



# Taxonomic status of *Salix ichnostachya* (Salicaceae) and its extended distribution in Kerala

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## Abstract

*Salix ichnostachya* Lindl. ex Andersson belonging to the family Salicaceae is endemic to southern India. Taxonomically this species has variously been treated from time to time due to its apparent similarity with *S. tetrasperma* Roxb. in certain characters. So far this species has been reported from Tamil Nadu, Karnataka and Assam (?) only. Present study has confirmed that the distribution is extended up to Kerala based on a specimen that was earlier mistreated as *S. tetrasperma*. The distinct characters of the species are discussed in detail along with illustration and special note on distribution for easy and effective determination.

**Keywords:** Distribution, Endemic, Kerala, *Salix ichnostachya*, Southern India

## Introduction

*Salix* L. is taxonomically a complex genus of the family Salicaceae Mirb., which has 34 species in India (Chanda, 2009) that are mostly confined to Himalayas except 2 species, *Salix tetrasperma* Roxb. and *S. ichnostachya* Lindl. ex Andersson. Both of them belong to the section *Tetraspermae* Andersson. *Salix tetrasperma* is distributed almost throughout India whereas, *S. ichnostachya* is endemic to southern India, so far known from Tamil Nadu and Karnataka. It is interesting that the later species was initially described as a distinct one (Andersson, 1851) but later it was reduced as a variety under *S. tetrasperma* for its apparent similarity in certain characters (Andersson, 1860, 1867, 1868). However, the subsequent workers (Beddome, 1874; Hooker, 1888; Cooke, 1907; Talbot, 1911; Schneider, 1916) had retained it as a distinct species, but Fischer (1928) preferred to merge this species with *S. tetrasperma*.

Taxonomic status and distribution pattern of *S. ichnostachya* are revised in this current account. Fresh collections of *S. tetrasperma* Roxb. and *S. ichnostachya* Lindl. ex Andersson were made and critically studied and concluded that both are distinct in terms of their specific characters and distributional pattern.

During the revisionary study of Indian Salicaceae for the “Flora of India Project”, authors came across one *Salix* specimen, *Nair* 654222 (MH),

which has been collected from Palakkad district of Kerala. The specimen shows apparent similarity with *S. tetrasperma* and hence labelled as *S. tetrasperma*, but after study it is noticed that the material neither fully match with the description nor with any authentic specimen of *S. tetrasperma*. As the specimen (*Nair* 654222) bears female catkins only, identity of the specimen has been carried out on the basis of female flowers and fruits. Finally, the specimen is compared with authentic specimens housed at CAL and BSI and confirmed its identity as *S. ichnostachya*. A detailed description and an illustration of this species are provided for its easy identification.

***Salix ichnostachya*** Lindl. ex Andersson, Kongl. Vetensk.-Akad. Handl.: 488. 1851; Bedd., Fl. Sylv. S. India 2: 302, t. 302, ff. 6 – 10. 1874; Hook.f., Fl. Brit. India 5: 628. 1888; T. Cooke, Fl. Bombay: 662. 1907; Talbot, For. Fl. Bombay 2: 539. 1911; C.K. Schneid. in Sarg., Pl. Wilson. 3: 97. 1916. *S. tetrasperma* Roxb. var. *ichnostachya* (Lindl. ex Andersson) Andersson, J. Linn. Soc., Bot. 4: 41. 1860; Kongl. Vetensk. Akad. Handl. 6: 3. 1867 & in DC., Prodr. 16(2): 193. 1868. *S. pondicheriana* Andersson, nom. nud.

**Fig. 1**

Trees, 6 – 9 m high; bark wrinkled, ash-grey or purplish; branches upright, thick, glabrous;

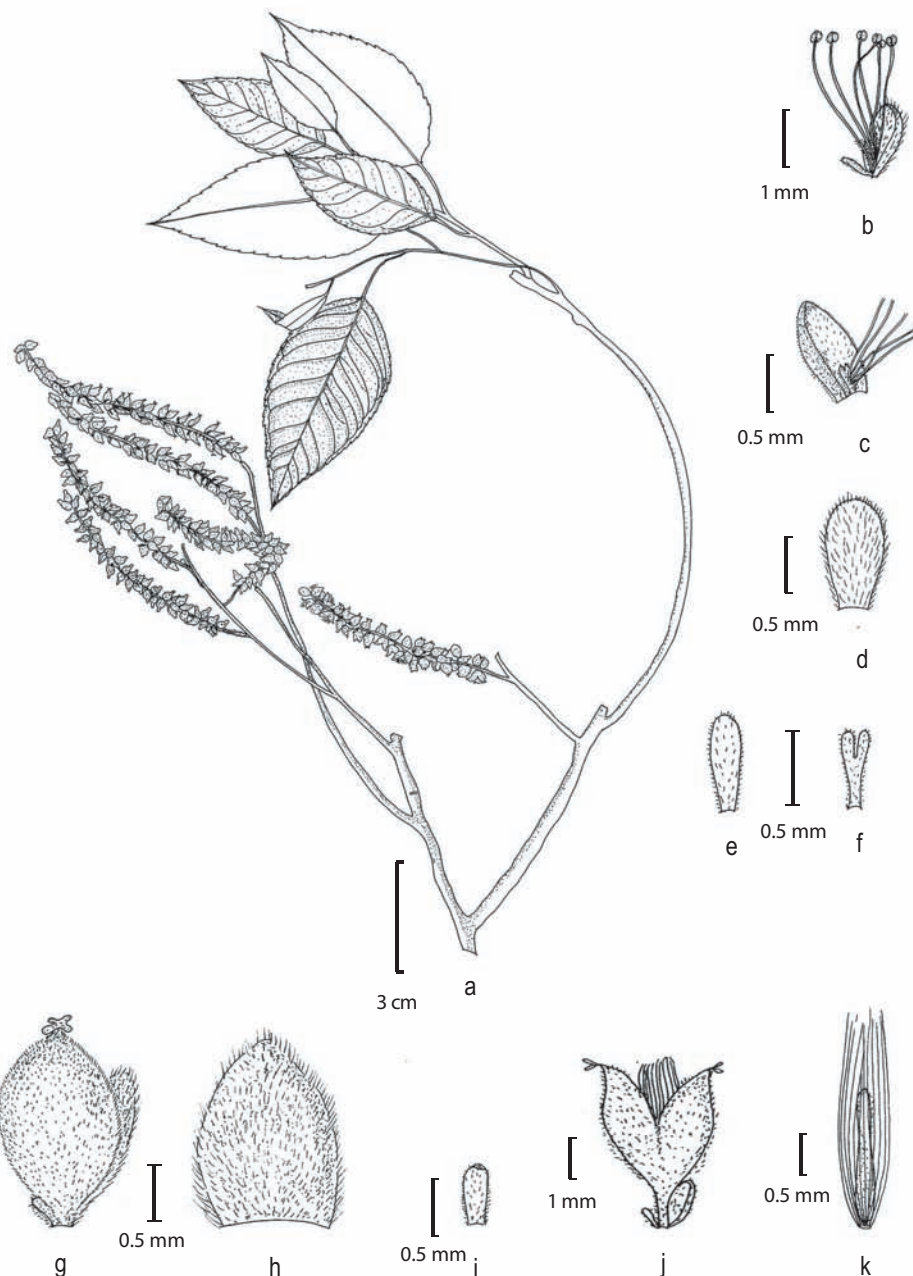


Fig. 1. *Salix ichnostachya* Lindl. ex Andersson: a. Flowering twig; b. Male flower; c. Attachment of anterior gland and base of filaments; d. Floral bract (male); e. Posterior gland (male); f. Anterior gland (male); g. Female flower; h. Floral bract (female); i. Gland (female); j. Fruit (dehisced); k. Seed. [Drawn by Sukla Chanda from a. *Shetty* 11974 (CAL); b – f. *Talbot* 2139 (BSI); g – i. *Sebastine* 2118; j & k. *Talbot* 2130 (BSI)]

young twigs puberulose to hoary. Leaves simple, alternate, ovate to elliptic-lanceolate or elliptic-ovate, 7.5 – 15 × 2.5 – 4.8 cm, broadly cuneate or obtuse at base, serrulate to crenate-serrate at margins, acute to acuminate at apex, subcoriaceous, glabrous or sparsely pubescent above, pubescent and glaucous below, light green; midrib prominent and quite raised below, rigid, glabrous, yellowish; secondary veins pinnate, 10 – 17 pairs; petioles slender, 1.5 – 2.5 cm long, glabrous, pubescent when young. Catkin solitary, axillary, either unisexual (male and female flowers born on separate catkins) or bisexual (male and female flowers mixed together in the same catkin), appearing with young leaves, slender, provided with basal leaves. Male catkins cylindrical, slender, 4 – 6 × 0.7 – 0.9 cm, spreading, lax-flowered, pedunculate; rachis pubescent; male flowers sessile; bract 1, obovate to obovate-spathulate, 1.5 – 2 × 0.8 – 1 mm, mostly  $\frac{1}{2}$  the length of filaments, concave, narrowed and finally truncate at base, entire at margins, subrounded to subobtuse at apex, densely pubescent; glands 2, fleshy and juicy, pubescent, brown; posterior gland opposite bract, posterior gland oblong-obovate, 0.8 – 0.9 mm long, subobtuse to subrounded at apex, upper portion wholly free, attached basally with bract, free from filaments; anterior gland hidden inside bract, smaller than the posterior, oblong to linear-oblong, 0.6 – 0.7 mm long, 2-lobed at apex, entire otherwise, wholly attached with bracts and filaments; stamens 4 – 6, or rarely 8; filaments filiform, 4 – 4.5 mm long, almost free except shortly connate for c. 0.5 mm at base, brownish, lower  $\frac{1}{3}$  villous or glabrous; anthers subglobose, 0.2 – 0.3 mm long, basifixed, 2-celled, dehiscence longitudinal-lateral. Female catkins erect to suberect, longer than male, cylindrical, 6.5 – 9 × 0.7 – 1.3 cm, slender, compact, pedunculate; rachis pubescent; female flowers sessile; bract 1, ovate-spathulate, ovate or subrounded, 2 – 2.5 × 1.5 – 2 mm, exceeding more than  $\frac{2}{3}$  length of ovary, shortly tapering and truncate at base, entire at margins, subacute or sometimes crenulate at apex, membranous, pubescent; gland 1, oblong, c. 0.5 mm long, posterior, opposite bract, free above, adnate to ovary base, pubescent, brown; carpels 2,

lateral, syncarpous; ovary superior, mostly sessile or subsessile, ovoid to ellipsoid, 2.5 – 3 mm long, densely pubescent; style very short, almost absent; stigma short, thick, 2-lobed. Infructescences 7 – 11.5 × 1 – 1.5 cm, subdense. Capsules simple, dry, dehiscent, subglobose to ovoid, 3 – 4 mm long, 2-loculed; each half broad-navicular (boat-shaped) after dehiscence; seeds 4, oblong, 2 – 2.5 mm long, yellowish brown, glabrous, but with tufts of persistent hair at base; hairs 3 – 4 mm long, flexible, spreading and exceeding to about  $\frac{1}{2}$  the length of seeds, silky-white.

*Flowering*: October – January; *Fruiting*: December – February.

*Habitat*: Grows along banks of streams and rivers. It grows within the altitudinal ranges between 575 m and 2130 m, however more common at 1200 m.

*Distribution*: India (Karnataka, Kerala and Tamil Nadu).

*Specimens examined*: INDIA, **Karnataka**, N. Kanara, without precise locality, 27.11.1889, *Talbot* 2130, 2139 (BSI). **Kerala**, Palakkad district, Chindakki, 575 m, 12.1.1980, *Nair* 654222 (MH). **Tamil Nadu**, Coimbatore district, Geddasal, 4000 ft., 30.11.1906, *C.E.C. Fischer* 1272; Nilgiri district, Nilgiri Hills, 1818 – 1835, *Schmid* s.n.; Kotagiri – Konarakari, 1833 m, 4.1.1957, *K. Subramanyam* 1905; Nilgiri Hills, Marapalam, 20.1.1957, *K.M. Sebastine* 2118, 2120; Kunnacombai R.F., 2000 m, 11.12.1957, *K.M. Sebastine* 4903; Gudalur – Naduvattam Road, 1600 m, 21.1.1961, *B.V. Shetty* 11974; Siran to Masipatti, 900 m, 17.11.1970, *G.V. Subba Rao* 37257 (MH).

*Notes*: *Salix tetrasperma* and *S. ichnostachya* are quite similar in their habit, shape and size of leaves. But *S. ichnostachya* can be differentiated from *S. tetrasperma* through its overall hairiness found both in vegetative and reproductive structures. These two species fall under the section *Tetraspermae* which is considered as the most primitive section among Indian *Salix*. The members show mostly tree habit and multiple stamens. The morphological differences of these two species are presented in Table 1.

The characters of specimen (*Nair* 654222) agrees well with the major diagnostic features of *S. ichnostachya* and hence correctly identified as *S. ichnostachya*

Based on these observations, it is further concluded that *Nair* 654222 constitutes the first report

**Table 1.** Differences between *Salix tetrasperma* Roxb. and *S. ichnostachya* Lindl. ex Andersson

Characters	<i>S. tetrasperma</i>	<i>S. ichnostachya</i>
Leaves	Serrate at margins, glabrous below	Serrulate to crenate-serrate at margins, pubescent below
Catkin rachis	Glabrous to puberulous	Pubescent
<b>Male flowers</b>		
Glands	Anterior gland larger than posterior, glabrous to sparsely puberulous, irregularly and variously lobed	Anterior gland smaller than posterior, pubescent, 2-lobed
Stamens	5 – 10	4 – 6 (rarely 8)
<b>Female flowers</b>		
Bract	Not exceeding ovary, never reach ovary base	Exceeding $\frac{2}{3}$ rds of ovary length
Ovary	Ovoid with 2 – 3 mm long stipe, glabrous	Ovoid to ellipsoid without stipe, densely pubescent
Fruits	Glabrous; fruiting pedicels 2 – 4 mm long	Pubescent; fruiting pedicels c. 0.5 mm long

of occurrence of the species in Kerala. It is an extension of its distributional range towards further south-western part of Peninsular India.

Incidentally, Kanjilal *et al.* (1940) mentioned this species from Assam with detailed description based on a report by D. Chatterjee. But no specimen of this species could be seen in any Indian herbaria nor came across in the field in Assam and its adjoining places of the state for study and confirmation. Therefore, the literature-based distribution of this species in Assam remains uncertain.

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