

Vegetation and Vascular Plant Flora of Doi Sutep–Pui National Park, Northern Thailand, by J. F. Maxwell and S. Elliot. 2001. *Thai Studies in Biodiversity* (Bangkok) No. 5: 1–205. \$10.00. Soft cover 300 baht; overseas price US 10.00 + postage; available from BIOTEC, NSTDA, e-mail kamolwan@biotec.or.th.

National parks and other conservation areas frequently suffer from a lack of knowledge about the biodiversity contained within their boundaries. This problem is due in part to the lack of collections, but also to the lack of broad and intensive taxonomic work on those collections that do exist. For this reason, forest scientists, ecologists, resource managers, wildlife biologists and others will all welcome the publication of this new volume in the series *Thai Studies in Biodiversity*.

Doi Sutep–Pui National Park (the authors prefer this spelling over the more common Doi Suthep), located in northern Thailand west of the city of Chiang Mai, has had a long history of significance in the history of Thai botany. Although not declared a national park until 1981, and heavily degraded by human activities in many areas, the remarkable biodiversity of this area has drawn botanists for a century. A total of 2247 taxa of vascular plants collected in the park are enumerated in this volume, a remarkable level of diversity considering the relatively limited elevational range present and strongly seasonal rainfall regime. The park extends from 350 m to the twin peaks of Doi Sutep and Doi Pui, which reach 1610, and 1685 m, respectively. Mean annual rainfall extends from about 1100 mm (1068 mm at nearby Chiang Mai) to 1670 mm at the park headquarters at 1050 m elevation and 2095 mm at Puping Village at 1375 m elevation.

The volume is divided into five parts. The first of these by J. F. Maxwell presents a reassessment of the forest types of Thailand. This section provides an in-depth review and critique of the complex history of terminology and classification systems used to characterize forest vegetation in Thailand. Implicit in this discussion is the problem or dichotomy in having a broad regional system of classification that is relatively imprecise in any single area versus a detailed classification system that works well locally but cannot be applied regionally. Also at issue are the problems presented for forest classification when human activities have strongly impacted forest structure and composition. Maxwell considers all of these issues carefully and then describes a new system that will surely be controversial to many ecologists. He bases his system heavily on forest structure and evergreen versus deciduous dominance, with elevation and floristic composition given a much smaller secondary role. He limits the use of “rain forest” to areas lacking in a dry season and thus entirely absent from Thailand. Instead, he suggests that the term “evergreen forest” be used to subsume a broad range of evergreen forest types from lowland evergreen forest through hill evergreen forests, with subtypes for the presence of bamboo or pines. It is this lumping that many will find difficult to accept particularly for the montane forests above 1000 m elevation. Deciduous forests are separated as deciduous dipterocarp forest (with oak and with or without pine) and mixed deciduous forest with or without bamboo is separated out as a distinct forest type intermediate between evergreen and deciduous forest communities.

Part II of the volume provides an overview of the vegetation and life form diversity of plants in Doi Sutep–Pui, as well as a history of botanical exploration and collecting in the park. It is noteworthy that 512 vascular plant species have been described as new from collections made in this park. This number dwarfs that for any other single site in Thailand.

Part III makes up nearly half of the volume and is given over to an annotated table of the species in Doi Sutep–Pui National Park. An extremely valuable set of information is provided on each species including habit, phenology, life mode (i.e. epiphytic, terrestrial, parasitic, aquatic, etc.), relative abundance, habitat, and months of flowering, fruiting, and leaf loss. These data will undoubtedly provide a rich vein of information for ecologists to mine.

The arrangement of families is by the Bentham and Hooker system. The species lists generally follow accounts in the *Flora of Thailand* for those families which have already been published. For those families that have not yet been treated, the authors have followed other monographic work or their own judgment. In some cases the taxonomy of species included deviates slightly from the *Flora of Thailand* account when the authors have judged that there has been a mistake. This approach is to be commended. For example, it was always a mystery why *Grewia acuminata* was placed in synonymy with *G. laevigata* in the *Flora of Thailand*. The former has been resurrected here.

Some of the family limits presented are conservative. For instance, *Buddleja* is placed in the Loganiaceae, even though it is not included there in the published *Flora of Thailand* account. *Viscum* is placed in the Loranthaceae, although it is mentioned that the Viscaceae may be recognized. In several cases recent realignments of family boundaries based on molecular phylogenies are not used or considered too radically different from the *Flora of Thailand* to be appropriate. An example is the broadened concept of the Malvaceae encompassing the Tiliaceae, Sterculiaceae and Bombacaceae.

The closing Part IV of the volume by Stephen Elliot discusses themes of exploitation and conservation. Aided by a series of color photographs, Elliot discusses threats to the park from deforestation, human population pressure, and fire, and the impacts these threats have on plant biodiversity both directly and indirectly through losses of animal populations critical for pollination and seed dispersal. He closes with a discussion of ongoing reforestation efforts and management recommendations.

In summary, this volume is well written and nicely produced. It should be a part of the library of anyone with serious interests in the plant biodiversity, floristics, or vegetation structure of Thailand and Southeast Asia. A very reasonable price adds to its attractiveness. Beyond the value of this book as a floristic database, it is a reminder of the paucity of published floristic information on most other national parks and reserves in Thailand.

Philip W. Rundel

Department of Organismic Biology, Ecology and Evolution
University of California
Los Angeles, California 90095, USA

David Middleton

Harvard University Herbaria
22 Divinity Avenue
Cambridge, Massachusetts 02138, USA