



Notes on *Aristida* spp. from Bhandara district of Maharashtra State, India

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Abstract: The present research work is undertaken to investigate species of *Aristida* *A. funiculata*, *A. hystrix*, *A. setacea* and *A. stocksii* which were collected from different localities of Bhandara district in Maharashtra State, India. This paper includes the synoptic notes on botanical description, photographs of four reported species of *Aristida*.

Keywords: *Aristida*; Grasses; Poaceae.

Introduction

In India, there are more than 1200 species of family Poaceae distributed among 268 genera (Karthikeyan *et al.*, 1989). The first account of Genus *Aristida* was reported by Hooker (1897) in Flora of British India, which enumerated 11 species of *Aristida*. Bor (1960) reported occurrence of 21 species of *Aristida* from Indian sub-continent. Karthikeyan *et al.*, (1989) reported 10 species of *Aristida* in Florae Indicae Enumeratio and Moulik (1997) enumerated 11 species and 2 varieties of *Aristida*. Gupta and Sharma (1977) reported *A. hystrix* from Rajashthan. Potdar *et al.*, (2012) reported eight species of *Aristida* from Maharashtra. Recently Kalidass *et al.*, (2018) recorded ten species of *Aristida* from India. Previous studies on floristic studies on grasses was reported on Bhandara district by Tiwari (2013); Tiwari and Deshmukh (2019a, 2019b). The present work has been undertaken due to the paucity on *Aristida* grass from Bhandara district of Maharashtra. Accordingly, detailed descriptions, herbarium images and relevant notes were reported here.

Study area

The Bhandara district lies between 21.07° N latitude 79.82° E longitude and it is situated on

north-eastern side of Maharashtra State, India with an area of about 3717 sq.km of which 1343 sq.km. forest area with average elevation of 357 meters.

Methodology

Botanical explorations were conducted during the year 2017 to 2019 in various localities of the study area and collected different species of *Aristida*. Morphological study of specimen was carried out with the help of dissecting microscope of Olympus Magnus MSZ-TR model (SWF10X/22 magnification). The photographs were taken from Nikon SLR Camera. Field collection details was recorded in the field book. Processing of plant specimens were mounted as per the methodology followed by Jain and Rao (1987). The mounted herbarium specimens were deposited in the herbarium of Shivaji Science College, Nagpur. The specimens were identified with the help of existing flora (Hooker, (1897); Bor, (1960); Blatter and McCann (1935); Patunkar (1980); Moulik (1997); Gosavi (2010); Purekar (1985) and confirmed by comparing with authentic specimens housed at various herbaria (BLAT; SUK; BSI-WRC, Pune). Taxonomic key is prepared on the basis of easily recognizable characters.

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Results and Discussion

The present paper include detail description of four species of *Aristida* (*Aristida setacea.*, *Aristida stocksii*, *Aristida hystrix* and *Aristida funiculata*) collected from different localities of Maharashtra.

Taxonomic treatment

Aristida funiculata Trin. & Rupr., Sp. Gram. Stip. 159. 1843 (Figure 1 A &B)

Annuals. Culms 10-30 cm high. Leaf-blades flat or folded. 2-15 cm long and up to 1-2 mm wide. Panicle linear, up to 10 to 30 cm long. Spikelet's green, tinged with brown, awned. Lower glumes linear to ovate, 15-20 mm. long; 1-nerved, 1-keeled. Membranous; upper glume 13-15 mm long, 1-nerved, 1-keeled. Lemma coriaceous, linear, articulated about 25 to 30 mm long, 3-nerved, 3-awned, awns 4-8 cm long; callus pungent and bearded; column covered with hairs. Awns 4-8 cm. Palea obovate, stamens 3. Caryopsis ovate.

Flowering and Fruiting: August to January

Habitat: locally abundant in open grassland

Locality: Korambi, 21.12 N & 79.61 E

Herbarium Accession Number: 1845

Aristida hystrix L.f., Suppl. Pl. 113 1781

Figure 2 (Herbarium specimen)

Perennials. Culms to 15-30 cm tall, tufted, ascending. Nodes glabrous. Leaves 10-15 cm. long, narrow, glabrous. Leaf sheath rounded, glabrous; ligule a row of hairs. Panicle 10 x 8 cm.

Spikelets ovate, 1.5-2 mm long, pedicelled Lower glume membranous, ovate, 1-nerved, 1-keeled, aristate tip; upper glume membranous, ovate, acuminate, 1-nerved, 1-keeled; floret one; Lower lemma ovate lanceolate, 3-nerved, 3-awned; palea ovate; stamens 3; ovary elliptic; styles 2, free; stigma plumose.

Flowering and fruiting: June-December

Habitat: Very rare in occurrence on hilly sites

Locality: Tumsar 21.38 N & 79.74 E

Herbarium Accession Number: 1746

Aristida setacea Retz., Observ. Bot (Retzius)

4:22.1786 (Figure 3)

Perennials. Culms 30-120 cm high, erect, tufted; nodes glabrous. Leaves 8-35 x 0.2-0.5 cm, linear, convolute, base rounded, apex acuminate. Leaf sheaths to 5-8 cm long; ligules fimbriate membranes. Panicles 10-35 cm long, contracted. Spikelets 1.5-2 cm long, linear-lanceolate or lanceolate. Lower glume lanceolate, aristate, 1-nerved, 1 keeled, aristate; Upper glume membranous 1 nerved, lanceolate, 1 keeled, aristate. Lemma linear, convolute, 3-awned; awns 1-3.5 cm long. Palea small, hyaline. Stamens 3; anthers 3, yellow. Ovary to 1.5 - 2 mm long, linear; stigmas long, pink.

Flowering and Fruiting: September-December

Habitat: growing on sandy soils

Locality: Chandpur 21.52 N and 79.83 E

Herbarium Accession Number: VJT - 1829

Aristida stocksii (Hook.f.) Domin, Bibl. Bot.

Heft.85:338.1915. Figure 4 (Herbarium Specimen)

Annual or perennial, tufted. Culms 10-25 cm long, terete. Nodes glabrous. Leaf blades linear, to 5 to 10 cm long, hispid on upper side. Ligules membranous, fimbriate; Leaf sheath terete, ribbed, glabrous. Inflorescences panicle 10-15 cm long, erect. Spikelets linear with single floret. Fertile spikelets are pedicelled. Glumes unequal, aristate, membranous, glabrous, 1-veined, 1 keeled. Lower glume elliptic-lanceolate, aristate. Upper glume similar to lower glume, aristate. Lemma elliptic-oblong, margins convolute, covering palea, coriaceous, without keel, 3-veined. column long and twisted, having white long hairs; awns of lemma 4-7 cm long, scabrid. Callus with white hairs. Palea without keels. Anthers 3. Stigma plumose.

Flowering and Fruiting: September-December.

Habitat: growing on dry soil and abundant

Locality: Gadkumbli, Sakoli 21.08 N and 79.99 E

Herbarium Accession Number: 1870

Discussion and Conclusion

We report here that the grasslands of Maharashtra are facing high grade of degradation due to heavy grazing, habitat fragmentation, invasive species and climatic factors. It is realized that floristic study of grasses is necessary to know about extinct and endemism. During our study we have reported four species of *Aristida* from Bhandara district of Maharashtra state which are found to be high valued fodder grass. Further extensive and intensive floristic investigations are needed to

record other species of this genus *Aristida* in India.

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Figure 1 a & b: *Aristida funiculata*



Figure 2: *Aristida hystrix*



Figure 3: *Aristida setacea* Habitat




Figure: 4: *Aristida stocksii*

References

- Blatter E. and McCann, C. The Bombay Grasses. Scientific monograph, Imperial Council of Agricultural Research, India, (1935), 324 pp.
- Bor N.L. The Grasses of Burma, Ceylon, India and Pakistan (excluding Bambuseae). Pergamon Press, (1960) London. 404 - 412.
- Gosavi, K.V.C., Studies on Lithophytic Grasses of Maharashtra. Ph.D. Thesis. (2010) Shivaji University, Kolhapur, M.S.,
- Gupta R. K. and Sharma S. K. Grasses of the Rangeland in Arid Rajasthan. Jour. Agric. Trad. Botan. Applic. (1977), 18 (1-3), 50 - 99.
- Hooker, J.D. The Flora of British India, vol. 7. L. Reeve & Co., London, (1897).
- Jain S.K. and Rao, R.A. Handbook of Field and Herbarium Methods. Today and Tomorrow Publ., New Delhi (1977).
- Kalidass, C., Kottaimuthu R. and Panda, P. C. Taxonomic enumeration of tribe Aristideae (Aristidoideae; Poaceae) in India. *Plant Sci. Res.* (2018), 10 (1 & 2): 47 -50
- Karthikeyan, S., Jain, S.K., Nayar M.P. and Sanjappa M. Florae Indicae Enumeratio: Mono-cotyledonae, (1989), BSI Calcutta.
- Moulik, S. The grasses and bamboos of India, vol. 1. Scientific publishers, (1977) Jodhpur, 700 pp.
- Patunkar, B.W. Grasses of Marathwada, Scienti-fic Publ., Jodhpur, India (1980)
- Potdar, G. G., Salunkhe C. B and Yadav S.R. Grasses of Maharashtra, Shivaji University Publi-cation, Kolhapur. (2012), pp.431-442.
- Purekar P. N. Grasses of Nagpur District Taxonomy and Palynology, Ph.D. Thesis, RTM Nagpur University, Nagpur. (1985), 165 - 168.
- Tiwari V. J. and Deshmukh R.N. New Records of Species of *Sporobolus* (Poaceae: Chloridoideae: Cynodontae: Zoysieae) from Bhandara District of Maharashtra State, India. *Jour. Emer. Tech. & Inn. Res.* (2019 a) 6(6), 1124 -1128.
- Tiwari, V. J. and Deshmukh R N Survey of Poaceae Tribes - Andropogoneae And Paniceae in Bhandara Districts of Maharashtra State, India, *Int. Jour.Res. & Anal. Reviews* (2019b), 6 (2), 95 to 99.
- Tiwari V. J. Biodiversity of Genus *Eragrostis* Wolf. of Family Poaceae., UGC Seminar *Biodiversity- A Global Need*: Kapgate D. =K., Saha R.C (Eds.) Department of Botany, J.M Patel College, Bhandara, (2013), 109-113.

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