

CHAPTER 6

CONCLUSION

In these study areas, relative humidity was relatively high at more than 70% throughout the year. Air temperature on Doi Suthep-Pui was around 20 – 25 °C, and Doi Inthanon was 18 – 26 °C. These mountain streams were in relatively good condition with DO, BOD₅, pH, conductivity and TDS within the range expected for unimpacted streams. Some organic contaminants including nitrates, ammonia, sulfates and phosphates were detected but in very low concentration. Soil pH in these sites was around 5-7.

Pitfall trapping provided a large diversity of ground dwelling insects (107 families). The major groups numerically were Entomobryidae (Collembola) and Formicidae (Hymenoptera). There was strong association in the fauna between sites on the same mountain and greater difference between mountains as revealed by cluster analysis and ordination.

The beating tray method yielded arthropod specimens of 48 taxa. Arachnida, Formicidae (Hymenoptera), Coccinellidae (Coleoptera), Pentatomidae (Hemiptera), Endomychidae (Coleoptera) were the most abundance taxa caught from this method. The arthropod community at Doi Suthep-Pui 600 m was rather similar to that from Doi Suthep-Pui 1,200 m and the Doi Inthanon community at 600 m was most similar

to Doi Inthanon 1,200 m. In contrast, the communities from Doi Suthep-Pui and Doi Inthanon at 1,000 m were relatively unique in their composition.

Arthropods from 37 taxa were caught by sweeping net. Diptera: Brachycera, Nematocera, and Chironomidae were the most abundant insects sampled with this method. The analysis of these arthropod communities showed grouping of sites at the same elevation.

The Malaise trap method was highly efficient for sampling flying insects. The Diptera, Homoptera and Hymenoptera were the most abundant insect orders captured. The aquatic insect orders Trichoptera, Plecoptera and Odonata were also found in the trap.

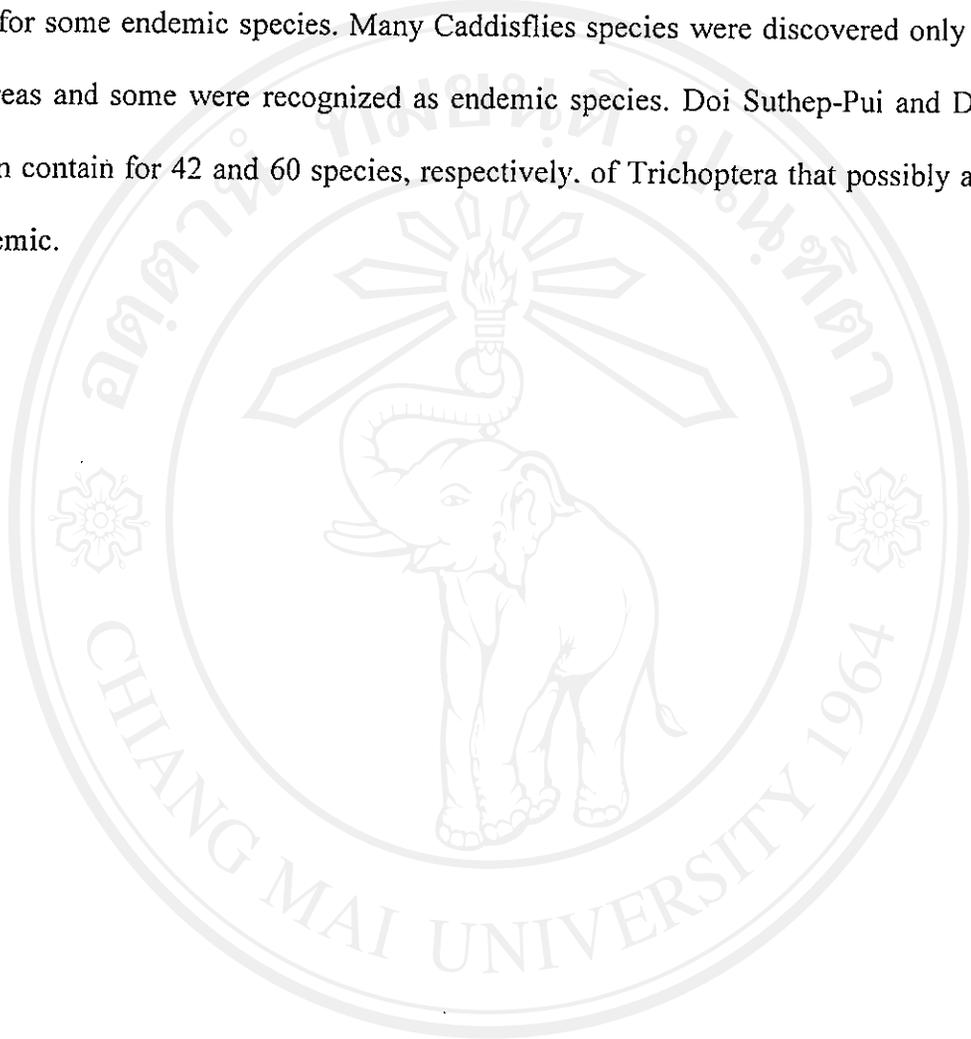
There were 960 individuals and 72 species of Trichoptera captured over the study period. Species diversity was much lower on Doi Suthep-Pui (10 families and 22 species) than on Doi Inthanon (18 families and 56 species). Cluster analysis showed that the sites on each mountain were more similar in terms of their Trichoptera fauna than sites at the same elevation on different mountains. The PCC module identified *Kisaura surasa* (Philopotamidae) as the species most strongly positively correlated with the ordination result. This species was found exclusively on Doi Suthep-Pui at 1,000 and 1,200 m. Classification of the sites using TWINSpan identified *Ugandatrichia maliwan* (Hydroptilidae) as an indicator species that separated the six sites into two major 2 groups. During this study, *Ugandatrichia maliwan* was found only on Doi Inthanon at 1,000 and 1,200 m.

The total 345 species of caddisfly fauna on two mountains in northern Thailand, Doi Suthep-Pui and Doi Inthanon National Parks is presented as the updated survey of Trichoptera in this region since 1987. There were 199 species known from Doi Suthep-Pui, and 249 species from Doi Inthanon.

The research found a moderate diversity of Geometridae in Doi Suthep-Pui and Doi Inthanon (17 and 14 species respectively). A total of 24 geometrid species was identified from both areas and there were a further 21 species that could not be identified to species level. This research also reviewed the 224 taxa of Geometridae so far found in Thailand. Classification methods applied to the known localities of the geometrids in Thailand identified into 3 groups: a northern Thailand geometrid community, and communities at high and low altitude.

The species richness of Trichoptera has a tendency to respond to the cycle of the monsoon. The highest peak of adult Trichoptera activity is in the pre-southwestern monsoon period (April). After that, during the southwestern monsoon in July and August, the species richness declined but recovered again in the post-southwestern monsoon period. The richness stabilized during the northeastern monsoon. The Trichoptera communities from Doi Suthep-Pui and Doi Inthanon showed the same pattern. The Trichoptera were categorized into 4 groups using the monsoon criteria; the species that can be found throughout the year, those found during the period of the southern or northern monsoon and those found strictly during the pre- and/or post-southwestern monsoon period.

The riparian zones in Doi Suthep-Pui and Doi Inthanon played a role as the habitat for some endemic species. Many Caddisflies species were discovered only in these areas and some were recognized as endemic species. Doi Suthep-Pui and Doi Inthanon contain for 42 and 60 species, respectively, of Trichoptera that possibly are the endemic.



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