

### (III)

## New Plants Record from North India

The vegetation survey of Ganga River in pre-monsoon and post-monsoon seasons from Gomukh, Uttarakhand to Gangasagar, West Bengal was conducted between March 2023 to May 2023 and October 2023 to November 2023 respectively. Five states viz., Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal were selected for present study. Approximately 13,100 plant specimens have been collected. The identification and authentication of collected plant samples have been done with the relevant literature of Hooker (1872-1897); Duthie (1903-1929); Mao and Dash (2020<sub>a,b</sub>); Dash and Mao (2020) as well as different regional floras by Bennet (1979); Singh *et al.* (2001); Uniyal *et al.* (2007); Singh *et al.* (2016); Pusalkar and Srivastava (2018); Naithani (2018); Sinha and Shukla (2020); Kellogg *et al.* (2020); Naithani *et al.* (2022); Naithani and Chandra (2023) and Khanna *et al.* (2024). Currently accepted botanical names have been used following <http://www.ipni.org>, however Angiosperm Phylogeny Group IV classification (Chase *et al.*, 2016) has been followed for families. The voucher specimens were dried, pressed and mounted on herbarium sheets following Jain and Rao (1977) and deposited in Patanjali Research Foundation Herbarium (PRFH), Haridwar, Uttarakhand for future reference and records.

The present paper deals with the new records of six plant species as *Cyperus longus* L., *Dioscorea oppositifolia* L., *Dichanthium aristatum* (Poir.) C.E. Hubb., *Dactyloctenium australe* Steud., *Ixora subsessilis* Wall. ex G. Don and *Stylosanthes humilis* Kunth to north India. Some plant species have very small population range and occupancy. These plant specimens were collected, identified with the reference of different floras and recent literature for their authentication. This paper records them with updated nomenclature, description and note on phenology along with images of herbarium sheets (Fig. 1-6).

#### Systematic Enumerations

***Cyperus longus*** L., Sp. Pl. 1: 45. 1753; Clarke in Hook.f., Fl. Brit. India 6: 614. 1893; Prasad in Mao & Dash, Fl. Pl. India Annot. Checkl. Monocot. 153. 2020.

**Family:** Cyperaceae

Annual or rarely perennial, rhizomatous, erect, up to 80 cm tall herb. Rhizome robust, with short stolons.

Stem smooth, triangular. Leaves shorter than stem; blades flat or keeled, up to 50 cm long, 6-9 mm wide with scabrid margins. Inflorescence supra decompound with several unequal rays, 5-10 cm long. Involucres bracts 3-5, unequal. Spikelets 25-30 × 1.0-1.5 mm, alternate, flattened, linear. Glumes broadly ovate, obtuse, keel hardly seen, 5-7 veined, veins inconspicuous, imbricate, reddish brown with narrowly scarious margin. Rachilla wings hyaline, persistent. Stamens 3; anthers c. 1.7 mm, linear-oblong, scarcely apiculate; filaments equal or longer than anthers. Style shorter than nut or sometimes equal; stigmas 3, linear, exerted. Nut c. 1.2 × 0.5 mm, obovoid, trigonous, immature grayish, mature blackish.

**Flowering and Fruiting :** July-October

**Ecological note:** Occasional; found in moist places as well as outskirts of agricultural field.

**Specimen examined:** Uttarakhand: Haridwar (Laksar), Vikram Singh 6122, 10.10.2023; Uttar Pradesh: Farrukhabad (Amritpur), Bhasker Joshi 3305, 22.10.2023; Bijnor (Kiratpur), Prashant Vats 3477, 26.10.2023; Raebareli (Mohammadpur Kucharia) Dheeraj Lal 6631, 28.10.2023 (PRFH).

**Vedic name :** Jalamocakahṛekhakaṇṣīkah

**Distribution:** In Hooker's, Flora of British India the occurrence of this species is mentioned from Quetta (Pakistan) by Hamilton and from Mt. Aboo (now Abu) (Rajasthan) by G. King. As per Prasad *et al.* (2020), it was reported from Gujarat, Kerala, Maharashtra, Rajasthan and Tamil Nadu.

***Dioscorea oppositifolia*** L., Sp. Pl. 2: 1033. 1753; Hook.f., Fl. Brit. India 6: 292. 1892, *p.p.*; Khanna in Singh *et al.*, Fl. Madhya Pradesh 3: 124. 2001; Bhaumik in Mao & Dash, Fl. Pl. India Annot. Checkl. Monocot. 153. 2020. *D. lanceolata* Heyne ex Hook.f., Fl. Brit. India 6: 292. 1892, *p.p.*

**Family:** Dioscoreaceae

Climber with elongate or globose to pyriform tubers; tubers white in side; stem twining to the right, unarmed, glabrous or rarely pubescent, purplish red; bulblets small, present in leaf axils. Leaves alternate basally, mostly opposite distally, simple, 6-13 × 4-6 cm, ovate-triangular to sagittate, usually 3-lobed, 3-5 nerved,

glabrous, base cordate to sub-truncate, apex acuminate, margin entire; petiole 2-3 cm long. Spikes clustered, axillary; axes glabrous or pubescent. Male spikes 2-8-together, 2-8 cm long. Male flowers sessile. Bracts c. 1 mm long, lanceolate, triangular-ovate. Perianth lobed; outer lobes 1.3-2 × 0.8-1.2 mm, oblong or broadly ovate, yellow with purplish brown dots; inner ones ovate, smaller than outer. Stamens 6, all fertile; filaments short. Female spikes solitary or 2 or 3 together. Capsule 1.5-2.5 × 12-17 mm, oblate or globose, winged, glabrous, not reflexed. Seeds brown, winged.

**Flowering and Fruiting** : July-September

**Ecological note**: Common; climbing on trees and shrubs along the roadsides.

**Specimen examined**: Uttarakhand: Haridwar (Dhauri), Inam Malik 6223, 14.10.2023 (PRFH).

**Vedic name**: Varāhakandakaḥ abhipatraḥ

**Distribution**: In Hooker's, Flora of British India the occurrence of this species is mentioned from Assam. As per Bhaumik (2020), it was earlier reported from Andaman & Nicobar Islands, Andhra Pradesh, Bihar, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tami Nadu and West Bengal.

**Dichanthium aristatum** (Poir.) C.E. Hubb. in Bull. Misc. Inform. Kew 1939: 654. 1939; Bor, Grasses Burma, Ceylon, India & Pakistan 134. 1960; Roy in Singh *et al.*, Fl. Madhya Pradesh 3: 406. 2001; Kellogg *et al.* in Phyto Keys 163: 350. 2020; Prasanna *et al.* in Mao & Dash, Fl. Pl. India Annot. Checkl. Monocot. 350. 2020. *Andropogon aristatus* Poir., Encycl. (Lam.) Suppl. 1: 585. 1811 (as "aristatum"). *A. caricosus* var. *mollicomus* (Kunth) Hack. in A.D.C. & C.D.C., Monogr. Phan. 6: 569. 1889; Hook.f., Fl. Brit. India 7: 196. 1896.

**Family**: Poaceae

Shortly rhizomatous, tufted, stoloniferous perennial. Culms geniculate to suberect, up to 1.5 m tall, leafy, branched; nodes glabrous or pubescent. Leaf blades linear, flat, 2-25×0.2-0.8 cm, glabrous or thinly pilose on both surfaces; ligule short, ciliate; sheaths usually longer than internodes, compressed, glabrous. Primary peduncle softly pilose at apex. Inflorescence sub-digitate panicle, comprising 1-4, subdigitate, flexuous racemes, 2-5 cm, with 1-6 pairs of homogamous spikelets; secondary peduncles pubescent. Sessile spikelet compressed, 3-5 mm, owned; lower glume obovate, sub-coriaceous, 7-9-nerved, pubescent on lower back, margins glabrous or shortly ciliate, keels often narrowly winged, apex rounded; upper glume glabrous or ciliate along margins, keeled; awn 1.2-2 cm. Pedicelled spikelet many-veined, resembling sessile spikelet except being narrow and rusty. Caryopsis fusiform, longitudinally grooved, c. 2 mm long.

**Flowering and Fruiting**: July-November

**Ecological note**: Common; found along the roadsides and open places.

**Specimen examined**: Uttarakhand: Haridwar (Roorkee-Laksar railway track), Vikram Singh 6180, 12.10.2023 (PRFH).

**Vedic name**: Agandhapatrakam kharomaśam

**Distribution**: As per Bor (1960), the occurrence of this species is mentioned from Madras (now Chennai) and Bombay (now Mumbai) States and Madhya Pradesh. As per Kellogg *et al.* (2020), it was earlier reported from Andhra Pradesh, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu.

**Dactyloctenium australe** Steud., Syn. Pl. Glumac. 1: 212. 1854; Bor, Grasses Burma, Ceylon, India & Pakistan 489. 1960; Lakshmin. in Sharma *et al.* (eds.), Fl. Maharashtra, Monocot. 447. 1996; Moulik, Grass. Bamb. India 2: 587. 1997; Karthik. *et al.*, Fl. Ind. Enum. Monocot. 204. 1989; Kellogg *et al.* in PhytoKeys 163: 501. 2020; Prasanna *et al.* in Mao & Dash, Fl. Pl. India Annot. Checkl. Monocot. 348. 2020; Siddabathula *et al.* in Species, 22(70): 293-295. 2021.

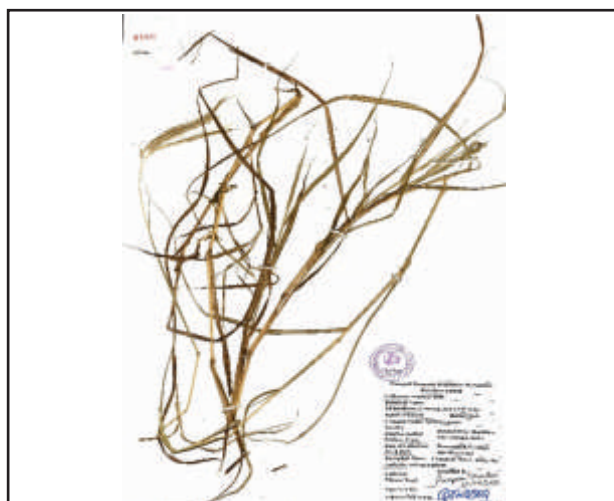
**Family**: Poaceae

Stoloniferous perennial. Culms slender, 30-85 cm tall, erect or ascending. Nodes and internodes distinct; internodes 10-15 cm long; nodes brown, glabrous. Leaves mostly cauline; blades linear-lanceolate, 5-27×0.2-0.4 mm, flat, base rounded-subcordate, bulbous based hairs along the margins and abaxial midvein, acuminate; sheaths 2-12 cm long, compressed, keeled, glabrous; ligule ciliate, 0.5-1.3 mm long. Inflorescence 1-4, 3.2-5 cm long, linear-oblong ascending spikes. Spikelets 3-5 flowered, oblong-elliptic, back of the rachis keeled, 5-5.5 mm long. Lower glume oblong, 1-2×0.5-0.8 mm, margins entire, light pinkish, truncate with a diverging mucro; Upper glume ovate-obovate, 1.5-2.3 × 0.5-1 mm, margin entire, apex rounded to truncate, chartaceous, keeled; keel extended in to a stout awn, 2-2.8 mm long, antrorsely barbed. Lemmas ovate to lanceolate, 2.5-3×2-3 mm, margin entire, apex acuminate-aristulate, chartaceous, keeled; keel extended in to a stout awn, 1-1.2 mm long, scabrid above middle. Palea lanceolate-ovate, 2-2.8×0.5-0.8 mm, margins entire, apex acute, keeled; keel scabrid. Stamens 3; filaments 0.3-0.6 mm long; anthers c. 0.45×0.3 mm. Ovary ovate-oblong.

**Flowering and Fruiting**: April-December

**Ecological note**: Occasional; found along the roadsides and open places.

**Specimen examined**: Uttarakhand: Tehri Garhwal (Devprayag), Rajesh Mishra 542, 12.05.2023; Haridwar (Laksar), Inam Malik 6073, 10.05.2023; Uttar Pradesh: Kanpur (Bithoor), Bhasker Joshi 3204, 22.10.2023; Farrukhabad (Amritpur), Vikram Singh 3362, 23.10.2023; Bulandshahr (Anupshahr), Bhasker Joshi

Fig. 1: Herbarium sheet of *Cyperus longus* L.Fig. 2 : Herbarium sheet of *Dioscorea oppositifolia* L.Fig. 3: Herbarium sheet of *Dichanthium aristatum* (Poir.) C.E. Hubb.Fig. 4: Herbarium sheet of *Dactyloctenium australe* Steud.Fig. 5: Herbarium sheet of *Ixora subsessilis* Wall. ex G.DonFig. 6: Herbarium sheet of *Stylosanthes humilis* Kunth

3439, 26.10.2023; Bulandshahr (Narora), *Prashant Vats* 3478, 26.10.2023; Prayagraj (Maharshi Mahesh Yogi Ghat), *I.P. Sharma* 331, 27.10.2023; Ballia (Govindpur Khas) *Dheeraj Lal* 1045, 23.10.2023; Raebareli (Mohammadpur Kuchariya, *Arun Kushwaha* 166, 28.10.2023; Varanasi (Chandar Khan), *Mukul Kumar* 764, 24.10.2023; Mirzapur (Bhawanipur), *Rajesh Mishra* 542, 25.10.2023 (PRFH).

**Vedic name:** Nartakaḥ anyagraḥ

**Distribution:** As per Bor (1960), this plant is native of South Africa and introduced in India. As per Prasanna *et al.* (2020), it was earlier reported from Maharashtra and from Telangana Siddabathula *et al.*, (2021).

***Ixora subsessilis*** Wall. ex G.Don, Gen. Hist. 3: 572. 1834; Hook. f., Fl. Brit. India 3: 139. 1880; Fischer in Rec. Bot. Surv. India 12(2): 101. 1938; Brandis, Ind. Trees 388. 1906; Kanjilal *et al.*, Fl. Assam 3: 68. 1939; Haridasan & Rao, For. Fl. Meghalaya 1: 481. 1987; Choudhury in Singh *et al.* Fl. Mizoram, 1: 696. 2002; Gangop. in Mao & Dash, Fl. Pl. India Annot. Checkl. Dicot. 1: 668. 2020.

**Family:** Rubiaceae

Shrubs or small trees, 1-2.5 m tall; bark dark grey or greyish-brown; branchlets terete, glabrous. Leaves opposite, subsessile, elliptic-lanceolate or oblanceolate, 6-10×2-4 cm, base acute, apex acuminate, subcoriaceous, glabrous on both surfaces, shining; lateral nerves obscure; stipules cuspidate, 1-1.2 cm long, sheathing, glabrous, long acuminate with apex subulate or linear, longer than sheath; petioles 0.4-1 cm long, glabrous. Inflorescences in terminal, subsessile, corymbiform and trichotomous, many-flowered cymes; bracts subulate or linear; pedicels 1-2 mm long, hispid; bracteoles subulate, elongate, 1-1.5 mm long. Calyx bright red, longer than ovary; segments linear, 0.5-1.3 mm long, glabrous, hypanthium 2-3 mm long. Corolla tubular, red; tube 0.8-1 cm long, linear, narrow, glabrous in throat; lobes 4-6×1-1.5 mm, oblong-ovate, short acuminate, reflexed. Anthers c. 4 mm long; filaments c. 1 mm long, flattened; anthers slender. Stigma entire, c. 4 mm long; style c. 6 mm long. Drupe saccate, 8-8.4 mm across, crowned with calyx teeth, glabrous. Seeds 1 or 2, concave.

**Flowering and Fruiting:** November-June

**Ecological note:** Occasional; found along the roadsides and in mixed deciduous forest.

**Specimen examined:** Uttarakhand: Uttarkashi (Uttarkashi), *Rajesh Mishra* 5578, 16.05.2023 (PRFH).

**Vedic name:** Rukmiṇikā upāvṛṇtapatrā

**Note:** In Hooker's, Flora of British India the occurrence of this species is mentioned from Assam and Khasia Mountains. As per Gangopadhyay *et al.* (2020), it was earlier reported from Arunachal Pradesh, Assam,

Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal.

***Stylosanthes humilis*** Kunth in Humb., Bonpl. & Kunth, Nov. Gen. Sp. (quarto ed.) 6: 506, pl. 594. 1823; Sanjappa in Mao & Dash, Fl. Pl. India Annot. Checkl. Dicot. 1: 428. 2020.

**Family:** Fabaceae

Annual or sometimes perennial herbs; stems ascending to prostrate, 50-70 cm tall, much-branched, puberulent to hirsute. Leaves trifoliate, glabrous to bristly hairy; leaflets lanceolate to elliptic, mucronate, acute, adaxial surface and margins sparsely setose to glabrous, nerves 3-4 pairs; terminal leaflet 1-2.5×0.5-1.0 cm, glabrous; lateral leaflets 0.8-1.15×2-3 mm; petioles 2-5 mm long; rachis 1.5-4.0 mm long; stipular sheath 3-5 mm long, short bristly, 5-7 nerved, teeth subulate, 2-3 mm long. Inflorescences spicate, hirsute. Flowers bright-yellow, c. 2 mm long; bracts 1-3 foliolate, sheath 2-4 mm wide, bristly, 5-9 nerved, teeth 2-3 mm long; bracteoles 2-3 mm long, apex ciliate. Calyx tube 4-7.5 mm long, lobes acute, c. 1.5 mm long, ciliate. Corolla yellow or orange with reddish centre; standard 3-4 mm long, suborbiculate, glabrous, not auriculate; wings 3-4 mm long, clawed and auriculate; keel c. 3 mm long, not beaked, auriculate, glabrous. Stamens 10, fused to each other; style 1.5-7 mm long, hooked. Pods 3-6×1.5-2.5 mm long, sparsely hairy, one-seeded, articulated, with a strongly curved beak, black at maturity, dehiscent. Seeds yellowish to brown, hooked, reniform.

**Flowering and Fruiting:** December-April

**Ecological note:** Common; found along the roadsides and open places.

**Specimen examined:** Bihar: (Patna-Gandhi Setu), *Amit Kumar* 1897, 25.10.2023 (PRFH).

**Vedic name:** Dīrghavartikā bahuśākḥā

**Note :** As per Sanjappa (2020), it was earlier reported from Madhya Pradesh, Kerala and Tamil Nadu.

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