

Pailin Jitchum 2010: Community Structure of Planktonic Copepods and Production of *Acartia erythraea* Giesbrecht in the Coastal Areas of the Upper Gulf of Thailand.

Doctor of Philosophy (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Professor Ladda Wongrat, M.S. 242 pages.

Community structure of planktonic copepods was studied biweekly from September 2006 to August 2007 in the coastal areas of the upper Gulf of Thailand. Production of copepods focusing on *Acartia erythraea* Giesbrecht, the most important species, was carried out in the laboratory during in January to August 2008. A total of 46 copepod species from 27 genera were identified. Calanoid was the most diverse group (22 species), followed by cyclopoid (9 species) and harpacticoid (4 species). The estuarine and neritic species were dominant in the study areas namely *A. erythraea*, *Acrocalanus gibber*, *Centropages furcatus*, *C. orsinii*, *Euterpina acutifrons* and *Pseudodiaptomus aurivilli*. Occurrence of two species *Labidocera bataviae* A. Scott and *L. pectinata* are reported for the first time in the coastal area of Manao Bay, while *Kelleria australica* Bayly, 1971 was recorded for the first time in Thai waters. Abundance of copepods fluctuated temporally at both studied areas, namely east coast (Si Racha Bay) and west coast (Manao Bay). Nauplii and copepodites dominated throughout the study period and more abundant at the east coast (70%) than the west coast (60%). Abundance and community structure of copepods were positively related to hydrographic variables, particularly water temperature and chlorophyll a. The present investigation is the first report of production study on *A. erythraea* in the upper Gulf of Thailand. Average abundance was  $300 \pm 181$  ind.  $m^{-3}$ , with average biomass of  $1.08 \pm 0.73$  mg C  $m^{-3}$ . Equation for the relationship between prosome length and carbon weight is:  $\ln CW = 2.48 \ln PL - 16.1$ ,  $R^2 = 0.74$ . Generally, mean values of egg production rate (EPR), secondary production rate and specific growth rate calculates at the Si Racha Bay were higher than those at the Manao Bay. The average values recorded were  $1.02 \pm 0.94$  eggs  $f^{-1} d^{-1}$ ,  $0.0003$  mg C  $m^{-3} d^{-1}$  and  $0.0096 \pm 0.006$   $d^{-1}$ , respectively. From this study, the increasing rate of egg production according to chlorophyll a concentration suggests that egg production was limited by food availability.

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Student's signature

Thesis Advisor's signature