Acknowledgements

I would like to express my sincere gratitude and deep appreciation to my adviser, Asst. Prof. Dr. Chamnein Choonpradub and Dr. Nittaya McNeil for their useful guidance, supportive and kind helps throughout the completion of the thesis. Also thanks to Prof. Dr. Don McNeil, Dr. Phattrawan Tongkumchum and Asst. Prof. Dr. Apiradee Lim for their helpful advice on my thesis, Dr. Sarawuth Chesoh for great comments and Mr. Greig Rundle for editing my English.

I would like to thanks to National Institute of Coastal Aquaculture (NICA) of the

Department of Fisheries of Thailand for allowing me to use the data, graduate school,

PSU for partially funding.

Finally, I would like to thank my family and friends for their encouragement, my colleague for supportive and encouragement throughout my study.

Safeenee Lateh