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SUPPLEMENT TO THE SYNOPTIC FLORA OF KOTA DIVISION (S. E. RAJASTHAN) — III

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ABSTRACT

The present paper includes the third supplementary list of 55 indigenous species belonging to 34 genera and two families *viz.* Cyperaceae and Poaceae, in continuation of earlier published works on the vegetation of Kota division. The specific names are followed by their important synonyms and/or field numbers, affinities with allied taxa, frequency and abundance in the area, exact locality of occurrence and flowering and fruiting period.

INTRODUCTION

Based on the extensive botanical explorations undertaken in the Kota division by the senior author for his Ph. D. Thesis, Maheshwari and Singh (1976) & Singh and Pandey (1981) published the supplements to the first and second parts of Majumdar's (1971, 1976) "Synoptic Flora of Kota Division" The third part of the "Synoptic Flora of Kota Division", which includes Cyperaceae and Poaceae, has recently been published by Majumdar (1982). Further, an account of the grasses of Jhalawar district which also falls in the Kota division has been given by Shringi (1981). The present paper which, it is hoped, will contribute to a better understanding of the flora of the region, deals with 55 species belonging to 34 genera of Cyperaceae and Poaceae not included by Majumdar (1982) and Shringi (*l. c.*). The taxa not included by Majumdar (1982) but recorded by Shringi (*l. c.*) have also been omitted from the present paper.

The herbarium specimens have been collected by the first author and deposited in the herbarium of the National Botanical Research Institute, Lucknow (LWG). In the Enumeration, the specific names are followed by the field numbers in parenthesis.

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ENUMERATION

CYPERACEAE

Carex cruciata Wehlenb. (74091)

Very close to *Carex filicina* Nees, but can be distinguished by its glumes being shorter than utricles. Occasionally found in low-lying areas in marshy habitats.

Fl. & Fr. : Sept.-Jan.

C. heterostachya Bunge (91075)

Occasionally found along the banks of rivers and ponds near Sitabari (Kota).

Fl. & Fr. : Oct.-April.

Cyperus compactus Retz. (90612)

According to Retzius (1789) this taxon was introduced in India from China, while the view of Haines (1924) was just the reverse. Occasionally found in rice-fields, particularly near Kota.

Fl. & Fr. : Aug.-Nov.

C. digitatus Roxb. (74474)

Very close to *C. exaltatus* Retz., but can be distinguished by its long, narrow and linear spikelets. Common on the banks of rivers in semi-aquatic habitats ; abundant near Chhabra.

Fl. & Fr. : Aug.-Nov.

C. kyllingia Endl. (90220, 90560)

Very close to *C. brevifolius* (Rottb.) Hassk., but can be distinguished by the upper part of the keel of the fruiting glumes being furnished with a ring or crest with

scattered small red glands and by its scented rhizomes. Common in wet and marshy habitats, particularly near Bara-bagh (Kota) and Devari.

Fl. & Fr. : July-Nov.

Cyperus platystylis R. Br. (90843)

Rare ; in marshy and aquatic habitats. Only few plants were seen near Kelwara village.

Fl. & Fr. : April-Dec.

C. tenuispica Steud. (90170)

Common in marshy and aquatic habitats. White nuts are visible between the opened glumes in fruiting spikelets.

Fl. & Fr. : April-Dec.

C. uncinatus Poir. (83929)

Rare ; on the margins of ponds and ditches near Manoharthana (Jhalawar). It can be easily distinguished by its long awns and obovoid nuts.

Fl. & Fr. : Aug.-Nov.

Eleocharis palustris (L.) R. Br. (syn. *Scirpus palustris* L. ; 74785)

Occasionally found in marshy habitats, chiefly in rice fields and on the banks of tanks near Atru (Kota).

Fl. & Fr. : Dec.-April.

Fimbristylis aestivalis (Retz.) Vahl (90632, 90910)

Very close to *F. quinquangularis* Kunth, but can be distinguished by its pubescent or hairy leaves with incurved margins. Abundant near Chhabra (Kota) and Nenva (Bundi) in aquatic and marshy habitats.

Fl. & Fr. : Oct.-March.

F. falcata (Vahl) Kunth (syn. *Scirpus falcata* Vahl ; 74764)

Rare ; found in aquatic and marshy habitats ; abundant in rice fields near Kelwara (Kota).

Fl. & Fr. : July-Sept.

F. ovata (Burm. f.) Kern (syn. *Carex ovata* Burm. f. ; 83930)

Common in marshlands and moist localities near Manoharthana (Jhalawar).

Fl. & Fr. ; Aug.-Oct.

Fuirena wallichiana Kunth (83763)

Easily distinguished from *F. ciliaris* (L.) Roxb. by its glabrous, eciliate leaves with dorsally produced midrib. Rare ; found in marshlands near Jhalarapatan.

Fl. & Fr. : Sept.-Jan.

Pycreus diaphanus (R. & S.) S. Hooper & Koyama (syn. *Cyperus diaphanus* R. & S. ; 83764)

Restricted to the sandy beds of Kali Sind river near Jhalarapatan ; found associated with *C. rotundus* L. and some grasses. The inflorescence is very beautiful.

Fl. & Fr. : Aug.-Nov.

Rikliella squarosa (L.) J. Raynal (syn. *Scirpus squarrosa* L. ; 83708)

Very similar to *Fuirena uncinata* (Willd.) Kunth, but can be distinguished by its glabrous glumes having long linear awns. Occasionally found in open wastelands in wet habitats near Atru.

Fl. & Fr. : Aug.-Dec.

Scirpus roylei (Nees) Parker (syn *Isolepis roylei* Nees ; 90181)

Easily distinguished from the allied taxa by its compressed spikelets. Common in marshlands, rice-fields and around the ponds.

Fl. & Fr. : Sept.-Nov.

S. supinus L. (74465, 90178)

Often confused for *Cyperus laevigatus* L., but can be distinguished by its pale-brown spikelets and keeled glumes. Common throughout the area in aquatic and marshy habitats.

Fl. & Fr. : Throughout the year.

POACEAE (GRAMINEAE)

Aristida depressa Retz. (90503)

Abundant in rocky plains around Kota ; recommended for soil conservation by the State forest department.

Fl. & Fr. : Aug.-Oct.

A. hystricula Edgew. (83756)

Common in wastelands near Atru. It is a good soil binder.

Fl. & Fr. : Aug.-Oct.

Aristida hystrix L. f. (74457)
Common in sandy soils near Manoharthana. It is also a good soil binder.
Fl. & Fr. : Aug.-April.

Arthraxon hispidus (Thunb.) Makino (syn. *Phalaris hispida* Thunb. ; 74608)
Rare ; found on the hills near Darah (Kota) in rocky habitats.
Fl. & Fr. : Aug.-Oct.

Bothriochloa kuntzeana (Hack.) Henr. (syn. *Andropogon kuntzeana* Hack. ; 74671)
Rare ; found in the campus of Soil Conservation Research and Training Centre, Kota. Perhaps, incidentally introduced with other grasses.
Fl. & Fr. : Aug.-Dec.

Brachiaria decumbens Stapf (74034)
Very close to *B. burmanica* Bor, which, however, has rugose upper lemmas. Native of Tropical Africa ; commonly found in sandy soils near Bundi.
Fl. & Fr. : Aug.-May.

B. setigera (Retz.) C. E. Hubb. (syn. *Panicum setigerum* Retz. ; 74834)
Common in wet and shady habitats on the hills at low elevation, particularly near Darah.
Fl. & Fr. : Aug.-Nov.

B. villosa (Lam.) A. Camus (syn. *Panicum villosum* Lam. ; 74831, 74875)
Occasionally found in shady localities from plains to the hills ; abundant near Darah (Kota).
Fl. & Fr. : Aug.-Nov.

Calamagrostis pseudophragmites (Hall. f.) Koeler (syn. *Arundo pseudophragmites* Hall. f. ; 90138)
Superficially resembles *Dinebra retroflexa* (Vahl) Fanz. ex Denkschr. Occasionally found in rocky habitats near Kota.
Fl. & Fr. : Aug.-Nov.

Cenchrus pennisetiformis Hochst. & Steud. ex Steud. (74634)
Very close to *Cenchrus setigerus* Vahl, which has, however, rigid, subulate inner bristles and few or no outer bristles. Found in sandy soils in association with *C. ciliaris* L.
Fl. & Fr. : Major part of the year.

Chloris barbata Sw. (83629)
Occasionally found in plains in rocky as well as sandy habitats near Bundi.
Fl. & Fr. : Aug.-Nov.

Chrysopogon aciculatus (Retz.) Trin. (syn. *Andropogon aciculatus* Retz. ; 74482)
The grains become attached to the clothes, hairs etc. by their sharp basal callus and small awns. The plants persist by their rhizomes. Common in wastelands.
Fl. & Fr. : Aug.-Oct.

Digitaria biformis Willd. (*Wadhwa* 7674 CAL)
This species has been included on the authority of Majumdar (1969) and the specimens cited above.
Fl. & Fr. : Aug.-Nov.

D. cruciata (Nees ex Steud.) A. Camus (syn. *Panicum crusiatum* Nees ex Steud. ; 90700)
Occasionally found in shady localities in the gardens, forests etc.
Fl. & Fr. : Aug.-Oct.

D. granularis (Trin. ex Spreng.) Henr. (syn. *Paspalum granulare* Trin. ex Spreng. ; *Wadhwa* 5335 CAL)
This species has been included on the authority of Majumdar (1969) and the specimens cited.
Fl. & Fr. : Sept.-Nov.

Dimeria connivens Hack. (43741)
Often confused for *Dichanthium* or *Bothriochloa* species. Occasionally found in the grasslands on the outskirts of forests, particularly near Atru (Kota).
Fl. & Fr. : Aug.-Nov.

Eragrostis coarctata Stapf (90137)
Superficially resembles *E. ciliata* Nees. Common in pastures and gardens.
Fl. & Fr. : July-Feb.

E. curvula (Schrad.) Nees (syn. *Poa curvula* Schrad. ; 74466)
Native of South Africa ; imperfectly naturalised in dry wastelands.
Fl. & Fr. : Aug.-Dec.

Eragrostis papposa (Duf.) Steud. (syn. *Poa papposa* Duf. ; 83633)

The young parts of culms and glumes are tinged with purple. Occasionally found in sandy and rocky habitats, particularly near Nenwa (Bundi).

Fl. & Fr. : June-Aug.

E. viscosa (Retz.) Trin. (syn. *Poa viscosa* Retz. ; 90938)

Rare ; collected from the rocky grounds near Chhabra (Kota). According to Haines (1924) the plant has a distinct smell and is disliked by cattle. But the plants collected by the authors were very dwarf and browsed by animals.

Fl. & Fr. : Aug.-Nov.

Erianthus bengalensis (Retz.) Back. f. (syn. *Saccharum bengalensis* Retz. ; 90139)

Rare ; collected from the beds of Chambal river at Kota-Dam.

Fl. & Fr. : Oct.-Dec.

Eriochloa procera (Retz.) C. E. Hubb. (syn. *Agrostis procera* Retz. ; *Verma* 744 CAL)

This species has been included on the authority of Verma (1965) and the specimens cited. Common on black loam soils.

Fl. & Fr. : Aug.-Dec.

Elytrophorus spicatus (Willd.) A. Camus (syn. *Dactylis spicata* Willd. ; 83772)

Easily distinguished by its characteristic inflorescence. Often found on the drying margins of ponds, particularly near Atru.

Fl. & Fr. : Oct.-Jan.

Hygrorhiza aristata (Retz.) Nees ex Wt. & Arn. (syn. *Pharus aristata* Retz. ; 90831)

Rare ; found in the tanks and ponds in association with other aquatic weeds e.g. species of *Ceratopteris, Utricularia, Nymphaea, Nymphoides* etc.

Fl. & Fr. : Oct.-Nov.

Hymenachne pseudointerrupta C. Muell. (91099)

Very close to *Panicum paludosum* Roxb., but can be distinguished by its contracted spikes. Rare ; found in wet and aquatic habitats near Kelwara.

Fl. & Fr. : Aug.-Oct.

Imperata cylindrica (L.) P. Beauv. (syn. *Lagurus cylindricus* L. ; 91061)

Abundant in wastelands, lawns, neglected corners of fields, along roads, railway-lines etc.

Fl. & Fr. : April-June.

Leptochloa panicea (Retz.) Ohwi (syn. *Poa panicea* Retz. ; 74682)

Common in wastelands in moist habitats, rice-fields etc.

Fl. & Fr. : Aug.-Oct.

Oryzopsis aequiglumis Duthie (90520)

Rare ; found in ponds, ditches etc. along the roads near Kota in aquatic habitats.

Fl. & Fr. : Oct.-Feb.

Panicum antidotale Retz. (74747, 90631)

Rather common in sandy soils, particularly on river beds near Talera (Bundi) and Chhabra (Kota).

Fl. & Fr. : Feb.-Aug.

P. walense Mez. (syn. *P. austroasiaticum* Ohwi ; *Verma* 776 CAL)

This species has been included on the authority of Verma (1965) and the specimens cited. Abundant in open fields along Kishanganj-Kapindhara road (Kota).

Fl. & Fr. : Aug.-Oct.

P. paludosum Roxb. (83606, 91058)

Closely resembles *P. repens* L. which, however, does not possess spongy culms. Occasionally found in aquatic habitats, abundant near Hindoli (Bundi) and Kelwara (Kota).

Fl. & Fr. : Oct.-May.

Pennisetum orientale L. C. Rich. (83657)

Superficially resembles *Cenchrus ciliaris* L. Common in wastelands, particularly among bushes near Manoharthana (Jhalawar).

Fl. & Fr. : July-Oct.

P. polystachyon (L.) Schult. (syn. *Panicum polystachyon* L. ; 74556, 83778, 90153)

Native of tropics of old world. Common in wastelands in dry habitats near Manoharthana (Jhalawar), Atru (Kota) and Kota-Dam (Bundi).

Fl. & Fr. : Major part of the year.

Perotis indica (L.) O. Ktze. (syn. *Anthoxanthum indicum* L. ; 83624)

Common in wastelands in association with *Aristida* species.

Fl. & Fr. : Aug.-Oct.

Poa annua L. (74782)

Normally, it is an annual grass, but often behaves like perennials in favourable habitats. Common in wet and shady habitats, particularly in lawns, gardens, near canals etc.

Fl. & Fr. : Dec.-March.

Sorghum purpureo-sericeum (Hochst. ex A. Rich.) Aschers & Schweinf. (syn. *Andropogon purpureo-sericeum* Hochst. ex A. Rich.; 83684)

It is a drought resistant species. Rare ; found at the foot of hills near Eklera (Jhalawar).

Fl. & Fr. : Aug.-Oct.

Sporobolus wallichii Munro ex Trin. (74868, 83890, 90585)

Very close to *S. diander* (Retz.) P. Beauv. which, however, has smaller grains (0.6 × 0.4-0.5 mm). Common throughout the area in sandy and alkaline soils or often in the crevices of rocks.

Fl. & Fr. : Aug.-Dec.

Themeda laxa (Anders.) A. Camus (syn. *Antistiria laxa* Anders. ; *Verma* 706, 754 CAL)

This taxon has been included on the basis of specimens cited. Fairly common in black-loam soils along Kishanganj-Puraniya road (Kota).

Fl. & Fr. : Sept.-Nov.

REFERENCES

HAINES, H. H. The Botany of Bihar and Orissa, Part 5-6. London. 1924.

MAHESHWARI, J. K. AND V. SINGH. Supplement to the Synoptic Flora of Kota division (S. E. Rajasthan). *Bull. bot. Surv. India* 18 : 155-160. 1976.

MAJUMDAR, R. B. Synoptic Flora of Kota division (S. E. Rajasthan). *Ibid.* 13 : 105-146. 1971.

—— Synoptic Flora of Kota division (S. E. Rajasthan) —II. *Ibid.* 18 : 49-79. 1976.

—— Synoptic Flora of Kota division (S. E. Rajasthan) —III. *Ibid.* 22 : 24-44. 1982.

SHRINGI, O. P. Botany of Jhalawar district, Rajasthan. *Journ. Econ. Tax. Bot.* 2 : 85-105. 1981.

SINGH, V. AND R. P. PANDEY. Supplement to the Synoptic Flora of Kota division (S. E. Rajasthan)—II. *Bull. bot. Surv. India* 21 : 91-96. 1981.