CHAPTER I

INTRODUCTION

Rising of human population has promoted agricultural conversion, urbanization, and resource extraction of natural habitats on a grand scale. As a result, natural habitats are increasingly changed and fragmented (Kaspari and Major, 2000). Over the past few decades, Thailand's natural habitats have been altered and disturbed continuously in every part. The difference in land management can affect to the different pattern of plants and animals in those areas. Land use changes alter the environmental factors, such as relative humidity, temperature, soil, and vegetation, and also influence diversity pattern through the food webs. When a forest is changing, the ecosystem is modified and subsequently has impacts on the composition of the inhibiting faunas.

Indicator taxa can be used to detect environmental changes. The ecological responses of selected taxa that are sensitive to habitat modification have been used as representatives of conditions for the other taxa in the area. Moreover, ants have been used as bioindicators in Australia for many years (Alonso, 2000). Ants possess several advantages to be used as ecological indicators for monitoring the environmental changes. They have many notable characters, such as easiness to collect and monitor, high diversity, widespread throughout the world, taxonomically well-studied group, and serving several important roles in ecosystem (Alonso and Agosti, 2000).

With the increasing loss of habitats and biodiversity around the world, there is an urgent need for biodiversity assessments to be carried out during the conservation planning process (Alonso, 2000) as well as factors influencing biodiversity variation, such as habitats and land use types. The main researches on ants in Thailand not only were mostly conducted in protected areas, primarily in the natural forests, but also the research focus was only on taxonomic aspects. Therefore, Thailand still has limited research addressing the effects of different land uses on ant communities.

Thong Pha Phum district, in the Kanchanaburi province, western Thailand, is located at the junction of three ecoregions: the Tenasserim-South Thailand semi-evergreen rain forest, the Kayah-Karen montane rain forest and the Chao Phraya

lowland moist deciduous forest (Beamish, 2007). Therefore, the biodiversity of ants including habitat-specific or specialist species are expected to be high due to high habitat diversity and high diversity of ecologically related organisms. Thong Pha Phum district also has several land use types which includes the reserve forest, the commercial plantings of teak and rubber trees and agricultural areas, such as the cultivation of fruit orchards, rice, and field crops.

The aim of this study was to determine and compare ant species diversity and abundance in three different types of land use within the same locality: specifically a natural mixed deciduous forest and two anthropogenic-derived habitats of a teak plantation as well as an intensively agrochemical used agricultural area represented by a durian orchard. Within this context, the rationale of this study is to explore the relationship of ant species diversity and composition in different land use habitats which will assist the evaluating and planning for biodiversity conservation management.

This research also aims to investigate the difference in species composition among these three habitats, the effect of the season in different land use types and the fluctuation in species richness through out the year, including the variation in the abundance of the important ant species and the physical factors, such as temperature, humidity, rainfall, and so on in the three different land used types.

Objectives

1. To determine and compare ant species diversity among mixed deciduous forest, teak plantation, and agricultural area
2. To study the correlation between some physical factors and the abundance of important ant species in each study site
3. To compare the abundance of important ant species among the study sites