

Contents

Part I	Introduction and Historical Review of the Subject (Chaps. 1 and 2)	
1	Why Morphometrics?	3
	Ashraf M.T. Elewa	
2	Morphometrics: An Historical Essay	9
	Richard A. Reyment	
Part II	Methodological Approach (Quantification and Visualization of Shape, and Traditional and Geometric Morphometrics) (Chaps. 3 to 6)	
3	Controlling for Curvature in the Quantification of Leaf Form . . .	27
	Jonathan D. Krieger	
4	Discriminating Groups of Organisms	73
	Richard E. Strauss	
5	Visual Analysis in Archaeology. An Artificial Intelligence Approach	93
	Juan A. Barceló	
6	Evolution of the Upper Cretaceous Oysters: Traditional Morphometrics Approach	157
	Ahmed A. Abdelhady and Ashraf M.T. Elewa	
Part III	Applications (Chaps. 7 to 15)	
7	Combining Shape Data and Traditional Measurements with the 2B-PLS: Testing the Covariation Between Avian Brain Size and Cranial Shape Variation as an Example	179
	Jesús Marugán-Lobón	

8 Biogeographic Analysis Using Geometric Morphometrics: Clines in Skull Size and Shape in a Widespread African Arboreal Monkey 191
 Andrea Cardini, José Alexandre Felizola Diniz Filho,
 P. David Polly, and Sarah Elton

9 Stock Identification of Marine Populations 219
 Steven X. Cadrin

10 Correlating Shape Variation with Feeding Performance to Test for Adaptive Divergence in Recently Invading Stickleback Populations from Swiss peri-alpine Environments . . 233
 Denis Roy, Kay Lucek, Esther Bühler, and Ole Seehausen

11 Macroevolutionary Trends in the Skull of Sauropodomorph Dinosaurs – The Largest Terrestrial Animals to Have Ever Lived 259
 Mark T. Young and Matthew D. Larvan

12 The Use of Geometric Morphometrics in Studying Butterfly Wings in an Evolutionary Ecological Context 271
 Casper J. Breuker, Melanie Gibbs, Stefan Van Dongen,
 Thomas Merckx, and Hans Van Dyck

13 Towards Automating Artifact Analysis: A Study Showing Potential Applications of Computer Vision and Morphometrics to Artifact Typology 289
 Michael J. Lenardi and Daria E. Merwin

14 Morphometric Analysis Applied to the Archaeological Pottery of the Valley of Guadalquivir 307
 Ana L. Martínez-Carrillo, Manuel Jesús Lucena, José Manuel Fuertes, and Arturo Ruiz

15 Some Applications of Geometric Morphometrics to Archaeology . 325
 Marcelo Cardillo

Part IV Scope to the Future of Morphometrics (Chaps. 16 to 18)

16 Prospectus: The Future of Morphometrics 345
 Richard E. Strauss

17 Morphometrics and Cosmology: Short Note and Future Hope . . 353
 Ashraf M.T. Elewa

18 Morphometrics in Past: Integrating Morphometrics with General Data Analysis Software 357
 Øyvind Hammer

Index 363



<http://www.springer.com/978-3-540-95852-9>

Morphometrics for Nonmorphometricians

Elewa, A.M.T. (Ed.)

2010, XI, 367 p. 104 illus., Hardcover

ISBN: 978-3-540-95852-9