

## CHAPTER 1 INTRODUCTION

### 1.1 General

The proturans are minute whitish hexapods ranging from less than 0.5 mm to 2 mm in length. They occur in all regions of the world in forest litter and humus, in tree cavities, under bark on dead trees, under stones, in peat bogs, in pastures, cultivated fields, grassland soils, on moss and lichens, underground in small mammal nests, and in caves (Copeland and Imadaté, 1990). They feed on decomposing organic matter, fungal spores and mycorrhizal fungi (Sturm, 1959; Machida and Takahashi, 2004; Triplehorn and Johnson, 2005). In general, most species can be found in soil surfaces but some are also found 15-25 centimeters at subsoil levels (Bernard and Tuxen, 1991; Copeland and Imadaté, 1990; Krauss and Funke, 1999).

Any studies concerning biology, ecology, karyology, biochemical taxonomy, embryology or anatomy of proturans can provide new, very important and interesting results. However, morphologically based taxonomy is a necessary base (Szeptycki, 2002; Yin, 1999).

### 1.2 Historical background in Thailand

Szeptycki (2002) reported that there are 688 proturan species in 71 genera worldwide. Europe has 166 described species in 17 genera (Imadaté, 1989; Szeptycki, 2002). In Austria 32 species, in 10 genera, and 3 families are known (Department of the Environment and Heritage, 2006; Tuxen, 1964). In Japan 68 species, 25 genera, and 4 families have been found (Imadaté, 1974; Nakamura, 2003). China has 156 species, 34 genera, and 10 families. The survey in Southeast Asia by Imadaté (1989) found 42 species in 7 genera.

In Thailand, Imadaté (1989) conducted a study concerning the taxonomy and distribution of proturans which found 25 species in 7 genera and 3 families (Condé, 1961; Imadaté, 1965, 1989). Most of them are known from Northern Thailand. Only 3 species were found in south (Imadaté, 1965). In the survey, the proturans which were found in Thailand consisted of 15 new species and few of these species were widely distributed.

A study in Doi Suthep-Pui National Park, Chiang Mai province, Northern Thailand found 11 species in 4 genera and 3 families (Likhitrakarn, 2004). Three of the species are new and are pending publication (Nakamura, pers. comm.). A study on collembolan, which are similar to proturan in habitat and ecology, found that there are 130 species of collembolan in Doi Inthanon National Park (Deharveng *et al.*, 1989). These findings suggest that the study of proturan in Thailand and Southeast Asia should be continued and expanded.

### 1.3 Objectives

The objectives of this study are:

1. To study the taxonomy of proturan in Doi Inthanon National Park, Chiang Mai province
2. To construct pictorial keys of proturan in Doi Inthanon National Park, Chiang Mai province