

CONTRIBUTION TO THE BOTANY OF MADHYA PRADESH—VII.

(Gramineae excluding Bambusae)

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ABSTRACT

This paper presents an enumeration of 161 species of the family Gramineae. Notes on habitat, flowering and fruiting condition, exact localities from where species have been collected together with the field nos. of the collectors, abundance in the area, are appended to every species enumerated.

INTRODUCTION

In continuation of the earlier series of publications on the flowering plants of Madhya Pradesh, as represented in the 4438 field nos. of plants collected by the Central Circle of the Botanical Survey of India, Allahabad, between 1962-1965, and also to supplement the list of about 600 species already reported in earlier papers, we present here an enumeration of 161 species of the family Gramineae collected and identified by us. Notes on habitat, flowering and fruiting condition, exact localities of occurrence, names of collectors and their field numbers, are furnished against every species enumerated. Wherever the collector's name is not given between the citation of locality and the field number in the enumeration, Panigrahi may be cited as the collector's name.

The following 10 important genera as represented by their species number (indicated in brackets) together account for 61 species, whereas 50 of the remaining genera are represented by a single species each: *Eragrostis* (12), *Pennisetum* (7), *Panicum* (6), *Aristida* (6), *Setaria* (6), *Sporobolus* (5), *Ischaemum* (5), *Brachiaria* (5), *Digitaria* (5) and *Sorghum* (4).

A critical appraisal of species reported from Madhya Pradesh by Tewari (1954, 1955, 1963), Bor (1960), Rao & Narayanswami (1960), Mooney (1942), Sebastine & Balakrishnan (1963), Raizada *et al.* (1957) establish the following, amongst others, as new records of grasses for Madhya Pradesh:

Acrachne racemosa (Heyne) Ohwi, *Aristida adscensionis* Linn., *Brachiaria deflexa* (Schumacher) C. E. Hubb. ex Robyns, *Cynodon arcuatus* J. S. Presl ex C. B. Presl, *C. barberi* Rang. et Tard., *Dactyloctenium aristatum* Link, *Digitaria bicornis* (Lamk.) Roem. et Schult. ex Loud., *Elyonurus royleanus* Nees ex A. Rich.

Tewari (1954 a, b, 1963) has listed 239 spp. of grasses from Madhya Pradesh; in our list of 161 spp. we have added at least 18 species to this number, while another 30 spp. collected by us remain yet to be identified after critical study.

Of the important cereal grasses occurring in Madhya Pradesh, *Triticum aestivum*, *Hordeum vulgare*, *Oryza sativa*, *Pennisetum typhoides*, *Zea mays*, *Sorghum vulgare*, *Coix lacryma-jobi* may be mentioned. The poorer people and the tribals in the area sometimes, however, depend on the seeds of *Brachiaria deflexa*, *Cenchrus biflorus*, *Echinochloa crus-galli*, *E. colonum*, *Oryza rufipogon*, *Hygrophiza aristata*, *Ischaemum rugosum*, *Sacciolepis interrupta*, *Setaria pallide-fusca*, etc.

According to Bor (1960), India enjoys either a forest climate or a desert climate and nowhere in India, grassland climate prevails over any considerable area. Accordingly, grasslands of Madhya Pradesh, such as at Khari-Seoni in Morena district, or near Shivpuri, are secondary and seral in status, owing their origin to annual fires and grazing. It may be stated that loads of hay made from *Cymbopogon martinii*, *Sehima nervosum*, *Themeda triandra* etc. growing in abundance in the grassland of Khari-Seoni, were transported to the North East Frontier Agency to feed the mules and horses of the Indian army during the war in 1962.

Imperata cylindrica, which flowers in April-May, when the grasslands are subjected to annual burning, takes possession of such bare burnt areas; *Saccharum spontaneum* with its enormous root-system and flowering towards the end of the rainy season, inhabits the mud flats, sand banks and eroded lands after the flood subsides. *Erianthus* sp. and *Phragmites karka* are associated with *S. spontaneum* in such situations. In other drier areas, *Xanthium strumarium* and *Euphorbia* spp.

replace grasses in the borders of grassland, subjected to annual fire, which incidentally help in the maintenance of grasslands in the deciduous forests of Madhya Pradesh.

Aristida redacta Stapf, *Brachiaria deflexa* Hubb. ex Robyns, *Capillipedium huegellii* A. Camus, *Cynodon barberi* Rang. et Tad. etc. endemic to India, have been collected from Madhya Pradesh.

In the following enumeration, plants must be taken as "Flowering and fruiting" unless the contrary is stated in each case.

ENUMERATION

Acrachne racemosa (Heyne) Ohwi

Annual. In alluvial soil of river bank. Occasional. Sidhi: Jiawan, 5662A; Morena: Parvati river bank, 5982.

Alloteropsis cimicina (Linn.) Stapf

Annual. A ruderal in waste places, abandoned cultivation and like places. Common. Chhindwara: Panarpani-Pachmarhi, 4616; Indore: Mhow, *Arora* 5535.

Andropogon pumilus Roxb.

Annual. Along dried up stream on hill slope. Fruiting. Scarce. Indore: Balwaraghat, *Rao* 79147.

Apluda mutica Linn.

In nala banks, plains and on hill slopes, often associated with *Chionachne* sp., *Cymbopogon* sp. and *Xanthium strumarium*. Abundant. Rewa: near Chachai fall, 2471; Sidhi: Jiawan, 5666B; Jhabua: Alirajpur, *Arora* 5830; Gwalior: Pabradam site, 5847; Hoshangabad: Churna-Bori, 6426; Pachmarhi, 6649; Bastar: Bailadilla, 6901; Raigarh: Dharmjaigarh, *Arora* 7142; Sagar: Zalimpur (500 m), *Balakrishnan* 11354.

Aristida adscensionis Linn.

Annual. Roadsides and on hill slopes. Occasional. Gwalior: *Arora* 46; Indore: Mhow, *Arora* 5624.

A. cumingiana Trin. et Rupr.

Annual. Along dried up stream in sandy soil. Fruiting. Scarce. Raigarh: Kunkuri, *Arora* 7327.

A. depressa Retz.

Annual. On sandy slopes. Common. Raipur: Abhaipur-Raipur, *Jain* 5259; Rewa-Sidhi Road, 5437; Jhabua: Alirajpur, *Arora* 5831.

A. funiculata Trin. et Rupr.

Annual. Growing on plantation hilllock in rocky substratum. Common. Sidhi: Jiawan, 5406; Ratlam; Raoti Block, *Arora* 5698.

A. redacta Stapf

Annual. Flowering. Scarce. Dhar: Sardarpur, *Arora* 5848.

A. setacea Retz.

Perennial. Roadsides, in crevices of rocks and in open places. Fairly abundant. Bastar: Gidam, 1110; Hoshangabad: Churna-Bori, 6435; Pachmarhi, 4502; Raigarh: Dharmjaigarh, *Arora* 7188.

Arthraxon lancifolius (Trin.) Hochst.

Annual. River banks, roadsides, rocky slopes, plantation hillocks. Fairly abundant. Sidhi: Jiawan, 5407; Shivpuri: N. Park lake, 6040; Hoshangabad: Rorighat, 6577; Raigarh: Dharmjaigarh, *Arora* 7221; Sagar: Rahatgarh (475 m), *Balakrishnan* 11483.

A. prionodes (Steud.) Dandy

On rocky slopes. Flowering. Scarce. Jhabua: Alirajpur, *Arora* 5825.

Arundinella pumila (Hochst.) Steud.

Annual. In shade in crevices of rocks. Fruiting. Occasional. Hoshangabad: Rorighat, 6581.

A. setosa Trin.

Perennial. Roadsides, hill slopes, plantation hillock and in valleys. Fruiting. Fairly abundant. Sidhi: Majhouli, 2382; Chhindwara: Tamia-Mahadeo, *Jain* 3004; Raigarh: Dharmjaigarh, *Arora* 7216; Bilaspur: Sonkyari, 8912.

Arundo donax Linn.

Perennial. Near nalas. Common. Gwalior: Phool Bagh, *Arora* 57; Dhar, *Arora* 5924.

Avena sativa Linn.

Cultivated. Fruiting. Sidhi: Majhouli, 2350.

Bothriochloa glabra (Roxb.) A. Camus

Growing on plantation hillock. Flowering. Scarce. Sidhi: Jiawan, 5675.

B. intermedia (R. Br.) A. Camus

Perennial. Growing under shade. Common. Bastar: Bailadilla, 1086; Sidhi: Majhouli, 2386.

B. pertusa (Linn.) A. Camus

Roadsides near nalas, on bunds of rice fields and in forests often associated with *Saccharum* sp. Common. Gwalior: Hanumanghati, *Arora* 35; Rewa: Allahabad-Rewa Road, 5510; Raipur: Abhaipur-Raipur Road, *Jain* 5257; Satna: Mohri Katra, 6210A.

Brachiaria deflexa (Schumach.) C. E. Hubb. ex Robyns

Annual. Fruiting. Scarce. Hoshangabad: Bori-Rahatgaon, 6296A.

Brachiaria distachya (Linn.) Stapf

Annual. Sandy river bed. Fruiting. Common. Sidhi: Kanjra Tal, 2184; Bilaspur: Korba, 8629.

B. eruciformis (J. E. Sm) Griseb.

Annual. Roadsides and hill slopes. Fairly abundant. Ratlam: Amritsagar lake, *Arora* 5662; Sidhi: Jiawan, 5711; Gwalior: Dabra, 5761; Dhar, *Arora* 5905; Morena: Parvati river bank, 5955.

B. ramosa (Linn.) Stapf

Annual. Scarce. Mandla: Khari R. F. (650 m), *Joseph* 14425.

B. reptans (Linn.) Gard. et C. E. Hubb.

Annual. Roadsides, cultivated fields and waste places. Common. Ratlam: Amrit sagar lake, *Arora* 5666; Morena: Kunoo river bank, 5926; Hoshangabad-Seoni Road, 6256.

Capillipedium assimile (Steud.) A. Camus

Perennial. Growing in forests. Fruiting. Common. Hoshangabad: Bori, 6480; Bastar: Bailadilla, 6885.

C. huegelii (Hack.) A. Camus

Perennial. Scarce. Dhar: Sardarpur, *Arora* 5850.

Cenchrus biflorus Roxb.

In sandy river bed. Occasional. Sidhi: Chitrangi-Garwa-Sone river bank, 2454.

C. ciliaris Linn.

Perennial. On hill slopes. Fruiting. Occasional. Gwalior: Pabra dam site, 5839.

C. setigerus Vahl

Perennial. On rocky slopes. Fruiting. Occasional. Gwalior: Fort gate, *Arora* 49.

Chionachne koenigii (Spreng.) Thw.

Perennial. Along river banks in open places and borders of cultivated fields. Fairly abundant. Dhar: Sardarpur, *Arora* 5863; Indore: Mandu, *Arora* 5967; Morena: Khadi, 5997; Bilaspur: Katghora, *Arora* 6033; Hoshangabad: Churna-Bori, 6438; Bastar: Chandnar forest, 6793; Raigarh: Dharmjaigarh, *Arora* 7158.

Chloris dolichostachya Lagasca

Perennial. Sandy river banks, and along paths through Teak-bamboo forest. Fairly abundant. Sidhi: Jiawan, 5658; Morena: Kunoo river bank, 5880; Hoshangabad: Bori, 6467; Sagar: Hirapur R. F. (425 m), *Balakrishnan* 11441; Mandla: Khari R. F. (675 m), *Joseph* 13436.

C. virgata Sw.

Annual. Near water in black alluvium and on borders of rice fields. Fruiting. Common. Raipur: Abhaipur-Raipur Road, *Jain* 5258; Morena: Kunoo river bank, 5985; Hoshangabad: near Hoshangabad

(300 m), *Joseph* 11046; Sagar: Mohli R. F. (500 m), *Balakrishnan* 11529.

Coelachne simpliciuscula (Wight et Arn.) Munro ex Benth.

Annual. River banks and beds. Fruiting. Fairly abundant. Bastar: Bailadilla, 1052; Raigarh: Jaspurnagar, *Arora* 7246; Mandla: Dindori-Keonchi Road, 8556; Bilaspur: Pali, 8662.

Coix lacryma-jobi Linn.

Perennial. Marshy places and rice fields. Fairly abundant. Bastar: Jagdalpur, *Jain* 3939; Sidhi: Majhouli, 5615; Ratlam: Amrit sagar lake, *Arora* 5654; Mandla: Mandla (450 m), *Joseph* 14720.

Cymbopogon martinii (Roxb.) Wats.

Perennial. Along river banks, roadsides, on rocky slopes and plantation hillock. Flowering. Fairly abundant. Sidhi: Jiawan, 5414; Morena: Ram pahari 5868; Hoshangabad: Dhupgarh, 6689; Raigarh: Dharmjaigarh, *Arora* 7157; Sagar: Kalyanpur, *Balakrishnan* 11947.

Cynodon arcuatus J. S. Presl ex C. B. Presl

On rocky substratum. Fruiting. Occasional. Bastar: Bailadilla, 1066A; Bilaspur: Katghora, *Arora* 3993.

C. barberi Rang. et Tad.

Hard lateritic soil. Fruiting. Scarce. Gwalior: Pabra dam site, 5837.

C. dactylon (Linn.) Pers.

Sandy river bed. Fairly abundant. Betul: Bhai-sadchi, 4366; Gwalior: Dasan river bank, 5728; Jhabua: Alirajpur, *Arora* 5773; Bilaspur: Korba, 8620; Mandla, *Joseph* 12280.

Cyrtococcum oxyphyllum (Steud.) Stapf

Under shade. Fruiting. Scarce. Hoshangabad: Bori, 6493.

Dactyloctenium aegyptium (Linn.) P. Beauv.

Annual. River banks, river beds and hill slopes. Fairly abundant. Raipur: Raipur, 5081; Sidhi: Jiawan, 5663; Morena: Goras-Kunoo river bank, 5928; Raigarh: Dharmjaigarh, *Arora* 7139.

D. aristatum Link

Annual. Fruiting. Scarce. Gwalior, 5788.

Desmostachya bipinnata (Linn.) Stapf

Growing in water. Common. Gwalior: Dabra, 5764; Hoshangabad: Kesla-Banglapur (500 m), *Joseph* 12855.

Dichanthium aristatum (Poir.) C. E. Hubb.

Perennial. Along river banks, on wall of bridges, in roadside drains, in cultivated fields and waste lands. Fairly abundant. Sidhi: Majhouli, 2138; Gwalior: Pabra dam site, 5752; Morena: Kunoo

river bank, 5886; Satna: Lalpur, 6212; Hoshangabad: Hoshangabad-Seoni Road, 6259; Sagar: Bhaikunda falls (500 m), *Balakrishnan* 11472; Mandla: Khari R. F. (675 m), *Joseph* 13466.

Dichanthium caricosum (Linn.) A. Camus

Under shade along roadsides in dried up mud. Occasional. Sidhi: near Bastua, 2320; Satna; Lalpur, 6210; Bastar: Dantewara, 6788; Bilaspur: Katghora, *Arora* 8630.

Diectomis fastigata (Sw.) Kunth

Perennial. Fruiting. Occasional. Sidhi: Jiawan, 5404; Raigarh: Dharmjaigarh, *Arora* 7226.

Digitaria adscendens (H. B. K.) Henr.

Annual. Fairly abundant.

subsp. **chrysoblephera**

Betul: Dhawa, 4326; Bastar: Sukma, *Jain* 5229; Sidhi: Jiawan, 5550; Ratlam: Amrit sagar lake, *Arora* 5663; Morena: Kunoo river bank, 5959; Hoshangabad: Rohatgaon, 6293; Raigarh: Dharmjaigarh, *Arora* 7175.

subsp. **adscendens** var. **criniformis**

Hoshangabad: Pachmarhi, 4604; Jhabua: Alirajpur, *Arora* 5778; Gwalior: Pabra dam site, 5810.

D. bicornis (Lamk.) Roem. et Schult. ex Loud.

Annual. Along roadsides, on plantation hillocks, and bunds of rice fields. Common. Surguja: Pratappur, *Arora* 3943; Hoshangabad: Manpur-Seoni Road, *Jain* 5276; Sidhi: Jiawan, 5697; Mandla: Mandla (500 m), *Joseph* 13516.

D. longiflora (Retz.) Pers.

Perennial. In sandy river bed. Flowering. Scarce. Hoshangabad: Pachmarhi-Mahadeo Road, 4548.

D. stricta Roth. ex Roem. et Schult.

Annual. Along river bank and on plantation hillocks. Fruiting. Common.

var. **denudata**

Sidhi: Jiawan, 5671; Jhabua: Alirajpur, *Arora* 5777; Bastar: Gidamghat, *Jain* 5142.

var. **stricta**

Ratlam: Amrit sagar lake, *Arora* 5665; Mandla: Mandla, *Joseph* 13522.

D. ternata (A. Rich.) Stapf ex Dyer

Annual. In lawn and in waste places. Flowering. Scarce. Chhindwara: Panarpani-Pachmarhi Road, 4615.

Dimeria connivens Hack.

Annual. Fruiting. Occasional. Shivpuri, 6052.

D. ornithopoda Trin.

Annual. Prefers drier situations, in red morrum and sandy soil. Fruiting. Common. Bastar:

Kutumsar, 1124; Bilaspur: Kathghora, *Arora* 3985; Shivpuri, 6036.

Dinebra retroflexa (Vahl) Panz.

Annual. Common. Indore: Mhow, *Arora* 5519; Mandla: Mandla (500 m), *Joseph* 13525.

Echinochloa colonum (Linn.) Link

Annual. On river beds, roadside drain, and as a weed in cultivated fields. Fairly abundant. Raigarh: Dharmjaigarh, *Arora* 3790; Surguja: Pratappur, *Arora* 3933; Sidhi: Gandhigram, 5546; Morena: Kunoo river bank, 5926; Shivpuri: N. Park lake, 6034; Bastar: Dantewara, 6772.

E. crusgalli (Linn.) P. Beauv. var. **crusgalli**

Fruiting. Occasional. Jhabua: Jhabua, *Arora* 5721; Indore: Mandu, *Arora* 5936.

E. stagnina (Retz.) P. Beauv.

In muddy soil, stagnant water and in nalas. Common. Sidhi: Majhouli, 2129; Satna: Lalpur, 6205.

Eleusine indica (Linn.) Gaertn.

Annual. Near ponds, water drains, and water falls. Common. Chhindwara: Tamia, 4461; Hoshangabad: Pachmarhi (1300 m), 4594; Indore: Mhow, *Arora* 5526; Ratlam: Amrit sagar lake, *Arora* 5664.

Elyonurus royleanus Nees ex A. Rich.

Annual. Dam site. Fruiting. Occasional. Gwalior: Pabra dam site, 5832.

Elytrophorus spicatus (Willd.) A. Camus

Annual. On river banks, dried up nalas and in damp soil. Fruiting. Fairly abundant. Bilaspur: Katghora, *Arora* 3984; Morena: Kunoo river bank, 5920; Rewa: near Rewa, 6162; Hoshangabad: Kesla, 6416; Raigarh: Dharmjaigarh, 8794.

Eragrostis atrovirens (Desf.) Trin. ex Steud.

Perennial. In muddy places along river banks, nalas and water drains. Abundant. Chhindwara: Tamia, 4466; Gwalior: Dabra, 5797; Hoshangabad: Rorighat, 6579; Bastar: Bailadilla; 6891; Raigarh: Dharmjaigarh, *Arora* 7126; Rewa: Rewa (500 m), *Sebastine* 7736; Bilaspur: Sonkyari, 8888; Sagar: near Hirapur (419 m), *Subramanyam* 134403.

E. ciliaris (All.) Vignolo-Lutati

Annual. Fruiting. Scarce. Mandla: Mandla (500 m), *Joseph* 13520.

E. ciliaris (Linn.) R. Br.

Annual. Along river bank and near-dam site. Occasional. Gwalior: Pabra dam site, 5833; Morena: Kunoo river bank, 5965.

Eragrostis coarctata Stapf apud Hook. f.

In crevices of rocks and in open places. Fruiting. Common. Raigarh: Jashpurnagar, *Arora* 3882; Bastar: Bailadilla, 7000; Bilaspur: Katghora, *Arora* 8632.

E. diarrhena (Schult.) Steud.

Near river bank and in dry places. Fruiting. Occasional. Hoshangabad: Bori, 6375; Sagar: Rohatgarh-near Bina river bank (430 m), *Subramanyam* 10142.

E. gangetica (Roxb.) Steud.

Annual. Along nalas and edges of lakes. Fruiting. Common. Raigarh: Jashpurnagar, *Arora* 3864; Shivpuri: N. Park lake, 6047; Hoshangabad: Churna-Bori, 6434.

E. japonica (Thunb.) Trin.

Along river banks. Occasional. Rewa: Kutlai river bank (500 m), *Sebastine* 7711; Bilaspur: Katghora, 6035; Mandla: Khari R. F. (675 m), *Joseph* 13415.

E. pilosa (Linn.) P. Beauv.

Annual. In rock crevices. Scarce. Ratlam: Raoti Block, *Arora* 5681.

E. tenella (Linn.) P. Beauv. ex Roem. et Schult.

Annual. In muddy soil near nalas and dam site. Fairly abundant. Indore: Mhow, *Arora* 5582; Sidhi: Majhoul, 5630; Jhabua: Alirajpur, *Arora* 5779; Gwalior: Pabra dam site, 5795; Shivpuri: N. Park lake, 6062; Hoshangabad: Kesla, 6429; Bilaspur: Katghora, *Arora* 7114; Sagar: Hirapur R. F. (425 m), *Balakrishnan* 11445.

E. tremula Hochst ex Steud.

Annual. In marshy places near nalas, in river beds and cultivated fields. Common. Sidhi: Kanzra Tal, 2170; Chhatarpur: Khajuraho, 6141; Bilaspur, Pali, 8741.

E. unioloides (Retz.) Nees ex Steud.

Annual. In marshy places near nalas, in river beds, on slopes and edges of forests. Fairly abundant. Shivpuri: Jadavnagar, *Arora* 76; Raigarh: Dharmjaigarh, *Arora* 3806; Bilaspur: Katghora, *Arora* 3969; Hoshangabad: Pachmarhi, 4597; Raipur: Raipur, 5063; Sidhi: Majhoul, 5613; Jhabua: Hatipawa Block, *Arora* 5743; Bastar: Bailadilla, 6891A.

E. viscosa (Retz.) Trin.

Annual. Fruiting. Scarce. Sidhi: Gandhigram, 5559.

Eremopogon foveolatus (Del.) Stapf

Perennial. Along road sides through forest. Occasional. Gwalior: *Arora* 47; Rewa: Rewa (500 m), *Sebastine* 7762.

Eriochloa nubica (Steud.) Hack. et Stapf ex Thell.

In swampy places sometimes associated with species of *Typha*, *Scirpus* and *Juncus* etc. Common. Gwalior: Pabra dam site, 5796; Shivpuri: N. Park lake, 6038.

Eulalia trispicata (Schult.) Henr.

On rocky slopes. Scarce. Raigarh: Dharmjaigarh, *Arora* 7160.

Eulaliopsis binata (Retz.) C. E. Hubb.

Perennial. On rocky substratum. Common. Raigarh: Dharmjaigarh, *Arora* 3788; Hoshangabad: Pachmarhi, 4552.

Hackelochloa granularis (Linn.) O. Ktze.

Annual. Along river bank, on hill slopes, plantation hillocks and in cultivated fields. Fruiting. Fairly abundant. Indore: Mhow, *Arora* 5539; Sidhi: Gandhigram, 5567; Hoshangabad: Bangla-pur (300 m)-Towa river bank, *Joseph* 11172; Mandla: Khari R. F. (675 m), *Joseph* 13506.

Hemarthria compressa (Linn. f.) R. Br.

Near river banks. Fruiting. Common. Dhar: Sardarpur, *Arora* 5865; Morena: Kunoo river bank, 5953.

Heteropogon contortus (Linn.) P. Beauv. ex Roem. et Schult.

Along roadsides, on hill slopes, plantation hillocks and in cultivated fields. Fairly abundant. Gwalior: Hanumanghati, *Arora* 30; Bilaspur: Katghora, *Arora* 3973; Hoshangabad: Pachmarhi, 4503; Bori, 6461; Balaghat, *Jain* 5281; Sidhi: Gandhigram, 5574; Indore: Mhow, *Arora* 5602; Ratlam: Amrit sagar lake, *Arora* 5680; Nagpur-Raipur Road, 6729; Sagar: Bareti, *Balakrishnan* 11374.

Hordeum vulgare Linn.

Cultivated. Fruiting. Sidhi: Majhoul, 2358.

Imperata cylindrica (Linn.) P. Beauv.

Along river banks and on hill slopes. Fairly abundant. Sidhi: Kanzra Tal, 2180; Hoshangabad: Pachmarhi, 4486; Rewa: Rewa (500 m), *Sebastine* 7740; Bastar: Bailadilla, 6976; Bilaspur: Korba, 8740; Mandla: Khari R. F. (650 m), *Joseph* 13993.

Isachne glaberrima (Thunb.) O. Ktze.

On moist sandy soil. Fruiting. Scarce. Bilaspur: Katghora, *Arora* 3983.

Ischaemum duthiei Stapf ex Bor

In bed of river. Fruiting. Scarce. Sidhi: on way to Majhouli, 2116.

I. indicum (Houtt.) Merrill

In marshy places along roadsides, river banks, near nalas, on plantation hillocks, and borders of cultivated fields. Fairly abundant. Sidhi: Majhouli, 2370; Hoshangabad: Kes'a, 6422; Bastar: Bailadilla, 6888; Raigarh: Dharmjaigarh, *Arora* 7203; Sagar: near Mohlitank (500 m), *Balakrishnan* 11509.

I. molle Hook. f.

Occasional. Fruiting. Sagar: Zalimpur (600 m), *Balakrishnan* 11379.

I. rugosum Salisb.

On moist soil along roadsides and near nalas sometimes associated with spp. of *Limnophila* and *Rotala*. Fruiting. Common. Surguja: Wadraf-nagar, *Arora* 3960; Gwalior: Gwalior, 5710; Morena: Kunoo river bank, 5977; Shivpuri-Jhansi Road, 6109.

I. semisagittatum Roxb.

Annual. Near water fall. Fruiting. Scarce. Hoshangabad: Pachmarhi, 6661.

Iseilema antheophoroides Hack.

Annual. Occasional. Indore: Mhow, *Arora* 5627; Dhar: Sardarpur, *Arora* 5869.

I. laxum Hack.

In roadside drains, near dam sites and in small depressions often associated with *Commelina* sp. and *Zizyphus* sp. Fairly abundant. Ratlam: Amritsagar lake, *Arora* 5641; Sidhi: Jiawan, 5709; Gwalior: Dabra, 5767; Rewa-Satna Road: *Sebastine* 7734; Hoshangabad: Hoshangabad (600 m), *Joseph* 11054.

I. prostratum (Linn.) Anderss.

Perennial. Often associated with *Cymbopogon* sp. Fairly abundant. Bastar: Kutumsar, 1156; Sidhi: Jiawan, 5666A; Shivpuri: N. Park lake, 6043; Hoshangabad: Bori-Pachmarhi, 6585; Mandla; Khari R. F. (675 m), *Joseph* 13464.

Leersia hexandra Swartz

Annual. Along streams and nalas. Fruiting. Common. Bastar: Kutumsar, 1131; Sidhi: Majhouli, 5614; Raigarh: Dharmjaigarh, *Arora* 7121.

Melanocenchris jacquemontii Jaub. et Spach

Annual. On alluvial soil near water fall and in rocky river bed. Fairly abundant. Sidhi: Chitrangi, 2461; Jabalpur: Lakhpatti near Katni, 5038; Indore: Mhow, *Arora* 5538; Sagar: Bhaikunda fall (500 m),

Balakrishnan 11464; Hoshangabad: Dhain (430 m), *Joseph* 12881; Mandla: Khari R. F. (675 m), *Joseph* 14407.

Narenga porphyrocoma (Hance) Bor

Perennial. In swampy places and near nalas. Common. Morena: Khadi-Sironi Road, 6000; Hoshangabad: near Pachmarhi fall, 6627.

Ophiuros exaltatus (Linn.) O. Ktze.

Perennial. Weed in cultivated fields. Common. Morena: Rampahari, 5874; Sagar: Kalyanpur, *Balakrishnan* 11501; Mandla: Mandla, *Joseph* 14724.

Oplismenus burmannii (Retz.) P. Beauv.

Annual. Along roadsides, river bank, on hill slopes and in cultivated fields. Fairly abundant. Bastar: Jagdalpur, *Jain* 3902; Sidhi: Gandhigram, 5582; Morena: Goras, 5947A; Dhar, *Arora* 6015; Shivpuri: N. Park lake, 6092; Hoshangabad: Banglapur (300 m), Towa river bank, *Joseph* 11109; Sagar: Zalimpur tank (500 m), *Balakrishnan* 11356.

O. compositus (Linn.) P. Beauv.

Under shade along river bank and in forests. Fruiting. Fairly abundant. Rewa: near Chachai fall, 2484; Bilaspur: Katghora, *Arora* 3978; Morena: Goras, 5947; Hoshangabad: Bori, 6477; Bastar: Bailadilla, 6958.

Oropetium thomaeum (Linn. f.) Trin.

Annual. Fruiting. Scarce. Rewa: Suhagighat, 6175.

Oryza rufipogon Griff.

In roadside drains and in cultivated fields. Fruiting. Common. Jabalpur: Lakhpatti, 5029; Indore: Mandu, *Arora* 5941.

O. sativa Linn. var. *sativa*

Cultivated. Fruiting. Raipur: Marand, *Jain* 5102; Bilaspur: Korba, 8679.

Panicum austroasiaticum Ohwi

Annual. Along roadsides, in forest and cultivated fields. Common. Sidhi: Gandhigram, 5593; Shivpuri: N. Park lake, 6061.

P. brevifolium Linn.

Perennial. Fruiting. Scarce. Bastar: Gidam, 1090.

P. maximum Jacq.

Fruiting. Scarce. Dhar: *Arora* 5899.

P. montanum Roxb.

Perennial. In sandy nala banks, and in Teak-Bamboo forest. Common. Bastar: Sukma, *Jain* 5234; Hoshangabad: Bori, 6470.

- Panicum paludosum** Roxb.
On roadside drains and in stagnant water. Fruiting. Common. Sidhi: on way to Bastua, 2121; Shivpuri-Jhansi Road, 6106.
- P. repens** Linn.
In sandy river bed. Fruiting. Common. Sidhi: Pourhi, 2336; Raigarh: Dharmjaigarh, *Arora* 3783; Hoshangabad: Bori, 6287.
- Paspalidium flavidum** (Retz.) A. Camus
Annual. Along river banks, near water falls and in cultivated fields. Common. Chhindwara: Tamia, 4425; Raipur: Raipur, 5097; Indore: Mhow, *Arora* 5521; Ratlam: Amrit sagar lake, *Arora* 5647; Hoshangabad: Banglapur-Towa river bank (300 m), *Joseph* 11175; Sagar: Bhaikunda fall (500 m), *Balakrishnan* 11471.
- P. geminatum** (Forsk.) Stapf
Annual. In swampy places near nalas sometimes associated with *Scirpus* sp. and *Typha* sp. Fruiting. Common. Gwalior: Pabra dam site, 5807; Morena: Kunoo river bank, 5986.
- P. punctatum** (Burm.) A. Camus
Perennial. In swampy places. Common. Sidhi: on way to Bastua, 2198; Raipur: Raipur, 5062; Satna: Lalpur, 6209.
- Paspalum cartilagineum** J. S. Presl ex C. B. Presl
Annual. Fruiting. Scarce. Raigarh: Dharmjaigarh, 8789.
- P. distichum** Linn.
Perennial. In roadside ditches, river bed, and sugarcane fields, associated with *Typha* sp. Common. Surguja: Pratappur, *Arora* 3932; Gwalior: Gwalior, 5787; Shivpuri, 6022.
- Pennisetum hohenackeri** Hochst. ex Steud.
Perennial. Along river bank and roadsides through the forests. Common. Bastar: Gidam, 1111; Hoshangabad: Pachmarhi, 4606; Bori, 6368; Dhar: Sardarpur, *Arora* 5866.
- P. hordeoides** (Lamk.) Steud.
Annual. Occasional. Hoshangabad: Churna-Bori, 6433; Sagar: Bareti R. F. (600 m), *Balakrishnan* 11377.
- P. orientale** L. C. Rich.
Along roadsides. Fruiting. Scarce. Hoshangabad: Pachmarhi, 6663.
- P. pedicellatum** Trin.
In roadside depressions, marshy places, on plantation hillocks and hill slopes. Fairly abundant. Bastar: Bastanar valley, *Jain* 5226; Sidhi: Majhoul, 5612; Khargone: *Arora* 6008; Hoshangabad: Bori, 6318.
- P. polystachyon** (Linn.) Schult.
Annual. On plantation hillock and hill slopes. Common. Sidhi: Jiawan, 5672; Indore: Mandu, *Arora* 5944; Bilaspur: Katghora, *Arora* 6034.
- P. setosum** (Swartz) L. C. Rich.
On edge of forest. Fruiting. Scarce. Hoshangabad: Churna-Bori, 6437.
- P. typhoides** (Burm.) Stapf et C. E. Hubb.
Cultivated. Fruiting. N. Bilaspur, 9087.
- Perotis indica** (Linn.) O. Ktze.
Annual. Along river bank and in field of *Cajanus cajan*. Common. Bastar: Gidam, 1089; Sidhi: Barkadol, 2160; Bilaspur: Katghora, *Arora* 6094; Hoshangabad: Bunglapur-Towa river bank (300 m), *Joseph* 11180.
- Phragmites karka** (Retz.) Trin. ex Steud.
Perennial. Along river banks, near water falls and in rocky nala beds. Common. Shivpuri, *Arora* 82; Sidhi: Chitrangi, 2465; Morena: Kunoo river bank, 5889; Hoshangabad: Bor, 6445.
- Pogonatherum crinitum** (Thunb.) Kunth
Annual. Growing along nalas and in rock crevices. Fruiting. Common. Bastar: Kutumsar, 1118; Raigarh: Jashpurnagar, *Arora* 3863; Bilaspur: Sonbayria, 8881.
- P. paniceum** (Lamk.) Hack.
Growing along nalas in river beds, rock crevices and on hill slopes. Fairly abundant. Sidhi: Majhoul, 2182; Raigarh: Dharmjaigarh, *Arora* 3756; Chhindwara: Tamia, 4458; Bilaspur: Amar-kantak, 9015.
- Polypogon monspeliensis** (Linn.) Desf.
Annual. Along river banks, in river beds and near water falls. Fruiting. Fairly abundant. Rewa: near Chachai falls (580 m), *Arora* 1388; Surguja: Pratappur, *Arora* 3918; Bilaspur: Pandrapat, 8847; Sagar: Rahatgarh (430 m), *Subramanyam* 10141; Mandla: Mandla, *Joseph* 12279.
- Pseudoraphis spinescens** (R. Br.) Vickery
Annual. In shallow water. Fruiting. Common. Raipur: Raipur, 5089; Dhar: *Arora* 5910; Sagar: Hirapur tank (450 m), *Balakrishnan* 11387.
- Pseudosorghum fasciculare** (Roxb.) A. Camus
Growing in teak forest. Fruiting. Scarce. Hoshangabad: Bori, 6472.
- Rhynchelytrum repens** (Willd.) C. E. Hubb.
Fruiting. Scarce. Hoshangabad: Mahadeo, 6605.
- Rotboellia exaltata** Linn. f.
On plantation hillock and near nalas. Common. Rewa: near Chachai falls, 2474; Sidhi: Jiawan,

5409; Jhabua: Alirajpur, *Arora* 5806; Hoshangabad: Bori, 6336.

Saccharum bengalense Retz.

Perennial. In sandy alluvial bed of sugarcane fields. Flowering. Occasional. Gwalior: near Gwalior, 5791.

S. spontaneum Linn.

Along river bank, in swampy places, sugarcane fields, waste places and on hill slopes. Abundant. Rewa: near Chachai fall, *Arora* 700; Sidhi: Jiawan, 5659; Jhabua, *Arora* 5731; Gwalior: Dabra, 5776; Hoshangabad: Bori, 6465; Sagar: Rahatgarh (475 m), *Balakrishnan* 11494; Mandla: Mangalgunj (500 m), *Joseph* 14491.

Sacciolepis interrupta (Willd.) Stapf

In marshy places and in shallow water. Common. Rewa: Govindgarh-Roopsagar lake, *Arora* 686; Sidhi: Khamarnaia, 2151; Satna: Mohrinkatra, 6204; Bastar: Kardagaon-Keskal, *Jain* 5254; Sagar: Rangir (560 m), *Subramanyam* 10191.

S. myosuroides (R. Br.) A. Camus

Annual. In nalas, sandy river banks and near tanks. Fruiting. Common. Raigarh: Jashpurnagar, *Arora* 3862; Bilaspur: Katghora, *Arora* 6087; Hoshangabad: Kesla, 6413; Sagar: Mohli tank (500 m), *Balakrishnan* 11510.

Schoenefeldia gracilis Kunth

Annual. Fruiting. Scarce. Shivpuri: National Park near lake, 6059.

Schizachyrium brevifolium (Sw.) Nees ex Büse

Annual. On plantation hillocks. Occasional. Sidhi: Jiawan, 5405.

S. exile (Hochst.) Stapf

Annual. On plantation hillock. Fruiting. Occasional. Sidhi: Jiawan, 5402.

Setaria glauca (Linn.) P. Beauv.

Annual. Fruiting. Common. Bastar: Sukma, *Jain* 5230; Balaghat: Balaghat, *Jain* 5282; Indore: Mhow, *Arora* 5517; Sidhi: Gandhigram, 5562; Dhar: Sardarpur, *Arora* 5867; Bilaspur: Katghora, *Arora* 7115.

S. homonyma (Steud.) Chiov.

Annual. Fruiting. Scarce. Hoshangabad: Mahadeo-Pachmarhi, 6601.

S. italica (Linn.) P. Beauv.

Annual. In cultivated field. Fruiting. Scarce. Indore: Mandu, *Arora* 5974.

S. pallide-fusca (Schumach.) Stapf et C. E. Hubb.

Annual. Along river banks, nalas, streams, on rocky slopes and in cultivated fields, sometimes associated with *Themeda* sp. and *Imperata cylin-*

drica. Fairly abundant. Sidhi: Majhouli, 2367; Surguja: Pratappur, *Arora* 3921; Hoshangabad: Pachmarhi (1300 m), 4499; Bori, 6294; Indore: Mhow, *Arora* 5537; Bastar: Bailadilla, 6863; Mandala: Mandala, *Joseph* 12278.

S. tomentosa (Roxb.) Kunth

Annual. Common. Hoshangabad: Pachmarhi, 4600; Indore: Mhow, *Arora* 5518; Sidhi: Jiawan, 5661.

S. verticillata (Linn.) P. Beauv.

Annual. Along river banks, near cultivated fields and in waste places. Fruiting. Common. Gwalior: Phoolbagh, *Arora* 54; Morena: Kunoo river bank, 5879; Dhar: *Arora* 5925.

Sehima nervosum (Rottl.) Stapf

Perennial. Near nalas, on plantation hillocks and rocky slopes. Common. Ratlam: Raoti Block, *Arora* 5685; Sidhi: Jiawan, 5699; Dhar: Sardarpur, *Arora* 5852; Morena: Khadi, 5999.

S. sulcatum (Hack.) A. Camus

Fruiting. Scarce. Shivpuri-Agra Road crossing, Rao 79371.

Sorghum deccanense Stapf

Flowering. Scarce. Indore: Mandu, *Arora* 5972.

S. halepense (Linn.) Pers.

Perennial. Along river bank and nalas. Fruiting. Common. Gwalior: Phoolbagh, *Arora* 59; Morena: Khadi, 6005; Sagar: Rahatgarh (475 m), *Balakrishnan* 11493.

S. miliaceum (Roxb.) Snowden

Perennial. In sugarcane field. Fruiting. Common. Morena: Rampahari, 5867; Dhar: *Arora* 5898; Hoshangabad: Banglapur, *Joseph* 11182.

S. nitidum (Vahl) Pers.

Perennial. Near nala. Fruiting. Scarce. Hoshangabad: Bori, 6452.

Spodiopogon rhizophorus (Steud.) Pilger

On slope. Fruiting. Scarce. Indore: Mandu, *Arora* 5947.

Sporobolus capillaris Miq.

Annual. In wheat field. Fruiting. Scarce. Bastar: Amarpatan, 6726.

S. diander (Retz.) P. Beauv.

In black alluvial soil. Flowering. Occasional. Betul: Bhaisadehi, 4370.

S. fertilis (Steud.) W. D. Clayton

On rocky substratum. Fruiting. Scarce. Bilaspur: Sonkari, 8911.

Sporobolus tenuissimus (Schrunk) O. Ktze.

In sandy alluvial soil. Flowering. Occasional. Hoshangabad: Pachmarhi (1300 m), 4495; Sagar: Rahatgarh-Bina river bank (475 m), *Balakrishnan* 11479.

S. tetragonus Bor

Annual. Fruiting. Scarce. Sidhi: Gandhigram, 5610.

Tetrapogon tenellus (Roxb.) Chiov.

Annual. Fruiting. Scarce. Indore: Mhow, *Arora* 5609.

Thelepogon elegans Roth ex Roem. et Schult.

Annual. Near water. Occasional. Ratlam: Amrit sagar lake, *Arora* 5653.

Themeda triandra Forsk.

Perennial. Along roadsides, dried-up nalas, on hill slopes and in plains. Abundant. Surguja: Pratappur, *Jain* 5141; Hoshangabad: Bori, 6469; Bastar: Bailadilla, 6880; Raigarh: Dharmjaigarh, *Arora* 7215; Mandla: Dindori, 8567.

Thysanolaena maxima (Roxb.) O. Ktze.

Perennial. Along dried-up stream on rocky slope. Fruiting. Common. Raigarh: Dharmjaigarh, 8770.

Tragus biflorus Schult.

Annual. On hilly tracts. Flowering. Scarce. Indore: Mhow, *Arora* 5611.

Tripogon jacquemontii Stapf

On hill slopes and near river bank. Fruiting. Common. Betul: Bhaishadehi 4367; Indore: Mhow, *Arora* 5559; Sagar: Rahatgarh (475 m), *Balakrishnan* 11477.

Triticum aestivum Linn.

Cultivated. Flowering. Hoshangabad: Bori, 6386.

Urochloa panicoides P. Beauv.

Annual. On slopes and in cultivated fields. Common. Sidhi: Majhouli, 2363; Dhar: Sardarpur, *Arora* 5862; Morena: Kunoo river bank, 5974.

Vetiveria lawsonii (Hook. f.) Blatt. et McCann

Perennial. Fruiting. Scarce. Sagar: near Bhalkunda falls (500 m), *Balakrishnan* 11466.

V. zizanioides (Linn.) Nash

Perennial. In marshy places. Fairly abundant. Gwalior: Phoolbagh, *Arora* 60; Bastar: Kutumsar, 1179; Rewa: Allahabad-Rewa road, 5428; Raigarh: Kunkuri, 7312; Sagar: Hirapur R. F. (425 m).

Zea mays Linn.

Cultivated. Sidhi: Majhouli-Bastua roadside, 2356; Indore: Mhow, *Arora* 5545.

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