Infaunal Communities in South Australian Temperate Mangrove Systems

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Declaration

This thesis contains no material, which has been submitted or accepted for the award of any degree or diploma in any university or other tertiary institution. To the best of my knowledge and belief the thesis also contains no material previously published or written by another person, except where due reference has been made in the text.

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Indarjani

Abstract

South Australian mangroves consist of only one single species *Avicennia marina* (Fosk.) Vierh.var *australasica* (Walp) Moldenke, 1960. They are distributed discontinuously within St. Vincent Gulf and Spencer Gulf and provide significant valuable habitat both in economical and ecological terms. The Fisheries Act 1971-1982 protected the existence of mangroves and the Harbour Act 1936-1981 controlled removal of mangrove areas in coastal development. To date very few ecological studies have been conducted in the South Australian mangroves, particularly on the infaunal organisms that have an important role in maintaining the ecological dynamic within the estuaries systems. As this is the first study on infaunal mangrove communities in the inverse estuaries of South Australia, there was no prior data for ecological comparison. The study was conducted at three mangroves location (Garden Island, Middle Beach and Saint Kilda) close to Adelaide in May 2000 and 2001.

Overall the study has reported that the infaunal mangrove assemblages of South Australian mangroves were comparable to other temperate mangroves. The infaunal communities were characterised by lower diversity and abundance compared to the tropical or subtropical mangroves. The infaunal zonation related to the tidal gradient and habitat variation was detected. Most infauna organisms occupied the surface layers and substantially decreased towards the deeper layers. The study also suggested that sediment structure of mangrove systems were complex and infaunal communities responded differently to the change of environmental conditions both in small scale and larger scale. Thus, assessing the infaunal communities structure in mangrove systems should be based on ecological characteristics rather than geographical positions. The examination of dominant polychaetes families showed that different species have different responses to the environmental cues within mangrove systems. The study did not find that any polychaete species was restricted to mangroves only as they all were also found in the habitat adjacent mangrove forest.

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