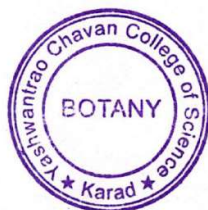



Yashwantrao Chavan College of Science, Karad
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Collaborative research

1. **Pooja Mane, Chandrakant Salunkhe, Girish Potdar** 2022. Lectotypification of *Andropogon compressus* Hook.f. basionym of *Bothriochloa compressa* (Hook.f.) Henrard (Andropogoneae: Poaceae) **Int. J. Curr. Res. Biosci. Plant Biol.** 9(1), 42-44 (<https://doi.org/10.20546/ijcrbp.2022.901.005>) ISSN: 2349-8080 (Online).
2. **Pooja R. Mane** , J. Swamy, **C. B. Salunkhe**, T. J. Shaikh, **G. G. Potdar** 2022. *Datura discolor* (Solanaceae): An Addition to the Flora of Maharashtra, India **The Indian Forester** 148 (1) : 99-100. (<http://dx.doi.org/10.36808/if%2F2022%2Fv148i1%2F157037>) ISSN: 0019-4816
3. **P R Mane**, J Swamy, **C B Salunkhe**, **G G Potdar**. 2022. *Bothriochloa ischaemum* (poaceae: andropogoneae): An addition to the flora of eastern ghats, India **The Journal of Indian Botanical Society** 102 (2): 181-183.
4. Tarbej Shaikh, **Pooja Mane, Salunkhe Chandrakant and Potdar Girish** 2023. Two new distributional records of grasses for Maharashtra State. **Indian Forester**, 149 (9) : 976-979. (DOI: 10.36808/if/2023/v149i9/167313).




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Lectotypification of *Andropogon compressus* Hook.f. basionym of *Bothriochloa compressa* (Hook.f.) Henrard (Andropogoneae: Poaceae)

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Article Info

Abstract

Keywords:

Bothriochloa
India
Lectotype
Poaceae

The lectotype is designated for the name *Andropogon compressus* Hook.f.

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Introduction

The genus *Bothriochloa* Kuntze (762: 1891) (Andropogoneae: Poaceae) is widely distributed throughout the world and represented by 38 species (POWO, 2021). In India, the genus is represented by 13 species, of which six species are endemic (Prasanna et al., 2020; Kellogg et al., 2020). While revising the genus *Bothriochloa* Kuntze for India, we found that the name *Andropogon compressus* Hook.f. (1897: 172) basionym of *Bothriochloa compressa* (Hook.f.) Henrard (1940:456) not been typified so far.

Typification

***Bothriochloa compressa* (Hook.f.) Henrard (1940: 456)**
= *Andropogon compressus* Hook.f. (1897: 172).

Type

INDIA, Deccan, December 1891, *Lisboa* No. 6 (K001057429 image! Lectotype designated here).

Notes

J.D. Hooker (1897) described *Andropogon compressus* based on Mrs. Lisboa's collection No. 6 (*A. odoratus*) and Woodrow's collections. In the protologue he cited "*The Deccan, Lisboa (No. 6 A. odoratus), Woodrow*".

While describing the species J.D. Hooker mentioned in the protologue "*sent by Mrs. Lisboa as A. odoratus, but apparently very different from the description of that plant and from the specimens received in the strongly compressed and acutely keeled sheaths, broad leaves, and inflorescence*".



Fig. 1: Lectotype of *Bothriochloa compressa* (K001057429). Available at <http://specimens.kew.org/herbarium/K001057429>. © Copyright Board of Trustees of the Royal Botanic Gardens, Kew.

From taxonomic literature (Stafleu and Cowan, 1981) we came to know J.C. Lisboa's major collection are housed at BLATT, DD, and K. Likewise, G.M. Woodrow's collection are housed at (BSI, DBN, DS, E, and K)

We could trace one collection of each collector at K (Woodrow collection at 1880 K000245659 image!), and Mrs. Lisboa's collection at 1891 K001057429 image!).

Both the specimens are well agreeing to the protologue of *Andropogon compressus* Hook.f. Apart from these two collections we could not find any other collection in any herbaria.

Since, Mrs. Lisboa's specimen is a complete specimen along with roots, strongly keeled and compressed sheath, broad leaves, and inflorescence and the herbarium specimen also bears illustrations of sessile and pedicelled spikelets with its description. Therefore, we are designating here as lectotype following the ICN Art. 9.3 (Turland et al., 2018).

Conflict of interest statement

Authors declare that they have no conflict of interest.

Acknowledgement

This study has been financially supported by Chhatrapati Shahu Maharaj Research, Training and Human Development Institute (SARTHI), Pune (CIN-U74999PN2018NPL177394). The authors are thankful to the authorities at BSA, BSJO, CAL and MH herbaria to consult the specimens in person, and herbaria A, E, K, and NY for making the specimens available online. We also thank the authorities of Krishna Mahavidyalaya, Rethare Bk and Principal of

Yashwantrao Chavan College of Science, Karad for providing the research facilities and workplace. We are also thankful to Dr. Gopal Krishna, Botanical Survey of India, Kolkata for his valuable guidance.

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(II)

Datura discolor (Solanaceae): An addition to the flora of Maharashtra, India

The genus *Datura* L. is represented by 14 species and native to south-west and south central of the USA, northern Mexico and Caribbean Islands (POWO, widely naturalized many parts of the world. In India, it is represented by 6 species (Swamy *et al.*, 2020). While revising the genus *Bothriochloa*, the first author collected an interesting *Datura* species in flower and fruit, which was later identified as *Datura discolor* Bernh. Scrutiny of literature revealed that this species reported from Andhra Pradesh (Swamy *et al.*, 2020) and Karnataka (Kumbhalkar and Nandikar, 2017). It has not been recorded in the flora of Maharashtra (Cooke, 1905; Singh *et al.*, 2001; Gaikwad and Garad, 2015) the present collection forms the first report of the species in the state and third from the Indian states after Andhra Pradesh and Karnataka. A detailed description with photo plate Plate 1 A and B provided to facilitate easy identification.

Taxonomic treatment

Datura discolor Bernh. in Neues J. Pharm. Aerzte 26: 149. 1833; Kumbhalkar and Nandikar in *Curr. Sci.*, 113(5): 855-856. 2017; Swamy *et al.* in *Nelumbo* 62(1): 54-56.2020. *Datura thomasi* Torr. in *Pacif. Railr. Rep.* Parke, Bot. 5: 362. 1857. (Fig. 1).

Annual herb with spreading branches up to 1 m high; stem greenish-purple, terete, dense pubescent on younger parts, sparsely pubescent or glabrous on older parts. Leaves simple, alternate, sub-opposite at apex; petiole 1-3 cm long, lamina deltoid to apparently pedate, 2-7 × 5-9 cm, oblique-unequal at base, sinuate to dentate along margin, acuminate at apex, glabrescent above, densely pubescent beneath especially on nerves, rectipinnate, lateral nerves 4-5 per side. Flowers solitary, white, from the fork of branches; pedicel 1-1.5 cm long. Calyx tubular, tube 5-10 cm long, sparsely pubescent, angular fluted, 5-lobed; lobes 1-1.5 cm long, unequal, triangular, acuminate at apex. Corolla funnel shaped 11-16 cm long, white with streaks of lilac to purple throat. Stamens 5, epipetalous, included; filaments 5.5-8.5 cm long; anthers 0.4-0.7 cm long. Ovary 0.2-0.5 cm long; style 8.6-13.8 cm long with persistent calyx, greyish densely glandular pubescent, sparsely aculci-echinate spines; spines 60-80 up to 1.3 cm long, dense glandular pubescent, dehiscent from top into 4 valves. Seeds ca. 0.26 × 0.3 cm, reniform with hilar residue, black, bullate-verucose.



Fig. 1: A. Flowering branch B. Capsule

Flowering and fruiting: Almost major parts of the year.

Distribution: Andhra Pradesh and Karnataka (Swamy *et al.*, 2020) and now from Maharashtra.

Habitat: Occasional in waste lands, along the road sides and in sugarcane fields; associated with *Alternanthera sessilis* (L.) R.Br. ex DC., *Hyptis suaveolens* (L.) Poit., *Senna tora* (L.) Roxb., and *Setaria verticillata* (L.) P.Beauv.

Specimens examined: India, Maharashtra, Satara District, Karad, Wathar, 17.185228° N, 74.182735° E, 566 m.s.l., 06.11.2020, Pooja R Mane 3894 (KMR)

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Swamy J., Ramana P.V. and Swamynaidu P. (2020). Notes on the Taxonomy and Distribution of the Desert Thorn Apple *Datura discolor* (Solanaceae) in India. *Nelumbo*, **62**(1): 5.

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RESEARCH ARTICLE

***Bothriochloa ischaemum* (poaceae: andropogoneae): An addition to the flora of eastern ghats, India**

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Abstract *Bothriochloa ischaemum* (L.) Keng is reported here as an addition to the flora of Eastern Ghats from Kinnerasani Wildlife Sanctuary of Telangana. A detailed description and a figure is provided to facilitate easy identification.

Keywords: *Bothriochloa*, Eastern Ghats, Kinnerasani Wildlife Sanctuary, Poaceae, Telangana.

Introduction

The genus *Bothriochloa* Kuntze belonging to the tribe Andropogoneae of the family Poaceae Barnhart is widely distributed throughout the world, and represented by 38 species (POWO 2021). The genus is represented in India by 13 species, of which six species, viz. *Bothriochloa compressa* (Hook.f.) Henrard, *B. ensiformis* (Hook.f.) Henrard, *B. grahamii* (Haines) Bor, *B. jainii* Deshp. & Hemadri, *B. longifolia* (Hack.) Bor and *Bothriochloa woodrovii* (Hook.f.) A. Camus are endemic (Prasanna *et al.* 2020, Kellogg *et al.* 2020).

While revising the genus *Bothriochloa* for India, a small population of *Bothriochloa* species was observed in the Eastern Ghats of Telangana, and a few specimens collected from the existing population by the second author. The voucher specimens were studied critically and identified as *Bothriochloa ischaemum* (L.) Keng. The identification is further confirmed by matching the

specimens at CAL and BSJO and also with electronic images of herbarium specimens at Kew Herbarium Catalogue (<http://www.apps.kew.org>). In India, the species is known so far from Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Punjab, Rajasthan, Uttarakhand and West Bengal (Prasanna *et al.* 2020, Kellogg *et al.* 2020). It is not reported from the Eastern Ghats (Pullaiah and Karuppusamy, 2020). Hence, the present collection forms the first report of this species in the Eastern Ghats. A detailed description and a photoplate are provided to facilitate easy identification. Voucher specimens are deposited in the Botanical Survey of India, Deccan Regional Centre (BSID), Hyderabad, Telangana.

Taxonomic treatment

***Bothriochloa ischaemum* (L.) Keng** in Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 201. 1936. *Andropogon ischaemum* L., Sp. Pl. 2: 1047. 1753. *Dichanthium ischaemum* (L.) Roberty, Biossiera 9:160. 1960 (Fig.1).

Perennial. Culms tufted, erect or geniculately ascending, terete, up to 80 cm high; nodes glabrous or sparsely bearded; internodes 2.5 – 9 × 0.2 – 0.3 cm, glabrous. Leaves mainly aggregated at base; leaf blade 3 – 22 × 0.2 – 0.4 cm, narrowly linear, glaucous, flat, hairy at base, scabrid along margins, acute-acuminate at apex, scaberulous on surface; ligule c. 1.41 × 1.03 mm,

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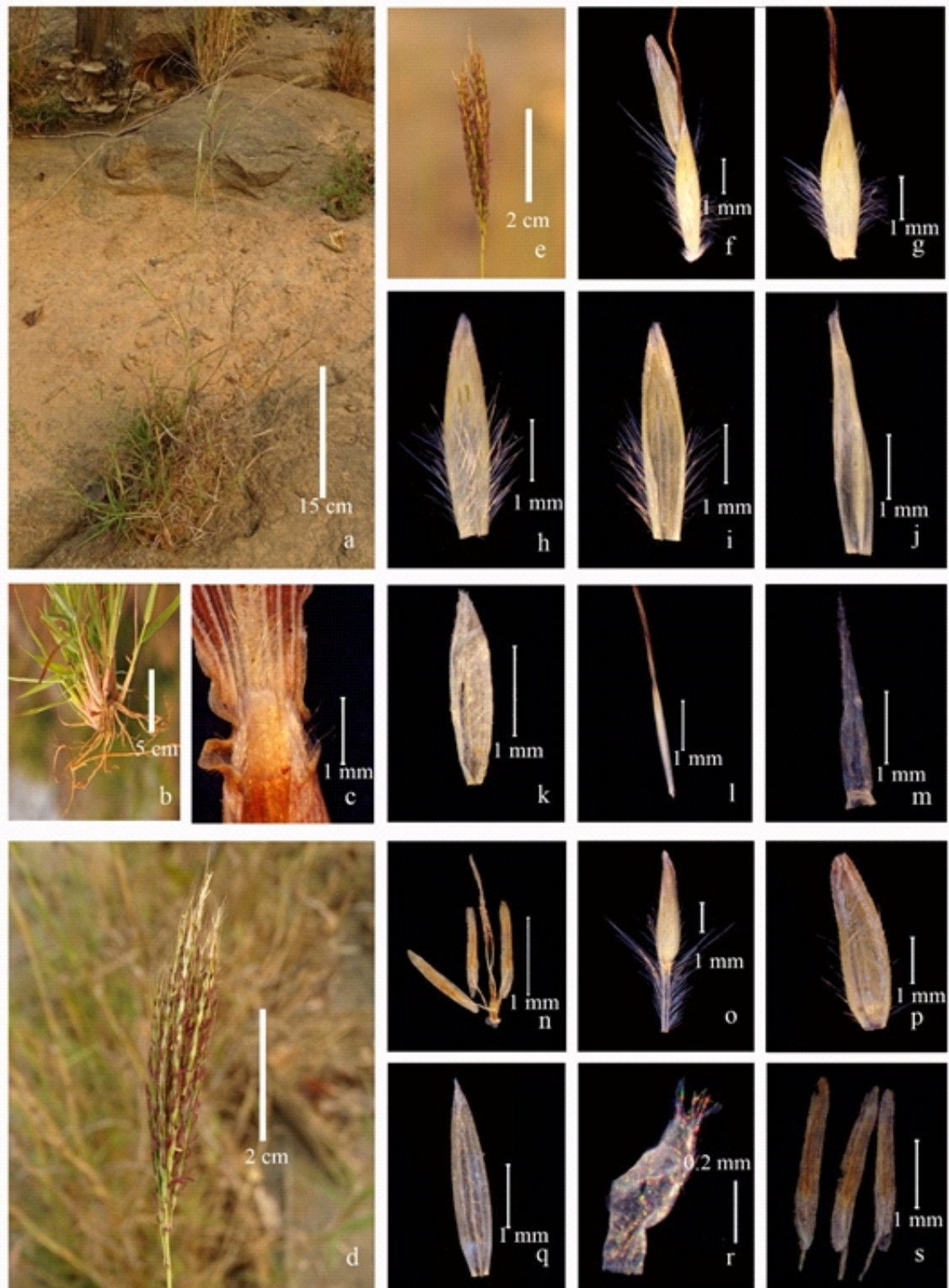


Figure 1: *Botriochloa ischaemum* (L.) Keng (a-s): **a.** Habit; **b.** Culms with roots; **c.** Ligule; **d-e.** Inflorescence; **f.** Paired spikelets. Sessile spikelet: **g.** Sessile spikelet; **h-i.** Lower glume; **j-k.** Upper glume; **i.** Upper lemma; **m.** Lower lemma; **n.** Pistil and stamens. Pedicelled spikelet: **o.** Pedicelled spikelet; **p.** Lower glume; **q.** Upper glume; **r.** Lemma; **s.** Stamens.

ciliolate membrane; leaf sheath $2.5 - 6 \times 0.2 - 0.4$ cm, keeled at apex when young, glabrous. Inflorescence composed of racemes; racemes 5 to 15, dense, digitate, 4 – 6 cm long, lower raceme longer than the main rachis; rachis flattened, villous on margins; oil glands at the junction of raceme and rachis; joints $2.5 - 3.0$ mm long, hairy on both sides with a translucent median line. Spikelets in pairs; callus shortly bearded. Sessile spikelets fertile, pedicelled spikelet with male floret only. Sessile spikelets $3.75 - 4.14 \times 0.7 - 0.8$ mm, lanceolate, obtuse at base, acute at apex, dorsally compressed, awned. Glumes dissimilar, exceeding the apex of florets. Lower glume $3.81 - 4.0 \times 0.75 - 0.80$ mm, elliptic-oblong, chartaceous, rounded to truncate at base, margins inflexed, acute at apex, flat on surface, 5 – 7-nerved, more or less appressed hairy below the middle, keeled at apex, keels rigidly ciliate, not pitted. Upper glume $3.87 - 4.2 \times 0.41 - 0.87$ mm, membranous, somewhat laterally compressed, lanceolate, margin inflexed and long ciliate, mucronate at apex, 3-nerved, keeled, keel ciliate at apex. Lower floret sterile; lower lemma $2.87 - 3.2 \times 0.3 - 0.4$ mm, oblong-lanceolate, acute-acuminate at apex, hyaline, nerveless; lower palea absent. Upper floret bisexual; upper lemma $2.17 - 2.31 \times 0.4 - 0.58$ mm, hyaline to a base of geniculate awn, linear, 1-nerved, awned; awn geniculate, 10 – 15 mm long; column twisted; palea absent. Lodicules 2, papery, *c.* 0.2 mm long. Stamens 3; filaments $0.22 - 0.38$ mm long; anthers $1.21 - 1.23 \times c. 0.16$ mm, linear, yellow. Ovary $0.31 - 0.4 \times 0.15 - 0.21$ mm, elliptic; styles 1.07×0.61 mm, filiform; stigmas 3, $1.19 - 2.40$ long, brownish. Pedicelled spikelet $4.08 - 4.30 \times 0.62 - 0.77$ mm, narrowly ovate-lanceolate; pedicel $2.38 - 2.74 \times 0.21 - 0.25$ mm, hairy on both sides with a translucent median line in the middle. Lower glume $4.04 - 4.20 \times 0.60 - 0.76$ mm, narrowly elliptic-lanceolate, margin inflexed and ciliate, acute at apex, keeled, keels ciliate, glabrous, 7 – 9-nerved. Upper glume $3.31 - 3.50 \times 0.6 - 0.8$ mm, narrowly ovate, margins inflexed, ciliate, acute at apex, 5 – 7-nerved, glabrous. Lower floret male. Lower lemma 0.76×0.22 mm, linear, obtuse at apex, ciliate. Palea absent. Stamens 3, filaments $0.20 - 0.40$ mm long; anthers $1.20 - 1.34 \times 0.19$ mm, yellow.

Flowering & Fruiting: September – January.

Distribution: India: Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Meghalaya,

Punjab, Rajasthan, Telangana, Uttarakhand and West Bengal (modified after Prasanna *et al.*, 2020; Kellogg *et al.* 2020).

World: Europe, Africa, Asia and America

Specimen examined: India, **Telangana**, Bhadrachari-Kothagudem district, Kinnerasani Wildlife Sanctuary, Allapally Range, Mylaram beat, 23.01.2021, *J. Swamy* 11842 (BSID!).

Additional Specimens studied: **Himachal Pradesh:** Shimla district, Bashahr, 31.08.1890, *J. H. Lace*, 593 (CAL!). **Jammu and Kashmir:** Anantnag district, Pahalgam, June 1905, *A. Meebold* 1612 (CAL!); s. loc., s. d., *Dr. T. A. Rao*, 767 (CAL!); Baramulla district, Panzalla, 26.01.1914, s. coll., 36050 (CAL!); s. loc., s. d., s. coll., 9831 (CAL!); Kashmir, s. loc., September 1975, s. coll. 5500 (CAL!); s. loc., s. d., s. coll., 9831 (CAL!). Leh district, Upshi, 8.9.1970, *U. C. Bhattacharya*, 41074 (CAL!). **Rajasthan:** Mount Abu, Sirohi district, Aranya, Shanti Shikar, 28.10.1960, *P. C. Nanda*, 2147(a) (CAL!).

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(III)

Two new distributional records of grasses for Maharashtra State

During the field exploration in Maharashtra state, specimens of genus *Bothriochloa* and *Setaria* were collected. On detailed and critical morphological observations, consultation of protologue, perusal of previous floristic reports of Maharashtra and relevant literature (Bor, 1960; Blatter and McCann, 1935; Cook, 1908; Deshpande 1984; Deshpande *et al.*, 1993; Gaikwad *et al.*, 2014; Hooker, 1897; Lakshminarasimhan, 1996; Potdar *et al.*, 2012) authors have confirmed that *B. ischaemum* and *S. barbata* has so far not reported from Maharashtra State. Therefore, *Bothriochloa ischaemum* and *Setaria barbata* reported here as a new distributional record and addition to the Grasses of Maharashtra.

Systematic treatment

Bothriochloa ischaemum (L.) Keng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 201. 1936; Cope, Fl. Pak. 143: 287. 1982; Bor, Grasses. Burma Ceyl. Ind. Pak. 108. 1960. *Andropogon ischaemum* L. Sp. Pl. 1047. 1753; Hook.f., Fl. Brit. India. 7: 171. 1897. *Amphilophis ischaemum* (L.) Nash in N. Amer. Fl. 17: 124. 1912. *Dichanthium ischaemum* (L.) Roberty in Boissiera 9: 160. 1960; Deshpande in Fasc. Fl. India 15: 16. 1984. **Yellow Bluestem** (Fig. 1).

Tufted Perennial; caespitose. Culm 45-90 (-120) cm long; erect or geniculate ascending; nodes hairy. Leaf Sheath keeled, glabrous, 4 – 6 cm long, ligule ca. 1 mm long, ciliolate membrane, truncate. Leaves mostly basal; blades 28 cm × 0.5 cm, glaucous, pubescent to scaberulous, margins minutely serrate, hairy at base, apex acuminate. Inflorescence of subdigitate racemes; 2 – 7 (-9) in number, 5 – 8 cm long, shortly pedunculate, the peduncles 4 – 8 mm, joint 2 – 2.2 mm long, grooved with translucent median line. Sessile spikelet 3.0 – 3.5 × 1 – 1.2 mm, oblong-lanceolate, dorsally compressed, awned; callus obtuse. Lower glume 3.0 – 3.5 × 1 – 1.2 mm, flat, without pit, hairy below the middle, oblong-lanceolate, keeled and acute at apex, coriaceous, (5-) 7 – 9-nerved. Upper glume 3.0 – 3.5 × 0.8 – 1 mm, linear-lanceolate, boat shaped, keeled and acute at apex, subcoriaceous, 3-nerved, glabrous. Florets 2, epaleate, lower empty, upper bisexual. Lower lemma 2 – 2.5 × 0.5 – 0.8 mm, linear-oblong, acute at apex. Upper lemma 1.8 – 2 × 0.15 – 0.2 mm, linear, tipped by stout awn, hyaline in lower third, chartaceous; awn 18 – 22 mm

long, geniculate. Lodicules 2, ca. 0.3 × 0.2 mm. Stamen 3, anthers ca. 1 – 1.5 mm long. Pistil 0.5 × 2 mm long. Pedicel 2.2 – 2.5 mm long, grooved with translucent median line. Pedicelled spikelet 3.5 – 4.0 × 1 – 1.2 mm, lanceolate or elliptic to lanceolate, without pit, acute at apex, callus glabrous. Lower glume 3.5 – 4.0 × 1 – 1.2 mm, lanceolate, coriaceous, margins infolded, spinulose, glabrous dorsally, ca. 15 – 17-nerved, acute at apex. Upper glume 2.5 – 2.8 × 0.8 – 1 mm, lanceolate, membranous, 3-nerved, subcoriaceous, acute at apex. Florets 2, both epaleate, lower empty, upper staminate or barren. Lower lemma 1.5 – 1.8 × 0.5 – 0.6 mm, oblong-lanceolate, margins entire, hyaline, dentate at apex, nerveless, 2-keeled. Upper lemma absent. Lodicules 2, ca 0.15 × 0.1 mm, obovate. Stamen 3; mostly barren, anthers ca. 0.5 mm long.

Distribution: INDIA: Gujarat, Jammu and Kashmir, Manipur, Punjab, Rajasthan, Uttar Pradesh, Madhya Pradesh, Rajasthan, Maharashtra.

Habitat: Sajjangad (Thoseghar Road) is part of Deccan trap of Indian Peninsula, located middle of the western ghat, about 20 km west to Satara, underlying by Deccan trap basaltic lava flow of Upper cretaceous and Eocene age (Suryawanshi *et al.*, 2016). An average 850 mm rainfall and above 75% humidity were recorded in the rainy season. Collection locality mainly comprises medium black type of soil.

Associated Species: *Apluda mutica* L., *Capillipedium filiculme* (Hook.f.) Stapf, *Chloris virgata* Sw., *Grona triflora* (L.) H. Ohashi and K. Ohashi, *Heteropogon triticeus* (R.Br.) Stapf ex Craib, *Ischaemum rugosum* Salisb., *Tephrosia purpurea* (L.) Pers., *Thelepogon elegans* Roth etc.

Specimen Examined: INDIA: Maharashtra: Satara district, Sajjangad (17°38'31.5" N 73° 54'06.7"E), 907 m. 27th September 2020, Shaikh Tarbej YCCSK-2103 (SUK!).

Setaria barbata (Lam.) Kunth, Rev. Gram. 1: 47. 1829; Bor, Grasses. Burma Ceyl. Ind. Pak. 360. 1960; Nair *et al.*, in J. Econ. Taxon. Bot. 3: 271. 1982; Sreek. and Nair, Fl. Kerala Grass. 303. 1991. *Panicum barbatum* Lam, Tab. Encycl. Meth. Bot. 1: 171. 1791. *P. flavescens* auct. Non Sw. 1788; Hook.f., Fl. Brit. India. 7: 56. 1897. East Indian bristle grass (Fig. 2)

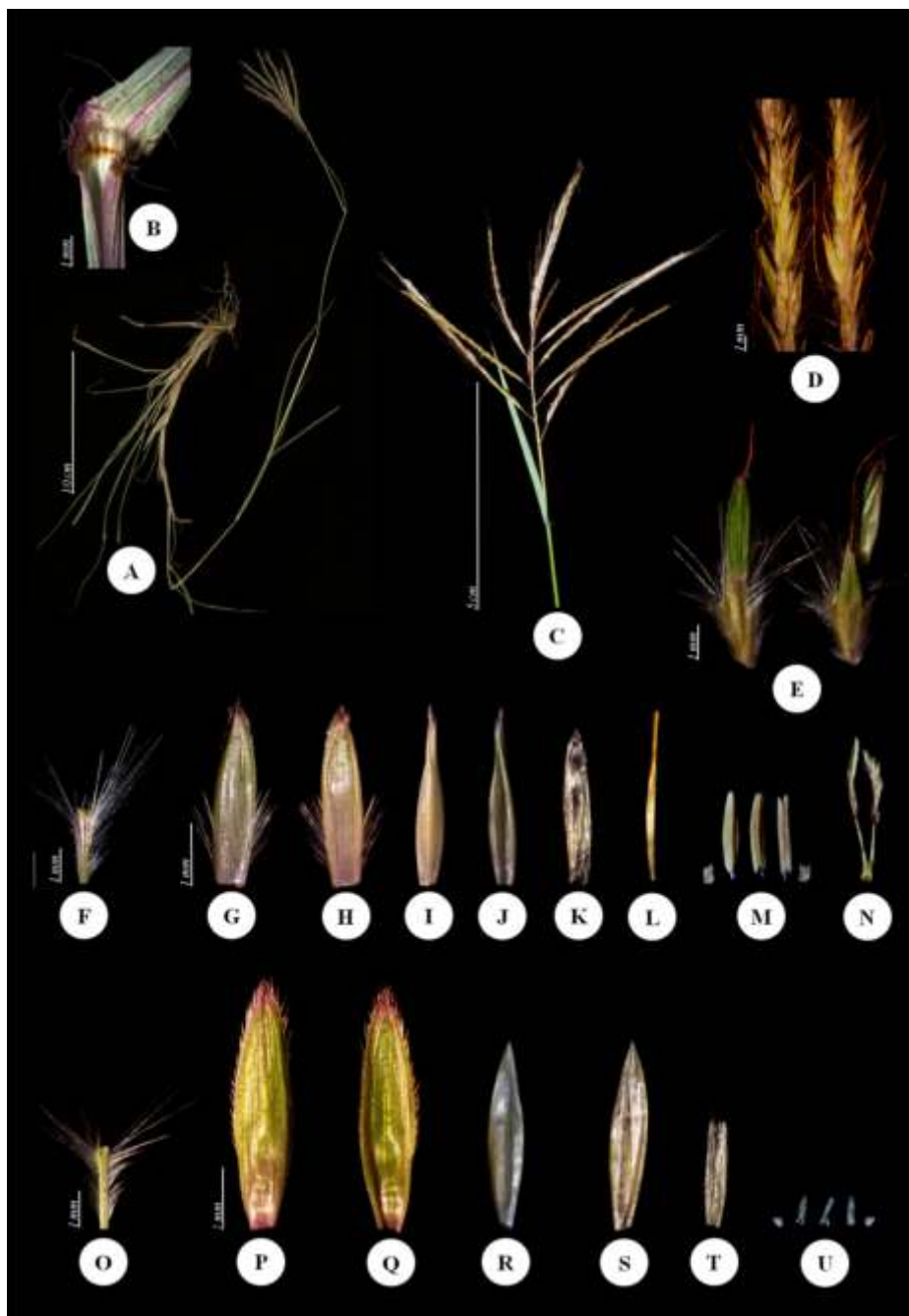


Fig. 1: *Botriochloa ischaemum* (L.) Keng. **A.** Habit; **B.** Ligule; **C.** Inflorescence; **D.** Portion of raceme; **E.** Sessile and Pedicelled Spikelets; **F – N.** Sessile Spikelets: **F.** Joint; **G.** Lower glume ab.; **H.** Lower glume ad.; **I.** Upper glume ab.; **J.** Upper glume ad.; **K.** Lower lemma; **L.** Upper lemma; **M.** Stamen and lodicules; **N.** Ovary; **O – U.** Pedicelled spikelet: **O.** Pedicel; **P.** Lower glume ab.; **Q.** Lower glume ad.; **R.** Upper glume ab.; **S.** Upper glume ad.; **T.** Lower lemma; **U.** Stamen and lodicules. [Photos credit: Shaikh Tarbej]

Caespitose annual. Culm 15 – 80(-150) cm long; nodes sparsely bearded. Leaf Sheath keeled, sparsely tubercle-based hairy, 4 – 6 cm long. Ligule ca. 1 mm long, fringe of hairs, truncate. Leaves elliptic to lanceolate; 30 cm long 2.5 cm wide, flat, keeled below,

pubescent to scaberulous, margins minutely serrate, apex acuminate. Inflorescence of narrow panicle, 4 – 18 cm long, lax; branches pubescent, or pilose. Spikelets elliptic to elliptic-lanceolate 1.5 – 3 × 0.5 – 1.5 mm long, subtended by an involucre of 1–10 mm long bristle.

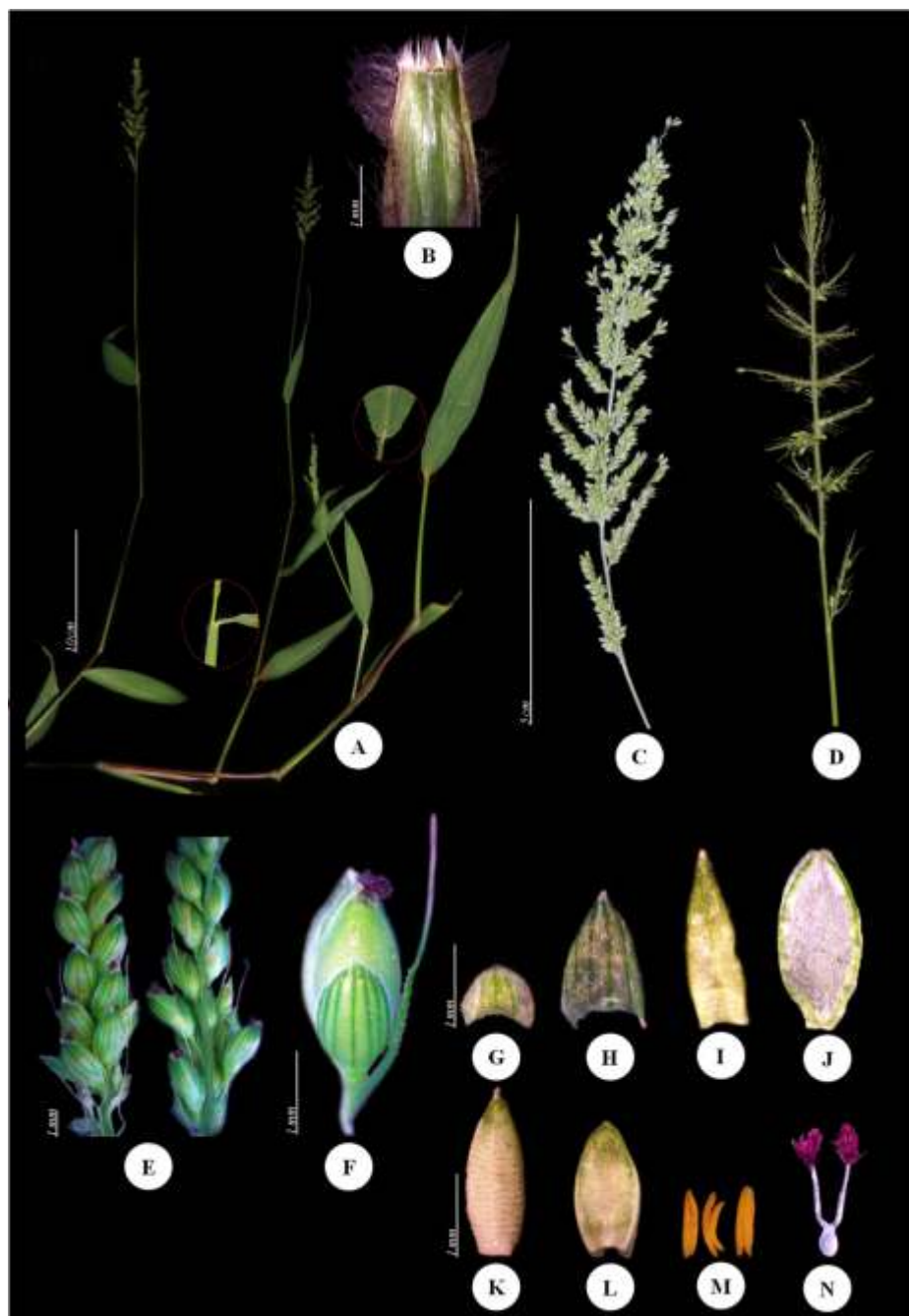


Fig. 2: *Setaria barbata* (Lam.) Kunth, **A.** Habit; **B.** Legule; **C.** Mature Inflorescence; **D.** Dried Inflorescence; **E.** Portion of raceme; **F.** Spikelet; **G.** Lower glume; **H.** Upper glume; **I.** Lower lemma; **J.** Palea of lower lemma; **K.** Upper lemma; **L.** Palea of upper lemma; **M.** Stamen; **N.** ovary. [Photos credit: Shaikh Tarbej]

Lower glume 0.5 – 1 × 0.5 – 1 mm, glabrous, not keeled, obtuse or slightly acute at apex, chartaceous, 3-nerved. Upper glume 1.5 – 2 × 1 – 1.25 mm, ovate-oblong, boat shaped, margins entire, acute at apex, chartaceous, 7-nerved, glabrous. Florets 2, lower male, upper bisexual. Lower lemma 1.5 – 2 × 0.5 – 1.5 mm, elliptic to elliptic-lanceolate, chartaceous, margins entire, acute at apex,

5–7-nerved. Palea 2 – 3 × 0.5 – 1 mm, elliptic, 2-keeled, 2-nerved. Stamens 3, anthers ca. 0.5 – 1 mm long. Upper lemma 2 – 3 × 1 – 1.5 mm, elliptic to elliptic-lanceolate, acute to shortly acuminate, crustaceous, rugose, 2-keeled. Palea 2 – 2.5 × 0.5 – 1 mm, crustaceous, rugose, 2-keeled, 0 – 2-nerved. Stamen 3, anthers ca. 0.5 – 1 mm long, linear-oblong. Pistil 0.5 × 1.5 mm long.

Distribution: INDIA: Andaman and Nicobar Islands, Assam, Bihar, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Rajasthan, Tamil Nadu, West Bengal, Maharashtra.

Habitat: Karve (Karad-Tasgaon Road) is part of Hard rock (Deccan Trap Basalt) of Indian Peninsula, located in the middle of the western ghat, about 10 km southeast to Karad. An average 760 mm rainfall and above 70% humidity were recorded in the rainy season. Collection locality mainly comprises deep black type of soil.

Associated Species: *Chloris virgata* Sw., *Bothriochloa pertusa* (L.) A. Camus, *Celosia argentea* L., *Dichanthium annulatum* (Forssk.) Stapf, *Dichanthium caricum* (L.) A. Camus, *Tridax procumbens* L. etc.

Specimen Examined: INDIA: Maharashtra: Satara district, Karad-Tasgaon Road, Karve (17°15'55.7"N 74°11'59.9"E), 573m. 15th November 2021, Potdar Girish YCCSK-2218 (SUK!).

Note: Good fodder grass, rare along the stream bank, water channels, grown mostly in shady places.

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LINKAGE

Yashwantrao Chavan College of Science, Karad



&



Krishna Mahavidyalaya, Rethare Bk

Linkage is signed on 1st January 2022 between **Department of Botany, Yashwantrao Chavan College of Science, Karad** (First Party) and **Department of Botany, Krishna Mahavidyalaya, Rethare Bk** (Second Party). It is agreed by First party and Second party to impart student exchange, guest lectures, study tours, instrument training, research to the students with jointly organizing conference/seminars and publishing research work in the form of research articles, books, book chapters etc. Both the parties have discussed in detail the areas of co-operation and mutually agreed to make the linkage. Now it is agreed by and between both the parties with the following terms and conditions.

Terms and Conditions:

- 1) Both the parties will extend their facilities to each other in the areas of student exchange, guest lectures, study tours, instrument training and research to the students and to organize conference/seminars jointly.







2) Both parties agreed to do research with exchange of ideas and publish the work in reputed journals and publishers in the form of research articles, books, book chapters, editorials etc.

3) No rental charges or any other incidental charges, unless mentioned, shall be paid by both the parties for using the infrastructure facilities of each other.

4) The linkage will be valid for a period of five years starting from the date of signing this agreement and may be renewed for a further period of five years through mutual consent of parties.

5) This linkage may be terminated by either side by giving a three months notice to that effect in writing.

In witness whereof, the parties here have set this hands on the 1st January 2022.

Party	First Party	Second Party
Institute	Yashwantrao Chavan College of Science, Karad	Krishna Mahavidyalaya, Rethare Bk
Signature		
Designation	Head, Department of Botany Yashwantrao Chavan College of Science, Karad	Head, Department of Botany Post Graduate Center of Botany Krishna Mahavidyalaya, Shivnagar, Rethare Bk
Signature		
Designation	Principal Yashwantrao Chavan College of Science Karad	Principal Krishna Mahavidyalaya, Rethare Bk Tal. Karad : 415 108 (MS)
Seal	