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Two additions to the family Poaceae in the Flora of Allahabad District, Uttar Pradesh, India

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ABSTRACT

A floristic exploration of the family Poaceae in Uttar Pradesh resulted in the addition of one Bamboo genus viz., *Dendrocalamus strictus* (Roxb.) Nees and one grass species viz., *Chrysopogon aciculatus* (Retz.) Trin. to the flora of Allahabad (U.P.). A detailed description, updated citation, phenology, habitat and distribution are provided which facilitates easy identification.

KEYWORDS: Bamboo, *Chrysopogon aciculatus*, *Dendrocalamus strictus*, Grass, Perennial, Prayagraj

INTRODUCTION

Prayagraj District formerly known as Allahabad is one of the largest districts of Uttar Pradesh, India. There are three rivers in Prayagraj which are Ganga, Yamuna and Saraswati. The meeting point of these three rivers is known as Sangam. The climatic condition of Prayagraj is characterized by long hot summer, pleasant monsoon and winter. There is alluvial, sandy loam and clay soil. It is located in between 24°47' N & 25°47' N latitude and 81°09' E & 82°21' E longitude. It covers an area of 70.5 km². The District shares boundaries with Sant Ravidas Nagar and Varanasi in East, Kaushambi in the West, Jaunpur and Pratapgarh in North and Mirzapur and - Madhya Pradesh in the South.

Poaceae forms the most fascinating family of flowering plants, with a wide range of diversity and plays a significant role for human beings and animals (Mitra and Mukherjee, 2005). It is the fifth largest family - in the world. Bamboos and common grasses are perennial plants belonging to the class Liliopsida of division Magnoliophyta (Takhtajan, 2009). Grass of this region was studied by Tiwari (1954), Majumdar (1956), Raizada (1975), Bor (1960), Choudhary (1959), Jain *et al.* (1975), Karthikeyan *et al.* (1989) and Karthikeyan (2005). During floristic exploration in Uttar Pradesh *Chrysopogon aciculatus* (Retz.) Trin. and *Dendrocalamus strictus* (Roxb.) Nees, are found to be a new addition to the flora of Allahabad District, Uttar Pradesh. *Chrysopogon aciculatus* (Retz.) Trin. is commonly known as 'Love grass' because spikelets are sharp and often attached to the animals skin and the clothes of human beings. It can

tolerate grazing, mowing and trampling by animals (Kabir and Nair, 2009). It is Perennial grass (Roy, 1984) and it prevents soil erosion.

Dendrocalamus strictus (Roxb.) Nees, is one of the predominant species of Bamboo in Uttar Pradesh, Madhya Pradesh, Odisha and Western Ghats (Limaye, 1952). It is commonly known as "Bamboo" (Kirtikar & Basu, 1933), and also recognized as Calcutta bamboo (Farrelly, 1984), male bamboo (Tewari, 1992), and solid bamboo (Anon, 1992). It is a giant and woody grass that prefers well drained, poor, coarse, grained and stony soil. It is the main species used for making paper - in India (Singh & Rekib, 1991).

MATERIAL AND METHODS

Work included an extensive field exploration during 2019-20 in Prayagraj District of Uttar Pradesh and plants were collected from different places during the month of April to November (2020). The specimens were identified with the help of different flora (Raizada 1975; Bor, 1960; Choudhary, 1959; Jain *et al.*, 1975). After collection, the plants were kept into vasculum to prevent from wilt. Collected specimen tagged with field number and all the necessary information recorded in a field diary. Plants with blotting sheet were placed in the plant press for drying. After drying, the poisoning of specimens was done by standard method. Specimen pasted on herbarium sheet and voucher specimen (Specimen No. 32105, 32133) recorded with their name place and date deposited in Duthie Herbarium, Botany Department, University of Allahabad.

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ENUMERATION

Chrysopogon aciculatus (Retz.) Trin., *Fund. Agrost.* 188, 1820: Bor, *Grass. Burma. Ceylon. India.* Pakistan. 115. 1960. *Andropogon aciculatus* Retz., *Observ. Bot.* 5: 22. 1788: Hook. f., *Fl. Brit. India* 7: 188. 1896. Raizada, Bharadwaj & Jain *Ind. For. Rec. (N.S.) Bot.* 4: 218. 1957.

Perennials, culms 30-50 cm (Figure 1). Leaves linear, lanceolate or oblong, 15-30 cm long, acute at apex, cordate at base, scabrid on margins; sheaths overlapping, compressed, glabrous, flabellate on creeping part; ligule a hairy rim. Inflorescence an exerted panicle; branches in several whorls, purplish or dark brownish. Spikelets in groups of 3, one sessile and 2 pedicellate. Sessile spikelets bisexual, 3.5-4 mm long, oblique; callus very sharp, with golden brown hairs. Lower glume lanceolate, 3-3.2 mm long, 2-dentate, 3-nerved, upper part hirsute; upper glume cymbiform, 3.5 mm long, aristate, ciliate. Lower lemma hyaline, 2.5-3 mm long, 2-nerved; upper lemma 3 mm long, 1-nerved. Palea hyaline, long. Anthers 1 mm long. Spikelets pedicellate, 5-6 mm long. Lower glume 4-5 mm long, glabrous; upper glume 3-4 mm long. Lower floret empty. Lower lemma 3.2-3.5 mm long; upper lemma 2.8-3 mm long, mucronate. Anthers 3, orange-yellow, 2.5 mm long.

Fl. & Fr.: July – November.

Distribution: Tropical Asia, Nepal, Sri Lanka, Indo-China, China, Malaysia, Polynesia, Australia. **India:** Andaman and Nicobar, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh.

Ecology: Occurs in open places, near crop fields.

Specimen examined: Mirzapur s.n. 13412 (BSA). Asrawal (Prayagraj), Nahid Fatima: 32105.

Dendrocalamus strictus (Roxb.) Nees in *Linnaea* 9: 476. 1834; *Gamble in Hook.f., Fl. Brit. India* 7: 404. 1896. *Bambusa stricta* Roxb *Pl. Coromandel.* 1: 58. 1798. Raizada & Jain, *Indian Forester* 92: 639.1966.

Perennial and deciduous grass. Culms robust, 6-15 m tall (Figure 2), 2.5-8 cm in diameter; internodes 30-45 cm long, hollow in wet and solid in dry climate, young ones glaucous-green, older ones dull green or yellowish; nodes swollen; culm sheaths variable, 7-30 cm long, rounded at the top, slightly auricled, ciliate on margins, covered on the back with golden-brown stiff hairs, sometimes glabrous striate; imperfect blade triangular, hairy; ligules narrow. Leaves linear-lanceolate, 2.5-25 cm long, terminating above in a sharp acuminate twisted point, rounded at the base into a short petiole, scabrous on margins; leaf sheaths striate, hairy, ending in a prominent callus and short auricle, with a few wavy, caducous cilia; ligules narrow. Inflorescence a large, branched panicle with dense, glabrous, spaced heads; rachis rounded, smooth. Spikelets 4-12 mm long, hairy, spinescent, fertile and sterile mixed. Empty glumes 2 or more, ovate, spinescent, many nerved. Lemma ovate ends in the sharp spine, surrounded

by ciliate tufts of hairs. Palea ovate or obovate, emarginate, 6-8 nerved; keels ciliate. Anthers yellow, 4-5 mm long, apiculate. Ovary ovate; style 6-10 mm long, undivided, ending into a purple feathery stigma. Caryopsis brown, ovoid- subglobose, 7-8 mm long, shining, beaked with persistent style. Fl. & Fr.: November – April.

Distribution: Bangladesh, Brazil, Burma, Caribbean, China, Malaysia, Myanmar, Nepal, Sri Lanka, Taiwan, Thailand. **India:** Andaman and Nicobar, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Goa, Gujrat, Kerala, Karnataka, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh

Ecology: occurs in open dry places.

Specimen examined: Kotdwara, (Uttarakhand) (R.G.Barke): 7266 (DD).

Manauri (Prayagraj) Nahid Fatima: 32133 (Duthie Herbarium).

RESULT AND DISCUSSION

The exploration of family Poaceae in Uttar Pradesh results addition of one species *Chrysopogon aciculatus* (Retz.) Trin. and one genus *Dendrocalamus* Nees as *Dendrocalamus strictus* (Roxb.) Nees in Flora of Allahabad district Uttar Pradesh.



Figure 1: (a and b) *Chrysopogon aciculatus* (Retz.) Trin



Figure 2: (a and b) *Dendrocalamus strictus* (Roxb.) Nees

Chrysopogon aciculatus (Retz.) Trin. is dominated in cultivated fields, and forests are cleared for urbanization so only open waste places remain. It prefers sandy loamy soil and dry turfs and persists for a long time. It has the ability to spread quickly with creeping rhizomes in open areas. It is cultivated as lawn grass, useful for erosion control due to its rhizomatous stem spreading quickly and being a good soil binder. Due to its rough spikes, it is resistant to trampling.

Dendrocalamus strictus (Roxb.) Nees is resistant to all types of temperature it can tolerate low temperature and high temperature also. It prefers slopes and wasteland. It can grow in all types of soil. Bamboo is a durable and good source of timber. It is cultivated in hilly regions and used for many purposes like making households i.e. basket, furniture and mat etc. Its shoot is rich in carbohydrates, protein and fibers. They are used as vegetables and pickles.

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