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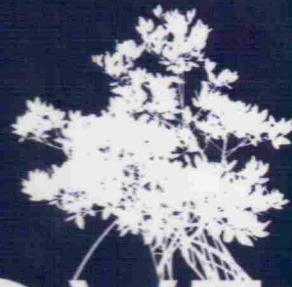
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Series

14

Editors

Sasekumar A. & Chong V.C.

**MANGROVE**  
— AND —  
**COASTAL ENVIRONMENT**  
OF SELANGOR, MALAYSIA



11.2 Mammals	140
11.3 Avifauna	142
11.4 Mitigation Efforts	148
11.5 Other vertebrates	149
11.6 Remarks	149
<b>12 Monitoring the Fireflies of the Selangor River</b>	<b>153</b>
12.1 Introduction	153
12.2 Materials and Methods	154
12.3 Results and Discussion	156
12.4 Conclusion	160
<b>OPEN WATERS AND ESTUARIES</b>	
<b>13 Microbial Ecology of Port Klang Waters</b>	<b>163</b>
13.1 Introduction	163
13.2 Location of study	163
13.3 Marine water quality	165
13.4 Microbes	167
13.5 Primary production and bacterial production rates	169
13.6 Bacterial growth efficiency	169
13.7 Bacterial mortality	170
13.8 Summary	171
<b>14 Phytoplankton</b>	<b>175</b>
14.1 Introduction	175
14.2 Materials and methods	176
14.3 Algal diversity	176
14.4 Classification key for Klang Strait's algae	177
14.5 Algal description	185
14.6 Conclusion	203
<b>15 Seaweeds on Fish Cages at Pulau Ketam</b>	<b>205</b>
13.1 Introduction	205
13.2 Results and discussion	206
13.3 Concluding remarks	211
13.4 Summary	212
<b>16 Ecology of Fish and Shrimp Communities</b>	<b>215</b>
16.1 Introduction	215
16.2 Species assemblages and diversity	216
16.3 Stock abundance	225
16.4 Animal distribution in relation to environmental factors	226
16.5 Trophic ecology	229
16.6 Reproductive and migratory patterns	235
16.7 Conclusion	236
<b>17 Larval Distribution of Two Anchova Species in the Kuala Selangor Estuary</b>	<b>243</b>
17.1 Introduction	243

## Microbial Ecology of Port Klang Waters

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### 13.1 Introduction

In the early 1970s, the original concept of marine food web was still based on the primary production of the larger sized phytoplankton, that is, net phytoplankton or those caught by the plankton net in the sea. The production of both diatoms and dinoflagellates were consumed by copepods, which in turn were eaten by larger consumers. Bacteria acted as a decomposer in this 'classic' marine food chain returning inorganic nutrients (*e.g.* nitrogen and phosphate) back to the primary producers. However, Pomeroy (1974) suggested that the 'classic' food chain was insufficient as the role of microbes (< 60  $\mu\text{m}$ ) was generally disregarded. Since then, there have been significant advances in our understanding of microbes and their role in marine food web.

We now know that there is a substantial pool of dissolved organic matter in the sea. The sources of dissolved organic matter include: (i) autochthonous inputs via *in-situ* primary production, and *in-situ* regeneration through decomposition processes, (ii) allochthonous inputs via horizontal and vertical transfer, atmospheric deposition, terrigenous surface-runoff, and river inputs. The main consumer of the dissolved organic matter is bacteria. Bacteria utilize dissolved organic matter, and their grazing or bacterivory in turn transfer the carbon to higher trophic levels, thereby completing the microbial loop (Azam *et al.*, 1983) (Figure 1). Other than bacterivory, viral lysis is also an important fate for bacteria. However unlike bacterivory, viral lysis has a net effect of reducing the amount of carbon and energy to the main food web (Fuhrman, 1999).

Most of our present knowledge on aquatic microbial ecology is from studies carried out in temperate regions where there is marked seasonality in temperature. In tropical waters where temperatures are relatively higher and stable, the structure and function of the microbial food web may differ and is worth investigating. Moreover with the rising atmospheric CO<sub>2</sub> concentrations and global warming concerns, we need to understand the major flows of carbon in the upper waters of our aquatic systems *i.e.* primary production and community respiration especially microbial respiration. To the best of our knowledge, measurements of microbial related processes are still relatively few in Malaysia.

### 13.2 Location of study

Port Klang is a multipurpose Malaysian gateway port located strategically mid-way on the west coast of Peninsular Malaysia overlooking the Straits of Malacca (Figure 2). It