

On scientific requirements for presentation of “new records”: the case of *Dendrobium ruckeri* (Orchidaceae)

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ABSTRACT

How detailed and explicit should information presented in a “new record” account be to make the new record officially acceptable, and what kind of documentation is required? In recent years, this question has come to prominence, for example, due to the increasing rate with which new national taxon records are appearing in popular orchid field guides. The scientifically deficient publication of such “new records” precludes the alleged occurrences in Thailand from becoming formally accepted in the scientific literature – and the species in question from being considered for conservation in Thailand. To demonstrate the problem in detail, we present the case of *Dendrobium ruckeri*. First, we outline the historical introduction and occurrence of this species in the Thai botanical literature, and then provide a full taxonomic account, in effect demonstrating what we think a proper “new record” account should include. To avoid continued confusion over scientifically deficient new records, we urge non-professional botanists to properly document any new national record, supported by voucher specimens, and to publish their find in collaboration with appropriate professional botanists before including the newly discovered taxon in a field guide, or any other popular publication.

KEYWORDS: Conservation, *Dendrobium chittimaie*, *Dendrobium* sect. *Dendrobium*, field guides, Flora of Thailand, herbarium vouchers, orchids.

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INTRODUCTION

In a paper intended to stimulate discussion, Chayamarit *et al.* (2007) demonstrated that over 34% of the papers published in the Thai Forest Bulletin (Botany) during 2000–2006 involved new national records. Against that background, they raised the question: “What constitutes a new taxon record for Thailand?” – drawing attention to the need (and possibilities) for ensuring that a “newly” recorded taxon has not been previously recognized as occurring in Thailand. Another important aspect is concerned with the scientific requirements for the presentation of a “new record”, more precisely: how detailed and explicit should information presented in a “new record” account be to make the new record officially

acceptable, and what kind of documentation is required? In recent years, this question has come into prominence, for example, in connection with the Orchidaceae.

As noted by Pedersen *et al.* (2009), the first two popular field guides to Thai orchids appeared in the period 1978–1987, another three followed from 1988–1997, and six more were added from 1998–2007, making field guides the third most dominant category of orchid publications in the latter period. The publication of orchid field guides has continued, and these books often include accounts of species that were not previously known to occur in Thailand. However, most authors of the field guides are non-professional botanists who focus on

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presenting attractive photos and diagnostic features, rather than providing scientifically required details and documentation of the purported new records. Controversial cases are also encountered, though less frequently, in coffee table books and monographs (sometimes providing neither locality data nor specimen citations), and in papers in scientific journals (sometimes citing voucher specimens that cannot be found in the herbaria indicated).

In the first two instalments of the Flora of Thailand orchid volume (Pedersen *et al.*, 2011, 2014), it is explicitly stated that the following species, all recorded for Thailand in one or more previous publications, were omitted due to insufficient evidence: *Calanthe tricarinata* Lindl., *C. velutina* Ridl., *Cryptostylis conspicua* J.J.Sm., *Cymbidium chloranthum* Lindl., *C. munronianum* King & Pantl., *C. roseum* J.J.Sm., *Dipodium pictum* (Lindl.) Rchb.f. and *Zeuxine gracilis* (Breda) Blume. Scientifically deficient publication of “new records” not only prevents the alleged occurrences in Thailand from becoming accepted in the scientific literature, it also means that the species in question are not considered in connection with conservation planning in Thailand. For example, although the eight species listed above must be extremely rare in Thailand (should these records be correct), none of them are included in the current Thai red-list of plants (Chamchumroon *et al.*, 2017); we acknowledge, however, that rarity is not the only criterion to be considered for red-listing.

To demonstrate in detail some of the problems that pertain to scientifically deficient presentation of “new records”, we present the case of *Dendrobium ruckeri* Lindl. – encountered while we were preparing the forthcoming account on *Dendrobium* Sw. sect. *Dendrobium* for Flora of Thailand. We first outline the historical introduction and occurrence of the species in the Thai botanical literature, and then provide a full taxonomic account, in effect demonstrating what we think a proper “new record” account should include. We are well aware that the proposed format is beyond the scope of popular field guides, and we acknowledge that most of the authors of such books probably cannot obtain the necessary permits to collect voucher specimens themselves. However, in order to avoid continued confusion over scientifically deficient new records (with adverse effects on science and conservation), we urge non-professional

botanists to have every new national record properly documented, supported by voucher specimens, and published through collaboration with appropriate professional botanists before including the newly discovered taxon in a field guide, or any other popular publication.

THE CASE OF *DENDROBIUM RUCKERI*

To date, *Dendrobium ruckeri* has consistently been treated under its taxonomic synonym *D. chittimae* Seidenf. in the Thai botanical literature. Schuiteman *et al.* (2008) treated *D. chittimae* as a synonym of *D. ruckeri*. Although we agree with this, we have to refer to *D. chittimae* when outlining the historical introduction and occurrence of the species in the Thai botanical literature.

When describing *D. chittimae*, Seidenfaden (1997: 29) indicated that the only available specimen was: “Bought in the Bangkok market, said to have been brought to the Chong Mek market by Laotian collectors, so probably not yet recorded from Thailand.”

We believe that the first published record of *D. chittimae* as an element of the Thai flora is the one provided by Vaddhanaphuti (2001: 69). In this field guide, the species is indicated to occur in NE Thailand, and the only illustration is a close-up photo (without accompanying locality information) that might show a cultivated plant of foreign or unrecorded provenance. It is tempting to think that Vaddhanaphuti (2001) simply overlooked Seidenfaden’s indication that the type specimen was probably brought in from Laos.

In the following year, Sitthisajjadham & Kritsanachandee (2002: 57, 155) treated *D. chittimae* as occurring in Thailand. The conditions of the photographic documentation are exactly as indicated for Vaddhanaphuti (2001), whereas the text indicates *D. chittimae* to occur in N Thailand. Does this mean that the authors have actually found the species in the northern floristic region of Thailand, or does it simply reflect a very broad delimitation of N Thailand in their account – so broad that it also includes the north-eastern floristic region? In the latter case, Sitthisajjadham & Kritsanachandee (2002) could simply have made the same mistake as hypothesized for Vaddhanaphuti (2001). Supporting this hypothesis, Vaddhanaphuti (2005: 90), in the latest edition of her book, still indicates *D. chittimae* to occur (only) in the “Northeast”.

In a coffee table book on Thai native orchids, Nanakorn & Watthana (2008: 218–219) indicate *D. chittimae* to grow in: “Freshwater swamp forest in the west; ...”, but again the conditions of the photographic documentation are exactly as indicated for Vaddhanaphuti (2001). Thus, it is tempting to ask whether the authors would be able to document the alleged occurrence in fresh water swamp forest in W Thailand, or whether this indication is based merely on rumours.

In a field guide published the following year, Sitthisajjadham & Tripetch (2009: 182–183) provide the first photos of *D. chittimae* that clearly shows the plant in its natural habitat (although it is not explicitly stated that the photos are taken in Thailand). The text indicates: [1] that *D. chittimae* was first found in Thailand in 1997 (thus clearly demonstrating oversight of crucial information given in the protologue); [2] that *D. chittimae* is endemic to Thailand (thus again demonstrating oversight of the type specimen’s probable Laotian origin); [3] that it occurs in Kanchanaburi; [4] that it grows in dry evergreen forest and fresh water swamp forest at ca 300 m elevation; [5] that natural populations are few, decreasing and difficult to find. Thus, in spite of including some clearly erroneous information, this is the first publication to convincingly place Thai populations of *D. chittimae* geographically at province level (with indication of habitat), and to provide photographic documentation that unequivocally shows *D. chittimae* growing in the wild. However, the first author of this book, six years later, published a new field guide in which the occurrence of *D. chittimae* is again placed in N Thailand (Sitthisajjadham, 2015: 106), rather than Kanchanaburi or SW Thailand!

Which one of the accounts cited above should be considered to represent the official “new record” of *D. chittimae* (= *D. ruckeri*) for Thailand? Indeed, do any of them qualify for this recognition? Needless to say, none of the popular publications cite a voucher specimen deposited in a public herbarium. Furthermore, as we saw, the first author of the most convincing account (Sitthisajjadham & Tripetch, 2009) subsequently published contradictory information a few years later (Sitthisajjadham, 2015). Based on these publications alone, we might well have chosen to omit *D. ruckeri* from the Flora of Thailand account on *D. sect. Dendrobium* due to

insufficient evidence. However, some of us luckily had the opportunity to collect voucher material of *D. ruckeri* from two natural populations in Tak (northern Thailand), discovered during a BKF field trip in 2014. This enables us to provide the first proper documentation of the occurrence of *D. ruckeri* in Thailand.

TAXONOMIC ACCOUNT

Dendrobium ruckeri Lindl., Edwards’s Bot. Reg. 29 (Misc.): 25, t. 60. 1843. — *Callista ruckeri* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 655. 1891. Type: “Philippines, Manila” (undoubtedly not the actual origin), *Rucker cult. s.n. (leg. Cuming)* [holotype **K-LINDLEY!**].

— *Dendrobium ramosum* Lindl., Gen. Sp. Orchid. Pl.: 82. 1830, nom. illeg. — *Callista ramosa* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 655. 1891. Type: India, Pundua, March 1824, *Wall. Cat. No. 2003 [F. De Silva]* [holotype **K-W** (photo seen, K001114881)].

— *Dendrobium pseudointricatum* Guillaumin, Bull. Mus. Natl. Hist. Nat., sér. 2, 34(3): 262. 1962. Type: Vietnam, Annam, Blao, du Haut Bonaï, *P. Tixier 10bis/61* [holotype **P** (photo seen, P00408147)].

— *Dendrobium chittimae* Seidenf., Contrib. Orchid Fl. Thail. XIII: 29. 1997. Type: Bangkok market (probably imported from Laos), *sine coll. GT 9836* (holotype **C!**). Figs. 1–2.

Epiphytic herb. *Rhizome* strongly condensed. *Roots* verrucose. *Stems* green to yellowish-green, tufted, subterete, gradually widening from base to apex, up to 43 cm long, 0.2–0.6 cm in diam., with many longitudinal ridges, branching or not. *Leaves* 2–5, arising near apex of stem, sessile, sheathing at base (sheaths covering the internodes), glossy green above, subglossy light green below, oblong to oblong-lanceolate, obliquely acute, 3.6–8.5 × (0.9–)1.6–2.3 cm, coriaceous, margin entire. *Inflorescence* leaf-opposed, 20–35 mm long, 1- to 2-flowered; peduncle 2–6 mm long, ca 1 mm in diam.; rachis up to 7 mm long; floral bracts normally ovate, occasionally triangular, acuminate to retuse, (1–)4.5–5 × (1–)3–4 mm, membranous, margin entire. *Flowers* yellowish white to yellow, fragrant, 20–32 mm long from apex of dorsal sepal to apex of mentum, 10–22 mm in diam.; pedicel plus ovary 12–17 mm long, glabrous; ovary 3–4 × 1–2 mm. *Sepals* spreading, entire, glabrous; dorsal sepal ovate-oblong, obtuse to acute,

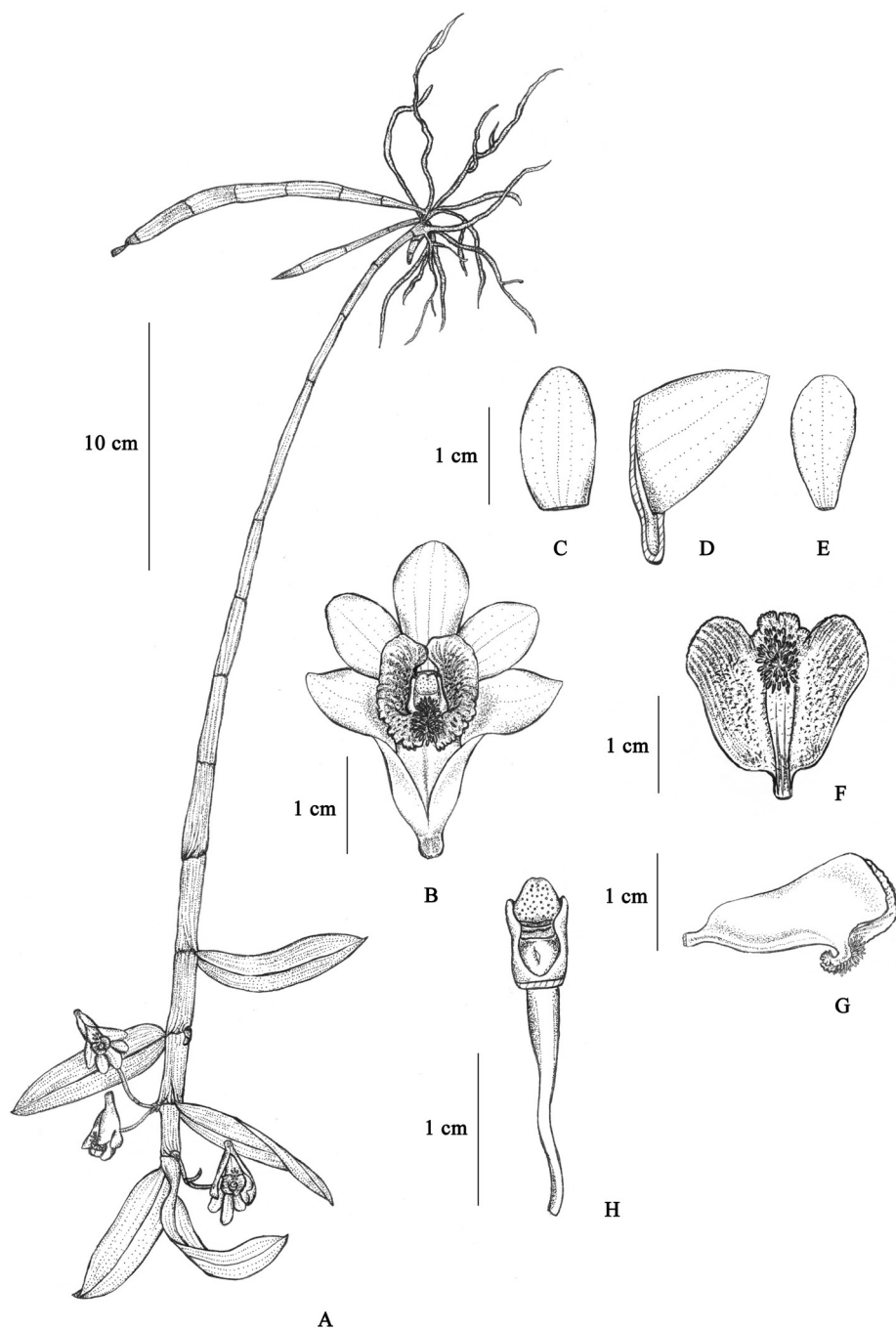


Figure 1. *Dendrobium ruckeri* Lindl.: A. habit; B. flower (front view); C. dorsal sepal; D. lateral sepal; E. petal; F. labellum (flattened); G. labellum in side view; H. column, ovary and pedicel; Drawn by W. Rujichaipimon A. from Suddee *et al.* 4696 (BKF!), and B–H. from Suddee *et al.* 4688 (BKF!).

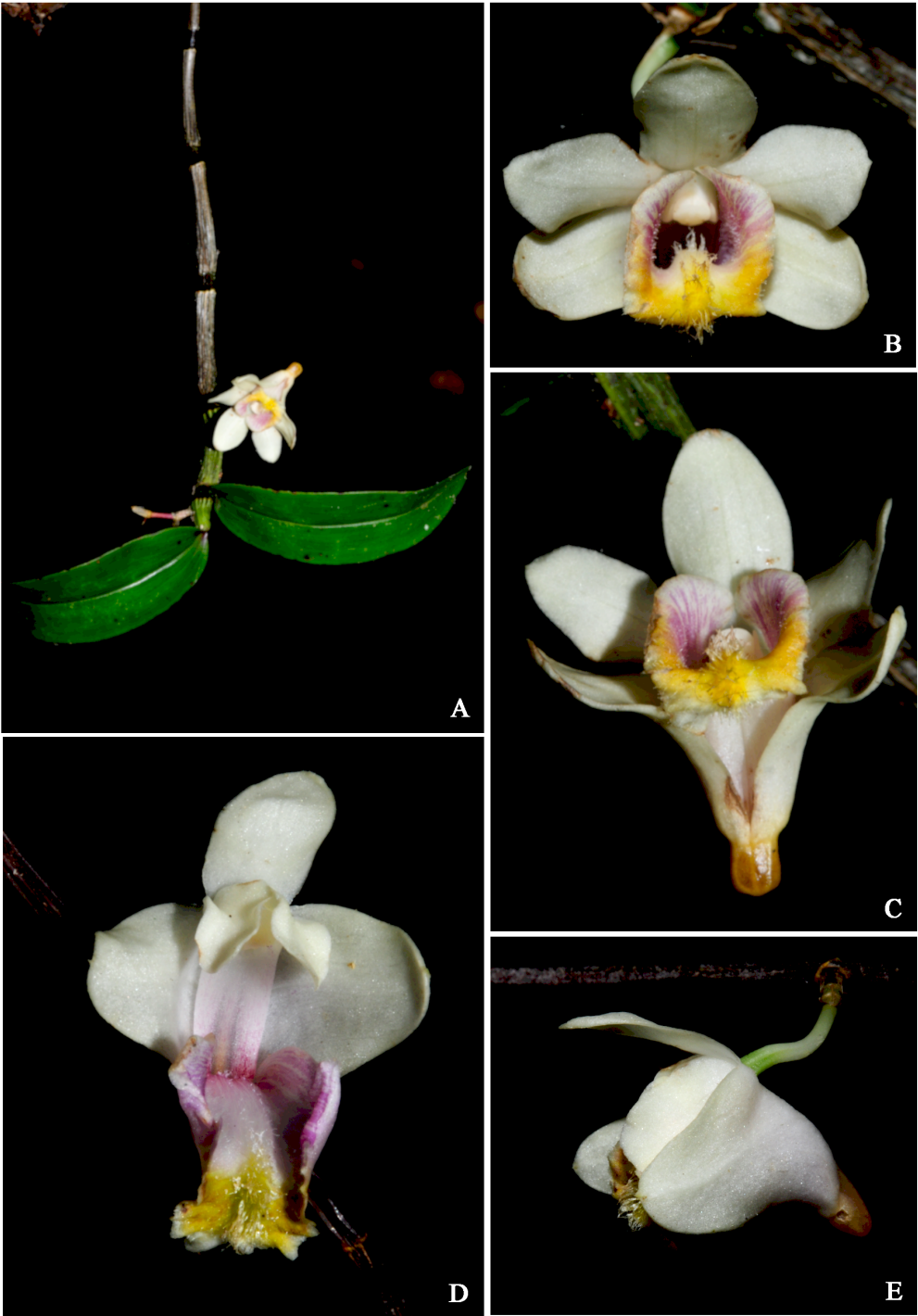


Figure 2. *Dendrobium ruckeri* Lindl.: A. habit; B, C. flower (front view and view from below); D. flower showing labellum and column; E. flower (side view); Photographed (in Tak, Umphang, Thung Yai Naresuan Wildlife Sanctuary, E side, Phru Thung Na Noi) by S. Rucangruea.

(8–)10–14 × 5–7 mm; lateral sepals obliquely triangular, acute, 11–15 × 7–10 mm, lower margins connate for 3–5 mm at base; mentum obliquely conical, retuse, 10–15 × 2–4 mm. *Petals* spreading, obovate, subacute to rounded, (9–)11–13 × 5–6 mm, entire, with minutely undulate to flat margin, glabrous. *Labellum* clawed, 18–21 × (10–)18–20 mm when flattened; claw adnate to column foot, 2–5 × 1.5–3 mm; lamina broadly obovate, finely pubescent on the adaxial side, glabrous on the abaxial side, 3-lobed in its distal part; side lobes embracing column, broadly and obliquely oblong, rounded, 15–16 × 7–8 mm, with purple streaks, entire; mid-lobe recurved, subquadrate, retuse, 6–7 × 6–7 mm, yellow, margins crisped; labellum ornamented with a broad flat median ridge that covers 3 longitudinal veins and extends from the labellum base to the basal part of the of mid-lobe, developing distally a conspicuous tuft of coarse fimbriae. *Column* somewhat cuboid with wing-like stelidia, 3–4 × 2–3.5 mm, with a few purple markings on column foot; anther obliquely pyramidal, 1.5–2 × 1.5–2 mm; pollinia 4 in 2 pairs, ca 1.5 × 0.3–0.5 mm.

Thailand.— NORTHERN: Tak [Umphang, Thung Yai Naresuan Wildlife Sanctuary, E side, Phru Thung Na Noi, ca 814 m, 9 Apr. 2014, *Suddee et al.* 4688 (BKF!); Umphang, Thung Yai Naresuan Wildlife Sanctuary, E side; Phru Thung Na Noi, ca 810 m, 10 Apr. 2014, *Suddee et al.* 4696 (BKF!)].

Distribution.— India, Bhutan, Bangladesh, Myanmar, Thailand, Laos, Vietnam.

Ecology.— Fresh water swamp forest; ca 810 m alt. Flowering: recorded in April.

Vernacular.— Wai chitti (หวายจิตติ), ueang chittima (เอื้องจิตติมา)(General) (Pooma & Suddee, 2014: 186).

Note.— Wood (2006) treats *D. chittimae* as a synonym of *D. ciliatilabellum* Seidenf., but it clearly differs from this species in its larger flowers and in several details of the labellum. In contrast, *D. chittimae* seems morphologically inseparable from the much earlier described *D. ruckeri*.

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REFERENCES

- Chamchumroon, V., Suphuntee, N., Tetsana, N., Poopath, M. & Tanikkool, S. (2017). Threatened plants in Thailand. Department of National Parks, Wildlife and Plant Conservation, Bangkok. 223 pp.
- Chayamarit, K., Chantaranonthai, P., Middleton, D., Parnell, J., Simpson, D. & Wilkin, P. (2007). What constitutes a new taxon record for Thailand?. *Thai Forest Bulletin (Botany)* 35: 1–3.
- Nanakorn, W. & Watthana, S. (2008). Queen Sirikit Botanic Garden (Thai native orchids 1). Wanida Press, Chiang Mai, 312 pp.
- Pedersen, H.Æ., Kurzweil, H., Suddee, S. & Cribb, P.J. (2011). Orchidaceae 1 (Cypripedioideae, Orchidoideae, Vanilloideae). In: T. Santisuk & K. Larsen (eds), *Flora of Thailand* 12, pp. 1–302, Pls. I–XXIV. The Forest Herbarium, Department of National Parks, Wildlife and Plant Conservation, Bangkok.
- Pedersen, H.Æ., Kurzweil, H., Suddee, S., de Vogel, E.F., Cribb, P.J., Chantanaorrapint, S., Watthana, S., Gale, S.W., Seelanan, T. & Suwanphakdee, C. (2014). Orchidaceae 2 (Epidendroideae p.p.: Neottieae, Tropidieae, Nervilieae, Gastrodieae, Thaieae, Calypsoeae, Arethuseae, Collabieae, Cymbidieae). In: T. Santisuk & H. Balslev (eds), *Flora of Thailand* 12, pp. 303–670, Pls. XXV–LVI. The Forest Herbarium, Department of National Parks, Wildlife and Plant Conservation, Bangkok.
- Pedersen, H.Æ., Watthana, S. & Srimuang, K. (2009). Gunnar Seidenfaden and his heritage: developments in the diversity and organization of Thai orchid studies. *Thai Forest Bulletin (Botany)*, special issue: 156–168.
- Pooma, R. & Suddee, S. (eds) (2014). *Tem Smitinand's Thai Plant Names*, revised edition 2014. Office of the Forest Herbarium, Department of National Parks, Wildlife and Plant Conservation, Bangkok.

- Schuiteman, A., Bonnet, P., Svengsuksa, B. & Barthélémy, D. (2008). An annotated checklist of the Orchidaceae of Laos. *Nordic Journal of Botany* 26: 257–316.
- Seidenfaden, G. (1997). Contributions to the orchid flora of Thailand XIII. Olsen & Olsen, Fredensborg, 64 pp.
- Sitthisajjadharm, S. (2015). Orchid manual [in Thai]. Sarakadee Press, Bangkok, 272 pp.
- Sitthisajjadharm, S. & Kritsanachandee, N. (2002). Orchid guide book [in Thai]. Sarakadee Press, Bangkok, 248 pp.
- Sitthisajjadharm, S. & Tripetch, P. (2009). Wild orchids of Thailand 2 [in Thai]. Amarin Printing and Publishing Co., Bangkok, 463 pp.
- Vaddhanaphuti, N. (2001). A field guide to the wild orchids of Thailand. 3rd ed. Silkworm Books, Chiang Mai, 216 pp.
- _____. (2005). A field guide to the wild orchids of Thailand. 4th ed. Silkworm Books, Chiang Mai, 272 pp.
- Wood, H.P. (2006). The Dendrobiums. A.R.G. Gantner Verlag K.G., Ruggell, 847 pp.