

## RARE PLANTS AND NEW TREE SPECIES DISTRIBUTION RECORDS FROM THUNG YAI NARESUAN WILDLIFE SANCTUARY, THAILAND

*Martin van de Bult<sup>1</sup> and Robert Steinmetz<sup>2</sup>*

### ABSTRACT

We describe the highlights of recent botanical work in Thung Yai Naresuan Wildlife Sanctuary, western Thailand. New distribution records for tree species from three genera (*Prunus*, *Symplocos*, and *Fraxinus*) represent southward extensions of their previously known ranges in Thailand. Most of these tree species were found at lower elevations than in northern Thailand. Another four species from the genera *Acer*, *Aesculus*, *Sapria*, and *Cleidiocarpon*, as well as two orchid species, are rare elsewhere in Thailand, but locally common in Thung Yai Naresuan Wildlife Sanctuary. Also recorded was the rare epilithic herb *Impatiens kanburiensis*, which has a restricted distribution in Thailand and occurs only in limestone habitats. Lastly, three tree species were recorded for the first time in the sanctuary. This region forms Thailand's largest remaining forested area and has been little explored floristically.

### INTRODUCTION

Thung Yai Naresuan (TYN) Wildlife Sanctuary (WS), 3,622 km<sup>2</sup> in area, is located at the southern tip of the Dawna mountain range. Together with the adjacent Huay Kha Khaeng (HKK) WS, it occurs in a broad transition zone between faunal biogeographic regions. This is reflected by the co-occurrence of mammal species with different biogeographic affinities. The Malayan tapir, colugo, banded linsang, and certain species of primates and bats all reach the northern, southern, or western limits of their distributions here, creating a unique mammal association not replicated elsewhere in the region (LEKAGUL & MCNEELY, 1977, NAKASATHIEN & STEWART-COX, 1990).

The flora of the region, however, remains poorly known. There has been little botanical work to determine patterns of plant distribution and rarity, species composition of different forest types, and whether biogeographic patterns displayed by mammals might also apply to plants. We present results from recent botanical work within western TYN that starts to answer these questions.

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<sup>1</sup>Western Forest Complex Ecosystem Management Project (WEFCOM), 84-years Anniversary Bldg, Royal Forest Department, Phaholyothin road, Chatuchak, Bangkok 10900. E-mail: Marvdult@hotmail.com

<sup>2</sup>World Wide Fund for Nature - Thailand Programme Office, PO Box 4, Asian Institute of Technology, Klong Luang, Pathum Thani 12120, Thailand.

Received 20 September 2002; accepted 22 March 2006.

## STUDY AREA AND METHODS

Thung Yai Naresuan WS is located in western Thailand adjacent to Myanmar. Together with the adjacent Huai Kha Khaeng WS, it constitutes Thailand's first and largest Natural World Heritage Site, and forms the core of the largest contiguous protected and forested complex in mainland Southeast Asia, known as the Western Forest Complex (Fig. 1). Major habitats are dry evergreen (48.2%; = mixed evergreen + deciduous), mixed deciduous (26.8%; = deciduous hardwood forest with bamboo), and hill evergreen (10.1%; = seasonal evergreen forest) forest types. Savanna and deciduous dipterocarp forest (= dipterocarp-oak) comprise 8.5%, and 5.2% is secondary forest. The remainder (1.2%) comprises inundated (swamp) forest and agricultural areas (VAN DE BULT, 2003). The sanctuary is characterized by rugged mountainous terrain with elevations up to 1,811 m, and receives 2,000 to 2,400 mm of rain annually.

Botanical work was conducted as part of an ongoing investigation of the habitat types and flora in TYN. Collections and observations reported in this paper were made between March 2002 and March 2003. They come from three middle elevation (700–1,000 m) sites in the foothills of the largest mountain complex in western TYN, known as Taipa Mountain (15° 15'N, 98° 40'E).

Botanical specimens collected during the botanical work are deposited at the Chiang Mai University Herbarium (CMU) in Chiang Mai and the Forest Herbarium (BKF) of the Royal Forest Department in Bangkok.

Previously known distributions of plant species in Thailand and the region were determined from the literature and specimens in BKF and CMU. We classified habitats (of species recorded in TYN) according to MAXWELL (2004), but mention (in Results) the habitat terminology used by the original collectors of the species. The following are the equivalent terms for habitats mentioned by the original collectors: semi and dry evergreen forest = mixed evergreen + deciduous forest; hill evergreen and lower montane forest = seasonal evergreen forest; mixed deciduous forest = deciduous hardwood forest with bamboo.

## RESULTS AND DISCUSSION

The following list includes three tree species that had previously been known only from northern Thailand. These records from western TYN represent significant southward extensions to their ranges. The remaining species are rare or previously unrecorded in the Western Forest Complex.

## ACERACEAE

*Acer oblongum* Wall. ex DC. (Santisuk, 1998)

Synonym.—*A. lanceolatum* Molliard

Distribution.—Himalayas, India (Kashmir, Assam, Sikkim), Nepal (type), Bhutan, south China, Myanmar, Laos, Vietnam (Annam), Thailand: Chiang Mai, Kampaeng Phet (Mae Wong National Park), Petchaboon (Nam Nao, Phu Hin Rong Khla), Chayaphum (Nampbron), Nakorn Ratchasima (Khao Laem), Uthai Thani (Huai Kha Kaeng), Chanthaburi (Pong Nam Ron, Klong Pratong), Kanchanaburi (Sisawat, Sai Yok).

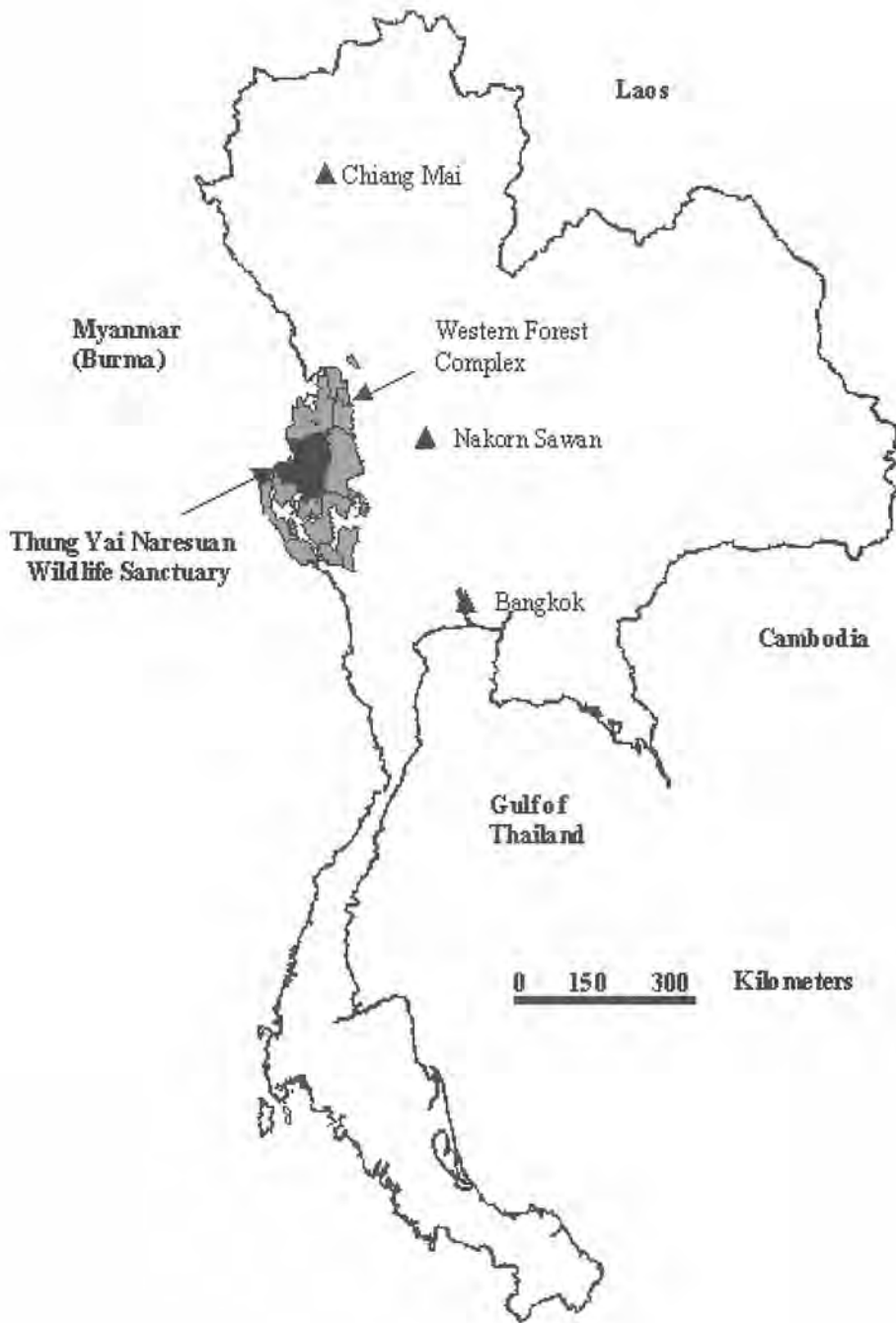


Figure 1. Location of Thungyai Naresuan Wildlife Sanctuary in the Western Forest Complex, western Thailand.

Habitat and elevation.—semi-evergreen forest and lower montane forest on sandstone or limestone, 500–1,500 m. In TYN: seasonal evergreen hardwood forest and deciduous hardwood forest, 700–1,800 m.

Remarks.—This common deciduous tree species typically occurs in seasonal evergreen hardwood forest. In TYN it was common near streams in deciduous hardwood forest. It occurs widely along the Himalayan track and the southern limit of its known distribution lies in Kanchanaburi (Southwest Thailand) and Chantaburi provinces (Southeast Thailand) (SANTISUK, 1998).

#### BALSAMINACEAE

##### *Impatiens kanburiensis* T. Shim

Distribution.—Thailand, Kanchanaburi (Tham Tarn Lod, Sai Yok, type), Chaiaphum (Ban Lui Lai).

Habitat and elevation.—open areas on limestone rocks with bamboo thickets, 80–700 m. In TYN: partly shady areas on steep limestone cliffs in fire-disturbed savanna/oak forest, 800 m.

Remarks.—This rare annual epilithic herb has a restricted distribution in Thailand and occurs only in limestone habitats. It was rare in TYN as well—recorded from just one location. This species was described in 1991 from specimens collected in Kanchanaburi, from which the specific epithet is derived.

#### EUPHORBIACEAE

##### *Cleidiocarpon laurinum* A. S.

Distribution.—East Myanmar (type), Thailand: Saraburi (Klang Dong), Kanchanaburi (Khao Yai)

Habitat and elevation.—dry evergreen forests between 750–1,150 m. In TYN: seasonal evergreen hardwood forest in shady, moist areas on limestone, 850–1,000 m.

Remarks.—This little-known evergreen tree (up to 30 m tall) has been collected only a few times before and is considered very rare (Peter van Welzen, personal communication). It was locally common at some locations in the foothills of the Taipa mountain range, and was fruiting profusely in June 2002.

#### HIPPOCASTANACEAE

##### *Aesculus assamica* Griff. (Phengkhilai, 1981)

Synonym.—*A. punduana* Wall. ex Hiern

Distribution.—subtropical Himalayas, Sikkim, Assam (type), Myanmar, Laos, southwest Yunnan, Thailand: Chiang Rai, Chiang Mai, Tak, Kampaeng Phet, Mae Hong Son, Kanchanaburi (Thung Yai Naresuan Wildlife Sanctuary, Chalerm Ratanakosin National Park), Uthai Thani (Huay Kha Kaeng Wildlife Sanctuary).

Habitat and elevation.—streams in evergreen forest, 150–1,300 m. In TYN: streams in seasonal evergreen hardwood forest and mixed evergreen + deciduous forest, 200–1,000 m. It also occurred in a seasonally moist depression in savanna/oak forest, 750 m.

Remarks.—This evergreen tree species (up to 20 m tall) is uncommon in TYN as well as in northern Thailand. It requires undisturbed or little disturbed forest, although we found it in and around fire-disturbed savanna areas in TYN. It has not yet been recorded south of Kanchanaburi Province.

#### MAGNOLIACEAE

##### *Magnolia henryi* Dunn (Keng, 1975)

Synonym.—*Talauma kerrii* Craib

Distribution.—North Myanmar, Laos, southwest Yunnan, Thailand: Tak (Doi Musoe), Nan (Doi Tiu, type of *Talauma kerrii*), Petchburi (Kaeng Krachan National Park).

Habitat and elevation.—tropical evergreen forest, 600–1500 m. In TYN: seasonal evergreen hardwood forest, 700–1000 m.

Remarks.—This evergreen canopy tree (up to 40 m tall) is rare in Thailand; in TYN it was locally common.

#### OLEACEAE

##### *Fraxinus floribunda* Wall. ex Roxb. (Green, 2000)

Distribution.—India (Uttar Pradesh, Meghalaya, Manipur), Nepal (type), Thailand: Chiang Mai (Pang Tawn, Doi Sutep, Khao Yai, Tat Noi, Doi Chiang Dao), Phitsanulok (Phu Rom Ro), Loei (Phu Kradueng).

Habitat and elevation.—evergreen forest, 800–1,800 m. In TYN: seasonal evergreen hardwood forest, 800–1,000 m.

Remarks.—Three individuals of this briefly deciduous tree (up to 25 m tall) were found in TYN in June 2002. This record represents a 300 km southward extension of the previously known distribution.

#### RAFFLESIACEAE

##### *Sapria himalayana* Griff.

Synonym.—*Richthofenia siamensis* Hoss.

Distribution.—India (type), Cambodia, and Vietnam, Thailand: Chiang Mai (Doi Sutep, type of *Richthofenia siamensis*), Ranong (Khao Pho Ta Chongdong), Kampaeng Phet (Mae Wong National Park), Uthai Thani (Huai Kha Kaeng Wildlife Sanctuary).

Habitat and elevation.—montane evergreen forest above 1000 m. In TYN: seasonal evergreen hardwood forest, in shady and moist areas, 800 m.

Remarks.—In TYN this leafless parasite was found growing on the roots of the woody climber *Tetrastigma cruciatum* Craib & Gagnep. (Vitaceae) and was locally common. This species has been proposed for threatened status by the World Conservation Union (IUCN). This species has poor dispersal capabilities and a low reproduction rate. *Sapria* is highly host specific—only three *Tetrastigma* species are known as hosts. Threats to this species include disturbance to its hosts, collection for putative medicinal purposes, and habitat loss (ELLIOTT, 1992).

## ROSACEAE

### *Prunus cerasoides* Ham. ex D. Don (Vidal, 1970)

Synonym.—*P. hosseusii* Diels

Distribution.—temperate Himalaya, Nepal (type), Myanmar, north Laos, north Vietnam, south China, Thailand: Chiang Mai (Doi Sutep, type of *P. hosseusii*), Kampaeng Phet (Mae Wong National Park)

Habitat and elevation: subtropical montane forest, disturbed seasonal evergreen forest, 1,000–1,700 m. In TYN: disturbed seasonal evergreen hardwood forest, 700–900 m.

Remarks.—deciduous tree up to 18 m tall. It is uncommon in northern Thailand, where it has been commonly planted for its ornamental value. This record represents a 150 km southward extension of the previous known distribution.

## SYMPLOCACEAE

### *Symplocos henschelii* (Mor.) Bth. ex Cl. ssp. *magnifica* (Flet.) Noot. (Nootboom, 1981)

Basionym.—*S. magnifica* Flet.

Distribution.—Thailand: Chiang Mai (Doi Inthanon, type)

Habitat and elevation: lower montane forest, 1,400–1,800 m. In TYN: seasonal evergreen hardwood forest, 800–1,000 m.

Remarks.—This rare evergreen tree taxon (up to 30 m tall) is possibly endemic to Thailand. Less than five collections have been made, all at Doi Inthanon and nearby mountains in northern Thailand. In TYN it was locally common, scattered in middle elevation primary evergreen forest. Besides representing a significant southward expansion of its known range (500 km), these findings alter its known elevation range as well.

## ORCHIDACEAE

Over collecting and habitat loss have depleted orchid populations in Thailand. It is an urgent task for botanists to study distribution patterns and habitat preferences before these species disappear from the wild. We report two orchid species from TYN that are rare elsewhere in Thailand.

### *Cyrtosia nana* (Rol. ex Dow.) Garay (Seidenfaden, 1995)

Basionym.—*Galeola nana* Rolfe ex Dow.

Distribution.—Chiang Mai (Doi Suthep), Nan (Sompoi), Kanchanaburi (Huay Ban Kew, Thong Pa Poom).

Habitat and elevation.—evergreen lowland and montane forest, 800–1,325 m. In TYN: seasonal evergreen hardwood forest, shady areas on limestone, 850–1,000 m.

Remarks.—This small (up to 15 cm tall) terrestrial orchid is leafless and saprophytic; it has underground rhizomes and characteristic fleshy, banana shaped capsules. It is rare in Thailand, but locally common in TYN.

#### ORCHIDACEAE Subfamily APOSTASIOIDEAE (APOSTASIACEAE)

##### *Neuwiedia siamensis* de Vogel (de Vogel, 1969)

Distribution.—Kanchanaburi (Kwai Noi basin, Pan Pang valley), Ratchaburi (type).

Habitat and elevation.—evergreen wet lowland forest, and river valleys, 400–800 m. In TYN: seasonal evergreen hardwood forest, shady and moist areas on limestone, 900–1,000 m.

Remarks.—This rare terrestrial orchid has a distribution restricted to western Thailand. Only a few clusters were found in TYN.

### CONCLUSIONS

New records for three tree species in TYN represent significant southward extensions of their previously known geographic distributions in Thailand. These extensions range from 150 km for *Prunus cerasoides* to 500 km for *Symplocos henschelii* ssp. *magnifica*. Some rare and little known species such as *Cyrtosia nana* and *Cleidiocarpon laurinum* are locally common in evergreen forest in TYN. In contrast, other rare species, namely *Impatiens kanburiensis* and *Neuwiedia siamensis*, were found in small clusters (15–50 individuals) at just one location in TYN. Two of the species we observed, namely *Prunus cerasoides* and *Symplocos henschelii* ssp. *magnifica*, occurred at elevations that were 300 to 600 m lower than for their populations in northern Thailand. Together, these new observations are of botanical and conservation interest, because they expand our understanding of the status of rare and little-known plant species.

### ACKNOWLEDGMENTS

The World Wide Fund field research team consisted of Wanlop Chutipong, Naret Seuaturian, and Kietipoom Kaewplang. We would like to express our gratitude to Mr. Paiboon Sawetmalanon, former superintendent of Thung Yai Naresuan Wildlife Sanctuary, Mr. Erb Chungsaat, present superintendent there, his assistant, Mr. Pongpan, and Thung Yai staff. Thanks also to the Department of National Parks, Wildlife, and Plant Conservation, and the Bangkok Forest Herbarium (BKF). Botanical assistance was received from Dr. Somran Suddee (BKF), Dr. Chamlong Phengklai (BKF) and Dr. Peter van Welzen (Leiden). We thank J. F. Maxwell (CMU) for his patience in identifying our specimens and critical comments.

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