

Contents

<i>Preface</i>	<i>page</i> ix
<i>Acknowledgments</i>	xi
1 Introduction	1
Asking the right question	3
Scientific methods	7
Scientific communication	9
Aims and structure	12
References	15
2 Methods of study	17
Flow simulation	18
Velocity measurement	30
Seston sampling	38
Specialized methods	43
References	60
3 Dispersal and settlement	69
Benthic suspension feeder life cycle	69
Dispersal	73
Larval dispersal	74
Post-larval dispersal	91
Local hydrodynamics	93
Larval settlement/recruitment	95
Summary	117
References	120
4 Flow and the physiology of filtration	128
Background	128
Passive suspension feeders	132
Active suspension feeders	138
	vii

viii	Contents
Facultative active suspension feeders	155
Combined passive–active suspension feeders	158
Deposit–suspension feeders	161
Summary	163
References	165
5 Mechanisms of seston capture	170
Nature of seston	170
Fluxes, encounter rates, and collection efficiency	172
Mechanics of capture	174
Seston capture mechanics	200
Summary	207
References	209
6 Behavioral responses to flow	213
Optimizing growth by orientation to flow	214
Avoiding flow dislodgement	238
Epifauna and aggregation	247
Swimming	254
Summary	260
References	263
7 Benthic populations and flow	270
Benthic limitation by flow	270
Water movement impoverishment	299
Biological interactions in mixed benthic communities	301
Summary	304
References	306
8 Ecosystems and flow	313
Background	313
Marine plant canopies: kelp forests	315
Marine plant canopies: seagrass meadows	326
Bivalve reefs	341
Summary	353
References	355
9 Future directions	362
Selecting pertinent scientific questions	362
Proximate fundamental questions	367
Proximate, applied benthic biology questions	374
Ultimate questions	378
References	387
<i>Glossary</i>	391
<i>Index</i>	405