

Watana Sakchoowong 2008: Diversity of Pselaphine Beetles (Coleoptera: Staphylinidae: Pselaphinae) in Eastern Forest Complex of Thailand. Doctor of Philosophy (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Associate Professor Jariya Chanpaisaeng, Ph.D. 270 pages.

Pselaphine beetles (Coleoptera: Staphylinidae: Pselaphinae) are cosmopolitan, species-rich group but poorly studied in the tropics. It includes 8,000 – 10,000 described species, but only 40 species have been known in Thailand. The beetles are rich in forest litter and predators of small invertebrates. However, no ecological study has been made in Thailand. The objectives of the study were (1) to provide baseline data of pselaphines for effective sampling from various habitats; (2) to document the ecological characteristics of the communities; (3) to investigate the diversity pattern of the beetles in relation to other soil insects; and (4) to establish the taxonomic and reference collection of pselaphines in Thailand.

The study consisted of three experiments. The first experiment compared the extraction efficiency of Winkler and Tullgren methods. The result showed that Tullgren method extracted more species and specimens of all group of soil macroarthropods including pselaphines than Winkler method. The second experiment compared the different length of storage times of the collected samples. The result showed that there were three patterns of declining curves of extraction; the first pattern was gradual decrease as in ants, the second pattern was rapid decline to 12 hours as in Hemiptera and spiders; and the third pattern was rapid decline to 6 hours as in beetles including pselaphines. The third experiment was a survey and analysis of pselaphines in three types of primary forest and two types of disturbed forests in eastern Thailand. The results showed that species richness, abundance and diversity (H') were high in primary forests and low in secondary forest and teak plantation due to the low qualitative environmental variables. Additionally, the relationships between the diversities of pselaphines and ants were analyzed. Although, the biomass of ants was higher than the beetles, habitat gradients in species richness, abundance and diversity (H') were significantly correlated between two taxa.

Pselaphines appeared to have rather narrow habitat requirements and their presence/absence was correlated with environmental differences. These traits make pselaphines a suitable bioindicator taxon for monitoring habitat change. The fact of correlating diversity between pselaphines and ants suggested that the beetles could be used to predict the diversity of ants. The study also clarified the occurrence of 114 species of pselaphines belonging to 51 genera of 6 supertribes where 92% of the species were undetermined. Three species were described as new during this study.

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