BIODIVERSITAS
Volume 27, Number 2, February 2026
Pages: 29

ISSN: 1412-033X
E-ISSN: 2085-4722
https://doi.org/10.13057/biodiv/d270236

Diversity, distribution, ethnobotany, and taxonomic revision of the genus *Senegalia* (Fabaceae) in Thailand

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Manuscript received: 31 July 2025. Revision accepted: 28 February 2026.

Abstract. *Panyadee P, De Stefano RD, Leeratiwong C, Ninkaew S, Saisorn W, Satthaphorn J, Sutjaritjai N, Balslev H. 2026. Diversity, distribution, ethnobotany, and taxonomic revision of the genus* Senegalia *(Fabaceae) in Thailand. Biodiversitas 27 (2): d270236. https://doi.org/10.13057/biodiv/d270236*. *Senegalia* (Fabaceae) represents the most diverse group of armed legumes in Thailand and has not been taxonomically revised since Nielsen's (1985) treatment under *Acacia*. Here, we present the first comprehensive taxonomic revision of *Senegalia* in Thailand, integrating morphological and ethnobotanical evidence in accordance with current generic concepts. Field surveys and extensive herbarium studies revealed 14 species comprising 16 taxa, belonging to two sections, sect. *Senegalia* and sect. *Monacanthea*. Two taxa (*Senegalia catechu* and *Senegalia pennata* subsp. *pennata*) are introduced and now naturalized, while 13 species are native to the country. *Senegalia pennata* subsp. *insuavis*, previously regarded as exotic, is confirmed as native based on its occurrence in undisturbed habitats, whereas *S. pruinescens* is excluded due to misidentification. Species richness is highest in northern and peninsular Thailand. Six taxa (five species) have documented ethnobotanical uses, including food, medicine, dyes, and fish poison. Vegetative characters, particularly petiole gland morphology, leaflet venation, and stipule form prove reliable for field identification and are emphasized to facilitate practical use. This revision presents an updated taxonomic framework and serves as a reference for botanical, ethnobotanical, and conservation studies of *Senegalia* in Thailand.

Keywords: Diversity, ethnobotany, *Senegalia*, taxonomic revision, Thailand

INTRODUCTION

Historically, *Senegalia* Raf., *Acacia* Mill., *Acaciella* Britton & Rose, and *Vachellia* Wight & Arn. were treated under the genus *Acacia sensu lato.* However, this classification has undergone comprehensive changes in recent years, particularly following advances in genetic analyses and the retypication of *Acacia* by Orchard and Maslin (2003). Several molecular phylogenetic studies, such as those by Luckow et al. (2003) and Koenen et al. (2020), have unequivocally demonstrated that *Acacia s.l.* is polyphyletic, necessitating its segregation into distinct genera. Consequently, several different entities were excluded from *Acacia s.l.* and assigned to other genera (Bruneau et al. 2024). A recent classification was presented by Murphy and Maslin (2023) and synopses of the seven genera that formerly comprised *Acacia s.l.* were provided in Hopkins et al. (2024), Maslin and Murphy (2024), and Maslin et al. (2024).

The genus *Senegalia* comprises a pantropically distributed lineage within the mimosoid legumes and is currently estimated to include 219 species worldwide (Terra et al. 2022; Maslin et al. 2024; WorldWideWattle 2025). Species richness is unevenly distributed across regions, with 102 species in the Americas, 68 species in Africa and Madagascar, 57 species in Asia (from the Arabian Peninsula to East and Southeast Asia), and two species in northeastern Australia. Major centers of diversity include Brazil, Mexico, East Asia (particularly China), and East Africa, reflecting the evolutionary and ecological breadth of the genus.

Recent taxonomic treatments recognize two major sections within *Senegalia*, distinguished primarily by armature morphology and supported by broader morphological and phylogenetic evidence (Pedley 1986; Vassal 1972; Maslin et al. 2019; Terra et al. 2022). Section *Senegalia* is characterized by paired thorns derived from modified stipules at the nodes and includes species distributed mainly in Africa and Asia. Section *Monacanthea* is defined by internodal prickles arising as epidermal outgrowths and encompasses a larger number of species with a pantropical distribution.

Prior studies of *Senegalia* in Thailand and surrounding regions were mostly done when the species was still considered to belong to the broader genus *Acacia*. The earlier taxonomic work was conducted by Nielsen during the 1980s and 1990s. One of the key outputs of this research

was the 1985 publication in the Flora of Thailand (vol. 4 part 2, Mimosoideae), which includes 17 species under *Acacia* (including one species "in observation"), of which 11 species are now assigned to *Senegalia.* The genus is characterized by bipinnate leaves and cauline prickles (Maslin 2015). Subsequent to Nielsen (1985a,b), *Acacia tonkinensis* (I.C. Nielsen) Maslin, Seigler & Ebinger, now recognized as *Senegalia tonkinensis* (I.C. Nielsen) Maslin, Seigler & Ebinger, was reported for Thailand, expanding the known diversity within the region (Srisanga and Sasirat 2000). The most recent and significant contribution to the understanding of *Senegalia* in the Asian region was that of Maslin et al. (2019), in a revision of *Acacia s.l.* for China. That study provided comprehensive information on 23 taxa of *Senegalia*, several of which are also found in Thailand. However, updated taxonomic information specific to the Thai region is required to fill a gap in local botanical research and understanding.

This study revises the taxonomy of *Senegalia* in Thailand, building on Nielsen's (1985a) treatment by prioritizing vegetative characters that are readily observable with minimal magnification. Emphasis on these traits improves the practicality of field identification and is supported by updated species descriptions and comprehensive specimen citations. The study also documents ethnobotanical uses of *Senegalia* in Thailand, highlighting their cultural significance in local practices. Together, these contributions provide an accessible and reliable reference for taxonomic research, conservation, and applied botanical studies.

MATERIALS AND METHODS

Scope of study

This work is based on analyses of herbarium specimens collected in Thailand, supplemented by field studies conducted throughout Thailand from 2020 to 2024 (Figure 1). It includes all species of the former *Acacia* subg. *Aculeiferum* (now *Senegalia*) that occurs in Thailand, either naturally or introduced. Our study covers all *Acacia s.l.* names that apply to *Senegalia*, as either accepted names or synonyms that appear in taxonomic literature involving Thailand (particularly the Flora of Thailand). The species, whether native or introduced, are arranged alphabetically and numbered sequentially under *Senegalia*.

Accepted names and synonyms

The accepted names, synonyms, and information on distribution follow the WorldWideWattle database (2025) and Plant of the World Online database (2026). We accepted names based on studies of herbarium materials and living plants from field surveys conducted in Thailand between 2020 and 2025, as well as scrutiny of relevant past literature (Nielsen 1981, 1985a, 1985b) and Maslin et al. (2019). Only synonyms pertinent to Thailand are included, i.e., names based on material collected in Thailand and publications involving taxa that occur in Thailand. Where additional synonyms exist, references to the relevant publications are given at the end of the synonymy list under the heading 'Additional synonymy not based on Thai type material'.

Descriptions

The descriptions were primarily based on herbarium specimens from Thailand, housed in the herbaria listed below. These descriptions have been cross-referenced with those published in the Flora of Thailand by Nielsen (1985a). Where significant discrepancies were found, they are detailed in the "Notes" section. Only important characters, including those used in identification keys, are included. More comprehensive descriptions of most species are available in Nielsen's works (1980, 1981, 1985a, 1985b, 1992), and in Maslin et al. (2019). The description of leaflet venation specifically refers to the veins visible on the lower surface of the leaflets in dried specimens.

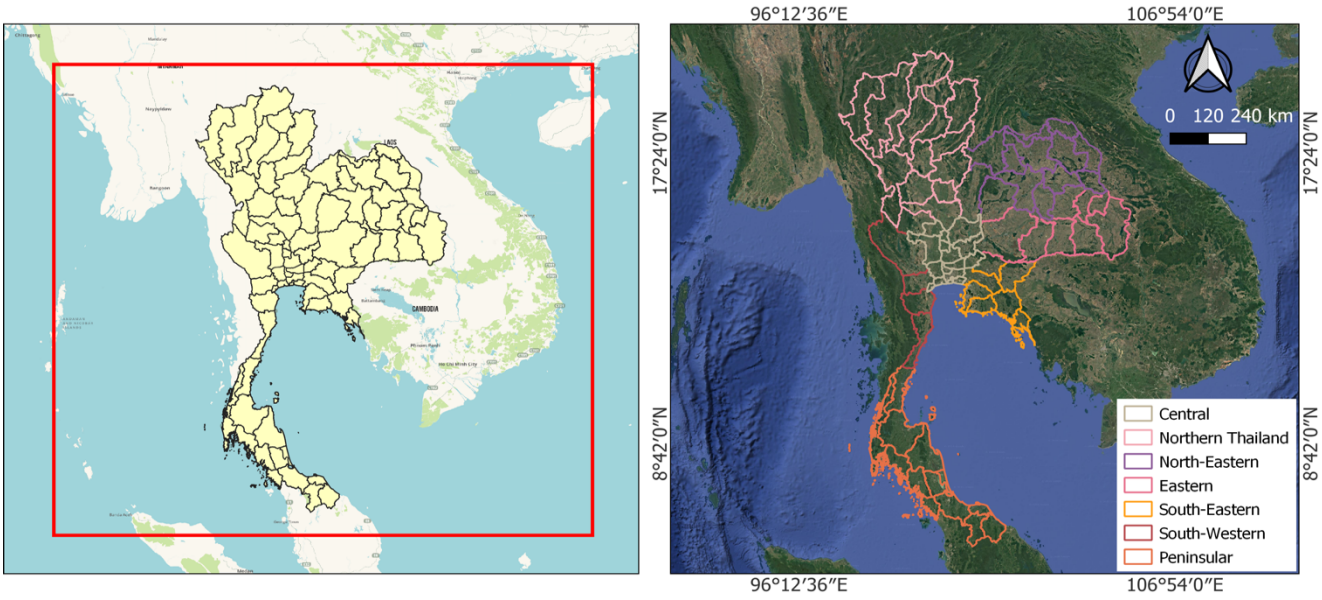

Figure 1. The floristic region and provinces of Thailand

Vernacular names

The included vernacular names are those commonly used in Thailand, derived from a variety of authoritative sources, including the Thai Plant Names compendium (Pooma and Suddee 2014), the Flora of Thailand, and ethnobotanical studies.

Habitat and phenological information

Habitat and phenological data were derived from herbarium specimens and supplemented with information from relevant literatures, particularly Nielsen (1985a) and our personal field observations.

Distribution citations

Information on global distribution is provided for each taxon, together with notes on its distribution within Thailand. Statements about distribution in Thailand are based on specimen records. Data sources validating global distribution records for species are provided in WorldWideWattle (2025). Suspicious or otherwise uncertain records are noted as requiring further investigation.

Specimen citations

Specimens examined are cited for all taxa. The citations follow the sequence of Thai regions and provinces as in the Flora of Thailand (Figure 1). Within each province, the specimens are arranged alphabetically by collector. Herbarium acronyms that are used to show placement of the specimens following those given in Index Herbariorum (New York Botanical Garden 2025— continuously updated).

Ethnobotanical and other uses

Ethnobotanical uses refer to the traditional uses of the species in Thailand, as documented in published ethnobotanical studies from Thailand (e.g., Krueasan 2000; Yaso 2000; Chuakul et al. 2002; Khamfachuea 2008; Kamwong 2009; Songsangchun 2015). These uses highlight the cultural and historical significance of the plants in various local practices. However, it is important to note that such traditional applications do not imply safety or validate the medicinal properties of these plants, which would depend on further scientific verification.

In addition to these ethnobotanical uses, "other uses" from both within Thailand and reported from other countries are included. This broader perspective showcases the global significance and versatility of the species, encompassing a wide range of applications beyond the traditional, some of which may also lack scientific validation for safety and efficacy.

Herbaria consulted

Specimens housed at the following herbaria were examined: AAU, BK, BKF, BO, CMU, CMUB, HN, KKU, PSU, QBG, SING, and VNM. Digital images of type and other specimens were obtained from the following herbaria: BM, E, K, L, and P. Herbarium acronyms used here follow those given in Index Herbariorum (Thiers, continuously updated). All species accounts are based on examination of available Thai specimens from these collections. Type specimens were verified through direct examination where available, and otherwise via high-resolution digital images obtained from major repositories (BM, E, K, L, P). All type identifications were cross-checked with protologues, nomenclatural databases, and the Index Herbariorum to ensure consistency and accuracy.

RESULTS AND DISCUSSION

Diversity and distribution of *Senegalia* in Thailand

There are 14 species (16 taxa) of *Senegalia* native and introduced in Thailand. These taxa are divided into two sections, namely sect. *Senegalia* and sect. *Monacanthea* based is on the position of prickles on branches, namely, at the leaf node or between the leaf nodes, respectively. The native ranges of *Senegalia catechu* and *S. pennata* subsp. *pennata* are uncertain. They may be native or introduced to Thailand, but if introduced, both are now naturalized.

The native species of *Senegalia* are found across all regions of Thailand, with the highest number of species in the northern and southeastern Thailand, which account for nine taxa (Table 1; Figure 2). A significant diversity of *Senegalia* species is also found along the mountain range from the north to the southwest (7 taxa) and the peninsular region (8 taxa). This diversity appears to be less prevalent in the lowland regions, such as in the central (5 taxa) or eastern regions (4 taxa). Some species of *Senegalia* are poorly documented in Thailand, being represented by only a few collections from very few localities, such as *S. meeboldii*, *S. pseudointsia*, *S. pluricapitata*, and *S. thailandica. Senegalia pruinescens* was recorded in Thailand by Maslin et al. (2019) based on the collection Somruay et al. 202 (BKF). However, this report was based on a misidentification of a specimen of *S. pseudointsia.* Therefore, *S. pruinescens* is now excluded from this account of *Senegalia* in Thailand.

Comparison to the treatment in Flora of Thailand

Most taxa included in this study were previously included under the genus *Acacia* in Nielsen (1985a). The only exceptions are the following: Nielsen (1980) identified *Senegalia torta* (as *Acacia torta*) in Thailand, based on a single specimen of Kerr 16287 (BK). However, this specimen belongs to *S. tonkinensis* as noted under that species below. *Senegalia garrettii* and *S. kerrii*, which were previously classified as infraspecific taxa under *Acacia megaladena* and *A. pennata*, respectively, are now recognized as distinct species. *S. garrettii* was formerly known as *A. megaladena* var. *garrettii*, and *S. kerrii* was known as *A. pennata* subsp. *kerrii*. The treatment of Nielsen (1985a) recognized *Acacia concinna*. Our treatment follows Maslin et al. (2013) and adopts the name *Senegalia rugata* for the species and lists the name *A. concinna* as a synonym.

Table 1. Summary of *Senegalia* species in Thailand

Species/taxon	Status	Distribution in Thailand	Key uses	Key characters
Senegalia andamanica (I.C.Nielsen) Maslin, Seigler & Ebinger	Native	Widespread in northern, north-eastern, south-western, and peninsular regions	None recorded	Leaflets (6-)7-12×(1.5-)2-3 mm. Leaflet apex symmetrically rounded to obtuse and without apiculum. Lateral veins not forming a reticulum. Leaflets have short, distinct petiolules
Senegalia caesia (L.) Maslin, Seigler & Ebinger	Native	Widespread but not especially common. Found in disturbed/secondary evergreen forests	Medicinal (anthelmintic, treats food poisoning, mumps, tumors, abscess, and skin allergies)	Leaflets imperfectly 2(-3)-veined, oblong, with a short, distinct, slender, clearly eccentric mucro. Petiole gland is typically single (1), prominent, and clearly raised (1-1.5 mm high).
Senegalia catechu (L.f.) P.J.H.Hurter & Mabb.	Introduced and naturalized. Cultivated and naturalized in dry dipterocarp forest.	Recorded in northern, central, and peninsular regions	Masticatory (source of catechu extract for betel chewing). Medicinal (paste for umbilical cord wounds and flatulence)	A tree (5-10 m high). Prickles/thorns are in pairs at the leaf nodes (stipular spines). Flowers arranged in cylindrical spikes. Main vein of leaflet is centric
Senegalia comosa (Gagnep.) Maslin, Seigler & Ebinger	Native	Found across northern, north-eastern, eastern, south-western, and south-eastern regions	Practical/poison (bark used as fish poison). Hair care (herbal shampoo to reduce dandruff). Medicinal (root and stem treat hemorrhoids)	Leaflets are alternate. Bracteoles are filiform and exserted beyond the flowers in buds, giving the heads a hairy appearance. Leaflets ±sessile, with an eccentric mucro. Petiole gland is often absent
Senegalia garrettii (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai	Native. Recognized as a distinct species (formerly a variety of *S. megaladena*)	Restricted to the northern region (Chiang Mai, Chiang Rai). Found in lower montane forest	None recorded	Branchlets and rachis typically have dense, patent (spreading) hairs. Petiole gland is flattened (peripterous), with a thin, spreading margin that curves or undulates upon drying. Leaflets numerous (30-70 pairs per pinna), typically without a mucro
Senegalia kerrii (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai	Native. Recognized as a distinct species (formerly a subspecies of *A. pennata*)	Among the most widespread and common species throughout Thailand. Found in forest clearings and margins	None recorded	Pinnae numerous, mostly 17-27 pairs. Leaflets small (3-4 mm long), usually flat when dried. Petiole gland situated close to the leaf base. Mature flowers are sessile or subsessile (pedicels 0.1-0.2 mm long)
Senegalia meeboldii (Craib) Maslin, Seigler & Ebinger	Native, poorly documented	Restricted range (Thailand and Myanmar) Found in south-western and peninsular regions in evergreen forest	None recorded	Leaflets very large (up to 75×33 mm). Leaflets (2-)3-5 pairs per pinna. Leaflets prominently 2-veined and thin-textured
Senegalia megaladena var. *megaladena* (Desv.) Maslin, Seigler & Ebinger	Native	Northern, south-western, and peninsular regions. Found in scrub and deciduous forest; alt. 500-1000 m	Practical/poison (aerial parts, especially bark, used as fish poison). Dye (bark used for black dye). Medicinal (decoction treats umbilical cord cutting wounds)	Leaflets 4-8×(0.7-) 0.8-1.5 mm. Lateral veins visible (obscure to somewhat evident).
Senegalia megaladena var. *indochinensis* (I.C.Nielsen) Maslin, Seigler & Ebinger	Native	Found in northern, north-eastern, eastern, central, south-western, south-eastern, and peninsular	Practical/poison (aerial parts, especially bark, used as fish poison). Dye (bark used for black dye).	Leaflets (2-)3-4(-6)×0.4-0.6 mm wide. Lateral veins not visible or occasionally extremely faint

		regions. Grows in various forests (e.g., montane evergreen, mixed deciduous) up to 1150 m	Medicinal (decoction treats umbilical cord cutting wounds)	
Senegalia pennata subsp. *pennata* (L.) Maslin	Introduced	Rare in Thailand. Recorded in the south-western region	None recorded	Pinnae (10-)15-16 pairs. Leaflets are flat (not folded lengthwise when dry). Apiculum is bluntly acute
Senegalia pennata subsp. *insuavis* (Lace) Maslin, Seigler & Ebinger	Native/cultivated	Widely cultivated and naturally occurring in dipterocarp forest	Food (common vegetable; young shoots eaten raw or cooked). Medicinal (treats various disorders, including respiratory, gastrointestinal, and post-partum syndrome)	Living plants often emit a distinctive, disagreeable odor when crushed (smell is lost when dried). Pinnae numerous, (15-)17-30 pairs. Leaflets usually folded lengthwise and/or curved forward when dry. Branchlets lack straight, patent hairs
Senegalia pluricapitata (Steud.) Maslin, Seigler & Ebinger	Native, poorly documented	Found in south-western and peninsular regions	None recorded	Inflorescence axes and peduncles have a mixture of white orthodox hairs and dark-colored (red-brown to black) glandular hairs. Petiole gland is stipitate to sub-stipitate and short-cylindric (raised to 1 mm high)
Senegalia pseudointsia (Miq.) Maslin, Seigler & Ebinger	Native, poorly documented	Recorded in the south-western region	None recorded	Rachillae axes normally truncate at the apex. Petiole gland is thickened, clearly raised**,** normally 4-5 mm long, and situated at the middle of the petiole. Pods are very large (120-250×30-50 mm)
Senegalia rugata (Lam.) Britton & Rose	Native	Widespread across nearly all regions. Found up to 1400 m	Medicinal (widely used; leaves and pods treat hemorrhoids, flatulence, and diarrhea). Food (leaves used for sour taste in soups). Practical/ritual (water infused with pods used as holy water in ceremonies and for hair care/dandruff). Dye (used as a mordant)	Stipules are foliaceous (leaf-like). Lateral veins on leaflets form a dense, net-like reticulum. Pods are distinctly thick-textured (crustaceous to ±woody) and coarsely wrinkled when dry. Seeds are somewhat turgid
Senegalia thailandica (I.C.Nielsen) Maslin Seigler & Ebinger	Native, poorly documented	Recorded in northern, eastern, and central regions	None recorded	Inflorescence axes and peduncles have a mixture of white orthodox hairs and dark glandular hairs. Petiole gland is sessile, small (c. 1 mm diam.). Pods are inflated and tightly coiled
Senegalia tonkinensis (I.C.Nielsen) Maslin, Seigler & Ebinger	Native	Recorded in north-eastern, south-western, and peninsular regions	None recorded	Branchlets are densely patent-hairy with yellowish brown hairs. Petiole glands are normally two (2), rather prominent, raised, and often conical. Bracteoles are acuminate and exserted beyond buds. Leaflets are sessile and oblong

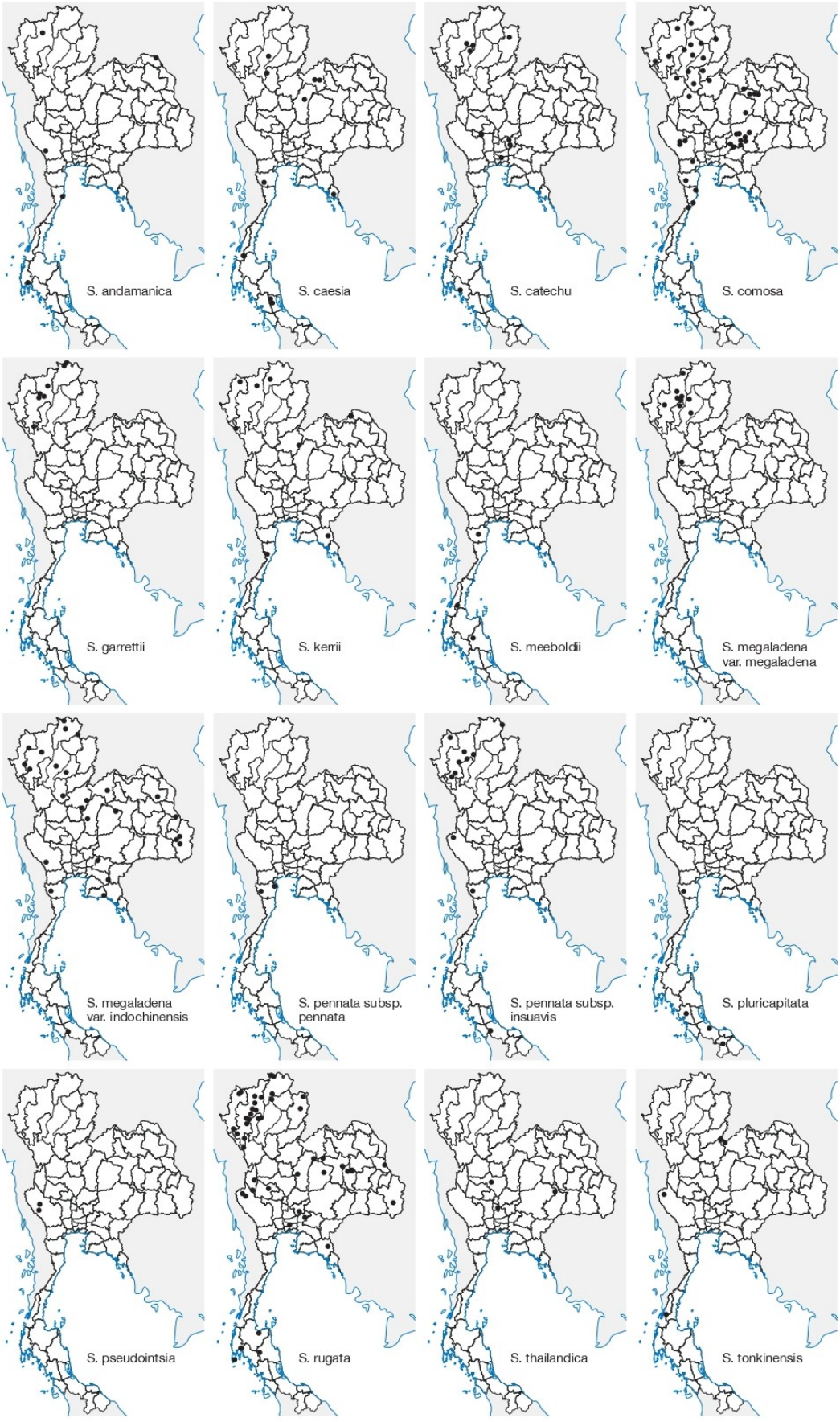

Figure 2. Distribution of *Senegalia* in Thailand (Drawn by Flemming Nørgaaard)

Corrections have also been made to inaccuracies in some species descriptions found in the Flora of Thailand (Nielsen 1985a). For instance, the leaflets of *Senegalia andamanica* were incorrectly described as sessile; however, our observations from several specimens reveal a short but distinct petiolule. Additionally, for many species, the stipules were inaccurately described as filiform, and therefore the necessary changes have been made herein. Further adjustments have been made to align with the morphological information derived from specimens collected in Thailand, such as the number of pinnae and the number of leaflets per pinna. Only the more significant of these discrepancies are specifically mentioned in the notes section under each species. The distribution information has also been updated.

Ethnobotanical use of *Senegalia* in Thailand

Six taxa of *Senegalia* have documented ethnobotanical uses in Thailand, namely *Senegalia caesia*, *S. catechu*, *S. comosa*, *S. megaladena*, *S. pennata* subsp. *insuavis*, and *S. rugata*. Notably, *S. rugata* stands out as a particularly versatile medicinal plant, of which the leaves and pods are used to treat hemorrhoids, flatulence, and diarrhea. These uses have been reported across various ethnic groups. In addition to their medicinal benefits, certain species such as *S. pennata* subsp. *insuavis* and *S. rugata* also have culinary uses. *S. pennata* subsp. *insuavis* is a common vegetable in Thailand and neighboring countries (Myanmar, Cambodia, Laos). This plant emits a distinctive odor that is favored locally and is commonly used as an ingredient in a variety of dishes, such as vegetable curries, fried omelets, or as a side dish. *S. rugata* is valued for its leaves, which impart a distinct sour taste and are frequently used in soups.

Furthermore, some species within this genus serve other purposes, such as for dyeing (*S. megaladena* and *S. rugata*) and as fish poison (*S. comosa* and *S. megaladena*) (Krueasan 2000; Yaso 2000; Chuakul et al. 2002; Khamfachuea 2008; Kamwong 2009; Songsangchun 2015). Overall, the genus *Senegalia* plays a significant role in the traditional practices of Thailand, spanning medicinal, culinary, and practical applications. This diversity of uses highlights the cultural and ecological importance of *Senegalia* species within the region.

Taxonomic treatment

Senegalia Raf., Sylva Telluriana 119 (1838) — *Acacia* subg. *Aculeiferum* Vassal, Bull. Soc. Nat. Hist. Toulouse 108:138 (1972).

Lianas or sometimes straggling shrubs, rarely trees, mostly evergreen, occasionally deciduous. Branchlets usually glabrous or minutely hairy towards the apices. Prickles (epidermal outgrowth) scattered on branchlet internodes and often a few on under surface of leaf axes, thorns (stipular spines in *S. catechu*) paired at leaf nodes on branchlets, sometimes absent from herbarium specimens. Stipules mostly caducous, not spinescent, rarely as paired thorns (in *S. catechu*). Leaves bipinnate, not sensitive, single at the nodes (not in brachyblastic clusters as sometimes occur on American species). Leaflets opposite (except alternate in *S. comosa*), mostly narrowly oblong with the terminal pair obovate; base often unequal with an obvious rounded angle on lower edge only, the petiolule excentric or sometimes centric, normally with a single, longitudinal main-vein (infrequently imperfectly 2-veined, e.g., *S. caesia*, *S. comosa*), lateral veins (on lower surface of leaflets) visible or not visible and sometimes forming a reticulum. Leaf glands usually present (often lacking in *S. comosa*), very variable, normally sessile but sometimes stipitate. Inflorescences pedunculate, normally globose heads or rarely cylindrical spikes (*S. catechu*) arranged in terminal panicles or racemes, or infrequently single or clustered in leaf axils. Flowers mostly bisexual, 5-merous, sessile or short-pedicellate; stamens numerous, filaments free to base. Pods dehiscent, oblong to oblong to narrowly oblong or broadly linear, firmly chartaceous to thinly coriaceous-crustaceous (except crustaceous to ± woody when dry in *S. rugata*), straight and flat (but inflated in *S. thailandica*), dark brown, basal stipe indistinct to evident. Seeds flattened (except somewhat turgid in *S. rugata* and *S. thailandica*), pleurogram obscure, areole open narrowly at the hilar end of seed; funicle filiform and exarillate.

There are 13 native species in Thailand, distributed throughout the country, with the highest species richness in the northern and peninsular regions. Although there are no species of *Senegalia* that are endemic to Thailand, a few have relatively restricted geographic ranges, for example, *S. meeboldii* (Thailand and Myanmar) and *S. thailandica* (Thailand, Cambodia, and possibly Myanmar).

Etymology. The genus name refers to Senegal, a country in West Africa, where the lectotype *S. senegal* was collected.

Notes: *Senegalia* (as *Acacia* subg. *Aculeiferum*) was formerly assigned to the tribe Acacieae within the subfamily Mimosoideae. However, that classification had been superseded as a result of recent genetic studies involving all genera of Mimosoideae (LPWG 2017). *Senegalia* is now placed in the *Senegalia* grade, within a redefined subfamily Caesalpinioideae (Koenen et al. 2020; Ringelberg et al. 2020).

Prior to the fragmentation and retypification of *Acacia* (Murphy and Maslin 2023), the species that are now assigned to *Senegalia* were accommodated within the former *Acacia* subg. *Aculeiferum*. Consequently, it is under this subgenus name that the species were treated in the Flora of Thailand (Nielsen 1985a). Vassal (1972) recognized two sections within subg. *Aculeiferum*, namely sect. *Senegalia* (with cauline prickles located at or near the leaf nodes) and sect. *Monacanthea* (with internodal cauline prickles). However, Terra et al. (2022) revised this classification by recognizing three groups, namely, sect. *Senegalia* (51 species, Afro-Asian), sect. *Monacanthea s.s.* (4 species, Africa) and sect. *Monacanthea* pro parte (164 species, pantropic). All native species of *Senegalia* in Thailand belong to sect. *Monacanthea* pro parte (called sect. *Monacanthea* hereafter).

As discussed in Terra et al. (2022), there is molecular evidence to indicate that *Senegalia* as currently defined is not monophyletic. However, because of low species numbers in the phylogenetic analyses, it was considered premature to formally split the genus. However, information

was provided to facilitate future studies to address this issue. Terra et al. (2022) and Murphy and Maslin (2023) provide a discussion of the taxonomic and nomenclatural history of *Senegalia*.

The generic description presented here is based solely on Thai specimens examined during this study and does not attempt to cover the full morphological variation of *Senegalia* worldwide. Detailed descriptions of *Senegalia* are also provided in Maslin et al. (2019, 2024).

Key to the species of *Senegalia* from Thailand

1. Flowers in cylindrical spikes. Thorns (stipular spines, when present) in pairs at leaf nodes. Trees ..... sect. *Senegalia—S. catechu*
2. Flowers in globular heads. Prickles (epidermal outgrowths, when present) scattered between leaf nodes. Shrubs or lianas (rarely small trees) ..... 2—sect. *Monacanthea*
2. Leaflets with the main-vein starting at or near middle of the base (i.e., petiolule ± centric) and/or leaflets 2(-3)-veined 3
2. Leaflets with the main-vein starting at or near upper margin (i.e., petiolule located near upper margin), leaflets 1-veined 6
3. Leaflets alternate. Bracteoles exserted beyond the flowers in buds ..... *S. comosa*
3. Leaflets opposite. Bracteoles variable 4
4. Leaflets 5-33 mm wide, 2-veined, asymmetrically obovate to sub-trapezoid or obliquely ovate-elliptic ..... *S. meeboldii*
4. Leaflets (1-)1.5-4(-7) mm wide, 1-veined or imperfectly 2(-3)-veined, oblong to narrowly oblong but terminal pair often obovate 5
5. Petiole gland 1. Bracteoles not exserted beyond the flowers in buds. Leaflets imperfectly 2(-3)-veined ..... *S. caesia*
5. Petiole glands 2. Bracteoles exserted beyond the flowers in buds (at least in young buds). Leaflets 1-veined ..... *S. tonkinensis*
6. Pinna axis normally truncate at the apex. Petiole gland thickened, clearly raised, normally 4-5 mm long and situated at the middle of the petiole ..... *S. pseudointsia*
6. Pinna axis terminated by a short, triangular point. Petiole gland characters not as above 7
7. Lateral veins form a dense, net-like reticulum on the lower surface of leaflets. Pods hard-textured (thickly crustaceous to ±woody) and wrinkled when dry. Leaflets apiculate ..... *S. rugata*
7. Lateral veins (when visible) not forming a reticulum or reticulum very imperfect on lower surface of leaflets. Pods chartaceous to thinly coriaceous, not wrinkled when dry. Leaflets apiculate or not 8
8. Leaflets (1.5-)2-3 mm wide, the apices normally symmetrically rounded to obtuse and without apiculum ..... *S. andamanica*
8. Leaflets less than 2 mm wide, the apices apiculate or not 9
9. Inflorescences axes, peduncles, and branchlets (at least when young) with numerous dark-colored (red-brown to black) glandular hairs 10
9. Inflorescence axes, peduncles, and branchlets without glandular hairs (or hairs very few and scattered) 11
10. Petiole glands stipitate to sub-stipitate and short-cylindric (raised to 1 mm high). Pod flat and straight ..... *S. pluricapitata*
10. Petiole glands sessile, c. 1 mm diam. and 0.5 mm high. Pods inflated and tightly coiled ..... *S. thailandica*
11. Petiole gland situated near base of petiole 12
11. Petiole gland position variable, often near the middle of petiole 13
12. Flowers sessile or sub-sessile (pedicel 0.1-0.2 mm long). Pinnae 17-27 pairs. Leaflet ±flat when dried. Petiole 20-35 mm long. Peduncle (5-)10-20 mm long ..... *S. kerrii*
12. Flowers pedicellate (pedicel 0.5-1 mm long). Pinnae 10-30 per side. Leaflets flat or folded when dry. Petiole 20-35(-50) mm long, Peduncle 15-20(-40) mm long ..... *S. pennata*
13. Rachis hairs patent. Petiole glands not thickened, flattened with a margin rather thin, spreading and variously curve or undulate upon drying ..... *S. garrettii*
13. Rachis hairs appressed. Petiole glands thickened (commonly ±donut-shape), orange to red-brown when fresh ..... *S. megaladena*

***Senegalia* andamanica (I.C.Nielsen) Maslin, Seigler & Ebinger**

Senegalia andamanica (I.C.Nielsen) Maslin, Seigler & Ebinger, Blumea 58: 40 (2013). Basionym: *Acacia pseudointsia* var. *ambigua* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 249 & 511 (1897). Type: India, Tytler Ghat near Port Mouat, Andamans, 12 July 1890, *Dr. King's Collector s.n.* (lectotype K barcode K000791195, ex CAL digital image, designated by Nielsen (1980); isolectotype CAL 140529 barcode 0000012918). Homotypic synonyms: *Acacia andamanica* I.C. Nielsen, Adansonia ser. 2, 19: 354 (1980). Missapplied names: *Acacia pseudointsia* as applied in Craib, Fl. Siam. 1: 551 (1928) (Figure 12).

Lianas or straggling shrubs. Branchlets glabrous or occasionally puberulous towards the tips. Prickles internodal. Stipules evident in young inflorescence buds but soon caducous, lanceolate, 3-6(-8)×1-4 mm. Leaves: pinnae (1.5-)6-9 pairs, (20-)30-75 mm long; leaflets opposite, (9-)13-33 pairs per pinna, (6-)7-12×(1.5-)2-3(-7) mm, main-vein extending obliquely from excentric petiolule to leaflet apex, lateral veins not forming a reticulum (except in specimens from the Andaman Island), apex symmetrically rounded to obtuse and without apiculum, base unequal with an obvious rounded angle on lower edge only. Petiole gland situated from near middle to base of petiole, 2-4(-5) mm long, flattened but often elevated slightly from beneath or curved upwards at distal end. Inflorescence is a terminal open panicle and/or sometimes elongated raceme of heads. Flower buds red when fresh; calyx glabrous. Pods 95-130×18-25 mm, thinly coriaceous to firmly chartaceous. Seeds 9.5×7 mm.

Vernacular name: Khi raet dong (ขี้แรดดง) (Prachuap Khiri Khan).

Ecology: Climbing on shrubs, montane forest with pine, rocky limestone; alt. up to 760 m.

Phenology: Flowering from May to December.

Distribution: East Asia: China. Southeast Asia: Andaman Islands, Thailand, Vietnam.

Etymology: The name of this species is derived from the Andaman Islands, the location where its type specimens were collected.

Notes: Nielsen (1985a) described the leaflets of this species as sessile; however, all material we have seen has short and distinct petiolules. In the note under this species in Flora of Thailand (Nielsen 1985a), a fruiting specimen from Phuket is cited with a petiole gland unusually positioned near the middle of the petiole. Although the original note did not include collector details, the specimen in question is *Haniff & Md. [Mohamid] Nur 4012* (BO, SING), as cited below. As discussed by Maslin et al. (2019), plants from the type locality of this species (i.e., the Andaman Islands) show some morphological differences from those in Thailand and elsewhere in the Asian mainland. Further study is needed to better understand the taxonomic relevance of these characters. The specimen *Niyomdham C. 5077* (AAU, BKF) from northeastern Thailand has slightly smaller leaflets (5-7 × 1.5-1.8 mm) than those of plants collected elsewhere.

Specimens examined: Thailand. Northern Region: Chiang Mai Province; Khrueasan MS 459, Mae Taeng, Pah Poo Chom Village, S.N. (QBG). North-Eastern Region; Nong Khai Province; Niyomdham 5077, Bungkhlaa, 21 June 1997 (AAU, BKF). South-Western Region: Kanchanaburi Province; Maxwell 05-482, Mahidol University, Kanchanaburi Campus, Doi Bin, c. 5 km N of Sai Yok, Sai Yok District [presumably cultivated], 12 September 2005 (BKF, CMUB); Prachuap Khiri Khan Province; Larsen & Larsen 33684, Sam Roy Yot, 6 May 1974 (AAU, BKF), Srisanga et al. 4211, Khao Sam Roi Yot national park, Tham Kaeo cave, 2 May 2018 (AAU), Srisanga et al. 4377, route to Tham Nam Thip, Rai Kao, 14 June 2018 (AAU). Peninsular Region: Phangnga Province; Md Haniff & Md Nur 4012, Pulau Panji [= Panyee Island, just N of Phuket], 11 December 1928 (BO, SING—specimen annotated as *Acacia andamanica* by I.C. Nielsen).

***Senegalia caesia* (L.) Maslin, Seigler & Ebinger**

Senegalia caesia (L.) Maslin, Seigler & Ebinger, Blumea 58: 40 (2013). Basionym: *Mimosa caesia* L., Sp. Pl. 1: 522 (1753). Type: Sri Lanka, Herb. Hermann 2: 50, No. 217 [Sri Lanka, fide Nielsen 1980: 348, as Ceylon] (lectotype BM barcode BM000621675 and BM000621676; isolectotype L - cited by Kostermans (1980). Homotypic synonyms: *Acacia caesia* (L.) Willd., Sp. Pl., ed. 4 [Willdenow] 4 (2): 1090 (1806); *Acacia intsia* var. *caesia* (L.) Wight & Arn. ex Baker, in J.D. Hooker, Fl. Brit. India 2: 297 (1878); *Acacia caesia* var. *caesia*, autonym established by publication of *Acacia caesia* var. *elegans* Kurz., J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 45 (4): 297 (1877 dated '1876').

Heterotypic synonyms: —*Acacia oxyphylla* Graham ex Benth., London J. Bot. 1: 514 (1842); *Acacia caesia* var. *oxyphylla* (Graham ex Benth.) J.F. Macbr., Contr. Gray Herb. 57: 7 (1919). Type: Bangladesh, Sillet, F. De S & W.G. [Sylhet, Bangladesh, F. De Silva & W. Gomez], in Wallich Numer. List no. 5252A (lectotype K barcode K000791196 digital image).

—*Acacia oxyphylla* var. *subnuda* Craib, Fl. Siam. 1: 550 (1928); *Acacia caesia* var. *subnuda* (Craib) I.C. Nielsen, Adansonia, ser. 2 19 (3): 348 (1980), nom. illeg. (superfluous). TYPE: Thailand, Lampang Me Salop, alt. 200 m, secondary growth forest, 25 Oct. 1925, Winit 1463 (holotype K barcode K000392266; photo of K holotype at AAU); isotypes ABD, BKF barcode SN036606)

—*Acacia intsia* sens. auctt. pl., see Nielsen, Fl. Thailand 4 (2): 168 (1985a) (Figure 13).

Lianas or straggling shrubs. Prickles internodal. Leaves: pinnae (2-)3-7 pairs, 35-100 mm long; leaflets opposite, 7-18(-23) pairs per pinna, 6-15(-20)×2-4(-7) mm, oblong to narrowly oblong but terminal pair often obovate, dark green and glossy above, imperfectly 2(-3)-veined with only the main-vein reaching the mucro, minor veins often forming an open but sometimes indistinct reticulum, ± sessile due to very short, centric petiolule, apex obliquely truncate or rounded-truncate with a short but distinct, slender, clearly eccentric mucro; petiole gland situated on lower half of petiole, 2-7 mm long, prominent and clearly raised (1-1.5 mm high). Inflorescence is a terminal open panicle and/or long racemes of heads. Flower buds red or reddish when fresh; bracteoles not exserted beyond flower buds. Pods 150-170×18-25 mm. Seeds broadly elliptic, 9-9.5×7-7.5 mm.

Vernacular name: Nam hueang (หนามเฮือง) (northern region).

Ecology: Disturbed and secondary evergreen forests, on lateritic and limestone soil, alt. 100-300 m. Widespread in Thailand, but not especially common.

Phenology: Flowering begins in late August and may extend through December. Mature pods with seeds are typically present from November to April, corresponding to the variation in flowering time.

Distribution: East Asia: China, Taiwan. Indian Subcontinent: Bangladesh, Bhutan, India, Sri Lanka. Southeast Asia: Cambodia, Laos, Myanmar, Thailand, Vietnam.

Etymology: The species name originates from the Latin term caesius, meaning bluish-grey or lavender blue. Linnaeus, in his initial description of *Mimosa caesia*, referred to Plukenet (mant. I. t. 330. f. 3.) characterization of the leaves as “subtus caesiis,” referring to their bluish-grey underside.

Notes: This species is similar to *S. comosa* and *S. tonkinensis* in having ± sessile leaflets with a much-reduced, centric petiolule and a clearly excentric apical mucro. A variety of this species, *Acacia caesia* var. *subnuda* was recognized by Roskov et al. (2005), based on the works of Nielsen (1980, 1981, 1985a) and Sanjappa (1992). It was treated as a synonym of *A. caesia* by Chakrabarty and Gangopadhyay (1996), Wu and Nielsen (2010), and Maslin et al. (2019). Here, we adopt the recent taxonomy by not accepting the variety. However, we recognize that studies of *S. caesia* in India may prompt a reassessment of this

decision. It is noted that Nielsen (1985a) should have adopted the name var. *oxyphylla* for the entity that he described as *A. caesia* var. *subnuda*; therefore, if this entity is recognized as a variety of *S. caesia*, then a combination based on *A. oxyphylla* will need to be made. Nielsen (1985a) described the pinnae as reaching 13) pairs, which does not coincide with any material that we have seen.

Ethnobotanical uses: The species is used for a range of purposes by the Karen people in Chiang Mai Province, northern Thailand (Table 2).

Specimens examined: Thailand. Northern Region: Chiang Mai Province; Pongamornkul 4847, Ban Mae Kong, Omkoi, 10 March 2025 (QBG). Lampang Province; Winit K. 1463, Mê Salop, 25 October 1925 (K K000392266 [holotype of *Acacia oxyphylla* var. *subnuda*; isotypes: ABD (*n.v.*)—cited by Nielsen (1980), BKF (*n.v.*)—cited by Nielsen (1980)]). Sukhothai Province; Khongpoon 1, Bann Kaeng, Si Satchanalai, 2 October 2023 (QBG), Khongpoon 2, Bann Kaeng, Si Satchanalai, 6 November 2023 (QBG), Thammarong et al. 4433, Bann Kaeng, Si Satchanalai, 30 November 2023 (QBG), Norsaengsri 11533, Si Satchanalai, Trail to Tad Dao waterfall, Sri Satchanalai NP, 18 November 2014 (BKF, QBG). North-Eastern Region: Loei Province; van Beusekom & Phengklai 3040, Ban Na Luang, 16 January 1970 (AAU, BKF, L), Dee 333, Wang Saphung, 29 October 1948 (BKF). South-Eastern Region: Trat Province; Ploenchit 2224, Huai Raeng, 15 November 1964 (BKF). South-Western Region: Phetchaburi Province; Nielsen et al. 1936, Kaeng Krachan NP, Ban Krang Camp, 25 August 2004 (AAU, BKF). Peninsular Region: Ranong Province; Sangkhachand B. 1151, Kapoe, 22 November 1965 (BKF). Phatthalung Province; Larsen et al. 44052, Khao Phu Kao Yah, 26 October 1993 (AAU), Upho *UBON* 1299, Srinakharin, 29 October 2003 (QBG).

***Senegalia catechu* (L.f.) P.J.H.Hurter & Mabb.**

Senegalia catechu (L.f.) P.J.H.Hurter & Mabb., Plant-book, ed. 3: 1021 (2008). Basionym: *Mimosa catechu* L.f., Suppl. Pl. 439 (1782 [1781 publ. Apr. 1782]). Homotypic synonym: *Acacia catechu* (L.f.) Willd., Sp. Pl., ed. 4, 4(2): 1079 (1806). TYPE: India, *Koenig s.n.* [recieved 1777] (lectotype LINN, Herb. Linn. 1228/23, designated by Hurter & Mabberley in Mabberley 2008: 1021) (Figure 3).

Additional synonymy not based on Thai type material: see Deshpande et al. (2019) and WorldWideWattle (2025).

Trees 5-10 m high; bark grey, peeling in long strips. Prickles in pairs at nodes, recurved, often absent from herbarium specimens. Stipules 2-3×1 mm, not spinose. Leaves: pinnae 6-8(-13) pairs (up to 25 pairs outside Thailand), relatively short (15-40 mm). Leaflets opposite, (9-)11-22(-27) pairs per pinna, 3-5×0.5-1 mm, main-vein centric, lateral veins absent or few, obscure and not forming a reticulum, apex obtuse, base unequal with lobed angle on lower edge only, petiolule eccentric; petiole gland usually near or above middle of petiole, 2-3.5 mm long, not prominent, depressed. Inflorescence 1-3 pedunculate spikes initiated in axils of young leaves; spikes (25-)35-65 mm long. Flower: calyx ⅕-1/3 (-½) as long as the corolla; petals glabrous or (at apices) ± sparsely to densely hairy as on calyx tube. Pods 95-130×15-25 mm, dark brown to blackish. Seeds 9-9.5×7-7.5 mm, circular to broadly elliptic, marked with a straight line from micropyle to near the areole.

Vernacular name: Si siat (สีเสียด), si siat kaen (สีเสียดแก่น), si siat lueang (สีเสียดเหลือง) (northern region); si siat (สีเสียด), si siat kaen (สีเสียดแก่น) (central region).

Ecology: Cultivated and naturalized in dry dipterocarp forest; alt. 40-700 m.

Phenology: Flowering from May to August, and pods with mature seed occur from November to February.

Distribution: South Asia: Bangladesh, Bhutan, Nepal, Pakistan, India, and Sri Lanka. Introduced and/or cultivated in East Asia: China, Japan (Ryuku Islands) and Taiwan. Southeast Asia: Indonesia, Philippines, Thailand, Vietnam, and Myanmar (where it is also cultivated). Indian Ocean: Mauritius.

Notes: Based on plants from India, Kshirsagar (2012) discussed the complex nomenclatural history of this species, which involves (among other species), *Senegalia chundra* (Roxb. ex Rottler) Maslin. However, the important flower characters that Kshirsagar (2012) used to distinguish the species are variable, and in Thailand, they cannot be used to confidently assign specimens to one species or the other. Therefore, following Maslin et al. (2019) in their treatment of Chinese *Senegalia*, the earliest and most commonly used name, *S. catechu*, is adopted here. The distinction between *S. chundra* and *S. catechu* requires further study.

Ethnobotanical uses: The paste, derived from the bark and stem, is traditionally applied to wounds resulting from the cutting of the umbilical cord in infants (Kamwong 2009). Additionally, this paste serves as a remedy for flatulence (Muangyen 2013).

Other uses: A wood extract called “catechu” is masticated with betel by many ethnic groups throughout Thailand.

Table 2. Uses of *Senegalia caesia* in northern Thailand by Karen people reported by Kantasrila (2016)

Pod	Boiled in water	As a drink	Anthelmintic
Root, seed	Ground on a stone and mixed it with water to create a paste	The paste is placed directly on affected area	Mumps
			Tumors around the breast
			Abscess
Pod	Boiled in water	Food poisoning	Food poisoning
Stem	Ground on a stone and mixed with water to create a paste	The paste is placed directly on affected area	Skin allergies

Specimens examined: Thailand. (Introduced). Northern Region: Chiang Mai Province; Balslev et al. 9176, Mae On, 20 July 2018 (AAU, BKF), Kerr s.n., Ban Suan Dok, 3 September 1921 (BK), Maxwell 33, Sutep rd. Chiang Mai, 28 May 1991 (CMU), Maxwell 93-1063, Mueang, 16 September 1993 (BKF, CMUB, QBG), Nanakorn et al. 744, Mae Rim, 2 June 1994 (AAU), Paoprachak 27, unknown locality, 31 May 1937 (BKF), S.N., unknown locality, 5 September 1921 (BK), Saí Jaí 33, Mueang, 28 May 1991 (L), Santisuk 6869, Huai Kaeo Arboretum, 27 December 1988 (BKF-2). Nan Province; Srisanga 986, Km 37 road to Tha Wang Pa, 28 July 1999 (CMUB). Lamphun Province; Prateep et al. 11091, Chiang Mai University, Hariphunchai Center, 7 November 2023 (QBG). Balslev et al. 9032, Mueang, 17 May 2018 (AAU, BKF), Balslev et al. 9198, Chiang Mai University Campus, side road to route 11. Roadsides in dry dipterocarp forest, 19 December 2018 (AAU, BKF, QBG, KKU). Lampang Province; Balslev et al. 9246, Mae Tha, route 11, 15 km southeast of Lampang, 22 December 2018 (BKF, QBG, KKU). Muangyen 2758, Ngao, 1 December 2017 (QBG). Thammarong et al. 4727, Ban Rai Phen Din Thong, Pichai, Muang Lampang, 26 April 2024 (QBG). Central Region: Saraburi Province; Maxwell 74-57, Mueang Saraburi, Sam Lan Forest, 20 January 1974 (AAU, BK), Maxwell 74-308, ibid., 27 April 1974 (AAU, BK), Rananand 7, Phu Khae, 8 July 1953 (BKF), Somprasong 103, Suphan Buri, Dan Chang, 12 December 1992 (BK); Bangkok Province; Umpai 163, Bang Khen, 20 September 1955 (BK). South-Eastern Region: Chonburi; Maxwell 04-826, Kasetsart University Siricha campus at Ao Udom, 22 December 2004 (CMUB). Peninsular Region: Krabi Province; Paisooksantivatana 2421-89, Mueang Krabi, 21 August 1989 (BK), Vanpruk 266, unknown locality, (BKF).

***Senegalia comosa* (Gagnep.) Maslin, Seigler & Ebinger**

Senegalia comosa (Gagnep.) Maslin, Seigler & Ebinger, Blumea 58: 40 (2013). Basionym: *Acacia comosa* Gagnep., Notul. Syst. (Paris) 2: 113 (1911). Type: Vietnam, Bien Hoa, Mar. 1869, Pierre 5977 (lectotype P designated by Nielsen 1980: 348; isotypes L, K barcode K000791212 digital image!) (Figure 4).

Lianas or straggling shrubs. Prickles internodal, often absent or few and inconspicuous on herbarium material. Stipules narrowly oblong to linear-triangular to filiform, 3-4 mm long, caducous. Leaves: pinnae (2-)3-6(-7) pairs, (20-)40-90 mm long; leaflets alternate, 10-20 on each side of the pinna, (5-)7-16×(2-)3-6 mm but often smaller on proximal pinna pair, often imperfectly 2-veined with only main-vein extending obliquely from centric or sub-centric petiolule to mucro, lateral veins forming a reticulum, apex obliquely rounded-truncate with eccentric mucro, sessile at the obliquely truncate base; petiole gland often absent. Inflorescence is a terminal open panicle and/or raceme of heads; bracteoles filiform, exserted beyond flowers in buds. Pods 120-170×15-20 mm, veins absent or few and indistinct, stipitate. Seeds 7.5-8.5×7 mm, broadly elliptic.

Figure 3. *Senegalia catechu*. A. Inflorescence (Balslev 9032), B. Branch and fruit (Balslev 9198), C. Prickles (Balslev 9032) (Photographed by Natcha Sutjaritjai)

Figure 4. *Senegalia comosa*. A. Branches and inflorescences, B. Leaves, C. Inflorescences (Balslev 9036) (Photographed by Natcha Sutjaritjai)

Vernacular name: Nam han (หนามหัน), nam haeng (หนามเหียง), nam hueang (หนามเฮือง), han kradang (หันกระด้าง) (northern region); nam han (หนามหัน), nam tanin (หนามตะหนิน) (eastern region); khi rat (ขี้แรด), nam khi rat (หนามขี้แรด) (south-western region).

Ecology: Grassland and thickets, scrub vegetation, forest margins, moist and dry mixed deciduous forests, dry dipterocarp forest, on limestone and sandy soils; alt. 0-400 m.

Phenology: Flowering in January, April to July and December, Fruiting in January.

Distribution: Southeast Asia: Cambodia, Laos, Thailand, and Vietnam.

Etymology: The specific epithet comosa comes from Latin, meaning hairy or bearing tufts of hair, which refers to the bracteoles that are longer than the buds, giving the capitula a hairy appearance.

Notes: *S. comosa* is similar to *S. caesia* and *S. tonkinensis* in having ± sessile leaflets with a much-reduced, centric petiolule and a clearly excentric apical mucro, but it is readily distinguished from both these species by its alternate leaflets and some other characters that are noted under *S. tonkinensis*.

Ethnobotanical uses: Traditionally, the Lua and Mien communities used the bark of *S. comosa* as a fish poison (Srithi 2012). It is also popular as a herbal shampoo, renowned for its ability to reduce dandruff (Srithi 2012). Furthermore, the root and stem of the plant are key ingredients in a traditional remedy used by the Thai Yuan people to treat hemorrhoids (Inta et al. 2012).

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; Pongamornkul 04107, Sop Moei, Ban Mae Ork, 28 February 2014 (QBG). Chiang Mai Province; Pongamornkul 2308, Chiang Dao, Ban Hua Thung, 28 June 2008 (QBG), Pooma 199, Hot-Chom Thong road, 1 July 1989 (BKF, CMUB). Chiang Rai Province; Winit 1270, Mae Saloi, 4 March 1925 (BKF), Winit 1402, Mae Kang, 29 April 1925 (BK, BKF), P. 15, Phrae, Huai Khamin, 16 October 1938 (BKF). Lamphun Province; Balslev et al. 9036, Mueang, 17 May 2018 (AAU, BKF). Lampang Province; Jatupol et al. 804, Mae Mo, Pan Daen Wid, Ban Pong Chai, 13 March 2012 (QBG), Kerr 4800, Chae Hom, 6 February 1921 (AAU, BK), Maxwell 90-582, Mae Mawh, 6 June 1990 (CMU, L), Maxwell 94-966, Mueang Lampang, Doi Khun Tan NP, 1 September 1994 (BKF, CMUB, L), Smitinand 1577, Ngao, 16 May 1954 (BKF). Uttaradit Province; Parinya & Santi 222, Ban Khok, 10 May 1993 (BK). Tak Province; S.N.108, Ban Na, Bhumibol dam, May 1959 (BK), Ploenchit 440, ibid., May 1959 (BK), Bunnak 516, unknown locality, December 1959 (BK), C.P. 3172, unknown locality, 21 January 1974 (BKF). Sukhothai Province; Maxwell 72-281, Mueang Gow, 8 June 1972 (AAU, BK), Maknoi 7520, Si Satchanalai, route to Tham Thara Wasan, Srisatchanalai NP, 30 March 2015 (QBG), Maknoi 7647, Tad Duean WF, Srisatchanalai NP, 31 March 2015 (QBG). Phitsanulok Province; Maknoi 1398, Wat Bot, Kaeng Ched Kwae NP, 6 April 2007 (QBG), Maknoi 4226, Wat Bot, Kaeng Takaen Waterfalls, 17 March 2011 (QBG). Kamphaeng Phet Province; Garrett 36, Mae Ping Bank, between Rahang and Kamphaeng Phet, 8 May 1909 (BKF). North-Eastern Region: Khon Kaen Province; Nanakorn et al. 1716, Phu Wiang, 16 September 1994 (QBG), Norsaengsri 5495, Phu Pha Man, Phanok Khao, 14 May 2009 (QBG), Nanakorn et al. 8504, Phu Wiang, Thap Phaya Suea falls, Phu Wiang NP, 9 January 1997 (QBG), Sutheesorn 747, Nam Phong, 7 November 1965 (BK). Eastern Region: Chaiyaphum Province; Sutheesorn 664, Kang Koa, 23 October 1963 (BK). Nakhon Ratchasima Province; Damrongsak 687, Wang Nam Khiao, 28 June 1968 (BKF), Koyama et al. T-33109, Pak Thong Chai, Lam Phra Phloeng dam, 29 January 1983 (BKF), Phengnaren 629, Pak Thong Chai, 12 March 1969 (BKF), Put 4337, Lat Bua, 8 November 1931 (BK), Sanoh 24, Wang Nam Khiao, 20 November 1967 (BKF), Smitinand 4464, Sikhio, 15 Mar 1958 (BKF), Smitinand s.n., Sakaerat, 19 January 1986 (BKF), Sørensen et al. 2116, 40 km south-west of Korat, 15 March 1958-1959 (BKF), Sutheesorn 3596, Khao Yai, 15 February 1976 (BK), Triboun et al. s.n., Nong Ramieng, 23 April 2011 (BK-2). South-Western Region: Kanchanaburi Province; van Beusekom & Phengkhlai 487, Erawan NP, 17 April 1968 (AAU, BKF, L), Chantanamuck 1026, Tabtao, 10 April 1965 (BK), Phengklai et al. 12208, Lum-e-su, 13 April 2000 (BKF-2), Phengklai et al. 12246, Lum-e-su, 14 April 2000 (BKF). Ratchaburi Province; Larsen et al. 1520, Huai Yang, 12 August 1966 (AAU, BKF). Phetchaburi Province; Nielsen et al. 1938, Kaeng Krachan NP, Ban Krang camp, 25 August 2004 (AAU, BKF). Prachuap Khiri Khan Province; Kerr 10734, Huai Yang, 1 July 1926 (AAU, BK), Pooma et al. 3087, Mueang, 3 October 2001 (BKF-2), Put 2295, Kan Kradai, 14 January 1929 (AAU, BK), Put 2452 Pran Buri, 26 November 1929 (AAU, BK). South-Eastern Region: Prachin Buri Province; Murata et al. T-37155, near Training Center of Khao Yai mountain, 2 October 1984 (BKF).

Senegalia garrettii (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai

Senegalia garrettii (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai, Pl. Diversity 41: 386, fig. 12 & 14 (2019). Basionym: *Acacia megaladena* var. *garrettii* I.C. Nielsen, Adansonia sér. 2, 19: 351 (1980). Type: Thailand, Doi Chawm Hot [Doi Chom Hot, Phrao District, Chiang Mai Province], 13 June 1941, H.B.G. Garrett 1239 (holotype K barcode K000791220 digital image; isotypes: ABD (*n.v.*) cited by Nielsen (1980), E (*n.v.*) cited by Nielsen (1980), P barcode P02436184 digital image, P barcode P02436185 digital image). — Homotypic synonym: *S. megaladena* var. *garrettii* (I.C. Nielsen) Maslin, Seigler & Ebinger, Blumea 58: 41 (2013) (Figure 5).

Lianas or straggling shrubs. Upper branchlets with a dense indumentum of short, patent, hairs, glabrescent. Prickles internodal. Stipules evident in young inflorescences, caducous, narrowly triangular to lanceolate or narrowly lanceolate, (3-)4-8×1-2 mm, glabrous (except ciliolate) to densely puberulous and obscurely to obviously striate abaxially, acuminate. Leaves: pinnae 10-16 pairs, 35-90 mm long; rachis normally with hairs as on branchlets; leaflets opposite, (25-)30-70 pairs per pinna, usually 4-6(-7)×0.7-1.3 mm, main-vein starting near upper margin at leaflet base, lateral veins ± patent, relatively few and not forming a reticulum, apex ± symmetrically rounded to obtuse

and without a mucro, base unequal with an obvious angle on lower edge only; petiole gland position variable, often near or above middle of petiole but sometimes below middle, 2-4 mm long, superficially sessile (but fractionally elevated from beneath) or sub-stipitate by a broad stipe, peripterous with a rather thin and spreading lamina, with the margin rather thin, spreading, variously curved upon drying, upper surface dark brown. Inflorescence of elongated terminal racemes or panicles of heads, the axes and flowering peduncles with a dense indumentum of short, patent, straight, often yellowish to pale orange-brown hairs, without glandular hairs. Flower buds at least sometimes dull red when fresh. Pods 95-170×20-30 mm, firmly chartaceous to thinly coriaceous-crustaceous, stipitate. Seeds 7-9×4.5-5.5 mm, ovate elliptic, areole c. 7×3 mm.

Vernacular name: Khi raet ka (ขี้แรดกา) (northern region).

Ecology: Lower montane forest; alt. 1420 m.

Phenology: Flowering May to August, fruiting in December.

Distribution: East Asia: China. Indian Subcontinent: India. Southeast Asia: Myanmar, Thailand.

Etymology: The name of the species honors Henry Burton Guest Garrett (c. 1871-1959), a forest officer of the Royal Thai Government who made botanical collections in northern Thailand from 1899 to 1959. His contributions include approximately 1500 specimens.

Notes: The species that is here called *S. garrettii* was treated as a variety of *A. megaladena* (Nielsen 1985a). These two species are related and have parapatric ranges, meeting in the area of the type locality of *S. garrettii,* but not co-occurring within the same microhabitat. *S. megaladena* can most readily be distinguished by its thickened petiole gland, which is orange when fresh and brown when aging. See Maslin et al. (2019) for further discussion.

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; Norsaengsri 11029, Ban Huai Phu Loei, 29 April 2014 (QBG). Pongamornkul 1775*,* Mae La Noi, Mae La Noi, Ban Dong, 1 May 2004 (QBG). Chiang Mai Province; Garrett 1239, Doi Chawm Hot [= Doi Chom Hot], Phrao District, 13 June 1941 (K K000791220, holotype of *A. megaladena* var. *garrettii*, isotypes: ABD (*n.v.*)—cited by Nielsen (1980), E (*n.v.*), P), Khwan 183, Mae Chaem, Tambon Wat Chan, 1 May 2007 (QBG), Maxwell 93-446, Samoeng, 16 May 1993 (CMUB, L), Maxwell 01-288, Mae Rim, 26 May 2001 (CMUB, L-2), Balslev et al. 9062, Mae Rim, 19 May 2018 (AAU, BKF), Balslev et al. 9113, Omkoi, 24 May 2018 (AAU, BKF). Chiang Rai Province; Srisanga et al. 3465, Mae Fa Luang District, Doi Tung, 16 May 2009 (AAU), van de Bult M. 1839, Mae Sai District, Doi Tung, summit of Pa Hoong cliffs, above Wat Phratat Doi Tung temple 24 April 2021 (QBG), Maxwell 05-303, Mae Sai, 28 April 2005 (BKF, CMUB), Palee 963, Mae Fah Luang, 24 May 2006 (CMUB, L), Maxwell 07-22, ibid., 8 February 2007 (CMUB, L, QBG). Phayao Province; Muangyen 894, Pha Daeng Doi Luang NP, 1 December 2018 (QBG). Nan Province; Srithi 503*,* Thung Chang, Manee Pruek 1 Village, 18 March 2010 (QBG).

***Senegalia kerrii* (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai**

Senegalia kerrii (I.C.Nielsen) Maslin, B.C.Ho, H.Sun & L.Bai, Pl. Diversity 41: 397, fig. 19 & 21 (2019). Basionym: *Acacia pennata* subsp. *kerrii* I.C. Nielsen, Adansonia ser. 2, 19(3): 353 (1980). Type: Thailand, Chiang Rai, Mae Suai, 25 July 1967, K. Bunchuai & B. Nimanong 1430 (holotype K barcode K000791221 digital image; isotypes: BKF 46294 barcode SN080094, C barcode C10011409 digital image, E barcode E00318283 digital image, P (*n.v.*) cited by Nielsen (1980)) — Homotypic synonyms: *Senegalia pennata* subsp. *kerrii* (I.C. Nielsen) Maslin, Nuytsia 22(6): 467 (2012) — Heterotypic synonym: *Acacia tomentella* Zipp. ex Span., Linnaea 15: 199 (1841). Type: Lectotype (designated by Nielsen 1985a: 19): s. coll. (Zippel?), Timor Herb. Lugd. Bat. No. 908.2 … 725 (L) (Figure 6).

Lianas or straggling shrubs to 5 m high. Upper branchlets usually with a dense indumentum of short, patent, straight or shallowly curved hairs. Prickles internodal. Stipules evident in young inflorescences, caducous, lanceolate to narrowly lanceolate, 4-6(-8)×1.5-2.5 mm, densely hairy abaxially, acuminate. Leaves: pinnae mostly 17-27 pairs; petiole 20-35 mm long; leaflets opposite, (20-)30-65 pairs per pinna, 3-4(-5)×0.4-0.8(-1) mm, flat, main-vein extending obliquely from the excentric petiolule to apex, lateral veins not visible or very few and not forming a reticulum, apex finely to broadly acute and normally symmetric to slightly asymmetric, base unequal with a rounded angle on lower edge only; petiole gland situated close to leaf base, 2-4 mm long, superficially sessile (but fractionally elevated from beneath) or sub-stipitate by a broad stipe, peripterous with a rather thin and spreading lamina, with the margin rather thin, spreading, variously curved upon drying, upper surface dark brown. Inflorescence a terminal open panicle or elongated raceme of heads, the axes puberulous and without glandular hairs; peduncles (5-)10-20 mm long, indumentum as on branchlets. Flower buds dull red when fresh; mature flowers sessile to subsessile, pedicels 0.1-0.2 mm long. Pods 90-200×20-29 mm, firmly chartaceous to thinly crustaceous, clearly stipitate. Seeds 6-10×4.5-7 mm, narrowly elliptic to oblong, areole 4-5×2 mm.

Vernacular name: Phak kha (ผักคา) (northern region).

Ecology: Forest clearing and margins of evergreen, deciduous, mixed deciduous, or scrub forests, roadsides; alt. up to 600 m. This species is among the most widespread and common species of *Senegalia* in Thailand, often found together with *S. megaladena* subsp. *megaladena*.

Phenology: Flowering from June to September and fruiting from June to December

Distribution: Australia: Queensland. East Asia: China, Taiwan. Indian Subcontinent: Bhutan (Uncertain), India, Nepal (Uncertain), Sri Lanka (Uncertain). Southeast Asia: Andaman Islands, Cambodia, East Timor, Indonesia, Laos, Malaysia, Peninsular Malaysia (uncertain), Myanmar, Thailand, Vietnam.

Etymology: This species is named for Arthur Francis George Kerr (1877-1942), who started his career as a medical doctor with the Royal Thai Government before transitioning to the role of Government botanist. Between

1902 and 1932, Kerr conducted extensive botanical collections in Thailand, amassing over 20,000 specimens.

Notes: Although *Acacia tomentella* Zipp. ex Span. (1841) is the earliest name for this species, the epithet '*tomentella*' could not be used in *Senegalia* because this name was already occupied by *S. tomentella* Britton & Rose (1928). *S. kerrii* is seemingly most similar to *S. garrettii*. It also resembles *S. pennata* subsp. *insuavis,* because both taxa have numerous pinnae, acute leaflets, depressed petiole glands situated close to the leaf base and clearly stipitate pods. *Senegalia pennata* subsp. *insuavis* can be recognized in the field by its green petiole gland (dark brown or reddish on the upper surface in *S. kerrii*) and because most plants emit a distinctive, disagreeable odor when the branchlets are cut or the leaves crushed; this smell is lost upon drying, but it is never present in *S. kerrii*. However, when working with herbarium specimens care is needed to reliably distinguish the taxa. *S. pennata* subsp. *insuavis* can be distinguished from *S. kerrii* by its branchlets and peduncles that never possess straight, patent hairs, its petioles and peduncles are generally longer, the petiole gland is often more elongated (length/width ratio = 1.5-4; in *S. kerrii* length/width ratio = 0.7-2), and its mature pods are of a paler color, at least when dry. Also, in *S. pennata* subsp. *insuavis* some leaflets are normally strongly folded lengthwise and/or ± strongly curved forward upon drying, whereas in *S. kerrii*, the leaflets dry flat or almost so and are not, or only slightly, curved forward. As discussed in Maslin et al. (2019), the shape, size, and form of petiole gland in *S. kerrii* are variable and require further study.

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; Maxwell 99-92, Pang Mapha, 6 August 1999 (CMUB, L). Chiang Mai Province; Maxwell 89-526, Doi Chang Dao, SE foothills at Ban Yang Pon Luang, 29 April 1989 (CMU). Chiang Rai Province; Bunchuai & Nimanong 1430, Mae Suai, 25 July 1967 (K barcode K000791221, holotype of *Acacia pennata* subsp. *kerrii*; isotypes: BKF, P *n.v.*—cited by Nielsen 1980), Maxwell 97-636, Doi Luang National Park, Bu Gang falls, 16 June 1997 (CMUB). Lamphun Province, Balslev et al. 9199, Mueang District, Chiang Mai University campus, side road to route 11, 19 December 2018 (AAU), Balslev et al. 9200, Mueang District, Chiang Mai University campus, side road to route 11, 19 December 2018 (AAU). Phitsanulok Province; Larsen et al. 805, Tung Salaeng Luang, 23 July 1966 (AAU). North-Eastern Region: Nong Khai Province; Balslev et al. 9444, route 212, 20 km north of Phon Phisai, 10 January 2019 (AAU, BKF, QBG, KKU). Eastern Region: Nakhon Ratchasima; Choopan 2021-50, Ban Nang Tho, Muang Yang, 21 February 2021 (QBG). South-Western Region: Prachuap Khiri Khan Province; Middleton et al. 1225, Amphoe Pran Buri, Kui Buri NP, 20 August 2002 (AAU, BKF, CMUB). South-Eastern Region: Chon Buri Province; Maxwell 72-10, Sattahip, Tong Brong, 1 January 1972 (AAU). Chanthaburi Province; Larsen et al. 32190, Pong Nam Ron-Pailin, 28 August 1972 (AAU). Peninsular Region: Kerr 4809, unknown locality, 21 May 1921 (AAU). Songkhla Province; Maxwell 85-411, Dton Nga Chang reserve, 18 April 1985 (AAU).

Figure 5. *Senegalia garrettii*. A. Habit (Balslev 9113), B. Branches and inflorescences (Balslev 9062), C. Flowering branches (Balslev 9113) (Photographed by Prateep Panyadee)

Figure 6. *Senegalia kerrii*. A. Habit, B. Fruiting branches (Balslev 9444), C. Fruits (Photographed by Jiratthi Satthaphorn)

***Senegalia meeboldii* (Craib) Maslin, Seigler & Ebinger**

Senegalia meeboldii (Craib) Maslin, Seigler & Ebinger, Blumea 58: 40 (2013). Basionym: *Acacia meeboldii* Craib, Bull. Misc. Inform. 1928: 66 (1928). Type: Thailand, Pato, Lang Suan District, Chumphon Province Kerr 12197 (Lectotype ABD designated by Nielsen 1980: 350; isotypes: BM, K) (Figure 14).

Lianas. Branchlets glabrous. Prickles internodal, numerous and prominent. Stipules ovate-oblong, 4-5×1.5 mm, caducous. Leaves: pinnae (1-)3-4 pairs, 40-110 mm long; leaflets opposite, (2-)3-5(-7) pairs per pinna, asymmetrically obovate to sub-trapezoid or obliquely ovate-elliptic, 8-75×5-33 mm, terminal pair the largest, size decreasing towards base of pinna, thin-textured, sub-sessile, prominently 2-veined, but only one extending to apex, lateral veins forming an open reticulum, apex asymmetrically acute; petiole gland near base of petiole, 3-4 mm long, prominent, raised. Inflorescence is a terminal open panicle of heads. Pods 100-160 × 30-60 mm. Seeds 11-18.5×6-5-10 mm, elliptic.

Vernacular name: Suat (สวด) (peninsular region).

Ecology: Evergreen forest; alt. ca 200 m.

Phenology: Flowering and fruiting in January.

Distribution: Southeast Asia: Myanmar and Thailand.

Etymology: The specific epithet meeboldii honors Alfred Meebold (1863-1952), a German botanist, writer, and explorer known for his significant contributions to botany. Meebold is the collector of the specimen from Myanmar mentioned in the protologue, but which is not the type (Meebold 15295, K000791203, K).

Specimens examined: Thailand. South-Western Region: Phetchaburi Province; Tagane et al. T2293, Kaeng Krachan NP, 4 November 2013 (BKF), William et al. 1165, ibid., 28 January 2005 (BKF, L). Peninsular Region: Chumphon Province; Kerr 12197, Lang Suan District, Pato, (ABD, lectotype of *Acacia meeboldii*; isotypes: BM & K, *n.v.*, cited by Nielsen (1980). Nakhon Si Thammarat Province; Sapan 773, Chawang, 13 March 1956 (BKF).

***Senegalia megaladena* (Desv.) Maslin, Seigler & Ebinger**

Senegalia megaladena (Desv.) Maslin, Seigler & Ebinger, Blumea 58(1): 41 (2013). Basionym: *A. megaladena* Desv., J. Bot. Agric. 3: 69 (1814), as 'megalodena'. TYPE: Habitat in India orientalis, ex herb. A.N. Desvaux (holotype P barcode P02436186 digital image). — Heterotypic synonyms: *Acacia arrophula* D. Don, Prodr. Fl. Nepal. 247 (Dec. 1824); *Acacia pennata* var. *arrophula* (D. Don) Baker in J.D. Hooker, Fl. Brit. India 2(5): 298 (1878). Type: Nepal, 1821, Wallich Numer. List no. 5257 (neotype K-W barcode K001120304 digital image). Missapplied

Names: *Acacia pennata* auct. pl. non (L.) Willd.: Gagnep., Fl. Indo-Chine 2: 83 (1913), *pro parte*, and Craib, Fl. Siam. 1(3): 550 (1928), pro parte, fide Nielsen (1981: 72 & 1985: 178).

Additional synonymy not based on Thai type material: WorldWideWattle (2025).

Robust lianas. Branchlets glabrous or sometimes minutely hairy towards apices when fruiting. Prickles internodal. Stipules triangular to narrowly lanceolate, 2.5-6×0.5-1.5 mm, caducous. Leaves: pinnae 12-24 pairs; rachis with appressed hairs; leaflets opposite, 19-81 pairs per pinna, (2-)3-8×0.4-1.3 mm, main-vein starting near upper margin at leaflet base, lateral veins not visible or somewhat evident, ascending and not forming a reticulum, apex symmetrically rounded or obtuse and without a mucro, base unequal with an obvious rounded angle on lower edge; petiole gland usually near the middle of petiole, sometimes above or below, prominent, 1.5-4×1-2 mm, thickened and commonly ± donut-shaped, orange to red-brown when fresh, aging brown. Rachis gland at base of uppermost 1-4(-5) pairs of pinnae. Inflorescence mostly terminal, open panicles of heads, sparsely to moderately hairy, without glandular hairs. Flower buds reddish when fresh. Pods dark- to red-brown or purplish brown, 95-180×(20-)25-37 mm, firmly chartaceous to thinly coriaceous. Seeds 7-9×4.5-5.5 mm, ovate-elliptic to ellipsoid, areole 4-5×1.5-2 mm.

Etymology: Derived from the Greek words megalos, meaning large and adenos, meaning gland, alluding to the notably large petiole gland in this species.

Notes: The taxonomic history of *S. megaladena* is summarized in Maslin et al. (2019). Two varieties are recognized and both occur in Thailand.

Ethnobotanical uses: Many ethnic groups use the aerial parts of *S. megaladena*, particularly the bark, as a fish poison (Krueasan 2000; Yaso 2000; Chuakul et al. 2002; Khamfachuea 2008; Kamwong 2009; Songsangchun 2015). The Karen people use the bark as a dye, producing a black color (Kamwong 2009). Meanwhile, the Lua people employ a decoction made from *S. megaladena* and *Archidendron clypearia* (Jack) I.C.Nielsen to treat wounds resulting from the cutting of the umbilical cord in infants (Pongamornkul 2006).

***Senegalia megaladena* var. *megaladena* (Desv.) Maslin, Seigler & Ebinger**

Senegalia megaladena var. *megaladena* (Desv.) Maslin, Seigler & Ebinger, autonym established by publication of *S. megaladena* var. *garrettii* and *S. megaladena* var. *indochinensis* (Maslin, Seigler & Ebinger, Blumea 58: 41, 2013). — *A. megaladena* var. *megaladena*, autonym established by the publication of *A. megaladena* var. *garrettii* and *S. megaladena* var. *indochinensis* (Nielsen, Adansonia sér. 2, 19(3): 351, 1980) (Figure 7).

Key to varieties of *Senegalia megaladena*

Leaflets 4-8×0.8-1.5 mm, lateral veins visible (obscure to somewhat evident)..... *S. megaladena* var. *megaladena*

Leaflets (2-)3-4 (-6)×0.4-0.6 mm, lateral veins not visible or occasionally extremely faint ..... *S. megaladena* var. *indochinensis*

Stipules (few seen) triangular to narrowly triangular, 3×0.6-1 mm. Pinnae 40-100 mm long; leaflets 4-8×(0.7-)0.8-1.5 mm, flat or shallowly curved forward when dry; lateral veins visible and obscure to somewhat evident.

Vernacular name: Phak Lae (ผักแหละ), nam han (หนามหัน) (northen region); nam khi raet (หนามขี้แฮด) (south-western region); hai (ไฮ) (peninsular region).

Ecology: Scrub and deciduous forest, and secondary vegetation; alt. 500-1000 m.

Phenology: Flowering in January and July to August, fruiting in July to August and December.

Distribution: East Asia: China. Indian Subcontinent: Bangladesh, Bhutan, India, Nepal. Southeast Asia: Andaman Islands, Indonesia, Laos, Myanmar, Thailand, Vietnam.

Ethnobotanical uses: See under *S. megaladena.*

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; 6 km S of Ben Sop Pong, Anderson 6006 (CMU). Chiang Mai Province; Balslev et al. 9142, Mae Chaem, 18 July 2018 (AAU, BKF), Balslev et al. 9145, San Sai, 19 July 2018 (AAU, BKF), Balslev et al. 9164, Doi Saket, 20 July 2018 (AAU, BKF), Bjørnland & Schumacher 549, Mae Rim, Ban Kong Hae, 21 December 1978 (AAU). Maxwell 87-637, Mueang, 18 July 1987 (L), Maxwell 87-1167, ibid., 10 October 1987 (CMU, L), Maxwell 87-673, Doi Sutep E side Pahh Ngeub, 18 July 1987 (CMU), Maxwell 90-678, Mae Dang [=Mae Taeng District], 24 June 1990 (L), Maxwell 91-651, Fang, 10 July 1991 (L), Maxwell 97-694, Mae Taeng, 1 July 1997 (CMU, CMUB, L), Nanakorn et al. 6697, Queen Sirikit Botanical Garden, Mae Rim District, 1 July 1996 (AAU), Palee 367, San Kamphaeng, 15 December 1995 (CMUB, L), Sribunroung 600, Mueang, 20 August 1987 (CMUB). Chiang Rai Province; Anderson 6092, Akha village Ba Ka Akha, 28 June 1989 (CMU, Anderson 6039, Akha village Huay Mak Lian, 23 June 1989 (CMU), Bragg 240, Mae Tameo Village, 5 Apr. 1989 (CMU). Lamphun Province; Balslev et al. 9206, Mueang, Chiang Mai University Campus, Side road to route 11, 19 December 2018 (AAU, BKF, QBG, KKU). Lampang Province; Maxwell 95-578, Mueang Pan, 25 August 1995 (CMUB, L). Eastern Region: Ubon Ratchathani Province; Balslev et al. 9331, Det Udom, route 2213 some 5-10 km from take-off from route 24, 28 December 2018 (AAU, BKF, QBG, KKU).

***Senegalia megaladena* var. *indochinensis* (I.C.Nielsen) Maslin, Seigler & Ebinger**

Senegalia megaladena var. *indochinensis* (I.C.Nielsen) Maslin, Seigler & Ebinger, Blumea 58: 41 (2013). Basionym: *A. megaladena* var. *indochinensis* I.C. Nielsen, Adansonia sér. 2, 19: 351 (1980), as 'indo-chinensis'. Type: Thailand, Prachinburi, Khao Yai NP, alt. 750 m, 13 July 1966, Larsen K., Smitinand T. & Warncke E. 375 (holotype AAU! digital image!; isotype BKF 54811 barcode SN036634). — Heterotypic synonym: *Acacia pennata* var. *arrophula* sens. Craib, Fl. Siam. 1: 550 (1928), pro parte, fide Nielsen (l.c.) (Figure 8).

Stipules conspicuous in young inflorescence buds, narrowly triangular to narrowly lanceolate, 4-8×1-1.5 mm. Leaves: pinnae (15-)20-55 mm long; leaflets (2-)3-4(-5)×0.4-0.6 mm wide, often shallowly to moderately curved forward when dry; lateral veins not visible or occasionally extremely faint.

Figure 7. *Senegalia megaladena* var. *megaladena*. A. Fruiting branches (Balslev 9206) (Photographed by Prateep Panyadee) B. Flowering branches (Balslev 9145) (Photographed by Kittiyut Punchay), C. Gland (Balslev 9206) (Photographed by Prateep Panyadee)

Figure 8. *Senegalia megaladena* var. *indochinensis*. A. Leaves (Balslev 9699), B. Flowering branch (Balslev 9699). (Photographed by Jiratthi Satthaphorn)

Vernacular name: Khi raet (ขี้แรด), hang lai daeng (หางไหลแดง) (central region); han daeng (หันแดง), lai daeng (ไหลแดง) (northern region); lae (แหล) (Shan-Chiang Mai).

Ecology: Montane evergreen, dry evergreen, mixed deciduous, dry deciduous, dry deciduous dipterocarp, and scrub forests, in clearing, along roadsides and forest margins; up to 1150 m.

Phenology: Flowering from June to August, fruiting in from February to November.

Distribution: China, Laos, Myanmar, Thailand, Vietnam, and possibly Cambodia, Malaysia and Indonesia (introduced).

Specimens examined: Thailand. Northern Region: Mae Hong Son Province: Pongamornkul 3562, Sop Moei, Ban Um Da Tai, 10 July 2013 (QBG), Chiang Mai Province; Geesink et al. 5809, Bo Luang, 7 June 1973 (AAU), Nanakorn et al. 7830, Mae Rim, QSBG, Huai Maesa Noi, 21 November 1996 (QBG). Chiang Rai Province; Maxwell 09-152, Mae Fa Luang, 2 June 2009 (CMUB), Nimanong et al. 141, Chiang Rai, 17 December 1967 (AAU), Watthana 312, Mae Fa Luang Palace area, Doi Tung, 25 June 1999 (QBG). Phayao Province; La-ongsri et al. 3275, Phu Sang, Ban Huak, 31 March 2014 (QBG), La-ongsri et al. 2546, Phu Sang NP, Ban Huak nature trail, 12 December 2012 (AAU), La-ongsri et al. 3126, Tambon Romyen, 23 January 2014 (AAU). Lampang Province; Kerr 4807, Maharet, February 1921 (AAU). Phrae Province; Maknoi 3924, Long, Erawan cave, 29 August 2010 (QBG). Sukothai Province; Maxwell 72-282, Sukothai, 8 June 1972 (AAU). Phitsanulok Province; Maknoi 4052, Noen Maprang, Tham Pha Tha Phon, non-Hunting Area, 17 January 2011 (QBG), Maknoi 4054, ibid.17 January 2011 (AAU, QBG), Maknoi 4169, ibid., 5 March 2011 (AAU, QBG), Maknoi 4891, ibid., 02 July 2012 (QBG), Murata et al. T-17075, Tung Salaeng Luang NP, 25 July 1973 (AAU). Kamphaeng Phet Province; van de Bult 16, Klong Lan, Kaeng Pa Koy Nang rapids, 28 July 1997 (CMUB, L). North-Eastern Region: Phetchabun Province; Maknoi 3726, Chon Daen, Sap Phutsa, 25 May 2010 (QBG). Loei Province; Dee 978, Wangsapong, 26 November 1957 (AAU). Sakon Nakhon Province; Nielsen et al. 1548, Thor-Khate division of Phu Phaan NP, 7 August 2004 (AAU). Mukdahan Province; Nielsen et al. 1516, Phu-Sra-Duakbua NP, 5 August 2004 (AAU). Eastern Region: Chaiyaphum Province; Larsen et al. 31503, Phu Khiao, 6-7 August 1972 (AAU). Nakhon Ratchasima Province; Murata et al. 16464, Kao Yai NP, 18 July 1973 (AAU) Ubon Ratchathani Province; Balslev et al. 9387, Don Mot Daeng, route 4041, 5 km east of route 2050, 2 January 2019 (AAU, BKF, QBG, KKU), Balslev et al. 9398, Warin Chamrap, Phomun village. Sideroad <1 km from route 231, 3 January 2019 (AAU, BKF, QBG, KKU). South-Western Region: Kanchanaburi Province; Maxwell 73-198, Muang Cha, 7 July 1973 (AAU) Maxwell 00-60, Sai Yok, 18 February 2000 (L), Maxwell 05-337, ibid., 17 May 2005 (CMUB, L). Phetchaburi Province; Sasrirat 5, Khao Pa Noen Tung, 21 August 1998 (QBG). Central Region: Saraburi Province; Srisanga et al. 3540, Phuttabat District, The Siam Cement (Ta Luang) Khao Wong, 17 June 2009 (AAU, QBG). South-Eastern Region: Prachin Buri Province; Larsen et al. 375, Khao Yai NP, 13 July 1966 (AAU, holotype of *A. megaladena* var. *indochinensis*; isotype: BKF 54811 bc SN036634). Chachoengsao Province; Middleton & Pholsena 170, Sa Kaeo Province, beside road through Chachoengsao wildlife sanctuary, 9 September 1999 (E, L). Rayong Province; Wessumritt 50, Mueang, Kachet, Ban Ta Phun Thong, 9 November 2007 (QBG). Chantaburi Province; Larsen et al. 32162, Pong Nam Ron - Pailin, 28 August 1972 (AAU). Peninsular Region: Songkhla Province; Balslev et al. 9699, Sadao, route 4145 west of Khlong Ngae Village, 3 June 2019 (AAU, BKF, K, MO, QBG). Unknown Region: Kerr 6198 (AAU).

***Senegalia pennata* (L.) Maslin**

Senegalia pennata (L.) Maslin, Nuytsia 22(6): 466 (2012). Basionym: *Mimosa pennata* L., Sp. Pl. 1: 522 (1753). Type: Ceylon [Sri Lanka], Herb. Hermann 3: 7, No. 216 (lectotype BM barcode 000621813 and 000621815, designated by Brenan & Exell 1957: 101; second step by Nielsen 1981: 66). — Homotypic synonym: *Acacia pennata* (L.) Willd., Sp. Pl. Editio quarta 4(2): 1090-1091 (1806); *Acacia pennata* var. *pennata*, autonym established by publication of *Acacia pennata* var. *dregeana* and *A. pennata* var. *heyneana* (Bentham, London J. Bot. 1: 516, 1842). Heterotypic Synonyms: *Acacia pennata* var. *heyneana* Benth. (Bentham, London J. Bot. 1: 516, 1842. Type: India (designated by Subhedar 1989: 271, but failed to cite herbarium of lodgment): Wall. Cat. n. 5253A (K)).

Additional synonymy not based on Thai type material: see Deshpande et al. (2019: 7) and WorldWideWattle (2025).

Lianas or scandent shrubs. Branchlets glabrous to densely puberulous. Prickles internodal. Stipules densely hairy abaxially. Leaves: pinnae 10-30 pairs; leaflets opposite, mostly 30-80 pairs per pinna, 3-6×(0.3-)0.5-1 mm, flat and straight or (when dry) folded lengthwise and/or curved forward over their entire length or at apex only, ciliate otherwise glabrous, main-vein ±close to and parallel with upper margin for at least a short distance above leaflet base, lateral veins not visible, apices obliquely rounded to obtuse or slanting and terminated by short but distinct, excentric apiculum, base unequal by an obvious rounded angle on lower edge only, petiolule excentric; petiole gland 4-10 mm above pulvinus, oblong, 1.5-4 mm long, depressed, slightly thickened and flat-topped or elongate-cupular with a low rim and shallow central area; rachis-gland at base of uppermost 1-4(-6) pairs of pinnae. Inflorescence of terminal racemes or open panicles of heads, the axes and peduncles densely hairy, without glandular hairs. Flowers with short but discernible pedicels; calyx tube glabrous to ± densely puberulous. Pods 100-200×20-25 mm, firmly chartaceous to thinly coriaceous, yellowish to light brown, stipe 5-10 mm long. Seeds 7.5-10.5×7-8 mm, broadly oblong to oblong-elliptic, areole c. 5×4 mm.

Notes: Two subspecies are recognized in Thailand, namely subsp. *pennata*, which is introduced, and subsp. *insuavis*, which includes both native and possibly introduced populations. In the past, the name *Acacia* (*Senegalia*) *pennata* often appeared in the literature and on herbarium specimens, but in recent years the circumscription of this species has greatly changed. Today, the species is much more narrowly defined than previously, as tersely discussed in Maslin et al. (2019). The two subspecies currently

recognized within *S. pennata* are both found in Thailand. Subspecies *pennata* is introduced and appears to be rare, while subsp. *insuavis* is more widespread and includes both native and possibly introduced populations. Further study is needed to better understand the relationship between these two entities and to determine whether the rank applied to them is appropriate. Such work, which would need to involve plants from Sri Lanka (the type locality of *A. pennata*) and southern India, is beyond the scope of the present study. Nielsen (1985a) treated *Acacia pennata* var. *canescens* Graham ex Kurz as a synonym of *A. pennata*. However, the taxonomic status of this entity requires further study; it may represent a 'good' taxon restricted to Myanmar and NE India (WorldWideWattle 2025). Based on the materials we have examined, it appears that the previous description of the branchlets of *S. pennata* subsp. *pennata* in the Flora of Thailand (Nielsen 1985a) may have overemphasized the presence of glandular hairs.

Key to subspecies of *Senegalia pennata*

Pinnae (10-)15-16 pairs, leaflets flat (not folded lengthwise when dry), terminated by a bluntly acute point. Living plant odor unknown. Petiole 20-35 mm long. Peduncle 15-20 mm long ..... *S. pennata* subsp. *pennata*

Pinnae (15-)17-30 pairs; leaflets at least some obviously curved forward and/or folded lengthwise when dry, terminated by a finely acute point. Living plant often emitting un-pleasant odor when leaves or branches are crushed. Petiole 30-50 mm long. Peduncle 15-40 mm long ..... *S. pennata* subsp. *insuavis*

***Senegalia pennata* subsp. *pennata* (L.) Maslin**

Senegalia pennata subsp. *pennata* (L.) Maslin, autonym established by publication of *Senegalia pennata* subsp. *kerrii* (I.C. Nielsen) Maslin, Nuytsia 22(6): 467 (2012) — *Acacia pennata* (L.) Willd. subsp. *pennata*, autonym established by the publication of *Acacia pennata* subsp. *hainanensis*, *A. pennata* subsp. *insuavis,* and *A. pennata* subsp. *kerrii* Nielsen (1980) (Figure 15).

Stipules triangular or oblong-acute, 2-3×1 mm. Leaves: pinnae 10-16 pairs, 30-70 mm long; petiole 20-35 mm long; rachis (60-)100-130 mm long; leaflets 5×1 mm, flat or (when dry) some curved forward at apex main-vein ±close to and parallel with the upper margin in lower half of leaflet, apiculum bluntly acute; petiole gland 1.5-2 mm long. Peduncles 15-18 mm long. Pods not seen.

Vernacular name: Nam khi aet (หนามขี้แรด) (south-western region).

Ecology: Along roadsides, in clearings, along forest margins; up to 920 m.

Phynology: Flowering in late August.

Distribution: This subspecies is introduced in Thailand. It occurs naturally in southern India and Sri Lanka.

Notes: The differences in leaflet curvature and folding between the two subspecies of *S. pennata* are seemingly related to leaflets being more thinly textured in subsp. *insuavis* than in subsp. *pennata*. It is uncertain if subsp. *pennata* emits a disagreeable odor, as does subsp. *insuavis*; further investigation is needed. The only record we have seen of odor in this subspecies is that of Kostermans (1980), who reported that, when collected in alcohol (wet method), the pickled plant has a strong odor of hydrogen sulfide. However, not having seen any specimen upon which this record was based, we are unable to verify Kostermans observation.

Etnobotanical uses: None recorded.

Specimens examined: Thailand. South-Western Region: Phetchaburi Province; Maxwell 71-494, Phetchaburi, 22 August 1971 (AAU), Nielsen et al. 1924, Kaeng Krachang NP, Phanron Thing ranger station, 25 August 2004 (AAU, BKF).

***Senegalia pennata* subsp. *insuavis* (Lace) Maslin, Seigler & Ebinger**

Senegalia pennata subsp. *insuavis* (Lace) Maslin, Seigler & Ebinger, Blumea 58: 41 (2013). Basionym: *Acacia insuavis* Lace, Bull. Misc. Inform. 1915: 401 (1915). Type: Burma, Maymyo Plateau, near Ani Sakan, alt. 900 m., 18 May 1913, J.H. Lace 6173 (E barcode E00318280 digital image); isolectotypes: CAL n.v. -cited by Chakrabarty and Gangopadhyay (1996), E barcode E00318279, E barcode E00318281, K barcode K000791207) — Homotypic synonyms: *Acacia pennata* subsp. *insuavis* (Lace) I.C. Nielsen, Adansonia, ser. 2, 19: 353 (1980); — *Senegalia insuavis* (Lace) Pedley, Austrobaileya 9(2): 314 (2014) (Figure 9).

Plants usually emit a disagreeable odor from crushed fresh branches and leaves. Stipules ovate-lanceolate, (2-)3-5×1.5-2 mm. Leaves: pinnae (15-)17-30 pairs, mostly 30-100 mm long; petiole 30-50 mm long; rachis 110-200 mm long; leaflets 4-5 mm long, to c. 0.5 mm wide at base, usually at least some leaflets obviously curved forward over their entire length and/or folded lengthwise when dry, main-vein ±close to and parallel with upper margin for at least a short distance above leaflet base, apiculum finely acute; petiole gland 2-4 mm long. Peduncles 15-40 mm long.

Vernacular name: Cha om (ชะอม) (central and peninsular regions); phak ha (ผักฮ้า) (northern region); pha-seng-du (ฟ่าเซ็งดู่), phu-su-do (พูซูเด๊าะ) (Karen, northern region), pho-sui-do (โพซุยโดะ) (Karen, south-western region).

Ecology: Mostly found in cultivation; in nature, it occurs in dipterocarp forest with pine and in some cattle fields.

Phenology: Flowering and fruiting from May to June.

Distribution: This subspecies has long been cultivated for culinary purposes, therefore, it is often difficult to know with certainty if specimen records represent native or introduced plants (Maslin et al. 2019). However, as best can be determined, *S. pennata* subsp. *insuavis* occurs naturally and is also cultivated in Myanmar, southern China and Thailand. Its status in Laos is uncertain and Nielsen (1981) regarded it as introduced, whereas Newman et al. (2007) regarded it as native. Similarly, in India, it is not known whether native or introduced (Deshpande et al. 2019). It is introduced to Australia (Northern Territory and Queensland), Cambodia, Egypt, Singapore, and U.S.A. (Florida) (WorldWideWattle 2025).

Notes: Since the time that Lace (1915) described *Acacia insuavis* based on material collected from Myanmar, this entity has been treated as a species of *Acacia* or *Senegalia*,

as a subspecies of *A. pennata* (Nielsen 1985a) or *S. pennata*, or as a synonym of *A. pennata*. Here, we follow Maslin et al. (2019) in treating it as a subspecies of *S. pennata*, but recognize that future more detailed studies may lead to it being recognized as a separate species. Most living plants of *S. pennata* subsp. *insuavis* emits a rather strong, offensive smell when its leaves are crushed or its branches are cut; this smell is lost when the plants are dried following collection. However, limited field observations in both Thailand and northern Vietnam have revealed that some living plants lack this smell, or the smell is weak. Again, further field studies are needed to better understand the variation within this character. The leaflet's main vein in *S. pennata* subsp. *insuavis* was incorrectly described as not being parallel to the leaflet upper margin in the Flora of Thailand (Nielsen 1985a).

Ethnobotanical uses: *Senegalia pennata* subsp. *insuavis* is one of the most common vegetables consumed by all ethnicities in Thailand. The young shoots may be prepared in many ways, and are most often used in curry or fritters. Moreover, the young shoots can be eaten raw as a side dish. The plant was also used to treat many diseases (Table 3).

Other uses: Cultivated as a hedge-row shrub. The leaves are fetid when crushed and used as vegetable.

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; Georgiadis 523, Pang Mapha, 19 May 2010 (CMUB). Chiang Mai Province; Balslev et al. 9098, Hot, 23 May 2018 (AAU, BKF), Balslev et al. 9127, Omkoi, 26 May 2018 (AAU, BKF), Balslev et al. 9183, route 1013, 19 km west of Mae Wang, 21 July 2018 (AAU), Balslev et al. 9234, Hang Don District, road to Aob Khan NP, side road to route 1269, 21 Dec 2018 (AAU), Georgiadis 626, Chom Thong, 25 May 2011 (CMUB, L), Nanakorn et al. 742, QSBG Mae Rim, 2 June 1994 (QBG), Palee 835, Mae Awn, 24 October 2005 (CMUB). Chiang Rai Province; Matratahn 5, Wiang Kaen, 2 August 2002 (CMUB). Lamphun Province; Palee 11, unknown locality, 27 April 1992 (CMUB). Eastern Region: Nakhon Ratchasima Province; Maxwell 03-67, Nakhon Ratchasima, Pak Chong, 4 April 2003 (CMUB). Ubon Ratchathani Province; Balslev et al. 9317, route 24 north of Det Udom, 27 December 2018 (AAU). South-Western Region: Kanchanaburi Province; Maxwell 94-549, Sangklaburi, 17 April 1994 (CMUB, L) Maxwell 71-497, unknown locality, 22 August 1971 (AAU). Peninsular Region: Songkhla Province; Balslev et al. 9676, route 4 to Sodao, 1 June 2019 (AAU). Unknown Region: Kerr 4406 (AAU).

Table 3. Uses of *Senegalia pennata* subsp. *insuavis* in Thailand

Part of plant used	Preparation	Application	Treatment/ailment	Ethnicity	Reference
Entire leaf, young shoot	-	-	Gastrointestinal	Thai	Turreira-García et al. (2017)
Young shoot	Cooked	Eaten as food	Carminative	Hmong	Noitana et al. (2013)
Young shoot	Cooked	Eaten as food	Anthelmintic	Hmong	Noitana et al. (2013)
Bark	No preparation	Chewed	Sore throat	Thai Yuan	Songsangchun (2015)
Entire leaf, young shoot	-	-	Skeleto-muscular	Thai	Turreira-García et al. (2017)
Entire plant	Decoction	Bath	Post partum syndrome	Thai Yuan	Pantarod (2002)
Root	Decoction	Drink	Post partum syndrome		
Entire leaf, young shoot	-	-	Respiratory	Thai	Turreira-García et al. (2017)
Bark	Grated	Liniment	Pustules	Lua	Srithi (2012)
Entire leaf	Decoction	Bath	Itching (pruritus)		
Entire leaf, Stem	Decoction	Bath	Rashes		

Figure 9. *Senegalia pennata* subsp. *insuavis*. A. Leaves and inflorescences (Balslev 9127), B. Inflorescences (Balslev 9098) (Photographed by Prateep Panyadee)

***Senegalia pluricapitata* (Steud.) Maslin, Seigler & Ebinger**

Senegalia pluricapitata (Steud.) Maslin, Seigler & Ebinger, Blumea 58: 41 (2013). Basionym: *Acacia pluricapitata* Steud. ex Benth., London. J. Bot. 1: 516 (1842). Type: Holotype: Malay (Penang), G. Porter in Wallich Cat. no. 5255A (K-WALL). Homotypic synonyms: *Acacia pennata* var. *pluricapitata* (Steud. ex Benth.) Baker, in J.D. Hooker, Fl. Brit. India 2(5): 298 (1878). — *Acacia pennata* sens. Ridl., Fl. Malay Penin. 1: 657 (1922) (Figure 16).

Lianas. Branchlets microscopically puberulous, with glandular hairs on young growth. Prickles internodal. Stipules linear-triangular, 1.5-2.5×0.2-0.5 mm, caducous. Leaves: pinnae (17-)20-33 pairs, 20-30(-35) mm long; leaflets opposite, (25-)40-60 pairs per pinna, narrowly oblong to almost linear, 1.5-3.5(-4)×0.3-0.5 mm, main-vein obvious on lower surface, lateral veins not visible, apex symmetrically rounded to obtuse and without mucro, base unequal by a rounded angle on lower edge only, petiolule eccentric; petiole gland near or below middle of petiole, stipitate to sub-stipitate, short-cylindric, raised to 1 mm high; rachis gland at base of uppermost 6-14 pairs of pinnae. Inflorescence normally open, of terminal panicles of small heads, the primary axes with a mixture of white orthodox hairs and red-brown glandular hairs. Pods 70-125×19-24 mm, chartaceous, flat and straight. Seeds 6.5×3.8-4 mm, elliptic, areole 4.5×2 mm.

Vernacular name: Hang Lai Daeng (หางไหลแดง), Yan-ngai (ย่านงาย) (peninsular region).

Ecology: Evergreen forest at low altitudes.

Phenology: Flowering in October.

Distribution: Southeast Asia: Indonesia, Malaysia, Myanmar (doubtful), Philippines (doubtful), Thailand, Vietnam (WorldWideWattle 2025).

Etymology: The term *pluricapitata* originates from the Latin prefix *pluri-*, meaning many, and *capitata*, meaning headed. This name references the species possessing inflorescences comprising several flower heads.

Specimens examined: Thailand. South-Western Region: Phetchaburi Province; Nielsen et al. 1925, Kaeng Krachan NP, Phanron Thing ranger station, 25 August 2004 (AAU, BKF). Peninsular Region; Trang Province; Bunnab 37, Khao Chong, 5 October 1965 (BKF). Songkhla Province; Inuthai 534, Chana, Khao Reng Hill, 8 August 2009 (BKF). Yala Province; Maxwell 86-904, Bannang Sata, 12 November 1986 (CMU, BKF).

***Senegalia pseudointsia* (Miq.) Maslin, Seigler & Ebinger**

Senegalia pseudointsia (Miq.) Maslin, Seigler & Ebinger, Blumea 58: 41 (2013). Basionym: *Acacia pseudointsia* Miq., Fl. Ned. Ind. 1: 12 (1855), as '*Pseudo-Intsia*'. TYPE: Indonesia, Java, *Blume s.n.* (Holotype L, Nielsen 1980: 355). Autonym: *Acacia pseudointsia* var. *pseudointsia*, established by publication of *Acacia pseudointsia* var. *ambigua* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 249 & 511 (1897) (= *S. andamanica*. — Heterotypic synonyms: *Acacia macrocephala* var. *siamensis* Craib, Fl. Siam. 1(3): 549 (1928). Type: Thailand, Kao Ri Yai, Kanburi, 31 January 1926, A.F.G. Kerr *10357* (K holotype; AAU photo of K-holotype) — *Acacia pennata auct. non* (L.) Willd: Miq., Fl. Ind. Bat. 1: 12 (1855), pro parte, quoad cit. specim. "*A. globulifera* Blume in Herb. Laud." Et quoad nom. vernac. "Aroy Garoet", fide Nielsen (1985: 13). (Figure 17).

Lianas or straggling shrubs. Prickles internodal, often absent from herbarium specimens. Stipules filiform-linear, 2-3×0.1-0.2 mm, caducous. Leaves large; pinnae 9-16 pairs, 45-110 mm long, rachillae normally truncate at apices; leaflets opposite, 17-62 pairs per pinna, 5-7×1-1.5 mm, sessile, main-vein extending obliquely from the excentric and indistinct petiolule to apex, lateral veins not forming a distinct reticulum, apex normally symmetrically rounded to obtuse and without apiculum, base unequal with rounded/ truncate lobe on lower edge only; petiole gland at middle of petiole, 4-5 mm long, prominent, clearly raised. Inflorescence is a terminal panicle of heads. Pods 120-250×30-50 mm. Seeds not seen.

Vernacular name: Khi chang (ขี้ช้าง) (northern region).

Ecology: In scrub and evergreen forest; alt. up to 800-900 m.

Phenology: Fruiting in July.

Distribution: Southeast Asia: Indonesia, Malaysia, Thailand.

Etymology: The epithet pseudointsia is derived from pseudo, meaning false or similar, and the name *intsia*, referring to the species *Acacia intsia* (L.) Willd. (= *S. intsia* (L.) Maslin, Seigler & Ebinger). This indicates that Miquel thought that his new species resembled the species *Acacia intsia* (L.) Willd., which is now regarded as a confused name (WorldWideWattle 2025 for discussion).

Note: the leaflet size of (6-)7-13x1.2-2.8 mm as described by Nielsen (1985a), is larger than in any of the Thai specimens that we have examined. The reticulum is imperfect or indistinct; it is absent in specimens from Peninsular Malaysia.

Ethobotanical uses: None recorded.

Specimens examined: Thailand. South-Western Region: Kanchanaburi Province; Larsen 9426, Klang Dong, 31 January 1962 (BKF), Somruay et al. 202, Dong Yai, Si Sawat, n.d. (BKF).

***Senegalia rugata* (Lam.) Britton & Rose**

Senegalia rugata (Lam.) Britton & Rose, N. Amer. Fl. 23(2): 120 (1928). Basionym: *Mimosa rugata* Lam., Encycl. 1: 20 (1783). Type: Cet arbre croît dans l'Inde, & m'a été communiqué par M. Sonnerat (Holotype: s.d., s. coll. s.n. P-LA barcode P00297138). Homotypic synonyms: *Acacia rugata* (Lam.) Buch.-Ham. ex Voigt, Hort. Suburb. Calcutt. 263 (1845), nom. illeg.; — *Acacia rugata* (Lam.) Buch.-Ham. ex Merr., Philipp. J. Sci., C 5: 28 (1910), isonym; — *Acacia rugata* (Lam.) Buch.-Ham. ex Fawc. & Rendle, Fl. Jamaica 4: 141 (1920), isonym. — Heterotypic synonyms: *Mimosa concinna* Willd., Sp. Pl., ed. 4 [Willdenow] 4(2): 1039 (1806) Holotype: India. Orientalis, *D. Klein s.*n. (B-W) fide Nielsen (1980); — *A. concinna* (Willd.) DC., Prod. 2: 264 (1825); *Acacia rugata* vr. *concinna* (Willd.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 45(4): 297 (1877 dated '1876');— *A. concinna* var. *concinna* (Willd.) DC., autonym established by publication of *Acacia concinna* var. *rugata*

(Buch.-Ham. ex Benth.) Baker, in J. D. Hooker, Fl. Brit. India 2(5): 297 (1878) (Figure 10).

Additional synonymy not based on Thai type material: WorldWideWattle (2025).

Lianas, scandent shrubs or rarely small trees. Prickles internodal. Stipules foliaceous, ovate and acute to short-acuminate, lobed on one or both sides at base, 4-6×3-4 mm. Leaves: pinnae (4-)5-10 pairs, 40-85 mm long; leaflets opposite, 10-35 pairs per pinna, mostly 7-10×1-2.5 mm, thin-textured, main-vein extending obliquely from excentric petiolule to apiculum, lateral veins forming a net-like reticulum, apex symmetrically to asymmetrically obtuse with a short, acute, centric or excentric apiculum; base unequal with a prominent rounded angle on lower edge only; petiole gland normally situated on lower half or occasionally near middle of petiole, 1.5-2(-3) mm long, somewhat prominent and often hemispheric, raised to c. 1 mm high. Inflorescence comprising 2-3 (-5) pedunculate heads within leaf axils or occasionally in racemes or panicles. Flowers loosely arranged in heads; flower buds red or pink when fresh. Pods 35-100×15-20(-25) mm, flattened but thick, coarsely wrinkled very hard-textured and brown or black when dry. Seeds 10-11×7-8 mm, seated within discrete chambers in pod, somewhat turgid, areole c. 7×5 mm, occupying much of seed surface.

Vernacular name: Som khon (ส้มขอน), som poi (ส้มป่อย) (northern region); phak som poi (ผักส้มป่อย), som poi (ส้มป่อย). (north-eastern region); som poi (ส้มป่อย) (peninsular region).

Ecology: In scrub, dry deciduous dipterocarp, mixed deciduous, and dry evergreen forests, especially in clearing and at forest-margins; alt. up to 1400 m.

Phenology: Flowering from February to April, fruiting from November to March.

Distribution: East Asia: China. Indian Subcontinent: India, Nepal, Bhutan, Bangladesh. Southeast Asia: Andaman Islands, Myanmar, Cambodia, Laos, Vietnam, Malaysia, Indonesia, Myanmar, Philippines, Papua New Guinea, Singapore. Introduced to Brazil, the Caribbean, Madagascar, Mauritius, Reunion Island, Japan, Seychelles, and Australia.

Etymology: The species name originates from the Latin word *rugatus*, meaning wrinkled, which refers to the distinctive coarse wrinkles on the dry pods.

Notes: The very complex taxonomic and nomenclatural history of *S. rugata* was discussed by Maslin et al. (2019). Further study of this species over its entire geographic range is needed to better understand the patterns of morphological variation. This species was treated as *A. concinna* in the Flora of Thailand (Nielsen 1985a). The distinctive pods readily set *S. rugata* apart from all other Asian species of *Senegalia*. The inflorescences of *S. rugata* are pedunculate heads that are normally clustered within the leaf axils, but sometimes they are arranged in short racemes. Panicles are rare in this species but have been observed in a few collections, especially from northern Thailand (e.g., J. F. Maxwell *97-745*, CMU 11374).

Ethnobotanical uses: This species is highly regarded for its many uses among various ethnic groups across Thailand. Young shoots are frequently used in soups or curries to add a sour flavor. Water infused with the fresh or dried pods is widely used as holy water in rituals and ceremonies. Additionally, this infusion is used for hair care, helping to reduce dandruff and darken hair, and for laundry purposes (Kamwong 2009). It also serves as a mordant in dyeing processes (Khamfachuea 2008). Both the pod and leaf of *S. rugata* are used to treat a variety of diseases (Table 4).

Other uses: Dried pod steeped in scented water for ablution during the water festival and the new year celebration.

Specimens examined: Thailand. Northern Region: Mae Hong Son Province; Chusie 132, Khun Yuam, 5 March 1998 (QBG), Georgiadis 597, Pang Mapha, 19 May 2011 (CMUB, L), Norsaengsri 10469, Ban Mai Sang Nam, Tham Pla-Namtok Phae Suea NP, 28 June 2013 (AAU), Pongamornkul 2938, Pangmapha, Ban Phaem, 25 March 2011 (QBG), Pongamornkul 03989, Sop Moei, Ban Um Da Tai, 27 February 2014 (QBG). Chiang Mai Province; Benyatian 1, Mae Taeng, 21 August 2002 (CMUB), Jatupol 07-134, Mae Rim, Banphanokkok, Pong Yaeng, 8 December 2007 (QBG), Native S417, Doi Suthep, 15 March 1949 (BKF), Khwan 047, Mae Chaem, Tambon Wat Chan, 1 March 2006 (QBG), Konta et al. 4071, Chom Thong, 8 February 1998 (BKF), Koyama et al. 15527, Hot, 24 February 1979 (AAU, BKF), Maknoi 3694, Khao Pakarang, Sub Phutsa, 1 March 2010 (QBG), Maxwell 95-260, Chiang Dao, 28 March 1995 (BKF, CMUB), Maxwell 96-410, Chiang Dao, Doi Chiang Dao wildlife sanctuary, 20 March 1996 (BKF, CMUB), Nanakorn et al. 6945, Phrao, 30 July 1996 (QBG), Phengklai et al. 10913, Doi Inthanon, Mae Ya waterfall, 8 February 1998 (BKF), Pongamornkul 4633, Om Koi, Ban Pak Tang Muzer, 28 March 2015 (QBG), Pongamornkul 4846, Om Koi, Ban Mae Kong, 10 March 2015 (QBG), Pongamornkul 5994, Mae Chaem, Ban Huei Pha, 08 February 2017 (QBG), Smitinand 110, Doi Suthep, 18 March 1951 (BKF), S.N. s.n., Chiang Mai city, Chiang Mai market, 4 January 1921 (BK), Winichainan 1162, Mae Wang, Ban Huai Thong, 6 March 1994 (QBG). Chiang Rai Province; Maxwell 09-21, Mae Fa Luang, Doi Pa Sang Sung, south side, c. 3 km north of Pa Sang Sung Village, Thoet Thai, 24 January 2009 (CMUB, QBG), Maxwell 09-152, Mae Fa Luang, ca. 2 Km North of Jah Dtee (Lahu) Village, Thoet Thai, 2 June 2009, (QBG), Muangyen N. 624, Pan, Phu Kang Waterfall, 8 February 2016, (QBG), Norsaengsri 11986, Mueang, Pu Kaeng Waterfall, Doi Luang NP, 31 March 2015, (QBG). Nan Province; Chusie & Srithi PK 023, Ban Pong-kham, 7 March 2007 (QBG). Lamphun Province; Romkham 104, Mae Tha, Ban Ta Pa Pao, Tha Pla Duk, 23 December 2009 (QBG), Romkham 193, Mae Tha, Tha Sob Chai, 21 March 2010 (QBG), Romkham 281, Mae Tha, Tha Pla Duk, 25 June 2010 (QBG). Lampang Province; Hansen & Smitinand 12939, Doi Pae Poe, 15 March 1968 (BKF), Maxwell 97-745, Wang Nuea, Doi Luang NP, 12 July 1997 (BKF, CMUB, L), Sørensen et al. 1862, unknown locality, 3 March 1958-1959 (BKF), Tak Province; La-ongsri et al. 2794, Thung Yai Naresuan wildlife sanctuary, 26 March 2013 (QBG), Watthana 3671, Umphang, Thung Yai east, 14 January 2011 (AAU, BKF, QBG). Phitsanulok Province; Maknoi 4184, Tham Pha Phon wildlife sanctuary, 15 March 2011 (QBG).

Table 4. Uses of *Senegalia rugata* in Thailand

Part of plant use	Preparation	Application	Treatment/ailment	Ethnicity	Reference
Entire leaf	Decoction (with other plants)	Steam	Strengthen the respiratory system	Thai	Neamsuvan et al. (2013)
		Steam	Strengthen the circulatory system	Thai	Neamsuvan et al. (2013)
	Blended ball with honey	Eat	Hemorrhoids	Tai Lue	Inta (2008)
Entire leaf, young shoot	-	-	Cardiovascular	Thai	Turreira-García et al. (2017)
-	Decoction (with *Mimosa pudica*)	Drink	Strengthen vascular system	Karen	Sonsupub (2010)
Fruit	Decoction	Bath	Wading bad spirit	Shan	Pongamornkul and Muangyen (2012)
Entire leaf	Cooked	Eat as food	Flatulence	Thai Yong	Sumridpiem (2017)
Fruit	Burn and infusion	Drink	Flatulence	Karen	Kaewsangsai (2016)
Root	Decoction (with rice)	Drink	Diarrhea	Khamu	Srithi (2012)
Young shoot	Decoction	Drink	Diabetes	Shan	Archam (2011)
	Decoction (with sugar)	Drink	Diabetes	Shan	Inta et al. (2011)
Entire leaf	Decoction	Drink	Kidney stone	Karen	Tangjitman (2017)
Entire leaf	Heat	Poultice	Abscess	Karen	Kaewsangsai (2016)
Entire leaf	Decoction	Bath	Fever	Karen	Winijchaiyanan (1995)
Entire leaf	Decoction (with other plants)	Bath and drink	Typhoid fever	Karen	Winijchaiyanan (1995)
Fruit	Infusion	Bath	Fever	Shan	Pongamornkul and Muangyen (2012)
Young shoot	Decoction (with other plants)	Steam	Increase strength for the patience who just recovered from the fever	Karen	Winijchaiyanan (1995)
Fruit	Decoction	Bath	Insomnia	Shan	Pongamornkul and Muangyen (2012)
Entire leaf	Decoction	Drink	Diaphoretic	Thai Yuan	Inta et al. (2013)
		Steam	Promote metabolism	Thai Yuan	Inta (2011)
	Decoction (with other plants)	Steam	Promote metabolism to eliminate toxic from the body	Thai	Neamsuvan et al. (2013)
Entire leaf	Decoction (with other plants)	Steam	Muscular relieve	Thai	Neamsuvan et al. (2013)
		Steam	Treating muscle pain and bodily discomfort	Thai	Chotchoungchatchai et al. (2012)
	Herbal compress ball	Heat and apply directly	Tendon pain	Thai	Thangthaisong et al. (2011)
		Heat and apply directly	Muscular problem	Thai	Chotchoungchatchai et al. (2012)
	Grind (mixed with other plants)	Poultice	Tendon pain	Thai	Thangthaisong et al. (2011)
Stem	Decoction	Bath	Muscular pain	Shan	Pongamornkul and Muangyen (2012)
Entire leaf	Decoction (with other plants)	Steam	Stimulate nervous system	Thai	Neamsuvan et al. (2013)
Young shoot	Decoction	Drink	Increase appetite	Shan	Archam (2011)
	Decoction (with sugar)	Drink	Increase appetite	Shan	Inta et al. (2011)
Entire plant	Decoction	Bath	Detoxification	Shan	Pongamornkul and Muangyen

					(2012)
Fruit	Decoction	Bath	Detoxification	Shan	Pongamornkul and Muangyen (2012)
		Drink	Alcohol intoxication	Karen	Junsongduang et al. (2014)
				Lawa	Junsongduang et al. (2014)
	Burn and infusion	Drink	Hangover	Karen	Kaewsangsai (2016)
Stem	Decoction (with the leaf of *Buddleja asiatica*)	Bath	Post partum women	Karen	Winijchaiyanan (1995)
Young shoot	NA	NA	Menstruation	Hmong	Noitana et al. (2013)
	Decoction (with other plants)	Bath	Post partum syndrome	Karen	Pongamornkul and Muangyen (2013)
				Lawa	Songsangchun (2015)
-	Decoction (with other plants)	Steam	use for relaxing the muscles and for skin care in post-partum maternal healthcare	Thai	Chotchoungchatchai et al. (2012)
Entire leaf	Decoction (with other plants)	Steam	treating runny nose and asthma	Thai	Chotchoungchatchai et al. (2012)
Young shoot	-	-	Expectorate, cough	Hmong	Noitana et al. (2013)
Fruit	Infusion	Bath	Bleary-eyed	Shan	Pongamornkul and Muangyen (2012)
Seed	No preparation	Eat	Eye pain	Thai Yong	Sumridpiem (2017)
				Thai Yuan	Sumridpiem (2017)
Entire leaf	Decoction	Bath	Skin disorder	Thai	Junsongduang et al. (2018)
Fruit	Infusion	Hair wash	dandruff	Shan	Pongamornkul and Muangyen (2012)
	Burn	Apply directly	Eczema	Karen	Kantasrila (2016)
Young shoot	Decoction	Bath	Rashes	Hmong	Trisonthi et al. (2007)
			Skin disorders	Hmong	Noitana et al. (2013)

North-Eastern Region: Phetchabun Province; Maknoi 6574, Thamyai Nam Nao, Namnao NP, 18 February 2014 (QBG). Loei Province; Ploenchit 1572, Thung Yai, 25 February 1958 (BKF). Mukdahan Province; Vacharee 447, Mueang Mukdahan, 4 November 1982 (BK). Maha Sarakham Province; Maneechai 111, Kantharawichai, Maha Sarakham University, 30 June 2017 (BK), Nanakorn et al. 8401, Kosum Phisai, Pa Bung Sheloung, 7 January 1997 (AAU, QBG). Khon Kaen Province; Norsaengsri 4775, northeastern Plant Collection Center, 3 February 09 (QBG), Norsaengsri et al. 7716, Chum Phae, Chong Dang, Phuphaman NP, 28 February 2011 (QBG). Eastern Region: Chaiyaphum Province; Thongson & Boonprakop 0322, Muang, Phu Klang, Ban Kamphakpaew, 16 November 2010 (QBG). Ubon Ratchathani Province; Balslev et al. 9319, Det Udom; route 2182 town outskirts, forest around Wat Pa Chai Mong Kon, 27 December 2018 (AAU, BKF, QBG, KKU), Balslev et al. 9387, Don Mot Daeng, route 4041, 5 km east of route 2050, 2 January 2019 (AAU, BKF, QBG, KKU). South-Western Region: Uthai Thani Province; Tanming 888, Lan Sak, Khao Pla Ra, Tham Pratun non-hunting area, 19 September 2015 (QBG). Kanchanaburi Province; van Beusekom & Phengkhlai 420, Khao Yai, east of Sangkhla Buri, 10 April 1968 (BKF), Kantchai 64, Sangkhla Buri, 24 February 1960 (BKF). Central Region: Saraburi Province; Maxwell 73-692, Mueang Saraburi, Sam Lan forest, 1 December 1973 (BK), Nakhon Nayok Province; Maxwell 02-71, Mueang, 10 March 2002 (CMUB, L). Bangkok Province; Kerr 6757, unknown locality, 10 March 1923 (BK). South-Eastern Region: Chanthaburi Province; Bunrod 676, Pong Nam Ron, 15 March 1957 (BKF), *Dee* 1107, ibid., 1 March 1950 (BKF), Sangkhachand 621, ibid., 29 February 1956 (BKF). Peninsular Region: Phangnga Province; Kerr 18528, unknown locality, 11 Mar 1930 (BK), Kerr s.n., Surat Thani. Kao Yao, 24 July 1927 (BK), S.N. 12939, unknown locality, (BKF). Phuket Province; Kerr 17414, Kamala, 10 March 1929 (BK).

***Senegalia thailandica* (I.C.Nielsen) Maslin, Seigler & Ebinger**

Senegalia thailandica (I.C.Nielsen) Maslin, Seigler & Ebinger, Blumea 58: 42 (2013). Basionym: *Acacia thailandica* I.C. Nielsen, Adansonia sér. 2, 19: 356, pl. 1 (1980). Type: Thailand, Ang Thong, Put 2537 (holotype K barcode K000724531 digital image!; isotypes: C, P—Maslin et al. 2013: 42). (Figure 11; Figure 18).

Figure 10. *Senegalia rugata*: A. Branches, B. Leaves, C. Fruits (Balslev 9319) (Photographed by Prateep Panyadee)

Figure 11. *Senegalia thailandica*. A-B. Fruiting branches (Choopan et al. 2020-427) (Photographed by Thiamhathai Choopan)

Lianas or straggling shrubs. Branchlets minutely puberulous with white hair mixed with dark glandular hairs at least in leaf axils, glabrescent. Prickles internodal, numerous. Stipules persistent at mature nodes, triangular-ovate, 2×1 mm. Leaves: pinnae 7-13 pairs, 11-40 mm long; leaflets opposite, 17-44 pairs per pinna, (2.5-)3-5.5×0.5-1.3 mm, main-vein rather close to upper margin and parallel with it in lower part of leaflet, lateral veins few, indistinct and not forming a reticulum or reticulum very imperfect, apex obliquely obtuse and sometimes with ill-defined apiculum, base unequal with rounded angle on lower edge only, petiolule excentric; petiole gland on lower half of petiole, sessile, c. 1 mm diam., but evident, elevated to 0.5 mm. Inflorescence is a terminal panicle and/or long racemes of heads, the inflorescence axes and peduncles with a mixture of short, white hairs and dark glandular hairs. Pods inflated, tightly coiled, 20-25 mm long (unexpanded length), chartaceous. Seeds 6×4.5 mm, broadly elliptic, biconvex, areole c. 3×1 mm.

Vernacular name: None recorded.

Ecology: In evergreen scrub and edges of swamps, at low altitude.

Phenology: Flowering in December, fruiting in May.

Distribution: Southeast Asia: Cambodia and Thailand; possibly in Myanmar (H. Sun pers. comm., unvouchered).

Etymology: The name of this species is derived from Thailand, the location where its type specimen was collected.

Specimens examined: Thailand. Northern Region: Nakhon Sawan Province; Kerr 5985, unknown locality, 21 May 1922 (BK, K). Eastern Region: Nakhon Ratchasima Province; Choopan et al. 2020-427, Ban Nang Tho, Mueang Yang, Mueang Yang District, 4 June 2020 (QBG). South-Western Region: Kanchanaburi Province; Winit 497K, Ban Tuan, Phanom Thuan District, 27 December 1916 (K). Central Region: Ang Thong Province; Put 2537, unknown locality, 24 December 1929 (K *n.v.,* holotype of *Acacia thailandica*—cited by Nielsen 1980; isotypes: BK 257972, P *n.v.*—cited by Nielsen 1980).

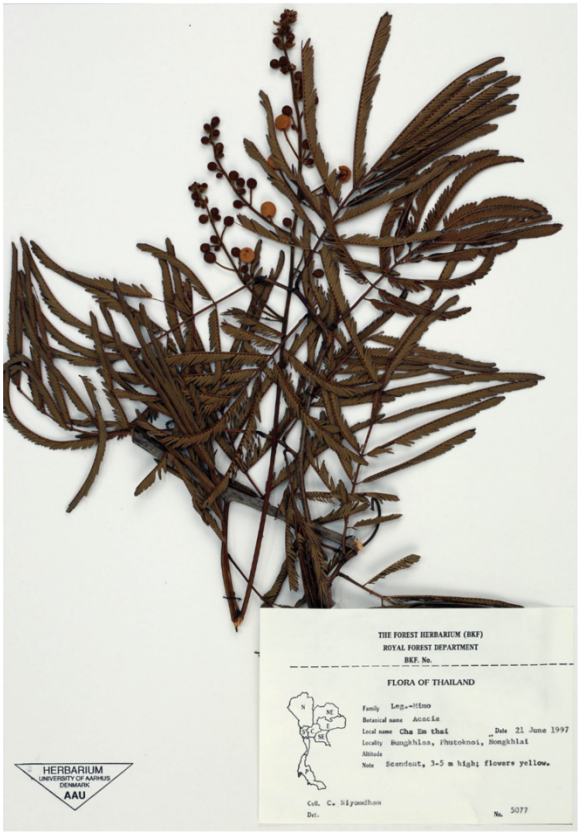

Figure 12. Herbarium specimens of *Senegalia andamanica* (Niyomdham 5077, BKF)

Figure 13. Herbarium specimens of *Senegalia caesia*. A. Larsen et al. 44052 (BKF), B. van Beusekom & Phengklai 3040 (AAU)

Figure 14. Herbarium specimens of *Senegalia meeboldii*. A. Sanan 773 (BKF), B. Williams et al. 1165 (BKF)

Figure 15. Herbarium specimens of *Senegalia pennata* subsp. *pennata*. A. Maxwell 71-494 (AAU), B. Nielsen et al. 1924 (AAU)

Figure 17. Herbarium specimens of *Senegalia pseudointsia*. A. Larsen 9426 (BKF), B. Somruay202 (BKF)

Figure 16. Herbarium specimens of *Senegalia pluricapitata*. Bunnab & Chermsirivathana 37 (BKF)

***Senegalia tonkinensis* (I.C. Nielsen) Maslin, Seigler & Ebinger**

Senegalia tonkinensis (I.C. Nielsen) Maslin, Seigler & Ebinger, Blumea 58: 42 (2013). Basionym: *Acacia tonkinensis* I.C. Nielsen, Adansonia sér. 2, 19: 358, pl. 2 (1980). Type: Vietnam, Laokai Tonking, August 1899, *Wilson E.H.* 2715 (holotype K barcode K000724533 digital image!) (Figure 19).

Lianas. Branchlets densely patent-hairy (hairs yellowish brown). Prickles internodal. Stipules narrowly triangular to narrowly lanceolate, 4-6×1 mm, caducous, apex caudate-acuminate. Leaves: pinnae 7-11(-13) pairs, 30-115 mm long; leaflets opposite, (11-)20-30 pairs per pinna, (3-)5-7×(1-)1.5-2 mm, oblong, sessile, base truncate, appressed short-pilose on lower surface, main-vein starting ±centrally from a much-reduced pulvinus and extending obliquely to mucro, lateral veins not visible, apex obliquely rounded-truncate and distinctly mucronate by an excentric and slender point; petiole glands normally 2, rather prominent, raised 1.5-2 mm high, often conical. Inflorescence is a terminal panicle and/or elongated racemes of heads, the axes hairy as on branchlets. Flower buds red when fresh; bracteoles acuminate and exserted beyond buds, at least on the young buds. Pods 125-170×20-30 mm, with scattered to moderately dense, dark-colored, small, sessile glands, sometimes embedded in a resin matrix. Seeds 8-12×5-7 mm, irregularly elliptic or oblong, areole 4-7×2 mm.

Vernacular name: None recorded.

Ecology: Roadsides in dry and hill evergreen forest; alt. 200-900 m.

Phenology: Flowering in December.

Distribution: East Asia: China. Southeast Asia: Laos, Myanmar (Deshpande et al. 2019), Thailand and Vietnam.

Etymology: The name of the species is derived from the Tonkin region in northern Vietnam, around the Red River delta, where the type was collected.

Notes: This species was not recognized under its correct name (Nielsen 1985a), where it was mistakenly treated as *Acacia torta* (Roxb.) Craib based on the specimen Kerr 16287. However, this specimen (as noted in the protologue of *Acacia tonkinensis*, Nielsen 1980) actually represents *Senegalia tonkinensis*. Additional occurrences of *S. tonkinensis* in Thailand, previously reported as *A. tonkinensis*, are documented in Srisanga and Sasirat (2000). It is therefore unlikely that *S. torta* occurs in Thailand. *S. tonkinensis* is similar *S. diadenia* (R.Parker) Ragup., Seigler, Ebinger & Maslin, which occurs in northeast India (Assam) and possibly Nepal (see Maslin et al. 2019 for discussion). In Thailand *S. tonkinensis* is similar to *S. caesia* and *S. comosa* in having ±sessile leaflets with a much-reduced,

centric petiolule and a clearly excentric apical mucro, but it is distinguished from both these species by having branchlets densely patent-hairy with yellowish brown hairs, petioles usually with two glands and leaflet lateral veins not forming a reticulum.

Ethnobotanical uses: None recorded.

Figure 18. Herbarium specimens of *Senegalia thailandica*. Put 2537 (BK)

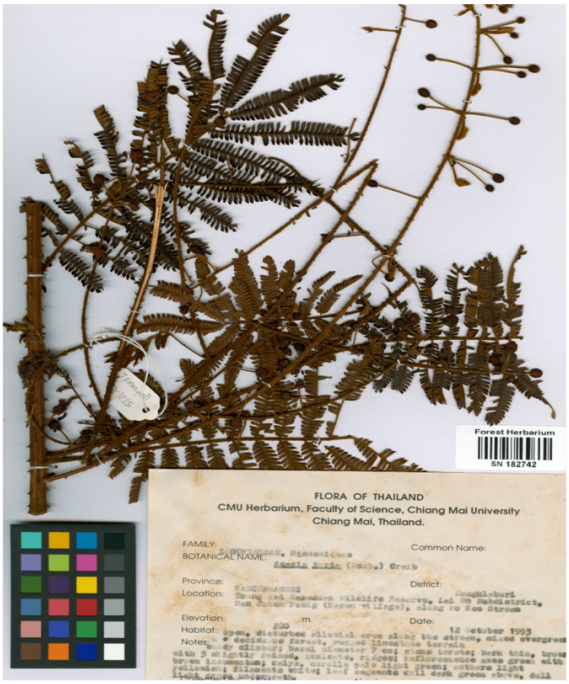

Figure 19. Herbarium specimens of *Senegalia tonkinensis*. Maxwell 93-1225 (BKF)

Specimens examined: Thailand. Northern Region: Nan Province; Srithi 159, Mueang, Santiphap village, 25 July 2009 (QBG). North-Eastern Region: Loei Province; Maknoi 2554, Na Haeo, route from TK2 to Hua Hom, Phu Suan Sai NP, 9 July 2008 (QBG), Nanakorn et al. 3852, Na Haeo, 21 June 1995 (QBG), Nanakorn et al. 9306, Na Haeo, Ban Huai Nam Phak, 29 June 1997 (QBG), Srisanga 989, Na Haeo, Huai Nam Phak, 28 August 1999 (P, QBG). South-Western Region: Kanchanaburi Province; Maxwell 93-1225, Sangklaburi, 12 October 1993 (CMUB, BKF, CMU, L). Peninsular Region: Ranong Province; Kerr 16287, Tasan, 22 December 1928 (BK 213414, K *n.v.* but cited by Nielsen (1980) as *Acacia torta*).

***Senegalia* sp. (in obs., Nielsen, Fl. Thailand 4(2): 181. 1985) (Excluded specimen)**

Senegalia sp. (in obs., Nielsen, Fl. Thailand 4(2): 181. 1985). Khon Kaen, 1958, Sorensen, Larsen & Hansen 2205 (AAU). This specimen was cited as being deposited in the AAU herbarium, but it has not been located for the present study.

In conclusion, this revision establishes a comprehensive account of *Senegalia* in Thailand, recognizing 14 species and 16 taxa. Our study confirms the native status of *S. pennata* subsp. *insuavis*, contrary to earlier assumptions of it being exotic, while excluding *S. pruinescens* based on misidentified specimens. Several nomenclatural updates and new synonymies refine the taxonomy, and vegetative traits such as petiole glands, leaflet venation, and stipule morphology are emphasized as effective diagnostic characters for field identification. This work thus provides the first systematic update since Nielsen's 1985 treatment, aligning Thai *Senegalia* taxonomy with current generic concepts. Equally important, the integration of ethnobotanical evidence highlights that six taxa remain embedded in local practices, most notably *S. rugata* and *S. pennata* subsp. *insuavis*, which are widely used in food, medicine, and rituals. Other species such as *S. megaladena* and *S. comosa* also retain cultural and practical significance through uses as dye plants and fish poisons. These findings underscore the dual role of *Senegalia* as both a component of Thailand's legume diversity and a contributor to biocultural resilience.

ACKNOWLEDGEMENTS

We would like to thank the curators and staff of AAU, BKF, C, E, K, KKU, and QBG herbaria for their kind permission to access their specimens. We are especially grateful to Bruce Maslin for his valuable advice and for generously sharing information throughout the course of this study. We also thank Ponprom Pisuttiman for assistance with photo arrangement. This work was supported by a grant to HB from the Carlsberg Foundation (Grant number CF14-0245) under the Flora of Thailand project and Fundamental Fund (Grant number 194500) under Thailand Science Research and Innovation.

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