A new species and three taxonomic changes in *Piper* (Piperaceae) from Thailand

C. Suwanphakdee¹, P. Chantaranothai¹

**Key words**  
Piper  
Piper chiangdaoense  
Piper trichostigma  
synonym  
Thailand

**Abstract**  
A new species, *Piper chiangdaoense* from Doi Chiangdao Wildlife Sanctuary, Chiang Mai province, Thailand, is described and illustrated. *Piper trichostigma* is raised to specific status and an epitype is selected. *Piper maculiphyllum* and *P. rubroglandulosum* are reduced to the synonymy of *P. argyrites* and *P. betle*, respectively. A lectotype for *P. argyrites* is selected.

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**INTRODUCTION**

*Piper* L. is the largest genus in the family *Piperaceae* with over a thousand species (Mabberley 2008). Members of the family occur throughout the tropics of both hemispheres, with major concentrations occurring in Latin America and in Malaysia (Yuncker 1958). The genus can easily be recognized on gross morphological characters, but the species are difficult to identify. The flowers are minute and densely set on the rachis, the perianths are absent and the stamens vary in number. The fruits and infructescence are of high importance for species identification.

In preparation of the treatment of *Piperaceae* for the Flora of Thailand (Office of Forest Herbarium 2010), one new species of *Piper* *P. chiangdaoense*, is here described. Two recently described Thai species are reduced to synonymy and a variety is raised to specific rank.

**DESCRIPTION OF THE SPECIES**

1. *Piper chiangdaoense* Suwanp. & Chantar., sp. nov. — Fig. 1–3

Affinis *Piper lorchites* sed folis cordatis subitus velutinis, infrutescentis et infructescentis brevioribus, fructibus minoribus differt. — Typus: T. Smi­

Woody climber, dioecious, nodes swollen with climbing roots, terminal shoot velutinous. Leaves with petiole 1–1.5 cm long, velutinous; stipules hood-like, lanceolate, caducous; lamina subcoriaceous, broadly ovate, asymmetric, 2.5–3.5 by 3.5–4.5 cm, base cordate or rarely oblique or rounded, apex acute or rarely rounded, margin undulate, upper surface puberulous, lower surface velutinous; venation pinnate with 3 pairs of veins from basal third of midrib. Inflorescence a terminal or leaf-opposed catkin, pendulous, cylindric, yellowish green; rachis hairy, with dense flowers; floral bract glabrous with a c. 0.05 mm long stalk, bract-head peltate, c. 0.1 mm diam margin entire. Male inflorescence 3–4 by 0.1–0.2 cm; peduncle 1–1.5 cm long, pilose. Male flower: stamens 4–6; filament very short and basally swollen; anther 2-valved and slightly exserted at anthesis, c. 0.08 mm diam, dehiscent lateral. Female in­florescence 2–4 by 0.1–0.2 cm; peduncle 1–2 cm long. Female flower: ovary ± elliptic, stigma star-shaped, 3–5-lobed, 1–1.5 mm diam, hairy. Infructescence 3–5 by 0.8–1 cm, pendulous, cylindric; peduncle 1–2 cm long. Fruit free, sessile, ± elliptic, 2–3 by 1–2 mm, dense or well-spaced on rachis, base rounded, apex acute with persistent stigma and floral bract.

**Distribution** — Northern Thailand (Doi Chiangdao, Chiang­mai).

**Habitat & Ecology** — Lower montane forest, at 1500–2175 m altitude.

**Phenology** — Flowering: May; fruiting: June.

Note — *Piper chiangdaoense* is similar to *P. lorchites* Schult. but differs in having a coriaceous leaf which is velutinous on the lower surface, a smaller infructescence and a smaller infructescence and fruits. The differences in character are shown in Table 1.

2. *Piper trichostigma* (Chaveer. & Sudmoon) Suwanp. & Chantar., comb. & stat. nov. — Fig. 1


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Fig. 1 a–c: *Piper chiangdaoense* Suwanp. & Chantar. a. Plant habit; b. portion of male inflorescence; c. infructescence. — d–f: *Piper trichostigma* (Chaveer. & Sudmoon) Suwanp. & Chantar.: d. male inflorescences; e. floral bracts and stamens; f. infructescences.
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Fig. 2 Type specimen of *Piper chiangdaoense* Suwanp. & Chantar. (T. Smitinand et al. 7806, BKF).
Table 2 Comparison of some characters of *P. thomsonii* and *P. trichostigma*.

<table>
<thead>
<tr>
<th>Character</th>
<th>P. thomsonii</th>
<th>P. trichostigma</th>
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</thead>
<tbody>
<tr>
<td>Leaves</td>
<td>subcoriaceous</td>
<td>chartaceous</td>
</tr>
<tr>
<td>Male inflorescence</td>
<td>2.3–5 cm long</td>
<td>4–10 cm long</td>
</tr>
<tr>
<td>Floral bract</td>
<td>peltate or rounded</td>
<td>rounded</td>
</tr>
<tr>
<td>Fruit</td>
<td>connate c. 3/4</td>
<td>free</td>
</tr>
<tr>
<td>Fruit apex</td>
<td>acute</td>
<td>reteuse</td>
</tr>
<tr>
<td>Mature fruit</td>
<td>dark purple or black</td>
<td>orange</td>
</tr>
<tr>
<td>Infructescence</td>
<td>shorter than peduncle</td>
<td>longer than peduncle</td>
</tr>
<tr>
<td>Infructescence size</td>
<td>5–10 by 5–12 mm</td>
<td>2–8 by 0.5–1 cm</td>
</tr>
<tr>
<td>Infructescence shape</td>
<td>subglobose</td>
<td>long cylindrical</td>
</tr>
<tr>
<td>Dried leaf</td>
<td>black</td>
<td>brown</td>
</tr>
</tbody>
</table>

Distribution — Thailand: Northern: Chiang Mai, Chiang Rai, Nan, Payao, Phrae, Tak; Central: Nakhon Nayok; South-western: Kanchanaburi, Phetchaburi; Peninsular: Chumphon, Phangnga.

Habit & Ecology — In evergreen forest by stream or waterfall.

Phenology — Flowering: March–April; fruiting: March–May.

Note — Because of the magnitude of the differences between this and *P. thomsonii*, some of which are listed in Table 2, we raise *P. thomsonii var. trichostigma* to specific rank. In general the best characteristic for delimitation of the species is the infructescence but the type of *P. trichostigma* only contains a young inflorescence and no infructescence. Therefore, we select C. Suwanphakdee 259 as epitype because it has mature infructescences.
3. Piper argyrites Ridl.

Piper argyrites Ridl. (1912) 25. — Type: Ridley 8176 (lecto SING; islecto G-DC, here selected), Malaysia, Selangor, Gua Batu Cave, Dec. 1920. 

Piper maculaphyllum Chaveer. & Sudmoon (2008) 120. — Type: A. Chaveerach 126 (holo BK; iso BKF), Thailand, Phuket, Khao Phra Thaeo Wildlife Conservation Development and Extension Center, syn. nov.

Distribution — Malaysia, Singapore, Thailand (South-eastern and Peninsular).

Habitat & Ecology — Growing near stream, along stream or evergreen hill forest.

Phenology — Flowering and fruiting: October—December.

Note — Of the two specimens cited by Ridley (1912) we were unable to find Ridley 7611 in K, G-DC or SING, and we choose Ridley 8176 as lectotype for Piper argyrites. Chaveerach et al. (2008) indicated that the type specimens of P. maculaphyllum were deposited in BK and BKF. However, we were unable to find these specimens and, from discussion with staff in BK and BKF, we understand that they were not actually deposited in these herbaria. We have examined the line drawing and description of P. maculaphyllum and found that features of leaves, inflorescence, floral bract, stamens and especially fruits and infructescence match with P. argyrites. Therefore, P. maculaphyllum is reduced to synonymy under P. argyrites.

This species is widely distributed in South-eastern and Peninsular Thailand.

4. Piper betle L.

Piper betle L. (1753) 28. — Type: Herb. Herrmann 3: 32; 4: 9, No. 27 (lecto BM, selected by Huber 1987), India. 


Distribution — India, Sri Lanka, China, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Singapore, Thailand (Northern, South-eastern, Peninsular), Philippines, Indonesia, Papua New Guinea.

Habitat & Ecology — In evergreen forest near stream, fruit plantation, disturbed area.

Phenology — Flowering: March—June; fruiting: May—July.

Note — Again, as with P. argyrites, we were unable to find the type of P. rubroglandulosum at BK and BKF as indicated by Chaveerach et al. (2008). We have carefully examined the description, line drawing and photographs of P. rubroglandulosum and found that it is a wild form of P. betle. Therefore, P. rubroglandulosum is reduced to synonymy of P. betle. Female plants of P. betle are cultivated throughout Thailand, but the wild form of both female and male plants can be found in nature only in south-eastern and southern regions.

Acknowledgements We would like to thank curators and staff of the following herbaria: BK, BKF, DMSC, G-DC, K, KKU, PSU, QBG and SING for help in studying the specimens and documents. We thank Orathai Kerdkaeaw (BKF) for the line drawing, Dr Piya Kasets Suksathan (QBG), Manop Poopath for photos of P. chiangdaoense and Dr D.A. Simpson (K) for the Latin diagnosis and valuable suggestions. This project is financially supported by Graduate School, Khon Kaen University.

REFERENCES


IDENTIFICATION LIST

Piper

<table>
<thead>
<tr>
<th>Species</th>
<th>Linnaean Name</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>argyrites</td>
</tr>
<tr>
<td>2</td>
<td>betle</td>
</tr>
<tr>
<td>3</td>
<td>chiangdaoense</td>
</tr>
</tbody>
</table>


Hooker & Thomson 181: 5 (type).


Larsen & S.S. Larsen 32321: 2; 33927: 4 – Larsen et al. 3053: 6; 43153: 6; 46521: 4.


Ridley 8176: 1 (type).


