

CHAPTER 1

INTRODUCTION

1.1 Background

Dragonflies and damselflies are ancient winged insect belonging to the order Odonata. Their sizes are tiny to large by wingspans ranging from 19 mm in the Southeast Asian coenagrionid, *Agriocnemis nana*, to 191 mm in the neotropical pseudostigmatid, *Megaloprepus caerulatus* (Tang *et al.*, 2010; Wilson, 2009). Odonata are distributed in all parts of the world except Antarctica with the actual number of species being perhaps close to 7,000 (Kalkman *et al.*, 2008). The order Odonata was often divided into three suborders, viz. Zygoptera, Anisoptera and Anisozygoptera (Kalkman *et al.*, 2008; van Tol, 2010). However, at present the suborder Anisozygoptera is included in Anisoptera or combined with Anisoptera under a new name Epiprocta (Kalkman *et al.*, 2008). Dragonflies and damselflies live near or around aquatic resources, such as river, pond, canal, stream, lake and paddy field. They are carnivorous in all stages. They have shown to be useful for nature conservation and environment management and are often used as indicators of environment health (Clausnitzer *et al.*, 2009; Eak-Amnuay, 1996; Ferro *et al.*, 2009; Kalkman *et al.*, 2008; Ratanabhumma, 2007). Recently, Odonata is the first insect order used in a global assessment of biodiversity loss (Clausnitzer *et al.*, 2009). Therefore, the accurate data on taxonomy and distribution are very important for evaluation, conservation, roles in the community, range expansion or contraction, and reaction to anthropogenic perturbations, including climate change and alteration of habitat (Ferro *et al.*, 2009).

1.2 Historical background of the knowledge of dragonflies of Thailand

According to Van Tol (2010) 5,747 species of Odonata are globally known. The highest species diversity within biogeographic regions is found in the Oriental region. The Oriental, Australasian and especially the Neotropical regions hold the highest number of undescribed species (Kalkman *et al.*, 2008).

Thailand has the best known odonate fauna in the Indochina region (Hämäläinen, 2004). Hämäläinen and Pinratana (1999) reported 315 species being found in Thailand. This figure included undescribed species and species identified to the genus level only. Thereafter new records have been steadily made, and misidentifications corrected. In Hämäläinen (2004) the number of species was ca 340, and at present there are already ca 350 species found in the country (Hämäläinen, pers. com.). Chiang Mai province has the richest in odonate fauna with over 200 species on record, and it is among the best-studied provinces in Thailand.

Diversity of Odonata in the Doi Suthep-Pui National Park, Chiang Mai province, is fairly well known. The first dragonfly specimens at Doi Suthep were collected in 1923-1924 by local collectors for Sir Walter Williamson who sent them for study by F.C. Fraser (Hämäläinen and Pinratana, 1991). After that, considerable

number of entomologist have recorded dragonflies at Doi Suthep (for instance, Asahina, 1982, 1983, 1984a-c, 1985a-g, 1986a-d, 1987a-b, 1988, 1989, 1990; Hämäläinen, 1987; Davies, 1990; Michalski, 1992; Dunkle, 1993; Donnelly, 1995; Garrison and Garrison, 1996; Dijkstra and Kalkman, 2001; Hoess, 2002; Dow, 2003). Hämäläinen and Pinratana (1991, 2000) provided a list of 119 dragonfly species recorded from the park. Hoess (2002) added six more species, of which one species was new to science (Hoess, 2007). Hämäläinen (pers. com.) added *Orthetrum chrysis* to the list in 2005. This increased the species number of Odonata in the Doi Suthep-Pui National Park to 126.

Although there are plenty of dragonfly records available from the Doi Suthep-Pui National Park, most of them come from a few sites only and several accessible sites have remained unexplored. This fact, and the increase in the species number suggest that the study of this insect group should be continued.

1.3 Objectives

The objectives of this study are:

1. To make an annual survey dragonflies and damselflies in Doi Suthep-Pui National Park, Chiang Mai province and to study their taxonomy.
2. To construct a pictorial key to the Odonata taxa found during this study in Doi Suthep-Pui National Park, Chiang Mai province.