA), whose dynamic, brilliant, Geomorphology course ignited my love for beaches. This was followed by Prof. D.J. Dwyer (Hong Kong/Liverpool universities), who thankfully turned my attention from an economics/mathematics Ph.D. to a coastal one. Finally, Hilary, who allowed me to pursue coastal issues to my heart’s content.

Ayşen Ergin: Thanks to those individuals who have contributed to motivation, and stimulating discussions cannot all be acknowledged properly here; however, very special thanks extended to Dr. Engin Karaesmen who has always with her interpretive capabilities and facility with mathematics contributed to this work in unique ways.

Giorgio Anfuso: Special thanks for field assistance go to Samanta da Costa Cristiano (for characterization of Brazilian beaches) and to Driss Nachite (for Morocco study case).

Enzo Pranzini: Thanks to Aysen, Allan, Anton, Giorgio and Nelson (yes, just my coauthors!) for having endured my constant criticism during the inspection to the beaches and the drafting of these texts.

Anton Micallef: I have been blessed with many friends who have inspired my love for the coast. I thank all of these, particularly those I have had the opportunity to work with in the field. I wish to acknowledge, in particular, my coauthors in this book for their dedication and encouragement and my parents, the latter, for gifting me as a child with the early books of Jacques Costeau who ignited my curiosity for the sea. Last but not least, I wish to thank Erika, my partner, for her constant support and patience. May others be as fortunate.

We also thank Petra van Steenbergen, Charles W. Fink (Coastal Research Library Series Editor), Shobha Karuppiah and Pavitra Arulmurugan, for their ongoing support and enthusiasm along this editorial project. Special Thanks to: Adriana Gracia C., Arthur and Ruth Maxwell who proof read this book.

Contents

1	Coastal Scenery: An Introduction	1
	Nelson Rangel-Buitrago, Allan T. Williams, Ayşen Ergin, Giorgio Anfuso, Anton Micallef, and Enzo Pranzini	
2	The Concept of Scenic Beauty in a Landscape.	17
	Allan T. Williams	
3	Some Scenic Evaluation Techniques	43
	Allan T. Williams	
4	Coastal Scenery Assessment by Means of a Fuzzy Logic Approach.	67
	Ayşen Ergin	
5	Coastal Scenery Assessment: Definitions and Typology	107
	Enzo Pranzini, Allan T. Williams, and Nelson Rangel-Buitrago	
6	Examples of Class Divisions and Country Synopsis for Coastal Scenic Evaluations.	143
	Giorgio Anfuso, Allan T. Williams, and Nelson Rangel-Buitrago	
7	The Management of Coastal Landscapes	211
	Anton Micallef and Nelson Rangel-Buitrago	

Editor and Contributors

Editor

Nelson Rangel-Buitrago Departamentos de Física y Biología, Universidad del Atlántico, Barranquilla, Atlántico, Colombia

Contributors

Giorgio Anfuso Department of Earth Sciences, Faculty of Marine and Environmental Sciences, University of Cadiz, Cadiz, Spain

Ayşen Ergin Department of Civil Engineering, Coastal Engineering Division, Middle East Technical University, Ankara, Turkey

Anton Micallef Euro-Mediterranean Centre on Insular Coastal Dynamics, Institute of Earth Systems, University of Malta, Msida, Malta

Enzo Pranzini Department of Earth Sciences, University of Florence, Florence, Italy

Allan T. Williams Faculty of Architecture, Computing and Engineering, University of Wales, Swansea, Wales, UK

CICA NOVA, Nova Universidade de Lisboa, Lisbon, Portugal