

## CHAPTER 5



### CONCLUSIONS AND RECOMMENDATIONS

Mangrove forests, situated at a transition between land and sea, are characterized by mangrove plants and muddy substrates with high water content and high amount of organic matter, providing suitable habitats for many diverse groups of macrofauna. Types of substrates (water content, organic content and particle size of sediments), which differ from station to station, and tidal inundation (or exposure to air) are two major factors controlling the animal distribution and abundance.

The mangrove macrofauna at KO Maphrao consisted predominantly of polychaetes, crustaceans and molluscs. Coelenterates, nemerteans, platyhelminths, sipunculans, xiphosurans, echinoderms and fishes were also recorded.

The highest biomass of mangrove macrofauna was 11.5 g dry weight  $m^{-2}$  in the middle mangrove forest and the lowest of 4.6 g dry weight  $m^{-2}$  was found in the seaward mangrove station. The mud flat macrofauna also provided a standing crop of 11.2 g dry weight  $m^{-2}$ . The biomass of mangrove macrofauna is high compared to the biomass from subtidal areas in the nearby localities, but low compared to temperate areas with a smaller primary production.

The estimated productivity values of fauna are puzzling low, compared to the primary productivity of mangroves. Obviously, direct measurements of animal production are needed to give a better insight into this problem of energy transfer within the food web.

A conceptual model is constructed to discuss the pathways of energy transfer in a mangrove ecosystem. Energy input derives from six basic sources; namely, allochthonous particulate matter, mangroves, phytoplankton, epiphytic microflora, benthic microalgae and macroalgae. The pathways from autotrophic compartments to heterotrophic compartments are discussed. Export from a mangrove ecosystem to the nearby environments is included.

Mangrove macrofauna is dominated by detritus feeders which consume organic detritus of various types. But the main nourishment of energetic component from detritus is probably microorganisms associated with detritus. It should be emphasized again that the detritus-based food chains in the mangrove ecosystem are very important.

It is not possible to quantify the production of some autotrophic producers and the pathways shown in the model. It is suggested that studies on short and simple food chains in the mangrove ecosystem are carried out in order to give a better understanding of the function of the ecosystem. Furthermore, studies on the role of mangroves in contributing to adjacent waters, putting emphasis on fisheries production, would be greatly beneficial to the management and conservation of mangrove forests.