

Saraca thailandica (Leguminosae-Detarioideae), a new species from Thailand

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ABSTRACT. *Saraca thailandica* Pongamornkul, Panyadee & Inta, a new species from northern Thailand, is described and illustrated. This riparian species is distinguishable by its large bracteoles which erect and clasping the calyx tube. It also has 7 stamens which is rarely found in previous known *Saraca* species. Its flowering and fruiting period is August to September and December to March, respectively, which is different from *S. dives* and *S. thaipingensis*. The additional key for *Saraca* in Thailand is also provided.

KEYWORDS: Fabaceae, Leguminosae, *Saraca*, Thailand

INTRODUCTION

The genus *Saraca* L. (Leguminosae) is now classified into the subfamily Detarioideae (LPWG, 2017). It is a small genus, comprising 11 species distributed from India to New Guinea (Mabberley, 2017). Eight species were reported in a revision by Zijderhoudt (1967). Lately, other three species were described from Vietnam (Larsen *et al.*, 1980), Malesia (de Wilde, 1981) and Sumatra (de Wilde, 1985). For Thailand, three species were recorded (Larsen *et al.*, 1984), included: *S. declinata* (Jack) Miq.,

S. indica L. and *S. thaipingensis* Cantley ex Prain. Other two species with wide distribution range were also included in dichotomous key: *S. asoca* (Roxb.) de Wilde and *S. dives* Pierre. The genus is characterised by its flowers with brightly colored bracts and 4(–6) petaloid calyx without corolla. All species are shrub or tree with paripinnate leaves, leaflets sometimes with a pair of wart-like glands at the base and/or at the apex. The pods are dehiscent with non-arillate seeds.

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Received: 10 October 2020

Accepted: 24 February 2021

During the ethnobotanical survey in Mae Hong Son province, the unknown specimens of *Saraca* were collected along the stream. The plants markedly differed from other Thai *Saraca* because most of their fruits were born on the trunk instead of branches, like other Thai *Saraca*, on the large woody tubercles. The plant was called ‘Ta Na’ and was eaten by Karen people. Young pods were grilled, then the seeds were eaten as side-dish vegetable with chili dip or were crushed with chili dip. Moreover, the bark was also used for textile dyeing, giving red color. However, we were too late to collect flower specimen.

A return to the survey in the following year to collect additional samples was undertaken. The flowers specimens were successfully collected along with other parts and ecological data. Through the dichotomous key in Flora of Thailand volume 4 part 1 (Larsen *et al.*, 1984), we found that the specimens are similar to *S. dives* and *S. thaipingensis* according to their large bracteoles and number of stamens. The first clue that ignite our curiosity about the status of this plant is a number of stamens which is mostly 7 because the choices presented in *Saraca* key in Flora of Thailand are 6 or 8–10 for *S. thaipingensis* or *S. dives*, respectively. We found that there is a species which was described as having 7 stamens, *S. cauliflora* Baker based on specimens collected from Malacca (Baker, 1879). Zuijderhoudt (1967) had examined the duplicates of the syntypes and found them with 4 stamens. Therefore, the name was placed in the synonym of

S. declinata (Zuijderhoudt, 1967). However, the examination of the authentic specimens and the original description in Baker (1879), Hou (1996) concluded that *S. cauliflora* is conspecific with *S. thaipingensis*. This species is characterised by its long petiolules (*ca.* 12.5 mm), large and caducous bracts, large and robust inflorescences, and large pods (Hou, 1996).

However, we are confidence that our specimens are not *S. thaipingensis* since this common species was also cultivated in Queen Sirikit Botanic Garden, a workplace of the first three authors, and many differences could be easily noticed, e.g. flowering period, place where most inflorescences are born, bracteole characteristics, petiolule length, and shorter pods (Table 1). Therefore, our specimens could be *S. dives*, another widespread species which is distributed from north Vietnam to Laos and was expected to be found in Thailand (Larsen *et al.*, 1984). There is no description of this species in Flora of Thailand since the species is not found in Thailand yet. Therefore, the description from Flora of China (Dezhao *et al.*, 2010) and Flore du Cambodge du Laos et du Viêtname (Larsen *et al.*, 1980) were used to examine the specimens along with photo of type specimen from Kew Herbarium website (<http://specimens.kew.org/herbarium/K000780032>). After carefully comparison, we concluded that our specimens are not *S. dives* since there are some remarkably differences (Table 1), especially bracteole characteristics which are persistent and spreading in *S. dives* but \pm persistent, erect

and clasping the calyx tube. Then the morphology of the specimens was compared to the description of *Saraca* species. from various literatures including: Zijderhoudt (1967), Larsen *et al.* (1980), de Wilde (1981, 1985), Hou (1996) and Dezhao *et al.* (2010).

After carefully compare with all known species, it did not show a convincing match. Therefore, we described this *Saraca* from the northern of Thailand as a new species here.

TAXONOMIC TREATMENT

Saraca thailandica Pongamornkul, Panyadee & Inta **sp. nov.**

Similar to *Saraca dives* and *S. thaipingensis* but differed from those by its \pm persistent, erect blackish brown in mature bracteoles. The number of stamens is mostly 7.

Type.— Thailand, Mae Hong Son, Sob Moei, Doi Phui Kho, 1,400 m alt., 24 August 2019, *W. Pongamornkul & Inta 7169* (holotype QBG!; isotype BKF!). Figs. 1 & 2.

Tree up to 15 m tall; bark blackish brown, lenticellate. *Leaves* paripinnate, *ca.* 60 cm long, glabrescent, subcoriaceous; rachis 27–54 cm long; petioles short, 0.5–2.8 cm long, swollen at lower part, *ca.* 12 mm in diam., glabrescent. *Leaflets* 3–6 pairs, ovate, elliptic to oblong–lanceolate, 14–42 \times 6–16 cm, base rounded to cuneate, apex acute to acuminate, leaflets of lowest pair distinctly smaller; petiolules 5–10 mm long. *Inflorescences* normally cauliflorous, on

woody tubercles, some on leafy branches, corymbose, 10–20 \times 15–30 cm diam.; peduncle 1–9 cm long, thick, 5–6 mm in diam., glabrous; rachis 2–7 cm long, glabrous. *Bracts* much larger than bracteoles, falling early, enclosing tuft of immature flowers, ovate, ovate-oblong, with acute or obtuse tip, 15–26 \times 10–15 mm, glabrous. *Pedicels ca.* 5 mm long, glabrous. *Bracteoles* 2, (sub) opposite, inserted at the top of pedicels; \pm persistent or caducous, erect and clasping the calyx tube, the color turned from yellowish orange to blackish brown at anthesis, ovate, elliptic to obovate with obtuse tip, 10–13 \times 5–8 mm, glabrous on both sides. *Calyx* tube yellowish orange, 15–25 \times 1–2.5 mm; lobes yellowish orange, 4–5, ovate, obovate to oblong, 8–10 \times 6–10 mm, apex rounded or retuse, outer lobe with ciliate margin. *Stamens* 7(–9); filaments 15–30 mm long, glabrous; anthers, ovate, elliptic or oblong, 1.8–2.5 \times 1.2–1.5 mm. *Pistil* 2.2–3.8 cm long, glabrescent; stipe of ovary *ca.* 1 cm, sparsely hairy; ovary 2–10 mm long, glabrescent; style 15–22 mm long; stigma capitate, *ca.* 0.9 mm in diam.; ovules 5–12. *Pods* compressed, oblong–lanceolate, 20–25 \times 4.5–7 cm, up to 5 mm thick, base cuneate or obliquely rounded, apex straight or curved shortly, acute, up to 1 cm long beaked; dried valves coiled, woody, with distinct straight and loosely reticulate veins on the outer surface, without indument; up to 5 pods per corymb; stalk 2–5 cm long. *Seeds* 5–10 per pod, varied in shape, e.g. circular, elliptic, obovate, unequal, 2.5–4 \times 1.5–2 cm, compressed, 1.5–3 mm thick, brown, glabrous.

Thailand.— NORTHERN: Mae Hong Son [Sob Moei district, Doi Pui Ko, 23 Aug. 2014, *W. Pongamornkul* 4378 (QBG); 11 Sep. 2014, *W. Pongamornkul* 4430 (QBG); 26 Mar. 2015, *N. Muangyen* 163 (QBG); 13 Jan. 2017, *P. Phaosrichai* 394 (QBG)]; Chiang Mai [Om Koi district, Ban Mae Khong, 970 m alt., 24 Jan. 2015, *W. Pongamornkul* 4780 (QBG); 10 Mar. 2015, *W. Pongamornkul* 4872 (QBG); 27 Aug. 2015, *W. Pongamornkul* 5092 (QBG); 28 Jan. 2016, *W. Pongamornkul* 5694 (QBG)].

Distribution.— Endemic to Thailand, possibly in Myanmar.

Ecology.— In mountainous evergreen forest, semi-shaded, along stream, 1,040–1,400 m alt.

Phenology.— Flowering: August–September; fruiting: December–March.

Vernacular.— Sok lueang (โสกเหือง), Ta Na (ตะนา) (Karen).

Uses.— Seed edible and barks are used as red dye for textile by local people.

Etymology.— The specific epithet, *thailandica*, refers to Thailand.

Conservation status.— Assessed using Geocat software (Bachman *et al.*, 2011), its conservation status is Endangered (EN), with

an estimated EOO of *ca.* 400 km² and AOO of *ca.* 16 km². Although, plants are common in their habitat, their distributions are hardly known from other areas. More extant populations could be expected in southwestern Thailand and in Myanmar. Further distribution information is needed for a formal assessment.

Notes.— *Saraca thailandica* is similar to *S. dives* and *S. thaipingensis* for their distinct large bracts, 12–35 mm long. However, *S. thailandica* has the bracteoles which is ± persistent, erect and clasping the calyx tube. The color is blackish brown in mature flowers which is distinctly differed from the color of calyx (yellowish orange). In contrast, the bracteole of *S. dives* is spreading with the same color with the calyx. In *S. thaipingensis*, bracteoles are quickly falling off before the anthesis. *Saraca asoca*, an Indian species, also has erect bracteole, but this species has relatively small bracts, 1–8 mm, and short pods.

In the field, *S. thailandica* could also be identified by its large woody tubercles along the trunk (Figs. 1B & 1C) where most inflorescences are borne. On the other hand, the inflorescences of *S. dives* and *S. thaipingensis* are mostly borne on leafy branches. The plants always found near the stream.

TABLE 1. Comparing the morphology, phenology and distribution between *Saraca thailandica*, *S. dives* and *S. thaipingensis*.

Characters	<i>Saraca thailandica</i>	<i>Saraca dives</i>	<i>Saraca thaipingensis</i>
Inflorescences			
– diameter (cm)	15–30	20–30	(8–)15–35(–40)
– main branch diameter (mm)	5–6	4–7	3–10
– position	mostly on the trunk	mostly on leafy branches	mostly on leafy branches
Bracts			
– surface	subglabrous or glabrous	thinly pubescent	glabrous to pubescent
– shape	ovate, ovate-oblong	ovate-oblong	ovate
– size (mm)	15–26 × 10–15	25–30 × 10–15	12–35 × 7–22
– apex	obtuse or acutish	obtuse or acutish	rounded or acutish
Bracteoles			
– attachment	± persistent	persistent	fugacious
– surface	glabrous	subglabrous or glabrous	mostly glabrous
– shape	ovate, elliptic to obovate	oblong-lanceolate	oblong-lanceolate
– size (mm)	10–13 × 5–8	10–15 × 5–7	6–17 × 2–5
– apex	obtuse	acutish	acutish
Stamens			
– number	7(–9)	8–9(–10)	(3–)4(–7)
– filament length (mm)	15–30	ca. 25	8.5–17
– anther length (mm)	1.8–2.5	3–3.5	(0.5–)1–2
Petioliules length (mm)	5–10	7–12	10–15
Pods size (cm)	20–25 × 4.5–7	22–30 × 5–7	15–40 × 3.5–8
Flowering period	August to September	April to May	January to April (Larsen <i>et al.</i> , 1984) or to November (Hou, 1996)
Distribution	Endemic to Thailand	China, Laos, Vietnam	Myanmar, Thailand, Malaysia (Malay Peninsula), Indonesia (Java)



FIGURE 1. *Saraca thailandica*: A. habit; B. cauliflorous inflorescence; C. inflorescence on woody tubercle; D. leaves; E. flower side view with bracteole; F. flower front view.



FIGURE 2. Pods and seeds of *Saraca thailandica*: A. immature pod; B. inside immature pod and seeds; C. inside mature pod and seeds; D. seeds prepared for cooking; E. local people is roasting the young pods.

Additional key to *Saraca* in Flora of Thailand

3. Bracts and bracteoles relatively large, 12–35 and 6–17 mm long respectively, bracts fugacious; main branches of corymbs 3–10 mm diam.; corymbs *ca.* 15–35 cm diam.
4. Stamens 6; bracteoles fugacious; pods up to 40 cm long; stipe 1–2 cm
- S. thaipingensis**
4. Stamens >6; bracteoles ± persistent; pods up to 30 cm long; stipe 2–5 cm
- 4a. Bracteoles spreading; stamens 8–10 in general **S. dives**
- 4b. Bracteoles erect, clasping the calyx tube; stamens 7, rarely 8–9 **S. thailandica**

ACKNOWLEDGEMENTS

The authors thank the Botanical Garden Organization for financial support. Thank also to Mr. Warinthorn Katiyot and Mr. Sumit Suriya for field assistance.

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