



Neotypification and taxonomic reinstatement of *Grewia macrophylla* G. Don (Malvaceae-Grewioideae)

Mayur D. NANDIKAR^{1,*} and Kaliamoorthy RAVIKUMAR²

1. Naoroji Godrej Centre for Plant Research (NGCPR), 431, Lawkim Campus, Shindewadi, Post Shirwal, Dist. Satara, Maharashtra, India 412 801.

2. National Herbarium of Medicinal Plants and Repository of Raw Drugs, Foundation for Revitalisation of Local Health Traditions (FRLHT), TransDisciplinary University (TDU), No. 74/2, Jarakabande Kaval, Post Attur, Via - Yelahanka, Bangalore, Karnataka, India 560 064.

* Corresponding author's email: mnandikar@gmail.com

(Manuscript received 5 August 2016; accepted 12 June 2017; online published 21 July 2017)

ABSTRACT: *Grewia macrophylla* G. Don has been treated as a synonym of *Grewia abutilifolia* Vent. ex Juss. in most literature. However, *G. macrophylla* is a distinct species and differs from *G. abutilifolia* in the characters of leaf, pedicel and petals. *G. macrophylla* is known from elevated hilly forests in the northeast region of India and Myanmar, while *G. abutilifolia* is distributed throughout India and Southeast Asia. Here, we resurrect and distinguish *G. macrophylla* from *G. abutilifolia*. A neotype for *G. macrophylla* and a lectotype for *G. abutilifolia* are also designated here.

KEY WORDS: *Grewia*, India, Nomenclature, Taxonomy, Typification.

INTRODUCTION

Malvales Juss. is one of the largest orders in Angiosperm that comprises 10 families, 338 genera and 6005 species (Stevens, 2001). It has long been apparent that the delimitation of families within the core Malvales (i.e. Tiliaceae Juss., Sterculiaceae Vent., Bombacaceae Kunth, and Malvaceae Juss.) is problematic (Hutchinson, 1967; Cronquist, 1981). Recently, these closely related families have been merged into an expanded Malvaceae with nine subfamilies, the genera formerly known in Tiliaceae are now distributed in a subfamilies viz. Brownlowioideae Burret, Dombeyoideae Beilschm., Grewioideae Dippel, and Tilioideae Arn. (Bayer and Kubitzki, 2003; Chung, 2005; Mabberley, 2008).

The subfamily Grewioideae includes 24 genera and 700 tropical species (Bayer & Kubitzki, 2003). The genus *Grewia* L. consists of 280–300 species and is distributed from tropical Africa and Madagascar northwards to the Himalaya, China and Taiwan, Southeast to India, Sri Lanka, Myanmar, Thailand, Indo-China, Malesia, Western Pacific (Marianas, Fiji, Samoa, New Caledonia) and the northern parts of Australia (Chung, 2005). In India, the genus is represented by 31 species (Daniel and Chandrabose, 1993). Of these, 23 species are known to occur in peninsular India (Kumar *et al.*, 2001).

The second author while on an expedition to collect the medicinal plants of Nagaland, India collected some specimens of *Grewia*. These were later identified as *G. macrophylla* G. Don, a species which has been treated as a synonym under *G. abutilifolia* Vent. ex Juss. by

Masters (1874), Kanjilal *et al.* (1991), Daniel and Chandrabose (1993) and Kress *et al.* (2003). However, Burret (1926), in his monograph of Tiliaceae and Narayanaswami and Rao (1950) in their enumeration of Indo-Burmese *Grewia*, treated *G. macrophylla* as a distinct species.

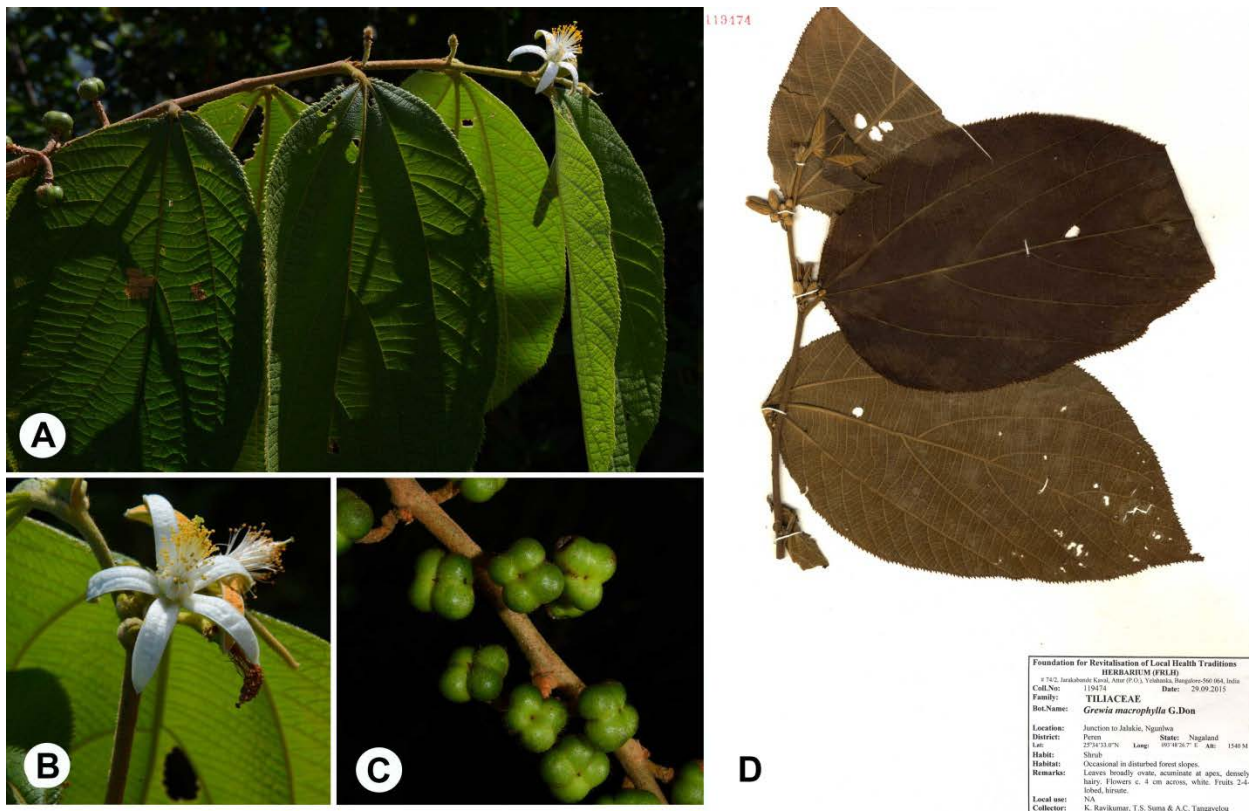
Don (1831) while describing *Grewia macrophylla* provided a diagnostic description, i.e. “shrub 10 feet, leaves large, oblong, acuminate, villous beneath, a span long and 4 to 5 inches broad, entire”. While consulting the specimens housed at CAL and ASSAM, we could find collections of *G. macrophylla* which were wrongly identified as *G. abutilifolia*. Further herbaria consultation and observation of live specimens revealed that *G. macrophylla* is clearly distinct from *G. abutilifolia* in its broadly ovate-elliptic leaves with a rounded to oblique base, 8 mm long pedicels and lanceolate petals (**Table 1**). Based on the morphological differences mentioned above, we reinstate *G. macrophylla* as a distinct species in the present paper. In addition, we designate here a lectotype for *G. abutilifolia* and a neotype for *G. macrophylla* by applying Art 9.2 and 9.7 of the ICN (McNeill *et al.*, 2012). Explanatory notes on the choice of type are also provided.

Grewia macrophylla G. Don, Gen. Hist. 1: 549. 1831. non Baker 1884. **Figs. 1 & 2**

TYPE: INDIA. Nagaland: Ngunlwa, Junction to Jalukei or Peletkie, 1540 m a.s.l., 25.3433°N, 93.4826°E, 29th Sept. 2015, K. Ravikumar *et al.* 119474 (Neotype: FRLH!, **Fig. 1D**), designated here; Isoneotypes: CAL!, FRLH!, NGCPR and TAI!.

**Table 1:** Comparative morphological account of *Grewia macrophylla* and *G. abutilifolia*.

	<i>G. macrophylla</i>	<i>G. abutilifolia</i>
Leaf		
lamina	broadly ovate to oblong-elliptic	ovate to orbicular or broadly oblong
size	10–25(–30) × 5–13(–15) cm	3–20 × 2–11(–15) cm
base	rounded to oblique at the base	sub-cordate at base
margin	bi-serrate, never lobed	irregularly serrate and occasionally lobed at margin
Flower		
pedicel	ca. 8 mm long	ca. 2 mm long
sepals	1.5–1.8 cm long	ca. 0.8 cm long
petals	lobes lanceolate with retuse apex, ca. 5 mm long	lobes oblong, emarginate or round at apex, ca. 3 mm long
stigma	distinctly tetra-lobed	5-lobed
Fruit	sparsely hirsute	puberulent

**Fig. 1.** *Grewia macrophylla*: **A.** Flowering and fruiting twig, **B.** Flower, **C.** Infructescence (Photographs by K. Ravikumar). **D.** Neotype image: FRLH119474.

Shrubs, 4–5 m high. Branchlets woody, terete; old branches sparsely to densely puberulous; young branchlets densely puberulous to stellate-puberulous. Petioles up to 1 cm long; stipules minute, ca. 2 mm long, lanceolate, puberulous, deciduous; lamina broadly ovate to oblong-elliptic, 10–25(–30) × 5–13(–15) cm, base oblique to rounded, apex acute to acuminate, margin bi-serrate, scabrous above with densely stellate veins, densely stellate-puberulous beneath; 3-nerved from the base, costa and lateral veins prominent beneath, dark green above, dull green below. Inflorescence axillary or supra-axillary; umbels pedunculate, axillary, usually 3-flowered; peduncles up to 3 mm long, stellate-puberulous; pedicels 7–9 mm long,

stellate-puberulous; bracts ca. 5 mm long, lanceolate; buds ovoid, stellate-puberulous without. Flowers white; sepals oblong-lanceolate, 1.5–1.8 × 0.2 cm, tomentellous, greenish brown without, glabrous, white within; petals orbicular at base, lanceolate-retuse at apex, ca. 5 × 3 mm, hirsute to stellate without, densely ciliate along margins, glabrous within, gland conspicuous, covered by the orbicular petal base, densely hirsute above; gonophore ca. 5 mm long, 5-lobulate, hirsute at apex; filaments ca. 8 mm long, glabrous; ovary densely hirsute; styles exceeding the stamens; stigmas green, tetra-lobed. Fruits usually 4-lobed, occasionally 1-3-lobed, ca. 1.5 cm across, dark brown to black, sparsely hirsute when dry; pyrenes four, rarely less.

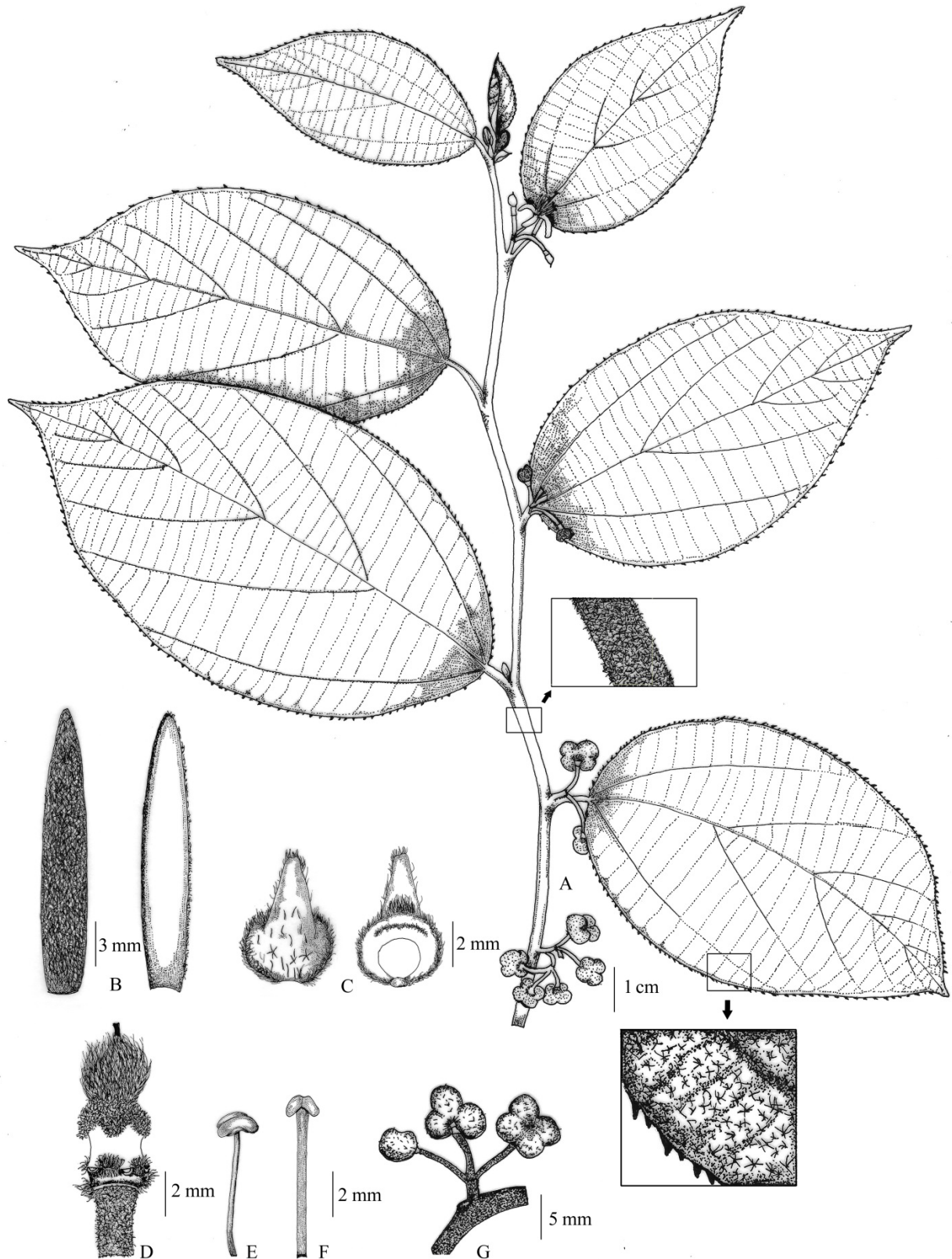


Fig. 2. *Grewia macrophylla*: A. A branch, B. Sepals (abaxial and adaxial), C. Petals (abaxial and adaxial), D. Gonophore, E. Stamen, F. Style and stigma, G. Inflorescence (illustrations from K. Ravikumar *et al.* 119474, by Mayur Nandikar).



Flowering & Fruiting: Flowering starts from February with a peak between September–December, fruiting throughout the year.

Ecology & Distribution: Hill slopes and secondary forest. India (Assam, Manipur, Meghalaya and Nagaland) and Myanmar (Upper Burma).

Specimens examined: INDIA. Assam: North Cachar, Halflong, 2500 ft.a.s.l., 11th Aug. 1908, W.G. Craib 230 (CAL); *ibid.*, 2750 ft.a.s.l., 24th Aug. 1908, W.G. Craib 422 (CAL). Manipur: Zubza, 5000 ft.a.s.l., Feb. 1906, A. Meebold 5218 (CAL). Meghalaya: East Khasi Hills, *s.d.*, *s.coll.* (CAL, *sh. no.* 61627); Rajapara village, South Kamrup District, 18th June 1964, A.S. Rao 38926 (CAL). MYANMAR: Upper Burma: 3rd Dec. 1900, J.C. Prazer 33 (CAL); Hill north-west of Kindat on other side of the River, 5th Aug. 1990, J.C. Prazer 269 (CAL).

Note: The protologue of *Grewia macrophylla* bears no information regarding type and collector. According to Stafleu and Erik (2000) and Miller (1970) Don's types are at BM, CGE, BR, E, GOET, K, LD, MO, OXF and the herbarium of Aylmer Bourke Lambert. A thorough search at these herbaria revealed that no original material or any annotated specimen is available. Hence, the specimens recently collected by us are chosen as a neotype, as it bears flowers, fruits and matches well with the protologue (Fig. 2).

Baker (1884) also described a species by the name *Grewia macrophylla* from Madagascar which is a later homonym of *G. macrophylla* G. Don (1831) and hence it was renamed as *G. speciosa* Burret (Burret, 1926).

Grewia abutilifolia Vent. ex Juss. Ann. Mus. Natl. Hist. Nat. 4: 92. 1804.

Fig. 3

TYPE: INDONESIA. Java. *s.d.*, *Felix de Lahaie* (Herb. Ventenat), *s.n.* (Lectotype: G! G357065-**Fig. 3D**), designated here; possible syntype: Java, *Leschenault de la Tour* 279 (P-JU).

Shrubs, up to 3 m high. Petiole 1–2 cm long; lamina broadly ovate to orbicular or broadly oblong, 3–20 × 2–11(–15) cm, base sub-cordate, apex acute, irregularly serrate, occasionally lobed along margins, puberulous; 3-nerved from base; secondary nerves 3–4 pairs; scalariform veins prominent beneath. Inflorescence axillary, pedunculate umbels usually 3-flowered; peduncles short, 1–5 mm long, stellate-puberulous; pedicel ca. 2 mm long, stellate-puberulous; buds ovoid to ellipsoid, stellate-puberulous without. Flowers white; sepals oblong, ca. 0.8 × 0.2 cm, tomentellous, green without, glabrous, white within; petals oblong, emarginate or rounded at apex, ca. 3 × 2 mm, hirsute to stellate without, glabrous along margins, glabrous within, upper half of the gland sparsely hirsute; gonophores ca. 3 mm long, hirsute at apex; filaments ca. 4 mm long, glabrous; ovary ovoid, densely hirsute; styles exceeding the stamens; stigma green, lobulate, 5-lobed. Fruits usually 2–4 lobed, ca. 0.8 cm across, dark green, brown when dry, hirsute; pyrenes 2–4.

Flowering & Fruiting: Throughout the year.

Ecology & Distribution: Open dry mixed

deciduous to semi-evergreen forests. India (except Manipur, Meghalaya and Nagaland), China, Cambodia, Vietnam, Laos and Malay peninsula.

Specimens examined: INDIA. Andhra Pradesh: Sirivaka, Godavari River, 01st Dec. 1902, C.A. Barber 5008 (MH); Lammasingi hills, Vizag, 21st May 1956, S. K. Wagh 2924; Lammasingi hills, Vizag, 23rd May 1956, H. Santapau 20849 (BLAT). Bihar: *s.d.*, S. Kurz *s.n.* (CAL). Chhattisgarh: Dhantewada, Bastar, 30th Aug. 1959, K. Subramanayam 8706 (MH). Goa: Goa University Campus, North Goa, 03rd June 2017, M. D. Nandikar 1523 (NGCPR). Gujarat: Junagarah, Burning Ghat, 24th Oct. 1952, H. Santapau 15096 Waghai, 100 m to Susarda, Dangs, 20th Oct. 1954, H. Santapau 19731; Sunda, Dangs, 22nd Dec. 1963, G. L. Shah 10711 (BLAT). Jharkhand: Snaughat, Dalma WLS, 16th Sept. 2000, P. Chakraborty & P. Satyanaryana 28733 (CAL). Karnataka: Hunsur, Mysore, 13th June 1909, C. A. Barber 4192 (MH); Bandipur, Mysore, 24th Aug. 1964, B.D. Naithani 21151 (MH). Kerala: Meenumutty, Idukki, 30th May 1982, C. N. Mohanan 74037 (CAL). Maharashtra: Lohagad, Pune, Oct. 1918, H. Santapau 28314; Khandala, Monkey hills, 6th Aug. 1944, H. Santapau 4664; Karjat, Raigad, 11th July 1948, H. Santapau 9685; Kolhapur, *s. d.*, R. D. Auckland 98 (BLAT). Odisha: Kalniia Ghat, Ganjam, Jan. 1884, J. S. Gamble 13740 (MH); Nivangiri, Kalahandi, 01st May 1956, S. K. Mukherjee 4209 (CAL). Tamil Nadu: Kodaikanal Ghats, 01st June 1905, C. A. Barber 7330 (MH); Anamalais, Coimbatore, 20th March 1931, V. Narayanaswami 5485 (MH); Sirumalai Hills, Madurai dt. 12th Oct. 1959, Pallithanam, J. 5203 (BLAT); Vellingiri Hills, Coimbatore, 12th April 1957, K. M. Sebastine 2733 (CAL); Walayar, Kerala Border, Coimbatore, 08th May 1957, K. Subramanyam 3024 (CAL); Vellapathy, Siruvani, 4th Dec. 1960, A. N. Henry 883 (MH); Rasipuram, Kolli hills, Thallakara, Fl. Tamil Nadu Carnatic, 01st Aug. 1978, N. Venugopal 15982 (CAL, RHT). West Bengal: Purwah, Maldah, 03rd May 1875, C. B. Clarke 26378 (CAL).

Note: In the present study, *Grewia abutilifolia* Vent. ex Juss. lacked a type and warranted typification. Jussieu (1804) ascribed the species probably based on the collection of Felix de Lahaie (1767–1829) during his Entrecasteaux Expeditions (Guillaumin, 1910), now a part of Ventenat's herbarium (*pers. comm.* Dr. Martin Callmander, Conservatoire et Jardin botaniques de la Ville de Genève). However, collections by Leschenault de la Tour (1773–1826) from his expeditions to Java are also used frequently by Jussieu and Ventenat (Orchard, 1999). These collections are part of Jussieu herbarium at Paris (P-JU). After possible search for the specimens referred by Ventenat and Jussieu at G, P-JU, PC, WU, K, OXF, we could locate collections of Felix de Lahaie and Leschenault de la Tour of *G. abutilifolia* from Java placed at G (G357065) and P-JU (no. 279) respectively. The former specimen (G357065) was initially collected as an intermediate between *Grewia abutilifolia* and *G. asiatica* and annotated by de Jussieu which unequivocally agrees with the protologue and has been designated here as lectotype. The latter specimen (P-JU) is also referred to de Jussieu but due to insufficient evidences it preferred here as probable syntype.

In various floristic treatments, Matthew (1983), Daniel and Chandrasekhar (1993), Kanjilal *et al.* (1991) and herbaria depositions, taxa like *G. scabrophylla* Roxb. (1832), *G. aspera* Roxb. (1832), *G. sclerophylla* Roxb. ex G. Don (1831) are synonymised under *G. abutilifolia*. The taxonomic distinctness of these names

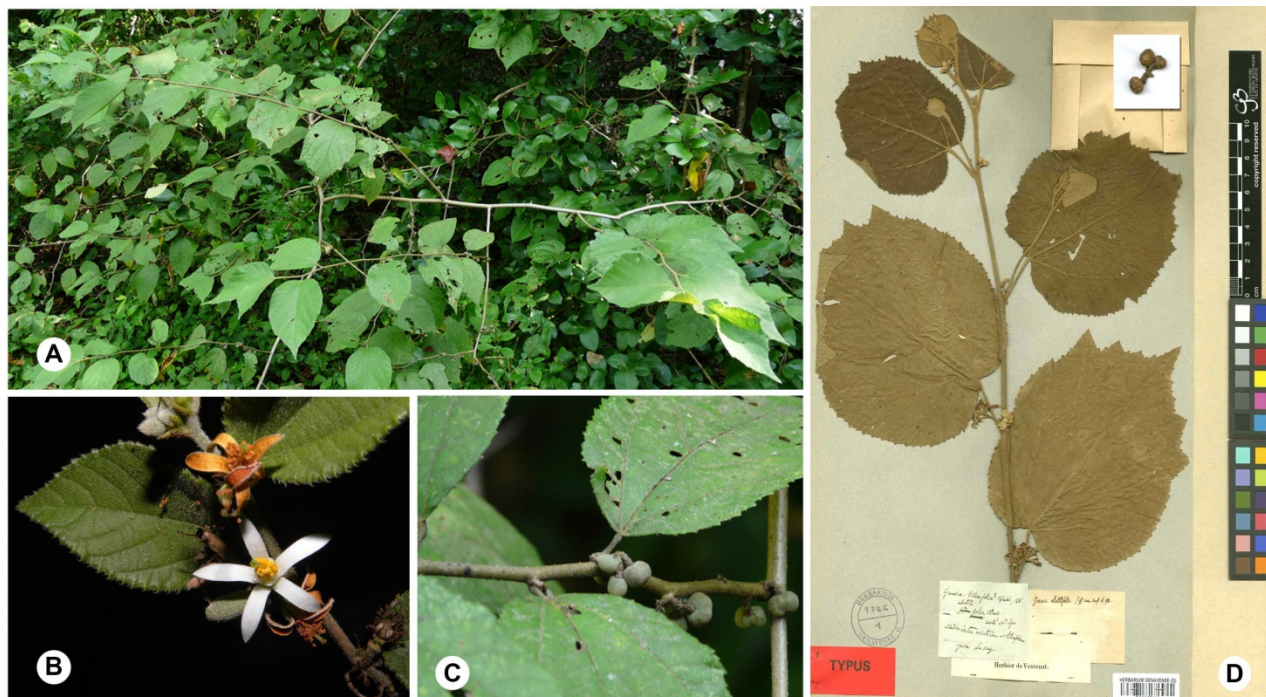


Fig. 4. *Grewia abutilifolia* A. Habit, B. Flowering twig, C. Fruiting twig (Photographs by Dinesh Valke and Mayur Nandikar), D. Lectotype image: G357065 (Catalogue des herbiers de Genève (CHG). Conservatoire & Jardin botaniques de la Ville de Genève. 18-08-2016 <<http://www.ville-ge.ch/musinfo/bd/cjb/chg>>).

needs to be scrutinized by examining protologue and type specimens. Therefore, due to the lack of information, we have not considered these names under synonymy in the present nomenclature account of *G. abutilifolia*.

ACKNOWLEDGEMENTS

K. Ravikumar is thankful to Mr. Darshan Shankar, Founder, FRLHT-TDU and Mr. D. K. Ved, Advisor, FRLHT-TDU for facilities and encouragements; the Ministry of Environment, Forests & Climate Change, Govt. of India, New Delhi for financial support under “Center of Excellence” project; Dr. A.C. Tangavelou and Ms. T.S. Suma, FRLHT-TDU for field and herbarium help. Mayur Nandikar is thankful to Mr. Vijay Krishna, Director, NGCPR for his constant support and encouragement, to SERB, Department of Science and Technology (DST), New Delhi for financial assistance under DST Fast Track Young Scientist Scheme (File No. YSS/2015/001169) and Dr. Martin Callmander, Conservatoire et Jardin botaniques de la Ville de Genève, Switzerland for providing relevant information about Ventenat Herbarium and Leschenault specimen from P-JU. Authors are indebted to the personnel of the following herbaria: ASSAM, BSI, BLAT, CAL, MH for consultation and G, P-JU, BM, CGE, BR, E, GOET, K, LD, MO and OXF, for their help in search of material annotated by George Don. We sincerely thank Dr. M. M. Lekhak (SUK) and anonymous reviewer for their careful reading, insightful comments and suggestions in the manuscript.

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