CHAPTER 1

INTRODUCTION

Honey bees are among the most advanced social insects and have been studied for several thousand years. However, the biology of Apis cerana, known as the "Eastern Honey Bee", is still fragmentary. Almost all of the information on honey bees have been derived from the knowledge obtained from studying the world's most famous species, Apis mellifera (Akratanakul, 1977; Wongsiri et al., 1986; Ruttner, 1988).

Honey bees belong to the genus Apis, with only one tribe, Apini, in the subfamily Apinae which comprises at least four species: the western honey bee, A. mellifera Linn.; the eastern honey bee, A. cerana Fabr.; the giant honey bee, A. dorsata Fabr.; the dwarf honey bee, A. florea Fabr. (Ruttner, 1988).

Other three species in this genus, A. laboriosa, A. andreniformis and A. koschevnikovi have also been reported occasionally by some investigators (Maa, 1953; Sakagami et al., 1980; Ruttner, 1988; Wongsiri et al., 1990a).

A. cerana is native to the eastern part of the world. It is the equivalent of the "Western Honey Bee", A. mellifera, and has a very wide area of distribution because of its adaptability (Ruttner, 1988).

Beekeeping with A. cerana has been reported in countries where techniques are more developed such as The People's Republic of China and India (Sylvester and Wongsiri, 1986). In Thailand, the raising of A. cerana began over a hundred years ago in coconut

plantations on Samui Island in the southern part of Thailand with traditional log hives and other types of unmovable frame hive (Wongsiri and Tangkanasing, 1986).

As a native honey bee, A. cerana has some advantages over A. mellifera. A. cerana shows a greater adaptation to climatic conditions, enemies and the native flora (Mattu and Verma, 1983; Wongsiri et al., 1985; 1986). However, A. cerana was reported as more frequently swarming and absconding than A. mellifera and the honey production from A. cerana was much lower (Sylvester and Wongsiri, 1986).

After modern beekeeping methods were adopted and applied to A. cerana beekeeping in China, the honey yield per colony and the number of colonies were increased ten and three times respectively. These figures indicate the economic value of A. cerana that was hidden and ignored for a very long time (Wongsiri et al. 1986). The same beekeeping methods were also introduced to A. cerana beekeeping in Thailand (Wongsiri et al., 1985). Selection and breeding have been done intensively in order to get a suitable strain for beekeeping (Wongsiri, 1988; Pothichot, 1989; Wongsiri et al., 1989). However, information on A. cerana's morphology and behaviour is still needed as a basis for strain improvement.

The morphometrical method was first introduced to study morphology and systematics of honey bees in 1916. Since then, several characters were proposed as morphometrical characters with over forty of them used by Ruttner (1988). Ruttner et al. (1978) proposed a set of morphometrical characters as the standard for morphometrical identification of honey bees. Daly and Balling (1978) developed a procedure based on 25 morphometrical characters to discriminate between Africanized and European honey bees in the

western hemisphere. The techniques of measurement were much improved with the aid of a microslide projector and digitizer coupled to computer system. Improved statistical programs also make the analysis easier (Daly et al., 1982).

Morphometrical investigations in A. cerana have been reported by very few authors (Mattu and Verma, 1983; 1984a; 1984b; Ruttner, 1985; 1988) so that the morphometrical knowledge of A. cerana is still incomplete and needs to be expanded. Study of reasonably large numbers of samples in any one area by local researchers with the same procedures will give the best data for comparisons.

The objectives of this thesis are to :

1. Provide morphometrical information on A. cerana in Thailand and Malaysian Peninsula.

2. Make a systematic profile of A. cerana in Thailand and Malaysian Peninsula.

The results of this study can be applied to :

- Basic studies on Biology : Evolutions, Biogeography, etc.
- Systematics of eastern honey bee
- Selecting and improving the strains by using the informations on morphological characters.