

CHAPTER I

INTRODUCTION

Principles and Rationale

At present, the loss of biodiversity in the world is in the alarming rate due to the high exploitation of the natural resources throughout. The importance of research on biodiversity in the tropical region is still increasing since the later half of 20th century because of the region is the main source to serve human needs. There are clearly recognized that we have been obtained much of benefit from tropical forests such as timber, food, medicine, ornamental plants, genetic resources, watershed, education and recreation. Southeast Asia is considered as one of the regions having high biodiversity. Unfortunately, the information and knowledge concerning forests and biological diversity are not completely known.

Thailand is located in the centre of mainland Southeast Asia (Fig. 1). It has been estimated that Thailand have about 10,000 species of vascular plants (Santisuk et al., 1991). The Flora of Thailand project, which was commenced in 1965 and continues today, has only approximately 40 percent so far been enumerated. Despite fairly rapid progress, the project will not be completed for many years, of which estimated ranging from another 100 years (Santisuk et al., 1991) to a perhaps overoptimistic 30 years (Parnell et al., 2003). One of the important factors for the incompleteness is that the forests of Thailand have not been explored throughout, especially along the borders of adjacent countries where the forest is difficult to access (Smitinand, 1989). Up to present, Thailand is still defined as an undercollected country as shown by the collecting density index below 0.5 specimen per km² (Larsen, 1979; Parnell et al., 2003).

According to Santisuk (1988) and Pooma & Barfod (2001), in northern Thailand, some areas in the eastern part of the region remain poorly explored in particular the forests along the border between Thailand and Laos in Nan province (Fig. 2). In contrast, patches of disturbance caused by human activities such as agriculture, logging and settlement are found over the entire area thus parts of the original forest have been changed and secondary forests, orchards, highland shifting cultivation fields and villages are instead occurring. Biological diversity research in this area is urgently needed as the forest is now heavily disturbed through development and other activities.

Doi Phu Kha is one of the under explored areas and has just recently been established as a national park, according to a royal decree, on 17 June 1999 (The Government Gazette, 1999), to conserve and restore forests in eastern most region of northern Thailand. It situates in Nan province between 18° 40' - 19° 30' north

latitudes and 100° 55' - 101° 10' east longitudes adjoining to the Laos' border. The area is about 1,704 km² (170,400 hectares) consisting of deciduous and evergreen forests. The elevation is between 500-1,980 m above the sea level.

In the past, this area had been overlooked by botanists and also difficult to access because of the unsteadiness of political situation in Thailand in 1976. The botanical exploration is therefore inadequate leading to merge the knowledge about vascular plants. Only in recent years has Doi Phu Kha become easily accessible by botanists due to political stability and the building of a new strategic route. The collecting activities have been expanded and much new information has been discovered.

During the past few years of the expeditions to Doi Phu Kha, some new species and new records of vascular plants for Thailand were discovered. For example, new record for the flora of Thailand is namely *Bretschneidera sinensis* Hemsl. (Bretschneideraceae) (Santisuk, 1989), *Indigofera caudata* Dunn (Fabaceae) (Larsen & Larsen, 1995), *Helwingia himalaica* Hook.f. & Thoms. ex C.B. Clarke (Helwingiaceae) (Pooma, 1997), *Acer wilsonii* Rehd. (Aceraceae) (Santisuk, 1998a), *Silvianthus tonkinensis* (Gagnep.) Ridsd. (Carlemanniaceae) (Tange, 1998), *Agapetes inopinnata* Airy Shaw (Ericaceae) (Wattana & Trisonthi, 1999) and *Bauhinia wallichii* J.F. Macbr. (Fabaceae) (Larsen, 1999). New species is namely *Thunbergia colpifera* B. Hansen (Acanthaceae) (Hansen, 1995), *Fosbergia thailandica* Tirveng. & Sastre (Rubiaceae) (Tirvengadum & Sastre, 1997), *Ophiopogon siamensis* M.N. Tamura (Convallariaceae) (Tamura, 1998a), *Caryota gigas* Hahn ex Hodel (Arecaceae) (Hodel, 1998) and *Aristolochia longeracemosa* B. Hansen & L. Phuphat. (Aristolochiaceae) (Hansen & Phuphatanaphong, 1999).

As mentioned above, the previous taxonomic work indicate that Doi Phu Kha National Park is not yet sufficiently explored, in which no intensive collections have been made and much of new knowledge can be expected. It should also be noted that there has not been any previous detailed floristic work recorded. If a study of vascular plant diversity in Doi Phu Kha National Park is continuously done, basic information about the occurrence of species and their status including the distribution will be obtained. These can be applied to the fundamental knowledge for the conservation activities and sustainable uses. Enrichment of knowledge and better understanding concerning Thai wild plants will be gained together with the direct benefit to the Flora of Thailand.



Figure 1. Map of Thailand and neighbouring countries.
Source: Ulack & Pauer (1989).

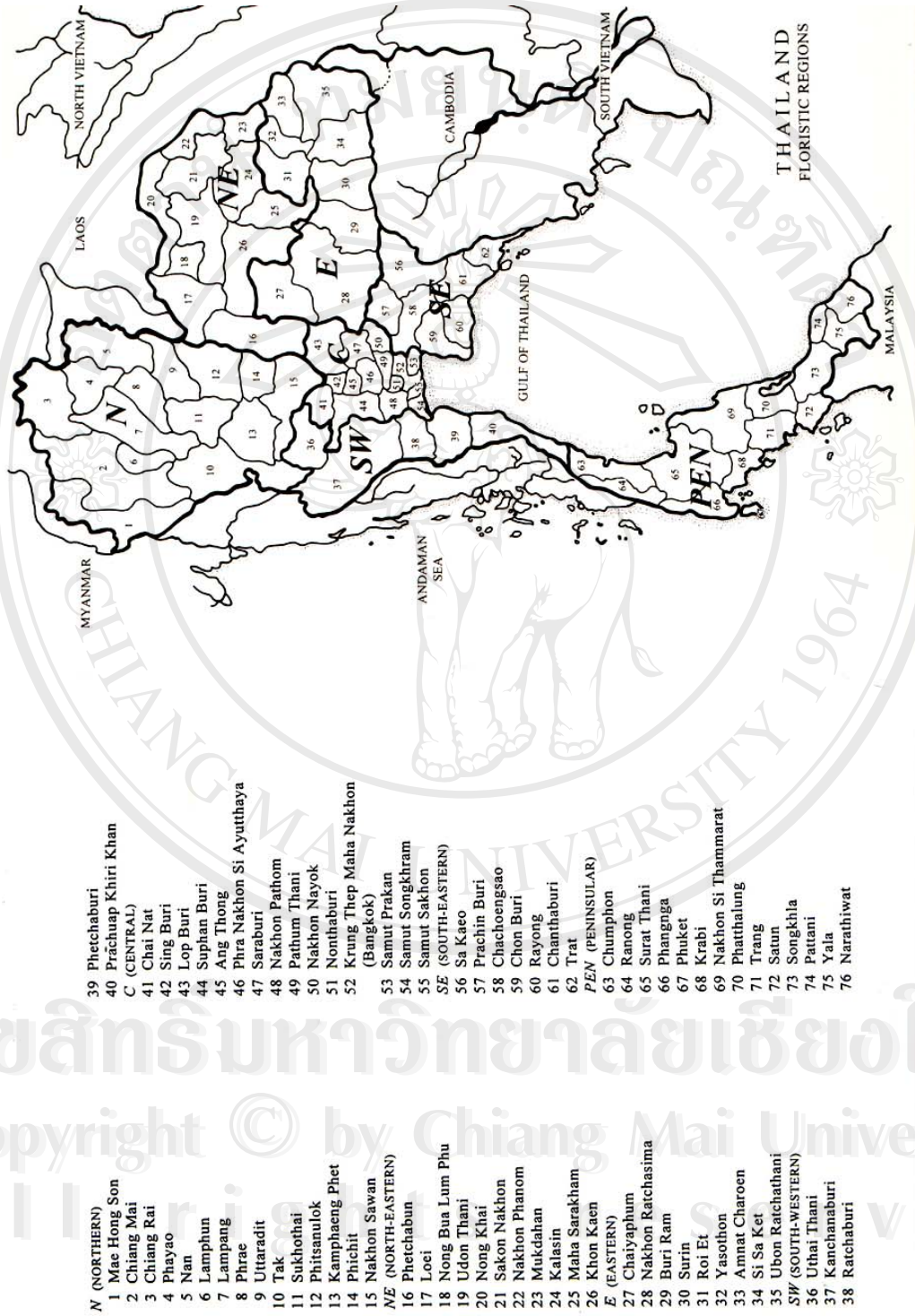


Figure 2. Floristic Regions and Provinces of Thailand.
 Source: Flora of Thailand 7(3) (2001).

Objectives

1. To provide botanical, ecological and distribution information of vascular plants of Doi Phu Kha National Park, Nan Province, Thailand
2. To estimate the number of families, genera and species and their diversity within the studied areas
3. To describe the vegetation of Doi Phu Kha National Park

Scope of Study

A study of vascular plants diversity on Doi Phu Kha National Park was undertaken using botanical inventory between 1998-2003. Attempts were made to visit all habitats and areas so as to cover all species. Voucher specimens were collected and previous collections from Doi Phu Kha (if available) investigated. The specimens were identified to the specific level and also re-checked by comparison with the materials deposited at the following herbaria: Department of Agriculture, Bangkok (BK), Forest Herbarium, Bangkok (BKF), Chiang Mai University Herbarium, Chiang Mai (CMU), Kunming Institute of Botany, Kunming (KUN), Laboratoire de Phanérogamie, Muséum National d' Histoire Naturelle, Paris (P) and Queen Sirikit Botanic Garden Herbarium, Chiang Mai (QBG). Description including their vernacular names, uses, ecological, phenological and distribution information are provided. Photographs and line drawing of some taxa are included. Occurrence species are enumerated. Keys to the families, genera and species of vascular plants on Doi Phu Kha National Park were constructed.

Vegetation in Doi Phu Kha National Park was described by empirical classification based on floristic components, elevation and other closely related environmental factors, such as edaphic, geological information, topography, climate, moisture, human activities, etc.

Soil samples along the altitude gradient were collected for physical and chemical analyses.

Some plants, in particular rare and useful species, were collected for growing and propagating at Queen Sirikit Botanic Garden, Chiang Mai.

Educational Application Advantages

The achievement gained to the Flora of Doi Phu Kha are as followed:

1. The botanical information about the occurrence species and their usages
2. The additional knowledge concerning species distribution within Thailand
3. The additional vegetation data on the eastern part of northern Thailand
4. Fundamental knowledge for conservation strengthening on the rare and endangered species, sustainable use and national park management