

Confirmation of the occurrence of *Kydia glabrescens* Mast. (Malvaceae) in Odisha based on authenticated herbarium specimens

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Abstract

Kydia glabrescens Mast. is reported here for the first time from Odisha, Eastern India, based on critical examination of herbarium specimens collected from Barbara (Khordha District) and Kapilas (Dhenkanal District). The identify of the species was confirmed through comparison with the original description and authenticated specimens preserved at the Royal Botanical Gardens, Kew. the species is readily distinguished from *Kydia calycina* Roxb. by the combination of glabrescent branchlets, glabrous abaxial leaf surfaces, and an epicalyx of four free bracteoles, whereas *Kydia calycina* possesses persistently stellate-tomentose branchlets, densely stellate-tomentose abaxial leaf surfaces, and an epicalyx of five bracteoles. The present report extends the known distribution of *Kydia glabrescens* to eastern India and updates the tree flora of Odisha.

Keywords: Eastern Ghats, Malvaceae, New distributional record, Odisha flora

Introduction

The genus *Kydia* Roxb. comprises a small number of tropical Asian tree species distributed from the Indian subcontinent to Southeast Asia. In India, *Kydia calycina* Roxb. has long been regarded as the common and widespread species, whereas *Kydia glabrescens* Mast. has been considered restricted mainly to north-eastern India, particularly Arunachal Pradesh. India Flora Online describes *K. glabrescens* as a tree characterized by glabrescent branchlets, glabrous leaves beneath, and an epicalyx consisting of four bracteoles. Its currently documented Indian distribution includes Arunachal Pradesh. Although the flora of Odisha has been studied extensively, neither Flora of Orissa nor the recent checklist “Forest trees of Odisha, India: An updated checklist” (Das *et al.*, 2022) [1] recorded the occurrence of *Kydia glabrescens* in the state. The latter work enumerated 501 forest tree species based on extensive surveys and herbarium studies but did not include *K. glabrescens*. During a taxonomic revision of *Kydia* in Odisha, herbarium specimens preserved at the Regional Plant Resources Centre (RPRC), Bhubaneswar, were critically examined and compared with authenticated material at the Royal Botanic Garden, Kew. This study confirms the occurrence of *Kydia glabrescens* in Odisha.

Materials and Methods

All available specimens of *Kydia* preserved in the Herbarium of the Regional Plant Resource Centre (RPRC), Bhubaneswar critically examined. Morphological characters including branchlet indumentum, leaf indumentum, epicalyx morphology, calyx, and fruit characters were studied under a stereomicroscope. The specimens were compared with: the original description of *Kydia glabrescens* Mast.; authenticated specimens preserved at the Royal Botanical

Gardens, Kew (K006372860); and descriptions available in India Flora online and other standard taxonomic literature.

Taxonomic treatment

***Kydia glabrescens* Mast:** J.D. Hooker, Fl. Brit. India 1: 348 (1874); P.K. Hajra, D.M. Verma and G.S. Giri, Mat. Fl. Arunachal Pradesh 1: 234-244; *Kydia calycina* var. *glabrescens* (Masters) Deb. Fl. Tripura State 1: 304 (1981) [2];

Diagnosis: Differs from *Kydia calycina* Roxb. in posing glabrescent branchlets, nearly glabrous to sparsely pubescent lower leaf surfaces, and an epicalyx consisting of four free bracteoles, capsules globose.

Small to medium-sized tree; 6 – 15 m high, branchlet glabrescent, becoming almost glabrous with age; young twigs glabrescent, without persistent stellate tomentum. Leaves alternate, simple, broadly ovate to suborbicular, palmately 5 – 7 veined from the base, apex acuminate to shortly acute, base deeply cordate; margin entire to obscurely crenate; upper surface green, sparsely pubescent when young, becoming glabrous; lower surface glabrous or nearly glabrous; smooth, lacking dense stellate tomentum; glands on the principal veins beneath absent; petioles slender, glabrescent. Inflorescences terminal, many – flowered panicles. Flowers white; epicalyx of 4 free, persistent bracteoles; calyx campulate, sparsely pubescent externally, 5-lobed; petals white; staminal column characteristic of the genus. Fruits globose capsules, enclosed by the persistent calyx at maturity. Flowering from July to September; fruiting from September to December.

Specimens examined: India, Odisha, Khordha District: Barbara, 29th December 1987, R.C. Misra 2088 (RPRC); Dhenkanal District: Kapilas, 05th December 1989, R.K. Moharana 682. Additional specimens examined: Royal Botanic Gardens, Kew (K006372860) (Fig 1).



Key to the species of *Kydia* in Odisha:

1a	Branchlets persistently stellate-tomentose; leaves beneath densely stellate-tomentose; epicalyx of five free bracteoles...	<i>Kydia calycina</i>
1b	Branchlets glabrescent; leaves beneath glabrous or nearly glabrous; epicalyx of four free bracteoles	<i>Kydia glabrescens</i>

Comparison with authenticated Kew material and Odisha specimens

Critical examination of the Odisha specimens preserved at the Herbarium of the Regional Plant Resource Centre (RPRC), Bhubaneswar, together with comparison of authenticated specimens of *Kydia glabrescens* Mast. preserved at the Royal Botanical Gardens, Kew (K006372860), revealed a close agreement in both vegetative and reproductive characters. The Odisha

specimens collected from Barbara (Khordha District) and Kapilas (Dhenkanal District) possess glabrescent branchlets, glabrous to nearly glabrous abaxial leaf surfaces, and an epicalyx composed of four free bracteoles, all of which correspond closely with the authenticated Kew material and the diagnostic characters given in the protologue of *K. glabrescens* Mast. and subsequent taxonomic treatments. In contrast, specimens of *K. calycina* Roxb. collected from Nrusinghnath (Bargarh District) consistently possess persistently stellate-tomentose branchlets, densely stellate-tomentose abaxial leaf surfaces and an epicalyx composed of five free bracteoles. These characters remain constant among the Odisha specimens examined and provide reliable features for distinguishing the two species. The present study therefore supports the recognition of *Kydia glabrescens* as a distinct species occurring in Odisha (Table 1).

Table 1: Morphological comparison of *Kydia calucina* and *Kydia glabrescens* based on Odisha specimens and authenticated Kew material

Character	<i>Kydia calycina</i> Roxb. (Nrusinghanath, Odisha)	<i>Kydia glabrescens</i> Mast. (Barbara & Kapilas, Odisha)	Authenticated Kew specimen (<i>Kydia glabrescens</i> , K006372860)
Branchlets	Persistently stellate-tomentose	Glabrescent	Glabrescent
Young twigs	Densely stellate-pubescent	Glabrescent	Glabrescent
Lower leaf surface	Densely stellate-tomentose, greyish	Glabrous or nearly glabrous	Glabrous to sparsely pubescent
Gland on veins beneath	Present	Absent	Absent
Leaf texture	Velvety beneath	Smooth beneath	Smooth beneath
Epicalyx calyx	5 free bracteoles	4 free bracteoles	4 free bracteoles
Calyx	Pubescent	Sparsely pubescent	Sparsely pubescent
Capsule	Persistent calyx	Persistent calyx	Persistent calyx

Discussion

The genus *Kydia* Roxb. has long presented taxonomic difficulties because of the close morphological resemblance among its constituent species. *Kydia glabrescens* Mast. was originally described by Masters (1874) based on specimens from North-eastern India and was later treated by Deb (1981) as *K. calycina* var. *glabrescens*. Recent taxonomic treatments, however, recognize *K. glabrescens* as a distinct species based on a combination of vegetative and reproductive characters, particularly the glabrescent branchlets, glabrous abaxial leaf surface and epicalyx consisting of four free bracteoles. These characters are also adopted in India Flora Online and Plants of the World Online. During the present study, all available herbarium

specimens of *Kydia* preserved at the Regional Plant Resource Centre (RPRC), Bhubaneswar, were critically re-examined. The specimens collected from Barbara (Khordha District) and Kapilas (Dhenkanal District) were found to agree closely with the authenticated specimen preserved at the Royal Botanical Gardens, Kew (K006372860), particularly in possessing glabrescent branchlets, glabrous to nearly glabrous abaxial leaf surfaces, glands absent on the principal veins beneath, and an epicalyx of four free bracteoles. In contrast, the specimens collected from characterized by densely stellate-tomentose branchlets, densely stellate-pubescent abaxial leaf surfaces and an epicalyx of five free bracteoles. The agreement between the Odisha specimens and the authenticated Kew material

confirms the identity of *K. glabrescens*. An interesting phytogeographical observation emerging from this study is the occurrence of both *Kydia calycina* and *K. glabrescens* within Odisha, although they occupy different ecological regions of the state. *Kydia calycina* is represented by collections from the Eastern Ghats around Nrusinghanath, whereas *K. glabrescens* has been confirmed from Barbara and Kapilas. The coexistence of two closely related species of the same genus within a single state is noteworthy and suggests that Odisha forms an important transition zone supporting elements of different floristic affinities. This pattern deserves further investigation through additional field survey and population-level studies. The occurrence of *K. glabrescens* in Odisha also indicates that its distribution is wider than previously recognized. Published floristic accounts, including *The Flora of Orissa* (Saxena & Brahman, 1994-1996) and the updated checklist of forest trees of Odisha by Das *et al.*, (2022), recorded only *K. calycina* and did not include *K. glabrescens*. The present study therefore documents the first confirmed occurrence of *Kydia glabrescens* Mast. in Odisha based on authenticated herbarium material and critical taxonomic comparison, thereby updating the tree flora of the state.

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References

1. Das PK, Sahoo T, Panda PC. Forest trees of Odisha, India: An updated checklist. *Plant Science Today*, 2022;9(4):1021–1031.
2. Deb DB. The Flora of Tripura State. Botanical Survey of India, Volume 1. Today & Tomorrow's Printers & Publishers, New Delhi. Page: 304, 1981.
3. Hooker JD. The Flora of British India. Volume 1. L. Reeve & Co., London, P. 348, 1874.
4. Hajra, Verma, Giri. Materials for the Flora of Arunachal Pradesh. Volume 1. Pages: 243-244.
5. Saxena HO, Brahman M. The Flora of Orissa, 1994;1:126–172.