

***Salix matsudana* Koidzumi: a new species record for India from Kashmir Himalaya**

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Abstract

Salix matsudana Koidzumi (Salicaceae) is reported as a new species record for India from the Kashmir Himalaya. A diagnostic taxonomic description, with an illustration and distribution map is provided to validate this record.

Key words: Kashmir Himalaya, New record, *Salix matsudana*

INTRODUCTION

The genus *Salix* Linnaeus is the largest and widespread genus of Salicaceae, with *ca.* 550 species worldwide (Chao 1987; Ohashi 2001; Newsholme 2003; Heywood *et al* 2006; Mabberley 1997). In the Indian subcontinent, it is represented by *ca.* 31 species (Brandis 1906). *Salix* is clearly distinguished from the other two genera of Salicaceae in having buds consistently enveloped by a single scale, catkin scales entire, and its perianth is represented by one or more small glands (nectaries). The genus, mostly comprising of deciduous trees and shrubs, rarely prostrate sub-shrubs.

Salix has been classified into 3 sub-genera, namely *Salix*, *Vetrix* and *Chamaetia*, each of which is further divided into sections (Skvortsov 1999). The subgenus *Salix* is characterized by trees, rarely shrubs, with bark furrowed, branchlets erect or pendulous, leaves mostly lanceolate and acuminate, and flowering coetaneous (i.e. vegetative and floral buds develop at the same time) or slightly precocious. The sections *Fragiles* Koch and *Albae* Borrer, which *Salix matsudana* belongs to, contain all the osier-willows with narrow leaves that may be called the “true” willows. They are characterized by male flowers having two stamens and two glands, leaves long narrow, acuminate, and shoots pliant that can be used for wicker works.

While carrying out systematic studies on the genus *Salix* in the Kashmir Himalaya, one naturalized plant was collected from different localities, and after critical examination it was identified as *Salix matsudana* Koidzumi. Detailed perusal of the relevant taxonomic literature (Rehder 1927; Bailey 1963; Skvortsov 1968; Bean 1980; Kartesz 1994; Flora of China Editorial Committee 1999) revealed that this species has not so far been reported from India (Hooker 1885). The present finding is, therefore, the first record of naturalization of this species for India from the Kashmir Himalaya.

A brief taxonomic description of *S. matsudana*, supplemented with an illustration and distribution map, is provided here to authenticate the new record and facilitate its easy identification. It is relevant to mention here that this species, introduced for ornamental purpose in gardens and parks, is now naturalized in this region. Only the female (pistillate) plants of the species have been documented from the area, therefore the plant propagates vegetatively.

Taxonomic description

Salix matsudana Koidzumi, Bot. Mag. (Tokyo) 29: 312. 1915.

Trees, deciduous; trunk 13–20 m tall, 0.6–1 m in girth, crown broadly globose; bark dull or grayish black, furrowed. Branches upright or spreading; branchlets spreading and twisted, brownish-yellow or greenish; buds slightly pubescent, light-yellow. Leaves alternate, stipulate, petiolate, twisted; stipules lanceolate, glandular-serrulate; petioles 2–8 mm long, villous; lamina narrowly lanceolate, 5–10 x 1–1.5 cm, sharply glandular-serrulate, long-acuminate, base narrowly rounded or rarely cuneate, green and shiny on abaxial surface. Female catkins 1.5–4 cm long, 0.5–1 cm broad, with 3–5 entire leaves at the base of peduncle; bracts yellowish green, ovate, obtuse, pubescent or glabrous at base; glands mostly adaxial, obtuse; ovary sub-sessile, long-ellipsoid, glabrous, style very short or wanting, stigma ovate and lobed, placentation parietal; fruit capsule.

Distribution: Native of China, Manchuria and Japan; introduced and naturalized in Europe, Australia, Nepal, and now Kashmir Himalaya (India).

Rehder (1927) has recognized three forms in *Salix matsudana*, namely f. *umbraculifera* Rehder, with a broad umbrella-shaped or semiglobose crown; f. *tortuosa* Rehder, with branches twisted and contorted; and f. *pendula* Schneider, with branches pendulous. On the basis of these characters, all the specimens collected by us from Kashmir belong to the forma *tortuosa*.

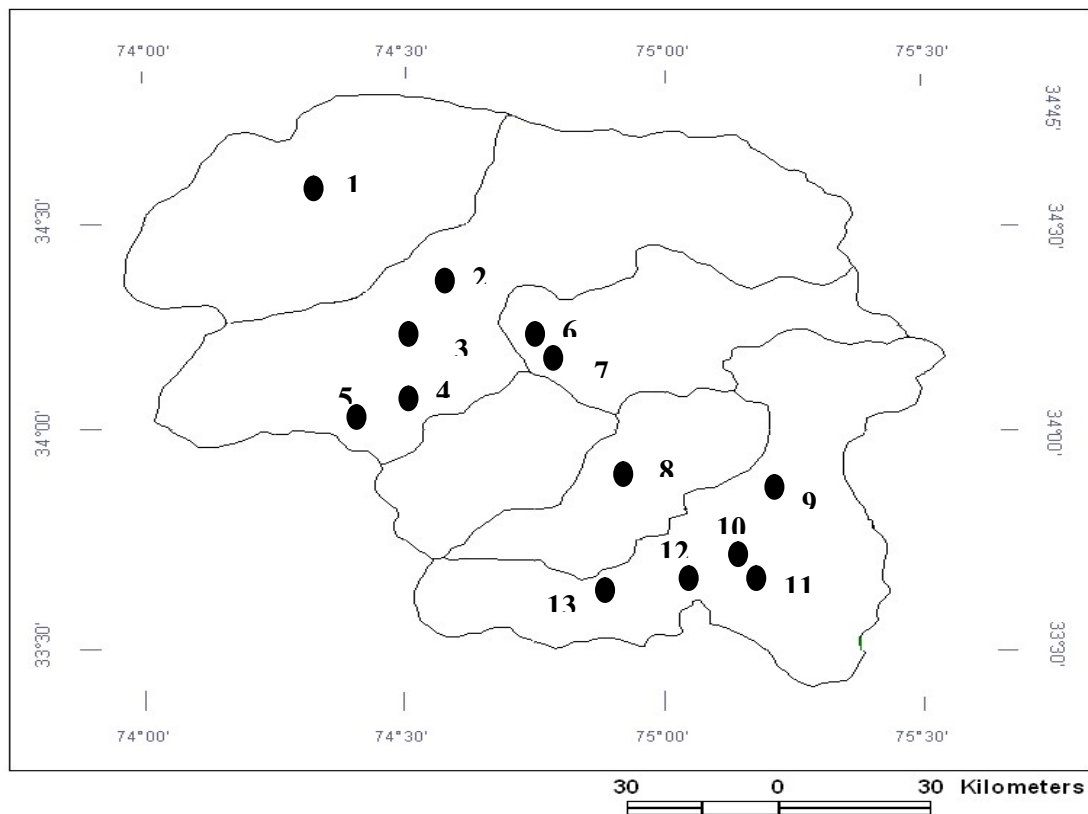


Figure 2. Map showing distribution of *Salix matsudana* Koidzumi forma *tortuosa* Rehder f. in Kashmir Himalaya. (Numerals in the map refer to the localities: 1 = Kupwara; 2 = Sopore; 3 = Baramulla; 4 = Tangmarg; 5 = Gulmarg; 6 = Srinagar; 7 = Kashmir University Campus; 8 = Pulwama; 9 = Pahalgam; 10 = Bijbehara; 11 = Anantnag; 12 = Kulgam; and 13 = Shopian).



Figure 1. *Salix matsudana* Koidzumi forma *tortuosa* Rehder f.: A) a portion of branch; B) female flower; and C) a scale.

Salix matsudana Koidzumi forma *tortuosa* Rehder *Man. Cult. Trees & Shrubs* ed. 2, 94: 1927. [Fig. 1].

According to FAO (1979), “*S. matsudana* cv. *tortuosa* is a female clone in which the up-stretched shoots are strangely contorted, which assures it a place in parks and collections.” *Salix* x *erythroflexuosa* Ragonese & R Alberti (= *S. matsudana* cv. *tortuosa* x *S. alba* L. var. *tristis* Ser.) in France is said to be a hardy vigorous shrub, combining contorted branches of bright red colour with drooping habit.

Specimens examined: INDIA, Kashmir: Srinagar, Nishat Garden, 06-06-2005, Akhtar H. Malik & G.H. Dar 701, KASH; Pahalgam, 06-08-2006, Akhtar H. Malik & G.H. Dar 703, KASH; Tangmarg, 07-07-2006, Akhtar H. Malik & G.H. Dar 702, KASH; Kashmir University Botanical Garden, 07-08-2006, Akhtar H. Malik & G. H. Dar 704, KASH; Sopore, 16-08-2006, Akhtar H. Malik & G.H. Dar 705, KASH. (KASH = Kashmir University Herbarium).

Local distribution: The plant is now occurring as naturalized in these localities: Pahalgam, Anantnag, Bejbehara, Kulgam, Shopian, Pulwama, Nishat Garden (Srinagar), Kashmir University Campus at Hazratbal, Ganderbal, Tangmarg, Gulmarg, Sopore, Kupwara, and Baramulla (Fig. 2).

Altitudinal range: 1600 – 2650 m (a.m.s.l.)

Flowering period: April – May

English names: Corkscrew willow, curly willow, turtuosa

Vernacular names: *Voul veer*, *Ringh veer* (Kashmiri)

Uses: *S. matsudana* cv. *tortuosa* is commonly planted in gardens, parks and lawns as ornamental, and along the roadsides for landscaping; the twigs are used in wicker-works (e.g., in making baskets); while the leaves are used as fodder for livestock. In Argentina, it has been crossed with the weeping willow to form *Salix x erythroflexouosa*, which is very attractive with drooping colored branches and curiously twisted form, being good for rock gardens (FAO 1979).

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