

# # 4572210923: MAJOR ZOOLOGY

KEY WORD: COMPANION MODELLING/ MULTI-AGENT SYSTEMS/ ROLE-PLAYING GAME /RAZOR CLAM / DON HOI LORD

KOBCHAI WORRAPIMPHONG: COMPANION MODELLING FOR RAZOR CLAM *Solen regularis* CONSERVATION AT DON HOI LORD, SAMUT SONGKHARM PROVINCE. THESIS ADVISOR: ASSOC. PROF. NANTANA GAJASENI, Ph.D. THESIS CO-ADVISOR: FRANCOIS BOUSQUET, Ph.D.  
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This study aimed to access the current razor clam population dynamics of Don Hoi Lord, to identify fisherman behavior and interactions, and to construct a multi-agent simulation model for collective discussion of razor clam management and conservation. Companion modelling approach, specifically Multi-agent system model (MAS) and Role-playing game (RPG) was used in this study. Monthly filed data collection was conducted for one year. Line transects and quadrat sampling method were used for collecting razor clam population data on the biggest sand dune in Don Hoi Lord. In addition, socio-economic surveys of local fisherman were conducted monthly to understand their harvesting behavior. A Multi-agent simulation model was constructed under Cormas platform based on both of razor clam population data and local fisherman harvesting behavioral patterns. Then, two rounds of RPG were organized in March and July 2005, to initiate collective discussion among stakeholders. Mean razor clam density was  $5.71 \pm 2.49$  individual/m<sup>2</sup>, mean razor clam length was  $4.55 \pm 0.90$  cm and dominant size class was 3-5 cm. At the moment, razor clam population has started to recover from the past exploitation caused by razor clam harvesting policy of provincial government. Besides, both rounds of RPG were an efficient tool to initiate collective learning and discussion among stakeholders. In each round, 4 scenarios were played. Scenario II (closed zone rotation for 3 month/each) in first RPG and scenario IV (quota system) in second RPG have been agreed upon by stakeholders and possibly implemented in the future. The result of the multi-agent simulation model based on both agreed scenarios indicated that the razor clam population has responded positively due to consistent dynamics of razor clam population. Finally, a policy based on both agreed scenarios should be an appropriate management for razor clam conservation.

Department.....Biology..... Student's signature.....

Field of study.....Zoology.....Advisor's signature.....

Academic year.....2005.....Co-advisor's signature.....