

CHAPTER I

INTRODUCTION

The members of a species complex, commonly known as sibling species or isomorphic or cryptic species, are reproductively isolated evolutionary units with distinct gene pools, and hence, differ in biological characteristics which determine their potential in the transmission of disease. The mosquitoes in the complex could exhibit the difference of biological characteristics such as the susceptibility to DDT (Subbarao *et al.*, 1988a; cited by Subbarao, 1998.), host preference and biting behaviors (Baimai *et al.*, 1988; Van Bortel *et al.*, 1999) etc.

Anopheles minimus was first described by F.V. Theobald in 1901. It has a wide distribution in the Oriental region, and throughout the range of its distribution it is considered as an important vector of malaria. Recent studies have indicated that it is a species complex in which two sibling species (A and C) are generally accepted (Sucharit *et al.*, 1988b; Green *et al.*, 1990; Baimai *et al.*, 1996). Species A is the predominant species of the *An. minimus* complex in Thailand (Green *et al.*, 1990) and has also been recorded in India, Laos, Cambodia, Vietnam and southern China (Subbarao, 1998; Van Bortel *et al.*, 1999, 2000; Chen *et al.*, 2002). Species C has been reported from western (Kanchanaburi Province) with a lower extent north-western Thailand (Tak and Chiang Mai Provinces) (Green *et al.*, 1990; Sharpe *et al.*, 1999). It has also been found in northern Vietnam (Van Bortel *et al.*, 1999) and

south-central provinces of China (Yunnan, Guangxi, Guizhou and Sichuan) (Chen *et al.*, 2002). Species C commonly occurs in sympathy with species A.

Recently, Somboon *et al.* (2001) have described another sibling species from the Ryukyu Archipelago, Japan which is provisionally designated *An. minimus* species E, based on crossing experiments (A and E), DNA analysis of the D3 region of the 28S gene of ribosomal DNA, mitotic karyotypes and some morphological characteristics. In particular, the evidence of reproductive isolation from hybridization experiments clearly indicates that species E and species A are distinct species. Species E differs from species C in metaphase karyotype, but is somewhat similar in wing morphology with a minor difference of the D3 rDNA sequence. Therefore, the lack of crossing experiments between species C and E has led to difficulty in excluding the possibility of species E being a geographically isolated population of species C. The objective of this study was to perform crossing experiments between *An. minimus* species C and putative species E and investigate some biological differences to further determine the specific status of the putative species E.