

INTRODUCTION

Tropical forests include the greatest wealth of biological and genetic biodiversity of any terrestrial ecosystem (Hubbell and Foster, 1983). They not only provide a magnificent spectacle and sanctuary for an incredible array of plants and animals, but also protect against soil erosion, influence climate, are vital in hydrology, etc. (Bruijnzeel and Critchley, 1994).

In recent years, rampant exploitation of forests has caused considerable and justified alarm. In Thailand alone, the rate of deforestation is so high that out of 32 million ha. of forests in 1950, only 14.4 million ha. was left by 1985 (Flaherty and Filipchuk, 1993). Simmons (1993) stated that humans are mostly responsible for this destruction. The consequences of forest destruction range from local stream siltation to changes in the global climate, which has resulted and will continue to cause the extinction of many species---perhaps including human beings. Unless forests are restored, the doomsday prophecies may soon be experienced.

This massive destruction of tropical forests is happening when our knowledge of the organization, functional dynamics, and even the alpha taxonomy of many threatened forests is still very limited (Hubbell and Foster, 1983). The implementation of conservation and management schemes is difficult due to a lack of basic knowledge of forest ecosystems. Research is, therefore, essential for suitable and intelligent planning and management of these areas. However, investigating all forest species is time consuming and requires the skills of many different taxonomists. Studying a certain group of indicator plants that might reflect the overall situation of the forest might provide a cost effective and rapid alternative for forest assessment.

Pteridophytes are a group of vascular plants in the Division Pteridophyta which includes ferns and their allies. They are widely distributed throughout the tropics and some species in this group are known for their economic importance. Most

Pteridophytes live in specific niches, thus, any alteration of their habitats may affect their abundance and distribution. It is therefore hypothesized that they could be potential indicators of forest conditions. If proven that Pteridophytes can be used as forest indicators, new methods for rapid assessment of forest conditions could be developed in the near future, thus reducing time, effort, and expense of detailed forest assessment. Most importantly, this rapid forest assessment method would be of great help for the development of suitable planning and management for forest conservation and restoration to combat the rapid degradation of tropical forests. This study was, therefore, conducted to achieve the following objectives:

1. To record and compare the Pteridophyte community compositions in different types of forest at Mae Kampong Village, Mae On Branch District, Chiang Mai Province;
2. To develop a system to evaluate forest conditions using Pteridophytes as indicator species; and
3. To formulate possible recommendations to aid in the zonation of forest reserves.

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