

## Cambridge Elements

edited by
Colin D. Sumrall
University of Tennessee

ECHINODERM
MORPHOLOGICAL
DISPARITY: METHODS,
PATTERNS, AND
POSSIBILITIES

Bradley Deline
University of West Georgia







## **CAMBRIDGE**UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org Information on this title: www.cambridge.org/9781108794749 DOI: 10.1017/9781108881883

© Bradley Deline 2021

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2021

A catalogue record for this publication is available from the British Library.

ISBN 978-1-108-79474-9 Paperback ISSN 2517-780X (online) ISSN 2517-7796 (print)

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.



## Echinoderm Morphological Disparity: Methods, Patterns, and Possibilities

**Elements of Paleontology** 

DOI: 10.1017/9781108881883 First published online: January 2021

> Bradley Deline University of West Georgia

Author for correspondence: Bradley Deline, bdeline@westga.edu

Abstract: The quantification of morphology through time is a vital tool in elucidating macroevolutionary patterns. Studies of disparity require intense effort but can provide insights beyond those gained using other methodologies. Over the last several decades, studies of disparity have proliferated, often using echinoderms as a model organism. Echinoderms have been used to study the methodology of disparity analyses and potential biases as well as documenting the morphological patterns observed in clades through time. Combining morphological studies with phylogenetic analyses or other disparate data sets allows for the testing of detailed and far-reaching evolutionary hypotheses.

**Keywords:** *Echinodermata*, disparity, morphology, morphospace, phylomorphospace

© Bradley Deline 2021

ISBNs: 9781108794749 (PB), 9781108881883 (OC) ISSNs: 2517-780X (online), 2517-7796 (print)



## **Contents**

1	Introduction	1
2	Methods of Quantifying Morphology	6
3	A priori Choices in Experimental Design	13
4	Taphonomy and Missing Data	18
5	Patterns in Phanerozoic Disparity	22
6	Future Directions	29
	References	33