Phyllagathis nanakorniana (Melastomataceae), a new species from Thailand

K. Wangwasit*, N. Cellinese**, M. Norsaengsri1

Key words
Melastomataceae
Phyllagathis
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Abstract A new species of Phyllagathis (Melastomataceae), P. nanakorniana, from Thailand is described and illustrated from recently collected material. The morphological characteristics are discussed in view of a wider generic concept that allows the inclusion of P. nanakorniana in Phyllagathis. A key to the Thai species is provided.

INTRODUCTION

Phyllagathis Blume (Melastomataceae, Sonerileae) is an Old World genus endemic to Southeast Asia and comprising approximately 56 species (Cellinese 1997, 2002). Its distribution ranges from South China, Vietnam, Laos, Thailand, and West Malaysia to Sumatra and Borneo. It was originally described as tetramerous with two whorls of four stamens (Blume 1831a, b). However, merosity in the genus is a proven unstable character (Hansen 1992, Cellinese 1997, 2002), and a few species display a switch from tetramerous to pentameric flowers (e.g., P. prostrata C.Hansen, P. rotundifolia (Jack) Blume, and P. socratichii King) sometimes even within the same species (Cellinese, pers. observ.), and from diplostemony to haplostemony (e.g., P. tetrandra Diels). Cellinese (1997, 2002) provided a comprehensive synopsis of Phyllagathis and its morphological characteristics, and proposed a wider concept of the genus to include several pentameric and tetramerous monotypic and diatypic genera. Among these are Kerriothyrsus C.Hansen (Hansen 1988), endemic to Laos, and Tylanthera C.Hansen (Hansen 1990), endemic to Thailand. Tylanthera has been included in Phyllagathis (Cellinese & Renner 1997) and comprises two species, Phyllagathis tuberosa (C.Hansen) Cellin. & S.S.Renner and P. siamensis Cellin. & S.S.Renner, both acaulescent with tetramerous, haplostemonous flowers. The monotypic Kerriothyrsus displays flowers that can be either haplostemonous or diplostemonous with 4 antepetalous sterile staminodes (Hansen 1988). In general, the switch from diplostemonous to haplostemonous androecia is not uncommon in Phyllagathis and can be observed in other species (Hansen 1992, Cellinese & Renner 1997), and other genera in the family (Renner 1989, 1993). The only species of Kerriothyrsus, K. tetrandrus (M.P.Nayar) C.Hansen, is found in a few localities of Laos. Based on its morphological characteristics, K. tetrandrus should be moved into Phyllagathis (Cellinese, in prep.).

Phyllagathis nanakorniana is morphologically similar to P. tuberosa and P. siamensis from Thailand, and the neighbouring K. tetrandrus.

MATERIALS AND METHODS

This work is based upon the study of specimens collected by Khantit Wangwasit and Montthon Norsaengsri in the Nongkai Province, Northeastern Thailand. Measurements of the vegetative and reproductive parts were taken from their collected material. Fruits and flowers were studied using a dissecting microscope. Data on the distribution and ecology were taken in the field.

KEY TO THE SPECIES OF THAILAND

1. Caulescent herb ................................. 2
2. Acaulescent herb ............................... 3
3. Stamens 4, isomorphic (all fertile) ....... 4
4. Leaves 25–30 by 17–20 cm; inflorescence an umbel, peduncle up to 16 cm long .......................... P. nanakorniana
4. Leaves 2–5 by 1–3 cm; inflorescence a scorpionid cyme, peduncle up to 6 cm long .......................... P. tuberosa

DESCRIPTION

Phyllagathis nanakorniana Wangwasit, Norsaengsri & Cellin., sp. nov. — Fig 1; Map 1

Plantaee rhizomate tuberoso, cyma scorpionidea, Phyllagathide siamensis similis sed antheris octo inaequalibus quatuor fertilibus et quatuor staminodialibus differt. — Typus: K. Wangwasit & M. Norsaengsri 070705-30 (holo QBG), Phu Wua Wild Life Sanctuary, 5 July 2007.

Acaulescent herb, 8–19 cm tall, glabrous in all of its parts, with a tuberous rhizome. Leaves one, broadly cordate to reniform, 2.7–10.5 by 3.7–15 cm, base cordate to very broadly cordate, apex subacute, round or obcordate, margin entire to slightly

1 Muang Phhon Khon Kaen Botanic Garden, The Botanical Garden Organization, Phon District, Khon Kaen Province, 40120, Thailand.
2 Florida Museum of Natural History, University of Florida, 354 Dickinson Hall, Museum Rd., Gainesville, FL 32611-78100, USA; corresponding author e-mail: noelilisse@fmmnh.ufl.edu.
* Equal contributors.

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Denticulate, lamina with 3–5 pairs of lateral primary veins, membranaceous, lower surface often red in colour. Petioles reddish (0.5–)1.5–4.5 cm long. Inflorescence a contracted scorpionid cyme, peduncle 7–15 cm long, quadrangular. Flowers 4-merous, subtended by two subulate bracts, 1–1.5 mm long, pedicel 4–11 mm long. Hypanthium campanulate, 4-ridged, 1–2 by 3 mm, glabrous. Sepals about 0.2–0.3 mm long, triangular. Petals ovate, 0.5–0.6 mm long, acute, pink. Stamens 8, dimorphic, filaments 2 mm long, fertile stamens 4, antepetalous, anthers 1 mm long, connective enlarged dorsally, ventral appendages absent, pore 1, apical, more or less oblique on the ventral side, staminodes 4, antepetalous, anthers undeveloped, slightly longer than the fertile stamens. Ovary 4-locular, c. 0.2 mm long, partially adnate to the hypanthium, crown with 4-ridged corners, anther pockets absent, styles c. 2 mm long, stigma slightly enlarged. Capsules subquadrangular, cup-shaped, about 2.5–3 by 2 mm, crown persistent. Seeds numerous, 0.2–0.5 mm long, narrowly conical or cuneate, tuberculate, with a small chalazal beak, light brown, raphe distinct, brown, slightly equal to seed length.

Distribution — Known only from Northeastern Thailand: Nongkai, Phu Wua Wild Life Sanctuary.

Habitat — On sandstone rock in dry evergreen forest.

Etymology — We name this species in honour of Dr. Weerachai Nanakorn, former Director of the Queen Sirikit Botanic Garden in Chiang Mai, Thailand.

Note — Similar to *P. siamensis* but differs by having 8 dimorphic stamens, which include 4 fertile stamens and 4 staminodes. In addition, the leaf apex is subacute to round and obcordate, distinctly different from the narrowly acuminate leaves of *P. siamensis*.

Fig. 1 *Phyllagathis nanakorniana* Wangwasit, Norsaengsri & Cellin. a. Whole plant, habit; b, c. flowers; d. fruit; e–g. fertile stamen: e. ventral view; f. lateral view; g. dorsal view; h, i. staminodes: h. ventral view; i. dorsal view. — Scale bars = 1 mm.
DISCUSSION

*Phyllagathis nanakorniana* is an acaulescent, small herb, with a tuberous rhizome, very much resembling both *P. siamensis* and *P. tuberosa* in habit. *Phyllagathis tuberosa* has also similar scorpioid inflorescences, but it is much smaller and covered with glands and soft, patent hairs. *Phyllagathis siamensis* is a much larger herb with umbellate inflorescences, covered with a spare indument. Although similar in the overall habit, *P. nanakorniana* is clearly distinguished for having diplostemonous flowers, with four fertile stamens, and four staminodes.

Diplostemous flowers arranged in scorpioid cymes are also observed in *Kerriothyrsus tetrandrus*. This is a subacaulescent herb, overall similar in habit, sparsely covered with hairs and glands, and with opposite, isomorphic leaves. It lacks tuberous rhizomes and interestingly, some specimens exhibit haplostemonous flowers, with a loss of the staminodial whorl. Because all of the above species are known from a few localities and a limited number of specimens, their intraspecific variation cannot be assessed at this stage. However, it is important to point out their morphological affinities and potential phylogenetic relationship to one another.

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