

BRYO-DIVERSITY IN INDIAN BOTANIC GARDEN, HOWRAH, WEST BENGAL

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A B S T R A C T

Twenty-five species of bryophytes, comprising 16 mosses, 7 liverworts and 2 hornworts have been recorded from various habitats in Indian Botanic Garden, Howrah. These include 5 new records for the Gangetic Plains and 2 new records for the State of West Bengal.

I N T R O D U C T I O N

Indian Botanic Garden, Howrah is one of the largest and oldest botanical gardens in the world, established by Lieutenant-Colonel Robert Kyd in 1787. It is situated on the west bank of the river Hoogly in Howrah district of West Bengal with an area of about 110 hectares (273 acres). The garden is well known for the great banyan tree, the palm, water lily and orchid collections. So far about 2350 species of phanerogams have been introduced in the garden for cultivation, multiplication, scientific study and conservation. Though, there are few reports of bryophytes from this *ex situ* conservation site (Srivastava, 1964; Gangulee, 1971, 1972, 1974, 1980; Singh, 2002), it seems no inventory of the bryophyte taxa growing in this historically well known Botanical Garden has been prepared so far.

The present study based on the collections made by the authors during last five years and few specimens deposited in Central National Herbarium (CAL) followed by available literature and records the occurrence of 25 taxa falling into 16 families and 21 genera of bryophytes referable to three classes i.e. Bryopsida (16 species), Hepaticopsida (7 species) and Anthocerotopsida (2 species) from various habitats of the Botanical Garden premises. Of these, five species, viz. *Jungermannia stephanii* (Schiffn.) Amakawa, *Archilejeunea minutilobula* Udar & U.S.Awasthi, *Lopholejeunea sikkimensis* Steph., *Marchantia hartlessiana* Steph. ex Bonner and *Notothylas udarii* D.K.Singh & R.C. Semwal are new records for Gangetic Plains, while two species viz. *Stereophyllum tavoyense* (Hook.) A. Jaeger and *Fissidens crenulatus* Mitt. are new to West Bengal.

The systematic enumeration of each taxon, along with brief taxonomic description for newly reported taxa have been provided. The distributional records of the species in the enumerations are on the basis of current available literature. The families of mosses are arranged as per classification of Vitt (1984), while those of liverworts are according to Schuster (1984). All the specimens have been deposited at Cryptogamic Section of the Central National Herbarium, Howrah (CAL). The species not collected by the authors are marked with an asterisk (*).

ENUMERATION

BRYOPSIDA

FUNARIACEAE

1. **Funaria hygrometrica** Hedw., Sp. Musc.: 172. 1801.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden, Nursery-1), 07.01.2004, *J.P. Ghosh* 66944. Terrestrial, growing on moist wall of the old tank

Distribution: India (Western Himalaya: Jammu & Kashmir, Himachal Pradesh, Uttarakhand; Eastern Himalaya: Assam, Manipur; Gangetic Plains: Jharkhand, Orissa; Central India: Madhya Pradesh; Western Ghats: Tamil Nadu), Pakistan, Afghanistan, Nepal, China, Taiwan, Sri Lanka, Myanmar, Thailand, Korea, Japan, Siberia, Europe, America, Africa, Australia, New Zealand. Cosmopolitan. (Gangulee, 1974, 1985; Chopra, 1975; Lal, 2005).

BRYACEAE

2. ***Bryum plumosum** Dozy & Molk. in Ann. Sci. Nat. Bot. ser. 3(2): 301. 1844.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 02.09.1958, *N.K. Chattarjee* 787 (iv). Terrestrial.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: Assam; Gangetic Plains: Jharkhand, Orissa, West Bengal Plains; Western Ghats: Tamil Nadu), Nepal, China, Taiwan, Sri Lanka, Philippines, Indonesia, Vietnam, Japan, Australia, New Caledonia. (Gangulee, 1974; Lal, 2005).

BARTRAMIACEAE

3. ***Philonotis glomerata** Mitt. in J. Proc. Linn. Soc., Bot. (suppl.) 1: 60. 1859.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden, Nursery -1), 03.11.1958, *N.K. Chattarjee* 3434 (vi). Terrestrial.

Distribution: India (Eastern Himalaya: Sikkim, Assam; Gangetic Plains: West Bengal Plains; Western Ghats: Tamil Nadu), all over Asia, Argentina, Chile, Africa, Australia. (Chopra, 1975; Lal, 2005).

PLAGIOTHECIACEAE

4. **Stereophyllum tavoyense** (Hook.) A. Jaeger in Ber. S. Gall. Naturw. Ges., 1877-78: 279. 1879. *Hypnum tavoyense* Hook. in Ic. Pl. Rar. 1: 24. 1836.

Plants yellowish green to deeper green, 25-40 mm long, 3-4 mm wide, creeping, pinnately branched. Leaves somewhat asymmetrical in lateral rows, otherwise symmetrical, spreading, appressed to stem, imbricate when dry, oblong with acute tip, 1.8-2.0 mm long, 0.64-0.76 mm wide, margin almost smooth, often involute at one side of base in lateral rows, base slightly decussate; costa vanishing a little above mid leaf; leaf cells $51-57 \times 5-8 \mu\text{m}$ at apex (a few very short cells at extreme tip), $72-80 \times 6-8 \mu\text{m}$ lower down; alar cells quadrate, $13-16 \mu\text{m}$ wide with a few rectangular cells at top and a row

of large cells $25-30 \times 13-15 \mu\text{m}$ along base, cells gradually becoming narrower and longer on top of alar as also towards vein.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 14.10.2003, *J.P. Ghosh* 66943. Epiphytic, growing on the bark of *Polyalthia longifolia*.

Distribution: India (Western Himalaya: Uttarakhand; Gangetic Plains: Bihar), Nepal, Bangladesh, Malaysia. (Gangulee, 1980; Lal, 2005).

Note: This species is a new record for West Bengal, earlier reported from Bihar in the Gangetic Plains.

5. ***Stereophyllum wightii*** (Mitt.) A. Jaeger in Ber. S. Gall. Naturw. Ges. 1877-1878: 279. 1980. *Hypnum wightii* Mitt. in J. Linn. Soc., Bot. (suppl.) 1: 82. 1859.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 14.10.2003, *J.P. Ghosh* 66949. Epiphytic, growing on the bark of *Samanea* sp.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: Assam, Meghalaya; Gangetic Plains: Jharkhand, Orissa, West Bengal Plains; Central India; Western Ghats: Maharashtra, Karnataka, Tamil Nadu), Sri Lanka, Myanmar, Thailand, Vietnam, Indonesia. (Gangulee, 1980, 1985; Lal, 2005).

HYPNACEAE

6. ***Vesicularia montagnei*** (Bél.) Broth. in Nat. Pfl. 1 (3): 1094. 1908. *Pterygophyllum montagnei* Bél. in Voyag. Ind. Or. Bot. 2 (Crypt.): 85. 1846.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 10.09.2002, *J.P. Ghosh* 66912. Terrestrial.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: Arunachal Pradesh; Gangetic Plains: West Bengal Plains), China, Sri Lanka, Bangladesh, Philippines, Thailand, Vietnam, Indonesia, Australia, Oceania. (Gangulee, 1980, 1986; Lal, 2005).

SEMATOPHYLLACEAE

7. ****Glossadelphus zollingeri*** (Müll.Hal.) M.Fleisch. in Musci Buitenzorg 4: 1355. 1923. *Hypnum zollingeri* Müll.Hal. in Syn. Musc. Frond. 2: 241. 1851.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), *Gangulee* 6099.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: Manipur, Nagaland; Gangetic Plains: West Bengal Plains; Western Ghats: Tamil Nadu), Taiwan, Indonesia, Japan, Philippines, Fiji, Hawaii. (Gangulee, 1980; Lal, 2005).

8. ***Taxithelium nepalense*** (Schwägr.) Broth. in Monsunia 1: 51. 1899. *Hypnum nepalense* Schwägr. in Sp. Musc. Suppl. 3 (1): 226. 1828.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 05.06.2002, J.P. Ghosh 66912; 10.09.2002, J.P. Ghosh 66916. Epiphytic, growing on the bark of *Cocus nucifera*.

Distribution: India (Eastern Himalaya: Assam, Meghalaya; Gangetic Plains: Orissa, West Bengal Plains; Central India; Western Ghats: Tamil Nadu, Karnataka; Andaman & Nicobar Islands), Nepal, Bangladesh, Myanmar, Thailand, Malaysia, Indonesia, New Guinea, Fiji, Samoa, Tasmania, Central Africa. (Gangulee, 1980, 1985; Lal, 2005).

POTTIACEAE

9. **Hydrogonium consanguineum** (Thwaites & Mitt.) Hilp. in Beih. Bot. Centrbl. 50: 626. 1933. *Tortula consanguinea* Thwaites & Mitt. in J. Linn. Soc., Bot. 13: 300. 1873.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 16.12.2002, J.P. Ghosh 66920b. Terrestrial, growing in patches at Charak Udyan.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya; Gangetic Plains: Orissa, West Bengal Plains, Uttar Pradesh; Western Ghats: Tamil Nadu), Nepal, Sri Lanka, Singapore, Philippines, Indonesia. (Vohra, 1970; Gangulee, 1972; Lal, 2005).

10. **Hyophila involuta** (Hook.) A. Jaeger, Ber. S. Gall. Naturw. Ges. 1871-72: 354. 1873. *Gymnostomum involutum* Hook., Musc. Exot. 2: 154. 1819.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden-Charak Udyan), 16.12.2002, J.P. Ghosh 66920a. Terrestrial, growing in dense tufts of dark green plants on bricks and soil.

Distribution: India (Western Himalaya; Jammu & Kashmir, Himachal Pradesh, Uttarakhand; Eastern Himalaya: West Bengal Hills, Sikkim, Arunachal Pradesh, Meghalaya, Assam; Gangetic Plains: Bihar, Jharkhand, Orissa; West Bengal Plains; Central India: Madhya Pradesh, Gujrat; Western Ghats: Tamil Nadu, Karnataka; Andaman & Nicobar Island), Nepal, China, Taiwan, Sri Lanka, Myanmar, Indonesia, Vietnam, Philippines, Korea, Japan, New Guinea, America, Europe, Oceania. Cosmopolitan. (Gangulee, 1972, 1985; Lal, 2005).

11. **Semibarbula orientalis** (F. Weber) Wijk & Margad. in Taxon 8: 75. 1959. *Trichostomum orientale* F. Weber, Arch. Syst. Nat. 1: 129. 1804.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 12.12.2002, J.P. Ghosh 66913. Terrestrial, growing on soil and the walls of old houses.

Distribution: India (Western Himalaya: Kashmir; Eastern Himalaya: West Bengal Hills, Arunachal Pradesh, Assam; Gangetic Plains: Jharkhand, West Bengal Plains, Orissa; Central India: Madhya Pradesh; Western Ghats: Tamil Nadu, Karnataka; Andaman & Nicobar Islands), Nepal, China, Taiwan, Sri Lanka, Indonesia, Philippines, Malaysia, Japan, New Guinea, Africa, Oceania. (Gangulee, 1972, 1985; Lal, 2005).

CALYMPERACEAE

12. **Calymperes tenerum** Müll.Hal. var. **teniolata** Gangulee, Mosses E. India 3: 600. 1972.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 11.02.2004, J.P. Ghosh 66968. Epiphytic, growing on the bark of *Cocus nucifera*.

Distribution: India (Gangetic Plains: West Bengal Plains; Western Ghats: Tamil Nadu), endemic. (Gangulee, 1972; Lal, 2005).

LEUCOBRYACEAE

13. *Octoblepharum albidum* Hedw., Sp. Musc.: 50. 1801.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 30.09.2002, *J.P. Ghosh* 66930. Epiphytic, growing on the bark of *Swetenia mahogoni*.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: Sikkim, West Bengal Hills, Arunachal, Assam, Manipur; Gangetic Plains: West Bengal Plains, Orissa; Central India; Western Ghats: Tamil Nadu; Andaman & Nicobar Island), Sri Lanka, Nepal, China, Myanmar, Thailand, Vietnam, Indonesia, Philippines, Hawaii, New Guinea, America, Australia, Africa. Cosmopolitan. (Gangulee, 1971, Lal, 2005).

FISSIDENTACEAE

14. *Fissidens crenulatus* Mitt. in J. Proc. Linn. Soc., Bot. (suppl.) 1: 140. 1859.

Plants reddish brown, 4-5 mm long, 1-5 wide, unbranched. Leaves lightly curled when dry, oblong-lanceolate to oblong-lingulate, 1.3 mm long, 0.32 mm wide near base; dorsal lamina narrowing down to base, sheathing lamina usually equal in mature leaves; leaf broadest at base, then almost rectangular to near tip after which it narrows down to an acute, symmetrical or subsymmetrical apex with a distinct, though short, apiculus formed by the costa tip; apical margin lightly serrulate by projection of the cell edges; simple smooth semilimbium of two rows of elongated, light yellow cartilaginous cells completely border the sheathing lamina in the perichaetial and topmost leaves passing to one row in the upper part and to 3 rows at the base; in few lower leaves the limbium usually ends a little below the apex changing into a few small parenchymatous cells; costa light brown, excurrent in the short apiculus; leaf cells with single, conical, mamillate papillae causing subobscure.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 08.10.2002, *J.P. Ghosh* 66923; 07.11.2002, *J.P. Ghosh* 66928. Terrestrial.

Distribution: India (Gangetic Plains: Orissa; Central India; Western Ghats: Tamil Nadu) Myanmar. (Gangulee, 1971; Lal, 2005).

Note: This species is a new record for West Bengal earlier reported from Orissa in the Gangetic Plains.

15. **Fissidens involutus* Wilson ex Mitt. in J. Proc. Linn. Soc., Bot. (suppl.) 1: 138. 1859.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden, Nursery-1), 11.09.1956, *Gangulee* 2446 (i). Terrestrial.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: West Bengal Hills, Sikkim; Gangetic Plains: Jharkhand, West Bengal Plains; Central India: Madhya Pradesh), Nepal, Myanmar, Thailand, Vietnam. (Gangulee, 1971; Lal, 2005).

16. *Fissidens sylvaticus* Griff. in Culcatta J. Nat. Hist. 2: 507. 1842.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 12.12.2002, *J.P. Ghosh* 66911. Terrestrial, growing on moist old walls.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: West Bengal Hills, Assam, Meghalaya; Gangetic Plains: West Bengal Plains; Central India: Madhya Pradesh; Western Ghats: Tamil Nadu, Kerala; Andaman & Nicobar Island), Sri Lanka, Hong Kong, Myanmar, Thailand, Vietnam, Indonesia, Philippines, Japan, New Zealand, Samoa, New Guinea, Algeria, Africa. (Gangulee, 1971; Lal, 2005).

HEPATCOPSIDA

JUNGERMANNIACEAE

17. *Jungermannia stephanii* (Schiffn.) Amakawa in J. Hattori Bot. Lab. 31: 101. 1968. *Aplozia stephanii* Schiffn. in Denkschr. Akad. Wiss. 67: 195. 1898.

Plants pale brown, 1-2 cm long, 3-4 mm wide, simple, rarely branched. Leaves imbricate, succubous, obliquely inserted, somewhat dorsally secund and concave or widely spreading, complanate, orbicular, to widely ovate, margin narrowly revolute, shortly decurrent dorsally, leaf cells thin walled, trigones subnodulose. Rhizoids numerous, colourless or yellowish, at right angles to stem.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 07.01.2004, *S.K. Singh* 66944. Terrestrial, growing on moist wall in association with *Funaria hygrometrica*.

Distribution: India (Eastern Himalaya: West Bengal Hills; Andaman & Nicobar Island), Indonesia, Philippines, New Guinea. (Srivastava & Singh, 1988).

Note: This species is a new record for Gangetic Plains, earlier reported from eastern Himalaya and Andaman & Nicobar Islands.

LEJEUNEACEAE

18. *Archilejeunea minutilobula* Udar & U.S. Awasthi in Geophytology 11: 77. 1981.

Plants greenish brown, 10-16 mm long, 0.8-1.5 mm wide; in cross section of stem cortical cells 12-14 and medullary cells 13-15, cells uniformly thickened, without trigones. Leaves incubous, obliquely spreading, compactly or slightly distantly arranged, oblong or quadrate, margin entire, apex rounded or occasionally obtuse; cells with indistinct trigones and intermediate nodular thickening; lobule very small, tooth indistinct. Underleaves reniform with entire margin.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 15.09.2002, *J.P. Ghosh* 66911. Epiphytic, growing in moist places on bark of tree base.

Distribution: India (Western Ghats: Tamil Nadu, Maharashtra), endemic. (Udar & Awasthi, 1981)

Note: This species is a new record for Gangetic Plains, earlier reported from Western Ghats.

19. *Lejeunea* sp.

Plants light green, 4-7 mm long, 0.5-0.7 mm wide, irregularly branched; stem in cross section with 7-8 cortical and 4 slightly smaller medullary cells. Leaf lobes imbricate, subhorizontally spreading, ovate subspherical, margin entire sometimes slightly undulate, trigones small; leaf lobules variable, subquadrate or ligulate-lanceolate, 1/3 to 1/2 of the lobe length, sometimes very small with a very distinct 2-3-celled uniseriate tooth. Underleaves distant, rotund, 2-3 times as wide as stem, 1/3-1/2 bilobed, margin entire.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 03.02.2006, *J.P. Ghosh* 66969. Epiphytic, growing on the bark of *Polyalthia longifolia*.

20. *Lopholejeunea sikkimensis* Steph., Sp. Hepat. 5: 87. 1912.

Plants dark brown, 5-10 mm long, 0.8-1.1 mm wide, irregularly branched; stem in cross section with 10-12 cortical and 23-28 slightly smaller, thick walled medullary cells. Leaf lobes imbricate, obliquely spreading, ovate, very large nearly rotund or obtuse, acute and incurved apices, margin entire, cells with small trigones; leaf lobules 1/3 to 2/5 of the lobe length, ovate, inflated, apex obliquely truncate with blunt or indistinct tooth; keel arched. Underleaves large distant, approximate or imbricate, 3-5 times as wide as stem, rotund or reniform, margin entire.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 29.04.2002 *J.P. Ghosh* 66940; 01.05.2002, *J.P. Ghosh*. Epiphytic, growing in moist places on bark of tree.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: West Bengal Hills, Manipur, Meghalaya; Central India: Madhya Pradesh; Western Ghats: Tamil Nadu, Karnataka, Kerala), Nepal. (Awasthi & al., 2000).

Note: This species is a new record for Gangetic Plains, earlier reported from Eastern Himalaya, Central India, and Western Ghats.

CYATHODIACEAE**21. *Cyathodium cavernarum* Kunze in Lehm., Nov. Stirp. Pug. 6: 17. 1834.**

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 15.12.2003 *J.P. Ghosh* 66958; 15.10.2005, *S.K. Singh*. Terrestrial, growing on moist old walls.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: West Bengal Hills, Meghalaya; Central India: Gujrat, Madhya Pradesh; Gangetic plains: Uttar Pradesh; Western Ghats: Maharashtra), Myanmar, Indonesia, Africa, America. (Srivastava & Dixit, 1996).

22. *Marchantia hartlessiana* Steph. ex Bonner in Candollea 14: 107. 1953.

Plants dark green, 2.5-3.5 mm wide, dichotomously branched, with dark median band on dorsal surface, margin entire, more or less crisped; epidermal pores bordered by 6-8 ring of cells, 3-4 above epidermis, 3-4 projecting into air-cavities, upper most ring of 4-6 cells and innermost ring of 4-6 cells; storage tissue compact, 15-20 layers in the middle, sclerotic cells purplish, mucilage cavities absent.

Ventral surface purplish, median scales purple, oil cell scattered, appendage purplish, ovate, rounded basally, apex acute, margin entire or sometimes with few teeth.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden, Nursery -1), 26.08.2002 J.P. Ghosh 66935, 66934. Terrestrial, growing on moist and shaded places.

Distribution: India (Eastern Himalaya: Sikkim, West Bengal Hills, Assam), Nepal, Bhutan. (Singh, 1966; Bischler, 1989).

Note: This species is a new record for Gangetic Plains, earlier reported from eastern Himalaya.

23. *Riccia billardieri* Mont. & Nees, Syn. Hepat. 602. 1846.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 26.08.2002 J.P. Ghosh 66932, 66933; 05.09.2003 S.K. Singh 66954; 08.11.2002 J.P. Ghosh 66956, 66959. Terrestrial, growing on moist and shaded places.

Distribution: India (Western Himalaya: Uttarakhand; Eastern Himalaya: West Bengal Hills, Assam; Punjab & West Rajasthan: Rajasthan; Central India: Madhya Pradesh; Gangetic Plains: Uttar Pradesh, Bihar, West Bengal Plains; Western Ghats: Maharashtra- Mumbai, Karnataka), Pakistan, Sri Lanka, Japan, Indonesia (Srivastava, 1964; Kachroo & Bapna, 1963).

ANTHOCEROTOPSIDA

NOTOTHYLADACEAE

24. **Notothylas indica* Kashyap: Kashyap & Dutt in Proc. Lahore Phill. Soc. 4: 49-56. 1925.

Distribution: India (Western Himalaya: Uttarakhand; Gangetic Plains: Uttar Pradesh, West Bengal Plains; Central India: Madhya Pradesh, Maharashtra-Nagpur; Western Ghats: Maharashtra-Mumbai), Pakistan, Myanmar (Singh, 2002).

25. *Notothylas udarii* D.K.Singh & R.C. Semwal in Phytotaxonomy 1: 35. 2001.

Plants dark green, forming suborbicular rosettes, repeatedly lobed; lobes narrow-laciniate, compact, ecostate, dorsal surface smooth; epidermal cells with single chloroplast, at the extreme base chloroplast devoid. *Nostoc* colonies prominent. Involucre lamellate on the dorsal surface; sporogonia one in each involucre, protruding beyond about half of its length; capsule dehiscing longitudinally along single suture; capsule wall non-stomatiferous, cells of the epidermal layer with sheet-like thickenings along the radial and transverse walls, radial wall thickenings extending on outer tangential walls as well; cells of inner layer devoid of thickening bands; columella well developed, persistent. Spores blackish-brown, globose-subglobose, 36-47 × 34-42 µm, with prominent equatorial crassitudo, which does not extend along the triradiate mark, and inconspicuous, hyaline, smooth or wavy flange. Pseudoelaters quadrate-rectangulate, 25-43 × 20-34 µm, with spiral thickenings.

Specimen examined: West Bengal, Howrah (Indian Botanic Garden), 10.08.2004 S.K. Singh 66953. Terrestrial, growing on moist and shaded places.

Distribution: India (Western Himalaya: Uttarakhand; Central India: Gujrat), endemic. (Singh, 2002; Chowdhary & al., 2006)

Note: This species is a new record for Gangetic Plains, earlier reported from Western Himalaya and Central India.

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भारतीय वानस्पतिक उद्यान, हावड़ा पश्चिम बंगाल में हरितोद्भिद विविधता

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भारतीय वानस्पतिक उद्यान, हावड़ा के विभिन्न प्रकोष्ठों में हरितोद्भिदों की 25 जातियाँ, जिनमें 16 मॉस, 7 लिवरवर्ट्स हैं अभिलिखित की गयी है। इनमें से 5 जातियों को गांगेय क्षेत्र से तथा 2 जातियों पश्चिम बंगाल से पहली बार अभिलिखित किया गया है।