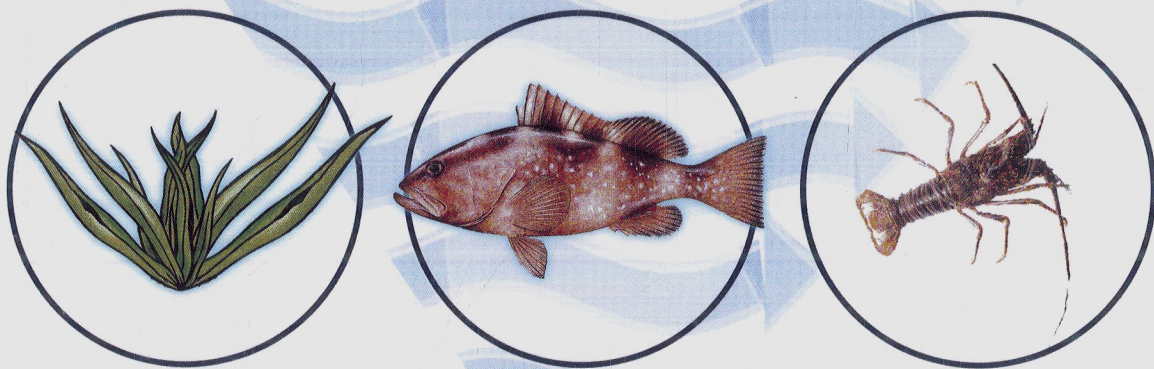


Edited by Ravi Fotedar & Bruce Phillips

Recent Advances and
New Species in
Aquaculture



 WILEY-BLACKWELL

Contents

| | |
|--|-----------|
| <i>Contributors</i> | ix |
| <i>Abbreviations and acronyms</i> | xi |
| <i>Preface</i> | xiv |
| <i>Acknowledgements</i> | xv |
| | |
| 1 Recent Developments | 1 |
| <i>Ravi Fotedar, Gopal Krishna, Uras Tantulo, Iain Mcgregor and Bruce Phillips</i> | |
| 1.1 Introduction | 1 |
| 1.2 Disease resistance in aquaculture systems <i>vis-à-vis</i> breeding strategy | 1 |
| 1.3 Freshwater ornamental aquaculture – an industry view from Western Australia | 5 |
| 1.4 Use of immunostimulants as feed additives | 10 |
| 1.5 Alternative sites for aquaculture | 11 |
| 1.6 Future directions | 16 |
| 1.7 References | 16 |
| | |
| 2 A Global Review of Spiny Lobster Aquaculture | 22 |
| <i>Bruce Phillips and Hirokazi Matsuda</i> | |
| 2.1 Introduction | 22 |
| 2.2 Broodstock management | 28 |
| 2.3 Larval rearing | 30 |
| 2.4 Raising wild-caught pueruli and juveniles | 46 |
| 2.5 Future developments | 65 |
| 2.6 References | 68 |
| | |
| 3 Slipper Lobsters | 85 |
| <i>Manambrakat Vijayakumaran and Edakkepravan V. Radhakrishnan</i> | |
| 3.1 Introduction | 85 |
| 3.2 Biology | 87 |
| 3.3 Aquaculture potential | 88 |
| 3.4 Marketing | 89 |
| 3.5 Slipper lobster culture initiatives | 90 |
| 3.6 Hatchery production of seeds | 90 |
| 3.7 Factors influencing phyllosoma growth and survival | 95 |
| 3.8 Hatching and larval rearing in <i>Thenus</i> sp. | 99 |
| 3.9 Growth of juvenile slipper lobsters | 101 |

| | | |
|----------|---|------------|
| 3.10 | Culture of <i>Thenus</i> sp. | 103 |
| 3.11 | Conclusions | 109 |
| 3.12 | References | 110 |
| 4 | Mud Crab Aquaculture | 115 |
| | <i>Brian D. Paterson and David L. Mann</i> | |
| 4.1 | Introduction | 115 |
| 4.2 | Portunid crab aquaculture | 116 |
| 4.3 | Biology and life cycle | 119 |
| 4.4 | Technology development | 122 |
| 4.5 | Future developments | 125 |
| 4.6 | References | 131 |
| 5 | Penaeid Prawns | 136 |
| | <i>Ngo Van Hai, Ravi Fotedar and Nguyen Van Hao</i> | |
| 5.1 | Introduction | 136 |
| 5.2 | Achievements | 137 |
| 5.3 | Challenges | 157 |
| 5.4 | Prospective/future outlook | 159 |
| 5.5 | References | 161 |
| 6 | Cobia Culture | 179 |
| | <i>Ravi Fotedar and Huynh Minh Sang</i> | |
| 6.1 | Introduction | 179 |
| 6.2 | Morphology | 179 |
| 6.3 | Distribution | 181 |
| 6.4 | Biological characteristics | 181 |
| 6.5 | Nutritional requirement of cobia | 183 |
| 6.6 | Hatchery | 186 |
| 6.7 | Growout | 189 |
| 6.8 | Disease and health management | 191 |
| 6.9 | Post-harvest and marketing | 194 |
| 6.10 | Challenges and opportunities | 195 |
| 6.11 | References | 196 |
| 7 | Barramundi Aquaculture | 199 |
| | <i>Suresh Job</i> | |
| 7.1 | Introduction | 199 |
| 7.2 | Biology | 200 |
| 7.3 | Hatchery production | 202 |
| 7.4 | Hatchery culture | 207 |
| 7.5 | Growout | 211 |
| 7.6 | Nutrition and growth | 213 |
| 7.7 | Health management | 216 |
| 7.8 | Quality | 221 |

| | | |
|-----------|---|------------|
| 7.9 | Sales and marketing | 221 |
| 7.10 | Future directions | 222 |
| 7.11 | Conclusions | 224 |
| 7.12 | References | 224 |
| 8 | Abalone Culture | 231 |
| | <i>Mark Allsopp, Fabiola Lafarga-De la Cruz, Roberto Flores-Aguilar and Ellie Watts</i> | |
| 8.1 | Introduction | 231 |
| 8.2 | The abalone market | 231 |
| 8.3 | Abalone production technology | 233 |
| 8.4 | Technological developments | 245 |
| 8.5 | Future possibilities | 249 |
| 8.6 | References | 249 |
| 9 | Seaweed Culture with Special Reference to Latin America | 252 |
| | <i>Julieta Muñoz, Vivek Kumar and Ravi Fotedar</i> | |
| 9.1 | Introduction | 252 |
| 9.2 | Seaweed utilisation | 252 |
| 9.3 | Aquaculture | 254 |
| 9.4 | Integrated aquaculture | 257 |
| 9.5 | Post-harvest: agar extraction | 259 |
| 9.6 | Cultivation in Latin America | 261 |
| 9.7 | Conclusions | 266 |
| 9.8 | References | 268 |
| 10 | Marine Ornamental Fish Culture | 277 |
| | <i>Suresh Job</i> | |
| 10.1 | Introduction | 277 |
| 10.2 | Broodstock and eggs | 281 |
| 10.3 | Broodstock conditioning | 293 |
| 10.4 | Larval culture | 294 |
| 10.5 | Juveniles | 300 |
| 10.6 | Commercial production | 306 |
| 10.7 | Conclusions | 312 |
| 10.8 | References | 313 |
| 11 | Tilapia | 318 |
| | <i>Luan Dinh Tran, Trung Van Dinh, Thoa Phu Ngo and Ravi Fotedar</i> | |
| 11.1 | Introduction | 318 |
| 11.2 | Seed production | 319 |
| 11.3 | Culture practices | 322 |
| 11.4 | Harvesting and value added products | 325 |
| 11.5 | Genetic improvement of tilapia | 326 |
| 11.6 | Environment and disease management | 327 |

| | | |
|-----------|---|------------|
| 11.7 | Marketing of tilapia | 327 |
| 11.8 | Conclusion | 330 |
| 11.9 | References | 331 |
| 12 | Carp Polyculture in India | 334 |
| | <i>Dilip Kumar</i> | |
| 12.1 | Introduction | 334 |
| 12.2 | Freshwater aquaculture resources in India | 335 |
| 12.3 | Development of aquaculture | 336 |
| 12.4 | Commonly cultured species | 336 |
| 12.5 | Aquaculture practices/systems | 339 |
| 12.6 | Developments in culture practices | 351 |
| 12.7 | Culture of pangasius (<i>Pangasianodon hypophthalmus</i>) | 359 |
| 12.8 | Freshwater prawn farming | 362 |
| 12.9 | Recent developments | 366 |
| 12.10 | References | 366 |
| 13 | Future Directions | 368 |
| | <i>Bruce Phillips, Ravi Fotedar, Jane Fewtrell and Simon Longbottom</i> | |
| 13.1 | Introduction | 368 |
| 13.2 | Developments in managing the environmental impacts of aquaculture | 368 |
| 13.3 | Ecolabelling | 378 |
| 13.4 | The future | 381 |
| 13.5 | References | 381 |
| | <i>Index</i> | 387 |
| | <i>Colour plate section facing page 48</i> | |