

# CHAPTER 1

## INTRODUCTION

The Acari (mites and ticks) is the largest group within the class Arachnida, phylum Arthropoda. They are very small (adult body length ranging from 0.1-30 millimeters) and differ from other arachnids in that all traces of body segmentation have disappeared (Krantz, 1978; Evans, 1990; Halliday *et al.*, 2000). They occupy an extraordinarily diverse range of niches. Many of them have remained predatory as their ancestors, but other groups have adapted to plant feeding, scavenging on dead plant matter, and have developed into various kinds of association with other organisms such as commensalisms, phoresy, and parasitism. (Halliday *et al.*, 2000).

The Acari are important to humans in various aspects. Many species are serious pests of agricultural crops. Other species are parasitic on domestic animals and cause losses in meat, egg, and fiber production. Humans can be attacked by scabies mites, and by pathogens transmitted by chigger mites, and ticks. Many species of Suborder Astigmata cause damage of stored food products; some species living in human habitations are known as “house dust mites” are primary source for human allergy. On the other hand, some mites are beneficial to humans in their role as biological control agents against agricultural pests. Mites, through their natural role, also provide “ecosystem services” in the form of nutrient cycling.

It is estimated that about 48,200 species of mites were described worldwide (Halliday *et al.*, 2000). This number is considered only 5-10% of all mite species in the world. Mites in Thailand, however, had been received little or no attention in many groups. The acarofauna of the country, therefore, are poorly known. The available information is restricted to the group of economic and medical importance. The family Cunaxidae (Suborder Prostigmata) has not been studied at all.

The cunaxid mites are pale yellow to orange in color. They are distinguished from other prostigmatans in that the chelicerae are separated and hinged at base; 2 pairs of sensillae are on prodorsum; palpus has 3-5 segments with strong spines, spurs, or apophyses, usually terminating with strong claw. Cunaxids are free-living

terrestrial mites occur on the surface of humus soil, in litter layers and on trees trunks. They are predaceous on nematodes and other microarthropods including the phytophagous mite pests of many economic plants. This family of mites, therefore, is one of the most interesting acarine groups that can be used as a biological control agent (Gerson and Smiley, 1990).

As mentioned above, the cunaxids and many groups of mites, in Thailand had never been studied faunistically and taxonomically. This could hamper any further researches that need the faunistic and taxonomic information. Therefore this study was conducted in the country for the first time, with special attention to the central region of Thailand where is the important agricultural area and is subject to urbanizations.

### **Objectives**

To collect and study taxonomy of the predatory mite family Cunaxidae in central Thailand.

### **Anticipated benefits**

The results of this study will facilitate further research in agricultural acarology, biogeography and evolutionary biology.

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย