

CHAPTER I

INTRODUCTION



The study of reproductive biology including the sequence of changes in maturity stages during the year are of considerable importance in building a thorough knowledge of general biology of fish stock. They form part of the basis of stock assessment, the information of which is vital for the management and regulation of fisheries (Holden and Raitt, 1974; Gulland, 1983, 1988; Blaxter, 1984).

The shorthead anchovy *Encrasicholina heteroloba* is a small anchovy inhabiting coastal regions throughout the tropical Indo-West Pacific Oceans (Whitehead, Nelson, and Wongratana, 1988). It is a common anchovy in Thai waters which plays an important role in the fisheries with their most abundance and most importance for anchovy purse-seining, one of the traditional fisheries operated in Thailand. The high abundance of this anchovy was reported along the eastern coast of the country (Chullasorn and Martosubroto, 1986). Its commercial interest has been growing markedly in recent years due to increasing demand in exports of fish sauce and dried anchovy, making drastic expansion of the number of fishing boats, operation methods, and fishing areas (Sakul Supongpan and Pirochana Saikliang, 1983; Pirochana Saikliang, 1990; Veeravat Hongsakul, 1990; Department of Fisheries, 1993; Pirochana Saikliang, 1994). The amount of landed anchovy

increased rapidly from 14,400 tons to 124,000 tons during the 1980s and up to 159,900 tons in 1992. More than 75% of this amount was obtained from the eastern coast of the Gulf of Thailand (Department of Fisheries, 1983, 1987, 1992, 1995). Their increasing demand have brought about socio-economic problems caused by conflicts among fishermen on the fishing areas. There has been an argument whether the destruction of juvenile commercial species is caused by anchovy fishery. Above all, it was reported that the total catch of this species has already exceeded its maximum sustainable yield (Department of Fisheries, 1993; Somsak Chullasorn, 1993; Pirochana Saikliang, 1994).

Despite its rising commercial value, the knowledge of life history of this anchovy in Thailand is minimal. The biological information is available only on its age and growth parameters including length-weight relationship (Tongsueb Taweessith and Pismorn Dhebtaranon, 1972; Pismorn Dhebtaranon, 1973; Sakul Supongpan and Pismorn Isara, 1974; Tongsueb Taweessith, 1979; Sommai Yoo-sook-swat, 1990), and some of its spawning aspects obtained from fish larvae investigation (Somyos Sidtichokpan, 1972; Sa-gna Watanachai, 1978; Hayase, 1982; Chongkolnee Chamchang, 1986; Wisid Chantarasakul, 1988; Anucha Songchitsawat, 1989; Sommai Yoo-sook-swat and Anucha Songchitsawat, 1990). Eventhough, the anchovy has been assumed to spawn all year in the Gulf of Thailand, there was no concrete evidence available on the reproduction of this species. Actually, nothing is known about the reproductive biology of *E. heteroloba* in Thai waters.

The objective of this study was to determine reproductive biology of *E. heteroloba* from coastal waters off Rayong Province, the main fishing ground of anchovy in the eastern coast of the Gulf. It was aimed to determine sex ratio, gonad index, fecundity, and gonad development by means of macroscopic examination. Microscopic inspection by histological techniques was also used for assessing oocyte development stage and oocyte size-frequency distribution. The outcome was expected to provide the basis for identification of anchovy spawning intensity. It was hoped to fulfill the knowledge of its stocks off the eastern coast of the Gulf of Thailand and could be applicable to the management and regulation of all anchovies in Thai waters.



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