

CHAPTER FIVE

CONCLUSIONS

The water channels in the Matang mangrove system generally show low density and diversity of macrobenthic animals. Fifty-three species belonging to nine taxa were sampled over a period of four months. In the main water channel, Sungai Sangga Besar (SSB), where floating fish cage culture is present, the macrobenthos abundance varies significantly along its length, being more abundant towards the sea. Sites on the opposite side of the cage area (non-cage sites) shows significantly higher macrobenthos abundance than sites inside the fish cage area, but only near the river mouth where the macrobenthos abundance is naturally higher.

Cage fish culture also has an impact on the structure of the macrobenthos community in the SSB estuary. Fish cage culture apparently attracts scavenging gastropods (Nassaridae and *Assimineae* sp.) into the cage culture area, while non-cage areas are dominated by the blood cockle, *Anadara granosa*, which is however extensively cultured in the estuary. Nassarids and *Assimineae* may prefer relatively coarser bottom substrates and left-over fish feeds under the cage farms.

Macrobenthos abundance in another nearby water channel, Sungai Sangga Kecil (SSK), where there is no aquaculture of any sort, is generally more diverse and abundant. While other macrobenthos taxa are more abundant in SSK, bivalves and gastropods which are abundant in SSB are comparatively few in SSK. This observation suggests changes in the structure of the macrobenthos community in SSB by aquaculture activity (both cage and cockle cultures), which are not observed in SSK. Polychaetes dominate

the community in SSK, with abundance and distribution that are clearly different from those found in SSB. Crustaceans are also more dominant in SSK than in SSB. The results indicate that macrobenthos abundance in both SSB and SSK was probably not significantly influenced by either diel or tidal phase effect.

Evidence suggests a general vulnerability of Matang's subtidal macrobenthos community that is stressed by periodically low dissolved oxygen levels; aquaculture activity however may exacerbate this stress.