



Note on *Celastrus paniculatus* Willd. ssp. *aggregatus* K.M. Matthew ex K.T. Matthew (Celastraceae)

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Celastrus L., a large genus of the family Celastraceae, is widely distributed in tropical, subtropical, and temperate zones of Asia, Australia, and North and South America, as well as in Madagascar between 40°S and 47°N. It is represented by ca. 31 species in the world (Mabberley 2008). In India, the genus is represented by seven species and one subspecies (Francis et al. 2009), of which the majority of the species are endemic and distributed predominantly in northeastern India.

Celastrus paniculatus Willd. belonging to subgenus *Celastrus* series *Paniculati* Rehd. & Wiels., section *Celastrus*, is highly polymorphic and is one of the most widespread species distributed chiefly in India, Myanmar, Thailand, China, Indonesia and

Philippines.

The wider distribution and the variable leaf forms of this species have been the cause of many synonyms in the past (Ding-Hou 1955). Moreover, based on herbarium materials of different geographical locations and measurable differences, Ding-Hou treated three different populations as three subspecies—*C. paniculatus* Willd. ssp. *paniculatus*, *C. paniculatus* ssp. *serratus* (Blanco) Ding-Hou and *C. paniculatus* ssp. *multiflorus* (Roxb.) Ding-Hou. However, there are so many transitional blade forms that it is hard to distinguish between them (Zhang & Funston 2008).

Thereafter, Matthew (1991, 1996, 1999) segregated *C. paniculatus* Willd. into two subspecies, namely, *paniculatus* (Images 4 & 5) and *aggregatus* (Images 1–3) based on the differences in size of inflorescences, number of bisexual flowers, number of capsules per infructescence and shape of the leaf apex. He further stated that subspecies *aggregatus* occurs clearly at higher altitudes than the typical variant.

After 1996, the subspecies *aggregatus* was not recorded by subsequent workers. Later, Francis et al. (2009) reported this subspecies from Aurangabad District of Maharashtra, at about 600–800 m, followed by Hegde & Hegde (2011) from Karnataka State. Meanwhile, the present authors consulted different herbaria in India such as the Central National Herbarium, Howrah, Kolkata (CAL), Botanical Survey of India, Western Circle, Pune (BSI); Blatter Herbarium, St. Xavier's College, Mumbai (BLAT); Dr. Babasaheb Ambedkar Marathwada University Herbarium, Aurangabad (BAMU), Shivaji University Herbarium, Kolhapur (SUK), Botanical Survey of India, Coimbatore (MH) and Herbarium of French Institute of Pondicherry, Pondicherry (HIFP), Botanical Survey of India, Andaman & Nicobar Circle Regional Herbarium (PBL).

During the herbarium consultation the authors found that, all the herbaria specimens of both the subspecies are deposited without segregation. The only exception was PBL, as it did not possess any herbarium specimen of subspecies *aggregatus*. However, the specimens collected from Andaman Islands were deposited at CAL. This shows that the subspecies occur in all the states of peninsular India and Andaman Islands.

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The following specimens examined in various herbaria belong to the population of *Celastrus paniculatus* Willd. ssp. *aggregatus* K.M. Matthew ex K.T. Matthew. Hence, the present record of this subspecies also forms a new report to the states of Andhra Pradesh, Kerala, Goa and Andaman Island.

Celastrus paniculatus Willd. Sp. Pl. 1: 1125. 1795 ssp. *aggregatus* K.M. Matthew ex K.T. Matthew in Kew Bull. 46: 540, f. 1, 2. 1991; K.M. Matthew, Ill. Fl. Palni Hills: t. 122. 1996 & Fl. Palni Hills 1: 216. 1999; Francis et al. Rheedeia 19 (1&2): 73–74. 2009. Hegde & Hegde in J. Threat. Taxa. 3(4): 1731–1734. 2011.

Scandent shrubs. Leaves alternate, broadly elliptic, subcoriaceous, apex abruptly acute or retuse, base obtuse, margins shallowly crenulate, to 10×6 cm. Flowers in condensed panicles, greenish white, polygamous. Sepals suborbicular. Petals ovate to oblong, reflexed. Capsule loculicidal, to 1.2×1.1 cm. Seeds 1-6 per capsule, broadly ellipsoid, completely covered with deep orange fleshy aril.

Flowering and fruiting: July–December.

Illus.: K.M. Mathew, loc. cit.

Specimens examined:

Andaman Islands: ix.1900, Andaman Islands, coll. Prain, 86181 (PBL).

Andhra Pradesh: 19.ix.1956, Addatigala, E. Godavari, coll. S.K. Wagh, 09891 (BLAT); 19.ix.1956, Addatigala, E. Godavari, coll. S.K. Wagh, 09892 (BLAT); 13.x.1964, Golugonda, coll. G.V. Subbarao, 21647/41178 (MH); 21.viii.1965, Vishnu Nandi, coll. J.L. Ellis, 25419/49572, 49573 (MH); 28.viii.1966, Chitapalli, coll. G.V. Subbarao, 28137/53878 (MH); 30.ix.1974, Papavinashinam Chittor, coll. G.V. Subbarao, 45907/89290, 89291 (MH); 12.xi.1975, Vallakadu, coll. Vivekananthan, 46652/90858,90859 (MH); 24.ix.1994, Thattilanga, coll. V.S. Chandraseler, 103414/167606, 167607,167616 (MH) 27.viii.1995, Bhadrachalam, coll. V.S. Chandraseler, 104308/167932, 167933 (MH).

Goa: 24.viii.1963, Todalowwary, Conacona, coll. K.C.Kanodia, 41553; 13.x.1964, Margao, coll. K.K. Ahuja, 48151 both deposited in BSI.

Karnataka: 30.viii.1961, Namadachilume Forests, Mysore, coll. R. Seshagiri Rao, 38038 (BSI); 24.viii.1964, Bandipur, coll. B.D. Naithani, 22149/40437,40438(MH); 17.vii.1965, Bannuhalla, Hassan Dt., coll. C. Saldanha, 14151 (CNH);

29.xi.1971, Kalhatti-Masinagndi, coll. N.C. Rathakrishnan, 39079/76290, 76291 (MH); 09.x.1976, Mangala Devi Temple, coll. K. Vivekananthan, 48626/94067, 94068 (MH); 19.ix.1980, Barangi, coll. G.V. Subbarao, 67577/137334,137934 (MH); 28.iii.1977, Tlaspacanvery, coll. Pascal, 004118/819 (HIFP); 28.iii.1977, Tlaspacanvery, coll. Pascal, 004118/819 (HIFP); 08.vi.1985, Hatuebera Belta, coll. B.R. Ramesh, 004123/1220 (HIFP); 08.vi.1985, Hatuebera Belta, coll. B.R. Ramesh, 004124/1220 (HIFP); 01.iv.1964, Malleshwara, coll. R. Sundara Raghvan, 46087 (BSI); 15.ix.1974, Joginath St. Forest Chitradurg, coll. N.P. Singh, 111184 (BSI); 29.iv.2007, Belgaon, N.V. Malpure, s.n. (SUK).

Kerala: 15.ix.1928, Ponnemodi, coll. V. Narayanswamy, 1647/77773 (MH); 26.x.1929, Wayanad, coll. J.S. Gamble, 10024 (MH); 16.xi.1975, Thekkady, coll. K. Vivekananthan, 46689/90932, 90933 (MH); 20.xii.1979, Chandanthode, coll. V.S. Ramchandran, 65351/114916,114917 (MH); 26.iii.1980, Munnar to Kunnili, coll. Ramamurthy, 66392/121965,121966 (MH); 25.ix.1981, Kulamavu, coll. C.N. Mohanan, 71974/137665,137666(MH); 09.xii.1992, Peryar WLS. Kottayam, coll. Ramesh & De Frances che, 004128 (HIFP); 09.xii.1992, Peryar WLS. Kottayam, coll. Ramesh & De Frances che, 004129 (HIFP).

Maharashtra: 25.iv.1902, Amboli, Belgaum Vengrula Road, coll. G.A. Gammie (BSI); 20.x.1965, Pokhri Ghat, coll. J.A. Vasavada, 2529 (BSI); 04.vii.1965, Tamboli,Ratnagiri, coll. P.J. Cherian, 96502 (BSI); 09.xi.1965, Chankul near Amboli, Ratnagiri, coll. B.G. Kulkarni, 62243 (BSI); 09.xi.1965, Chaukul near Amboli, Ratnagiri, coll. B.G. Kulkarni, 96500 (BSI); 18.vii.1966, Bahre-Nansi, Nashik, coll. R. Seshagiri Rao, 66882 (BSI); 18.vi.1967, Mosai Village, Dhasai Range, Thane, coll. K.V. Billore, 73971 (BSI); 18.vii.1967, Kiratmal Point Range, Nashik, coll. John Cherian, 66854 (BSI); 29.v.1970, Derwan, Ratnagiri, coll. B.G. Kulkarni, 963387 (BSI); 07.v.1983, Vasi, Mumbai, coll. P.L. Narasimhan, 107029 (BSI); 15.xi.1983, Sonaburdi Forest River area, Buldhana, coll. P.G. Diwakar 123063 (BSI); 29.ix.1984, Boripoda round, Nashik, coll. P.L. Narsimhan, 102023 (BSI); 27.v.1951, M.R.B.C mar. Parwati, Pune, coll. B.A. Razi, 09981 (BLAT); 04.ix.1954, Waghai, Pimpri road, coll. Fr. Santapau S.J., 09939 (BLAT); 17.vii.1960, Karanja

Gram, coll. P. Divakar, 09939 (BLAT); 23.viii.1960, Gram hill, coll. P. Divakar, 09966 (BLAT); 10.vi.1975, Chauka, Aurangabad, coll. Pokle D.S., 003161 (BAMU); 15.ix.1977, Nagzari, coll. B.R. Zate, 003146 (BAMU); 15.ix.1977, Nagzari, coll. B.R. Zate, 003147 (BAMU); 15.ix.1977, Nagzari, coll. B.R. Zate, 003148 (BAMU); 15.ix.1977, Nagzari, coll. B.R. Zate, 003149 (BAMU); 09.viii.2000, Amba, Kolhapur Dist., coll. P.D. Mahekar, SUK68 (SUK); 21.vii.2008, Mhaismal, Aurangabad, coll. J.W. Francis & A.S. Dhabe, 004902 (BAMU); 23.viii.2008, Ratnagiri, coll. J.W. Francis & A.S. Dhabe, 004904 (BAMU); 05.xi.2008, Lamangaon, Aurangabad, coll. J.W. Francis & A.S. Dhabe, 004909 (BAMU); 04.vii.2009, Gautala, coll. J.W. Francis & A.S. Dhabe, 004917 (BAMU); 28.viii.2009, Radhanagri, Kolhapur, coll. J.W. Francis & A.S. Dhabe, 004922 (BAMU); 7.v.2011, Sulibanjan, Aurangabad, coll. A.S. Dhabe & J.W. Francis, 004936 (BAMU).

Tamil Nadu: 30.xii.1902, Udhagamandalam, coll. C.A. Barber, 5372/10033 (MH); 30.xii.1902, Udhagamandalam, coll. C.A. Barber, 5372/72866 (MH); 09.ix.1969, Panagudi, coll. B.V. Shetty, 32314/62492,62493 (MH); 20.v.1971, Nanduvattam, coll. J.L. Ellis, 38490/75109,75110 (MH); 23.i.1972, Madanand, coll. E. Vajravelu, 39596/77237,77238 (MH); 25.xi.1972, Edapalayam, coll. B.D. Sharma, 41666/80203, 80233(MH); 15.ix.1957, Shiriman Hills, Chennai, coll. Wallithanam, 09926 (BLAT)

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Image 1. *Celastrus paniculatus* ssp. *aggregatus*



Image 2. *Celastrus paniculatus* ssp. *aggregatus*

Key to the subspecies of *Celastrus paniculatus* Willd.

- 1a. Inflorescence on lateral shoots, shorter than leaves ssp. *aggregatus*
- 1b. Inflorescence on terminal shoots, twice as long or more than twice as long as the leaves ssp. *paniculatus*

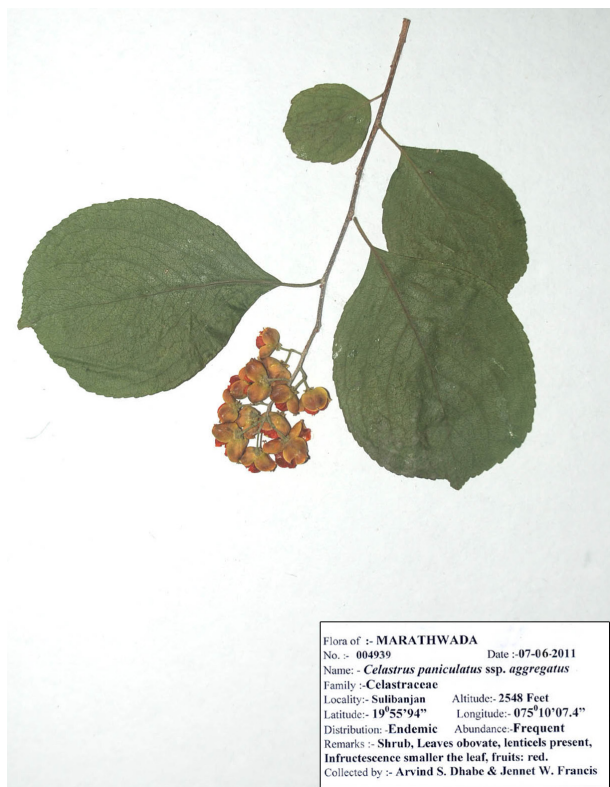


Image 3. Herbarium specimen of *Celastrus paniculatus* ssp. *aggregatus*



Image 4. *Celastrus paniculatus* ssp. *paniculatus*



Image 5. *Celastrus paniculatus* ssp. *paniculatus*

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