THAI FOR BULL 19:16-25. 1992.

Report on the Thai-Danish botanical expedition 1990.

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INTRODUCTION

Since the establishment of the botanical collaboration between Denmark and Thailand in 1957 several larger expeditions have been undertaken, (see Larsen 1979). During the three decades field work has been carried out, most of the efforts have been concentrated in the northern and western part of the country, while the peninsular provinces for various reasons have been neglected. During the latest years the road-net has been developed and several new field stations established by the Royal Forest Department, this, together with the stabilisation of the political situation of this part of the country, has made the area much more accessible.

The main purpose of the present expedition was to explore the rainforest reserves south of the Isthmus of Kra or between 6° and 10° North. The expedition was financed by a grant from the Danish Natural Research Council. I wish to express our gratitude for the understanding of the importance of this work in a time where tropical biodiversity is rapidly diminishing. Financial support was also received from the Danish East Asiatic Company in the form of free transport of all goods to and from Thailand. As during the earlier expeditions the main counterpart is the Royal Forest Department of Thailand, this time represented by its director Dr. T. Santisuk. Thanks to him two vehicles with drivers were placed at our disposal free of charge, and the use of the department's field stations was also granted. Recently scientific collaboration between the Prince of Songkla University in Hat Yai and Aarhus University has been established. The biology department of the Thai university, represented by the dean of the science faculty, Dr Methi Sunbhanich, supported us in providing another car and free use of the guest apartments of the university in Hat Yai and Pattani, we are indeed deeply indepted for this generosity. The Danish Embassy staff with the ambassador

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Mr. Mogens K. Isaksen assisted us in various ways and were particularly helpful in sending back the large amount of material of dried plant specimens.

The dried material generally consists of 4 - 5 sets of each collecting number, the main set will be deposited at the herbarium of the Botanical Institute, Aarhus University (AAU), a first duplicate set will be in the herbarium of the Royal Forest Department (BKF), and a second duplicate set at the herbarium of the biology department, Prince of Songkla University (PSU). Further sets will be distributed among the herbaria where specialists take part in the determination work.

The number series used is a continuation of the series used for general collections by the author, in this way there should be no confusion about duplicate numbers for plants collected in Thailand.

Participants

From Danish side: Prof. Kai Larsen, Supee Saksuwan Larsen M. Sc., and Anders Barfod Ph.D. took part; from Thailand: Weerachai Nanakorn Ph.D. and Mr. Wivat Ueachirakan both from the Forest Herbarium, Royal Forest Department participated, while the Prince of Songkla University was represented by associate prof. Puangpen Sirirugsa.

Itinerary

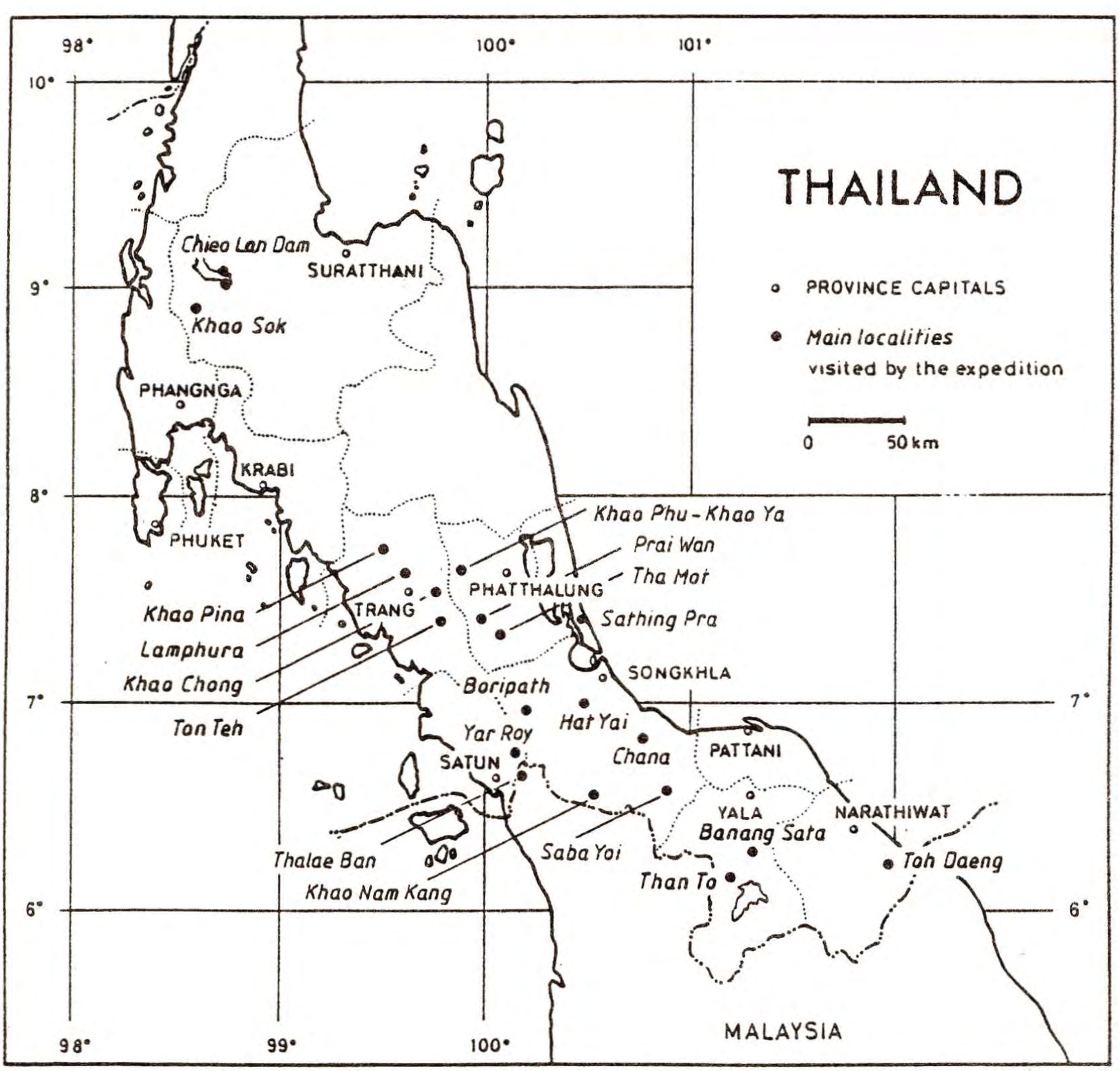
26. - 27. okt.	Khao Sok	Prov. Suratthani
28. okt.	Chio Lan Dam and surroundings	-
30. okt.	Khao Kho Hong, Hat Yai	Prov. Songkhla
31. okt.	Songkhla-Pattani road	-
1. nov.	Ton Nga Chang waterfall	-
3. - 4. nov.	Thalae Ban	Prov. Satun
5. nov.	S. of Satun	-
6. nov.	Yar Roy waterfall	-
7. nov.	Wayside near Boripath	Prov. Songkhla
8. nov.	Khao Kho Hong, Hat Yai	-
9. nov.	Boripath waterfall	-
10. nov.	Sathing Pra	-
11. nov.	Khao Kho Hong, Hat Yai	-

12. - 13. nov.	Khao Chong	Prov. Trang
14. nov.	Ton Teh waterfall	-
15. - 16. nov.	Lamphura	-
16. nov.	Khao Pina	-
17. nov.	Khao Phu - Khao Ya	Prov. Phatthalung
18. nov.	Khao Chong	Prov. Trang
19. nov.	Prai Wan waterfall	Prov. Phatthalung
23. nov.	Na Thawi	Prov. Songkhla
24. nov.	Tha Mot	Prov. Phatthalung
25. nov.	Tham Ta Lord, Bor Nam Ron & Tham Khu Ha at Saba Yoi	Prov. Songkhla
27. nov.	Than To waterfall	Prov. Yala
28. nov.	Tho Daeng	Prov. Narathiwat
29. nov.	Khao Pok Yok & Suk Tha Lai at Banang Sata	Prov. Yala
10. - 11. dec.	Phu Hin Rong Kla	Prov. Phitsanulok
13. dec.	Doi Phu Kha	Prov. Nan
14. dec.	Sila Peth waterfall	-
14. dec.	Tham Pa Tok at Nan	-
16. dec.	Muak Lek	Prov. Saraburi
17. dec.	Bangkok	Prov. Bangkok

Comments on the itinerary.

The main localities from which collections were undertaken in Peninsular Thailand are indicated on the map. The collecting sites in the two northern provinces visited for only a short time should offer no problems in locating.

The first area visited was the rich evergreen forests in the Khao Sok National Park along the Takuapa - Suratthani highway also visited in 1968 by the author. At that time the road was under construction and the whole area was densely covered by forests. Here as all over the southern provinces vast areas have been cleared, but around the Khao Sok this type of lowland evergreen forest has been conserved. It is a forest vegetation in which the evergreen dipterocarps play an important role. The collections were mainly undertaken around the newly established station and on the lower slopes of the surrounding mountains. Time was limited as the party was expected to arrive at the university in Hat Yai on


98°
100°
101°
10°
9°
8°
7°
6°
THAILAND
PROVINCE CAPITALS
Main localities
visited by the expedition
0
50 km
Chieo Lan Dam
SURATTHANI
Khao Sok
PHANGNGA
KRABI
PHUKET
Khao Phu - Khao Ya
Prai Wan
Tha Mot
PHATTHALUNG
Sathing Pra
TRANG
Khao Pina
Lamphura
Khao Chong
Ton Teh
Boripath
SONGKHLA
Hat Yai
Yar Roy
SATUN
Chana
PATTANI
YALA
Banang Sata
NARATHIWAT
Toh Daeng
Saba Yoi
Than To
Thalae Ban
Khao Nam Kang
MALAYSIA
98°
99°
100°

the 29. October. Most interesting was a visit to the Cheo Lan Dam. In connection with the construction of the dam quite a large area was flooded, this is naturally regrettable but on the other hand the surrounding steep limestone mountains, formerly almost inaccessable, are now in several places possible to climb. The one day set aside for this visit unfortunately turned out to be one with an extraordinary heavy downpour but in spite of that a number of very interesting collections were brought back. This was made possible as the party could hire a boat and in this way be able to land where small streams and waterfalls made access possibly. On the mountain sides Raphis sp., Dracaena sp. and Cycas pectinata were noted. A watercourse falling over gentle sloping travertine terrasses proved most interesting, some very large, sterile Zingiberaceae, probably Etlingera, were transferred to the PSU experimental plot to be studied when flowering. The whole central, mountainous part of the peninsula between 9° and 10° North is still dishearteningly poorly known, and there is no doubt that further collecting, particularly the higher elevations which are still not easy to reach, will reveal a very interesting flora with numerous new or little known species.

Thalae Ban south of Satun is also a new national park along the border to Malaysia. The station is beautifully situated down to a small lake encircled by a broad belt dominated by Hanguana malayana associated with Ludwigia octovalvis, Polygonum sp., and some Gramineae and Cyperaceae.

The region is occupied by mountains below 1000 m all clad with evergreen forest. Judging from the size of the trees the jungle is hardly influenced by logging and offers excellent opportunities to study the floristic composition of the lowland evergreen forests on basic and acid soil. It is noticeable that the vegetation is very rich in palms both concerning individuals and species number. Around the station the mountains are composed of igneous rocks while a few km towards the east limestone hills occur. A visit to the closely situated Yar Roy waterfall gave the same picture of a forest composed of Dipterocarpus sp., Cynometra malaccensis, and Syzygium species as prominent members of the canopy; Bauhinia integrifolia is among the most common lianas and Borassodendron machadonis a very characteristic component together with several species of rattans. A rich zingiberaceous flora is as usual characteristic for this type of forest, with Etlingera and Amomum representing the taller species while several species of Boesenbergia,

Globba fasciata, and Elettariopsis curtisii are important components in the ground cover; the variation of Boesenbergia plicata was studied and material for further investigations were transplanted to PSU.

It came to our knowledge that the Thalae Ban area is to a certain extent appointed to be a "development area" and that part of the vegetation is in danger of being cleared to give place to the tourist industry; this would indeed be a severe loss for the already strongly diminished lowland evergreen forests of peninsular Thailand, and it is hoped that the Royal Forest Department will succeed in their efforts to save most of this unique nature.

During ten days the party used the old forest station of Khao Chong as their base; we are indebted to the chief of the station Mr. Thawat for his kind help in various ways. This is a station which the author has had the opportunity to use for shorter and longer periods over the last 30 years. It is encouraging to see that in this area it has been possible to conserve a large part of the evergreen forests even if it has been fragmented by clearings for coffee, rubber, and oilpalm plantations. Few years ago the whole area was flooded and part of the planned botanic garden destroyed. At present the Forest Department is planning to establish a botanic garden dedicated to the study of indigenous palms. This initiative has to be strongly supported. During the expedition, where special attention was payed to the palms, it was experienced that our knowledge of the Thai palms is still very fragmentary and the biology as well as the taxonomy of several groups are badly in need of study using modern methods. The collection of palms at Khao Chong is still small, consisting of c 40 species of indigenous and introduced species. Numerous rattans occur naturally in the surrounding area and these are now collected and transplanted. A small ridge a few kilometers from the station revealed Oncosperma horrida as the dominating species; this site may be suitable for a closer population study of this important palm.

With Khao Chong station as the base, the limestone hills around Trang were also studied. Here areas were selected from where no collections have been done earlier. Particularly the limestone ridge near Lamphura proved to be interesting. The forest is mostly undisturbed due to the very steepness of the mountains and only few trails used by hunters are transsecting the slopes. In

narrow, humid chasms a very rich flora of herbs and ferns was found. Species of Impatiens, Globba, Boea, Chirita, and Begonia were collected. Also the limestone outcrops around Khao Pina north of Trang were visited and collections made in a flora of similar composition.

Another excursion from Khao Chong was undertaken to the newly established nature reserve Khao Phu - Khao Ya. Unfortunately time was limited here, but when the station is fully established it will form an excellent base; the geology is very complex and as far as we could see limestone as well as sandstone occur. A visit to Plai Wan waterfall at Kong Ra revealed another locality where the hillside forests were well preserved and good collections were brought back.

The remaining part of the stay in southern Thailand was concentrated in the areas south of Hat Yai. Most of the lowland forests are regrettably cleared in order to give place for rubber plantations and, to a lesser extent, to oil palms. But there are forested areas particularly in the mountains. One of the very interesting sites was another new nature reserve under establishment, Khao Nam Kang just north of the Malaysian border. Here lowland rainforest on acid, sandy soil was studied; ph was messured to c 5. The forest is dense with large trees and a very rich understory of palm species. It is in this area that the most northern populations of Johannesteijsmannia altifrons have been recorded. We did not see this remarkably and highly endangered species. A similar forest type was found at Tha Mot northwest of Hat Yai.

Excursions to the limestone areas south of Saba Yoi were a rather depressing experience as most of the forests have been cleared recently and only poor scrub vegetation or bare mountain sides left.

From Hat Yai the party moved to excellent facilities at the PSU satellite university in Pattani. This is excellently situated for the study of the southernmost forests of Thailand in the Narathiwat and Pattani provinces. The mountain chain east of Banang Sata and southwards to the border consists mostly of limestone and reąches 700 m, perhaps more. There are several possibilities of access to the slopes and the forests are still rather well preserved. It is, however, probably only a matter of time until a lot more land is cleared and botanists should collect as much as possible in this area before it is too late. A particularly promising locality

is the Khao Pok Yok where the slopes up to 600 m were studied.

The last locality was the Toh Daeng swamp forest originally streching from Narathiwat to Sungai Padi at the Malaysian border. Only little is left of this interesting plant community. Due to draining and clearing during recent years the whole environment has changed profoundly since the author first visited the locality in 1974. This swamp forest has been floristically studied by a research group from the Royal Forest Department and their results published (see Phengklai et al. 1989). The purpose of our visit was to plan an investigation of the floral biology of the palm species here and to visit the site of Cyrtostachys renda. The species was found, but it is without doubt that the species is endangered due to digging up of young individuals for commercial purposes. One way this could be stopped would be large scale propagation by seeds in order to get the market price down.

From Hat Yai the expedition split up, as Anders Barfod went to Kuala Lumpur to discuss future collaboration on palms with the Forest Research Institute of Malaya and the Royal Botanic Gardens Kew represented by Dr. J. Dransfield. The remaining group after repacking in Bangkok went to northern Thailand to visit two nature reserves.

First the base was set up at the forest station at Thung Salaeng Luang where the author spent a couple of weeks in July 1966 (see Larsen & Warncke 1966). Also here an alarming alteration of nature has taken place In the report from then it is said that the national park is situated in an area with evergreen forest intersected by few trails and northwest of the station towards Nakhon Thai good Dipterocarp forest dominated. Today nothing of this is left, almost all the land has been cleared and as far as the eye reached only Imperata grassland is seen. In 1966 the whole region was unsafe for political reasons and our collecting possibilities limited, but a four days trip with 15 bearers was undertaken to the Phu Mieng mountain plateau. It was a long walk through dense hillside forest, where the only locality in northern Thailand of Neuwiedia zollingeri was discovered. Today an asphalt road brings the visitor to the top in short time, and a new and very popular nature reserve has been established with a historical museum dedicated to the emergency of the former days, the Phu Hin

Rong Kla, situated in 1200 - 1700 m altitude. At the highest altitudes there are still some remains of the mountain forest. Here tall specimens of Gordonia axillaris were observed together with the more common Schima wallichii; a rich flora of Lauraceae are dominating the lower stories of the forest, e.g., species of Lindera, Litsea, Cinnamomum, and Actinodaphne. Along the waysides the rare Bauhinia nervosa was found together with several Rubus species, species of Ardisia, Maesa, and Polygala arillata. The herb vegetation in the forest is dominated by Acanthaceae; it was, however, not the best season for collecting these in flower. A rich epiphyte flora is present with species of Agapetes and several orchids and ferns; also the epiphytic lichens show the high humidity throughout the year at this altitude.

A more open vegetation is found where the soil layer is shallow as on the sandstone plateau, Lan Hin Poom. Here an open scrub vegetation with Rhododendron species, Callicarpa, Styrax, and Lithocarpus dominates; in crevices in open rock areas Eria tomentosa is colonising. Lan Hin Poom is conserved, but a view from the station or from the top of the Man Daeng waterfall shows deforested mountain slopes all around.

From Thung Salaeng Luang the expedition moved north to Nan where the whole party took quarters at the Dhevaraj Hotel where facilities for drying plants were kindly arranged by the management. From here the Doi Phu Kha national park was visited, a new nature reserve on the border to Laos. Also here the ridges reach above 1500 m and a rich evergreen vegetation is the climax vegetation; a very dominating species is the tall Caryota maxima. Several species of Acanthaceae, often dominating in the forest, were in flower, and among the herbaceous vines the scarlet Thunbergia coccinea was conspicuous. Also here clearings, partly by the shifting cultivation of the hilltribes, have removed most of the original vegetation.

This is the place where a single specimen of the unique tree Bretchsneidera sinensis was found a few years ago. Today the plant looks poor probably due to removing most of the original forest around the stand; it is fenced in by double barbed wire. There is, however, still good forest left along the border and collaboration with the Laotian authorities ought to be established concerning the exploration of the whole area.

During the stay at Nan also a short excursion to the limestone hills north of the city was undertaken. The vegetation, however, was already under the influence of the dry season. Most of the herbs were wilted away and many trees had already shed their leaves. More rewarding was a visit to the Sila Peth waterfall near Pua where, among other interesting collections, large populations of Equisetum debile and Canscora sp. were found as new to the region.

From Nan the expedition returned to Bangkok.

Besides rich general collections mainly from localities where no earlier collectors have worked, a number of areas were designated for further study during a 3-year tropical biodiversity programme established at the Botanical Institute of Aahus University with support from the Danish Natural Science Research Council. During this period botanists from Aarhus University will work in Ecuador, Thailand, and Brunei together with universities and forest administrations in the respective countries. In this programme Thailand will play a central role as the oldest scientific collaboration partner of the Botanical Institute, Aarhus University.