



RESEARCH ARTICLE

Nomenclatural updates in the sedge flora of western Uttar Pradesh

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Abstract

Establishing all plant's correct identity and nomenclature is crucial in the current context. Therefore, an updated list and nomenclature status of sedges of western Uttar Pradesh, India has been provided in this article. This research paper incorporates extensive consultation of taxonomic databases, examination of type specimens and scrutiny of published works, including Ph.D. thesis, research papers, books, and floras. To ensure the accuracy of binomial nomenclature, a systematic approach is adopted, starting with the utilization of search engines to cross-verify and validate taxonomic information. This includes a rigorous examination of online databases and repositories to access up-to-date information on botanical nomenclature. This paper aims to provide accepted binomials with correct author citations of the sedges growing in western Uttar Pradesh because several names in the published literature are not accepted now. Such publications include several synonyms as accepted name, as well as mistakes in authority. A pivotal aspect of this work involves the verification of binomial identities through the examination of protologues and type specimens. Keeping this in mind, a comprehensive study for solving and updating nomenclature issues has been carried out using different databases, websites and recent publications. We updated the nomenclature of all sedges of western Uttar Pradesh included in publications after 1959. Review of literature and field studies shows that western Uttar Pradesh includes a total of 91 species belonging to 14 genera published in 18 publications. In this study, 25 names of past publications were corrected. This is the first report on updated name changes in the floristic component of western Uttar Pradesh, where 41 names of sedges have been updated. This research paper covers the accepted name, synonym, taxonomic treatment, and typification.

Keywords

Nomenclature; taxonomic databases; type; Cyperaceae; sedges

Introduction

Cyperaceae (sedge family) comprises 5500 species under 100 genera (1). In India, the family is represented by 32 genera and 610 taxa (553 species, 24 subspecies, and 33 varieties) (2). Taxonomically, sedges are different from grasses. The stem of sedges is not divided into nodes and internodes and it is triangular in cross-section, whereas in the grasses, the stem is divided into visible nodes and internodes and it is circular in cross-section. A large number of worker did floristic work in different part of India including Bhopal (3); Delhi (4); Gorakhpur (5); Himachal Pradesh (6, 7); India (8); Indian desert (9); Jharkhand (10); Madras (11); Madhya Pradesh (12); Maharashtra (13); Presidency of Bombay (14); Rajasthan (15); Simla (16); Tamilnadu (17); Telangana (18); Upper Gangetic plain (19, 20); Uttarakhand (21, 22); Uttar Pradesh (23-26); Union territory (27); Achanakmar-Amarkantak biosphere reserve, Chhattisgarh & Madhya Pradesh (28). In the United States and Canada (29) did comprehensive work on

Cyperaceae across the world (1). The flora of western Uttar Pradesh, including sedges, has been studied by several workers (30-48). Name changes of common Indian plants have been published by several Indian workers (49-55). Since then, several of the binomials of the sedges have changed and there is no single document that includes all updated name changes. In this way, much confusion exists with regard to the correct nomenclature of the plant's names published in several documents. Due to frequent changes in the binomial of several well-known taxa, scientists, research scholars and students face considerable difficulties in the usage of correct and accepted binomial. Several papers have been published in which plants have been enumerated with their synonym instead of correct names (30-32, 35, 38). Besides, some publications mention the name *Cyperus* spp. (46) without any reference to the herbarium sheet. Such publications create confusion. This is why the authors came up with the idea to publish a revision and update of binomials listed in the publication of western Uttar Pradesh. This will be the first report on updated name changes of sedges in the floristic component of western Uttar Pradesh. This document covers the accepted name, synonym, taxonomic treatment, and typification.

In this study, we have observed that there are a total of 91 sedges (Table 1) in the study area. Of these, 41 names have been changed (Table 2). In this study, the currently valid name has been given first, followed by basionym & synonym. Accepted names are given in bold. Besides, for the sake of convenience and easy reference, the names of taxa have been arranged alphabetically. Review of the literature reveals that

in western Uttar Pradesh, there is no comprehensive report on sedges after 1959 and 1961, except for publication on the Terai region of Uttar Pradesh (44). In the present paper, 91 sedges have been enumerated with updated nomenclature published after 1959. Of these, 25 generic and specific epithets, along with author citations, have changed (Table 3). Such names need corrections. This study has been carried out in western Uttar Pradesh, covering ten districts (Fig. 1).

Materials and Methods

Research work and Ph.D. thesis (34, 48) related to sedges were downloaded using search engines like Google Chrome and Shodhganga and the descriptions and names of all the published and unpublished taxa were studied from the journals. Several research papers published for the sedges of western Uttar Pradesh were also studied (30-48). A list of the plants was prepared from the published literature. The nomenclature of all the taxa was studied with the help of POWO (<https://powo.science.kew.org/>), IPNI (<https://www.ipni.org/>), BHL (<https://www.biodiversitylibrary.org/>), world flora online (<https://www.worldfloraonline.org/>), Tropicos (<https://www.tropicos.org/home>) and Kew name matching service (<http://namematch.science.kew.org/>). Protologue of all the names and types of specimens for the same were also studied and examined. A table of accepted names for the nomenclature changes was prepared, and accepted names have been kept in place of synonyms. Type specimens and address of protologue for all the names of the sedges have been checked with the help of published literature and databases such as BHL, Tropicos, etc.

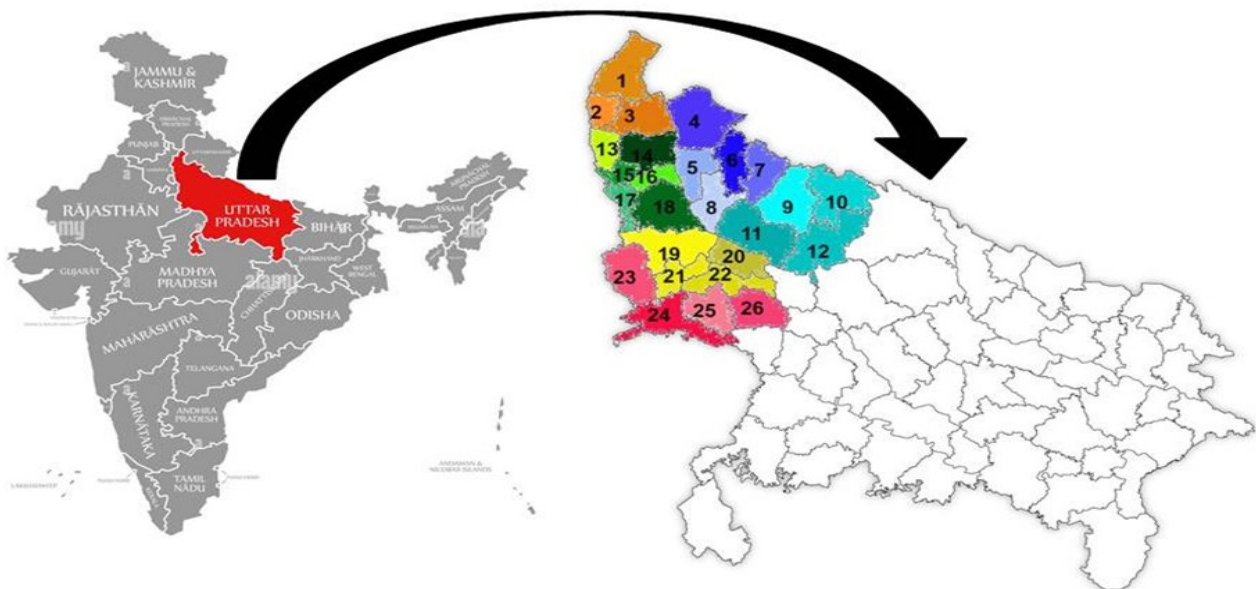


Fig. 1. Map showing study area in which numbers (1-26) represent various districts of western Uttar Pradesh such as 1 (Saharanpur); 2 (Shamli); 3 (Muzaffarnagar); 4 (Bijnor); 5 (Amroha); 6 (Moradabad); 7 (Rampur); 8 (Sambhal); 9 (Bareilly); 10 (Pilibhit); 11 (Badaun); 12 (Shahjahanpur); 13 (Baghpat); 14 (Meerut); 15 (Ghaziabad); 16 (Hapur); 17 (Gautambudhnagar); 18 (Bulandshahr); 19 (Aligarh); 20 (Kasganj); 21 (Hathras); 22 (Etah); 23 (Mathura); 24 (Agra); 25 (Firozabad); 26 (Mainpuri).

Table 1. Sedges diversity of western Uttar Pradesh.

Sl. No.	Accepted name	Synonym/Name in literature	Habitat & status	Distribution in study area	Reference
1	<i>Abildgaardia ovata</i> (Burm.f.) Kral	<i>Fimbristylis monostachya</i> Hassk.; <i>Fimbristylis ovata</i> (Burm. f.) Kern*	Moist land	Meerut; Pilibhit; Rampur; Saharanpur	(30-32, 34*, 44*, 48*)
2	<i>Actinoscirpus grossus</i> (L.f.) Goetgh. & D.A.Simpson	<i>Scirpus grossus</i> L.	Moist land	Gautambudhnagar	(39)
3	<i>Bolboschoenus glaucus</i> (Lam.) S.G.Sm.	<i>Bolboschoenus glaucus</i> (Lam.) S. G. Sm; <i>Scirpus tuberosus</i> Desf. *	Common near water bodies	Baghpat; Gautambudhnagar; Rampur	(37*; 39*, 48)
4	<i>Bolboschoenus maritimus</i> subsp. <i>affinis</i> (Roth) T.Koyama	<i>Bolboschoenus maritimus</i> (L.) Palla subsp. <i>affinis</i> (Roth) T.Koyama; <i>Scirpus affinis</i> Roth.*	Common in moist places	Baghpat; Gautambudhnagar; Meerut;Pilibhit; Rampur	(32*, 37*, 39*, 44, 48)
5	<i>Bolboschoenus maritimus</i> (L.) Palla	<i>Bolboschoenus maritimus</i> (L.) Palla; <i>Bolboschoenus maritimus</i> (L.) Palla Var. <i>maritimus</i> *; <i>Scirpus maritimus</i> L.*; <i>Bolboschoenus maritimus</i> (L.) Palla subsp. <i>maritimus</i> ***	Common in moist places	Gautambudhnagar; Meerut; Moradabad; Pilibhit	(31**, 32**, 34*, 42, 44***)
6	<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke	<i>Bulbostylis barbata</i> (Rottb.) Clarke	Cultivated land	Gautambudhnagar; Meerut; Muzaffarnagar; Pilibhit; Rampur; Saharanpur	(34, 38, 39, 44, 48)
7	<i>Bulbostylis densa</i> (Wall.) Hand.-Mazz.	<i>Bulbostylis densa</i> (Wall.) Hand.-Mazz.	Moist places	Saharanpur	(44)
8	<i>Carex cruciata</i> Wahlenb.	<i>Carex cruciata</i> Wahlenb.	Moist shady places	Saharanpur	(44)
9	<i>Carex dimorpholepis</i> Steud.	<i>Carex cernua</i> Bott.; <i>Carex dimorpholepis</i> Steud.*	Common in marshes and near water streams	Meerut	(31-32, 34*)
10	<i>Carex fedia</i> Nees	<i>Carex fedia</i> Nees; <i>Carex fedia</i> Nees ex Wight*	Common in moist places	Baghpat; Gautambudhnagar; Meerut; Muzaffarnagar; Pilibhit; Rampur; Saharanpur	(31-32, 34*, 37, 38, 39, 42, 44, 48)
11	<i>Carex myosurus</i> Nees	<i>Carex myosurus</i> Nees	Moist shady places	Saharanpur	(44)
12	<i>Carex wallichiana</i> Spreng.	<i>Carex wallichiana</i> Spreng.	In marshy places	Bijnor; Gautambudhnagar; Pilibhit; Saharanpur	(39, 44)
13	<i>Cyperus amabilis</i> Vahl	<i>Cyperus amabilis</i> Vahl	Paddy fields & Marshy places	Meerut	(30, 32, 34)
14	<i>Cyperus alopecuroides</i> Rottb.	<i>Cyperus alopecuroides</i> Rottb.; <i>Juncellus alopecuroides</i> C. B. Clarke.*	Common in Marshy places	Gautambudhnagar; Meerut; Muzaffarnagar	(31-32, 34, 38, 39, 42)
15	<i>Cyperus alulatus</i> J.Kern	<i>Cyperus alulatus</i> J.Kern	Frequent, near ponds and lakes	Gautambudhnagar; Meerut; Muzaffarnagar; Pilibhit; Saharanpur	(31, 34, 38, 42, 44)
16	<i>Cyperus articulatus</i> L.	<i>Cyperus articulatus</i> L.	Common	Baghpat; Muzaffarnagar	(35, 37)
17	<i>Cyperus atkinsonii</i> C. B. Clarke	<i>Cyperus atkinsonii</i> C. B. Clarke	Common	Baghpat	(37)
18	<i>Cyperus brevifolius</i> (Rottb.) Hassk.	<i>Kyllinga brevifolia</i> Rottb.	Common in paddy fields	Baghpat; Bijnor; Meerut; Pilibhit; Rampur	(34, 37, 44, 48)
19	<i>Cyperus bulbosus</i> Vahl	<i>Cyperus bulbosus</i> Vahl	Common	Baghpat	(37)
20	<i>Cyperus squarrosus</i> L.	<i>Cyperus aristatus</i> Rottb.; <i>Cyperus squarrosus</i> L.*; <i>Mariscus squarrosus</i> (L.) Clarke**	Sandy places; Marshy places; Roadsides	Meerut; Moradabad	(32, 34**, 44*)
21	<i>Cyperus alternifolius</i> L.	<i>Cyperus alternifolius</i> L.	Moist places	Rampur	(48)
22	<i>Cyperus alternifolius</i> subsp. <i>flabelliformis</i> Kük.	<i>Cyperus flabelliformis</i> Rottb.; <i>Cyperus involucreatus</i> Rottb.*	—	Gautambudhnagar; Saharanpur	(39, 44*)
23	<i>Cyperus compactus</i> Retz.	<i>Cyperus compactus</i> Retz.; <i>Mariscus compactus</i> (Retz.) Bold.*; <i>Mariscus dilutus</i> Nees**	Moist places	Meerut; Pilibhit; Saharanpur	(30**, 32**, 34*, 44)
24	<i>Cyperus compressus</i> L.	<i>Cyperus compressus</i> L.	Common in moist waste places & sandy soils	Baghpat; Gautambudhnagar; Meerut; Muzaffarnagar; Pilibhit; Rampur; Saharanpur	(30, 37, 38, 42, 44, 48)
25	<i>Cyperus corymbosus</i> Rottb.	<i>Cyperus corymbosus</i> Rottb.	Common	Baghpat; Muzaffarnagar	(37-38)
26	<i>Cyperus cuspidatus</i> Kunth	<i>Cyperus cuspidatus</i> Kunth; <i>Cyperus uncinatus</i> Poir.*	Common in moist soil	Baghpat; Saharanpur	(37*, 44)
27	<i>Cyperus cyperoides</i> (L.) Kuntze	<i>Cyperus cyperoides</i> (L.) Kuntze; <i>Mariscus sumatrensis</i> (Retz.) J. Raynal*	Common in Roadsides	Meerut; Muzaffarnagar; Saharanpur	(34*, 38, 44)
28	<i>Cyperus difformis</i> L.	<i>Cyperus difformis</i> L.	Common in paddy fields	Baghpat; Gautambudhnagar; Meerut; Moradabad; Muzaffarnagar; Pilibhit; Rampur; Saharanpur	(32, 33, 34, 37, 38, 42, 44, 48)
29	<i>Cyperus digitatus</i> Roxb.	<i>Cyperus digitatus</i> Roxb.	Frequent in Paddy fields	Meerut; Pilibhit; Saharanpur	(31-32, 44)
30	<i>Cyperus distans</i> L.f.	<i>Cyperus distans</i> L.f.	Frequent, Wet agriculture field and roadsides	Bijnor; Meerut; Pilibhit; Rampur	(31, 32, 34, 44, 48)

31	Cyperus dubius Rottb.	<i>Cyperus dubius</i> Rottb.; <i>Kyllinga triceps</i> Rottb.*	Waste and Moist places; Grassy and shady places	Bijnor; Meerut; Rampur	(32*, 44, 48)
32	Cyperus dives Delile	<i>Cyperus exaltatus</i> Retz. var. <i>dives</i> (Del.) Clarke	Marshy places and near water bodies.	Meerut	(34)
33	Cyperus esculentus L.	<i>Cyperus esculentus</i> L.	—		(33)
34	Cyperus exaltatus Retz.	<i>Cyperus exaltatus</i> Retz.	Common in Ponds	Bijnor; Meerut; Pilibhit	(30-32, 44)
35	Cyperus flavidus Retz.	<i>Pycrus flavidus</i> (Retz.) T.Koyama; <i>Pycrus flavidus</i> (Retz.) Koyama var. <i>flavidus</i>	Common	Bijnor; Gautambudhnagar; Meerut; Pilibhit; Saharanpur	(34, 42, 44)
36	Cyperus haspan L.	<i>Cyperus haspan</i> L.	Paddy field and moist places	Pilibhit	(44)
37	Cyperus iria L.	<i>Cyperus iria</i> L.; <i>Cyperus iria</i> L. var. <i>iria</i> *	Common in paddy fields	Baghpat; Meerut; Pilibhit; Rampur; Saharanpur	(30, 32-34*, 37, 44, 48)
38	Cyperus laevigatus L.	<i>Cyperus laevigatus</i> L.; <i>Juncellus laevigatus</i> C. B. Clarke.*	Common	Baghpat; Gautambudhnagar; Meerut	(30*-32*, 34, 37, 42)
39	Cyperus michelianus subsp. <i>michelianus</i>	<i>Cyperus michelianus</i> (L.) Delile subsp. <i>michelianus</i>	Agriculture field	Moradabad	(44)
40	Cyperus michelianus subsp. <i>pygmaeus</i> (Rottb.) Asch. & Graebn. (Rottb.) Asch. & Graebn.	<i>Cyperus michelianus</i> (L.) Delile subsp. <i>pygmaeus</i> (Rottb.) Asch. & Graebn.; <i>Juncellus pygmaeus</i> C. B. Clarke.*; <i>Cyperus pygmaeus</i> Rottb.**	Shady places and river bank	Meerut; Muzaffarnagar; Pilibhit; Rampur; Saharanpur	(32*, 34, 38, 44, 48)
41	Cyperus mindorensis (Steud.) Huygh	<i>Kyllinga nemoralis</i> (J. R. & G. Forster) Dandy ex Hutch. & Dalz.	Rare	Bijnor; Meerut; Pilibhit; Saharanpur	(34, 44)
42	Cyperus neochinensis (Tang & F. T. Wang) Bauters	<i>Lipocarpha squarrosa</i>	Rare	Saharanpur	(44)
43	Cyperus niveus Retz.	<i>Cyperus niveus</i> Retz.	Commonly found in dry habitats	Baghpat; Meerut; Pilibhit	(32, 34, 37, 44)
44	Cyperus nutans Vahl	<i>Cyperus nutans</i> Vahl	Common in Marshy places	Baghpat; Muzaffarnagar; Pilibhit; Saharanpur	(37, 38, 44)
45	Cyperus nutans var. <i>eleusinoides</i> (Kunth) Haines	<i>Cyperus nutans</i> var. <i>eleusinoides</i> (Kunth) Haines	Marshy places	Meerut	(34)
46	Cyperus pangorei Rottb.	<i>Cyperus pangorei</i> Rottb.; <i>Cyperus tegetum</i> Roxb.*	Marshy places	Saharanpur	(33, 44)
47	Cyperus paniceus (Rottb.) Boeckeler	<i>Cyperus paniceus</i> (Rottb.) Boeck.; <i>Mariscus paniceus</i> (Rottb.) Vahl*; <i>Mariscus paniceus</i> Vahl Var. <i>roxburghianus</i> C. B. C.**	Grassy fields; Roadside	Meerut; Pilibhit; Saharanpur	(32**, 34*, 44)
48	Cyperus pilosus Vahl	<i>Cyperus pilosus</i> Vahl	Moist places	Pilibhit	(44)
49	Cyperus pumilus L.	<i>Pycrus pumilus</i> (L.) Nees; <i>Cyperus pumilus</i> L.**	Common in fields	Baghpat; Meerut; Pilibhit; Saharanpur	(34, 37, 44)
50	Cyperus procerus Rottb.	<i>Cyperus procerus</i> Rottb.	Marshy places	Meerut; Pilibhit; Saharanpur	(34, 44)
51	Cyperus richardii Steud.	<i>Kyllinga bulbosa</i> Beauv.	Roadsides	Meerut;	(34)
52	Cyperus rotundus L.	<i>Cyperus rotundus</i> L.	Common	Bijnor; Gautambudhnagar; Ghaziabad; Meerut; Moradabad; Pilibhit; Shahjahanpur, Budaun, Bareilly, Aligarh, Hanthras, Firozabad, Mainpuri, Mathura, Rampur, Jyotiba Phule Nagar, Baghpat, Muzaffarnagar, Saharanpur	(32-45, 48)
53	Cyperus sanguinolentus Vahl	<i>Pycrus sanguinolentus</i> (Vahl) Nees	Marshy places	Meerut; Pilibhit; Saharanpur	(34, 44)
54	Cyperus serotinus var. <i>inundatus</i> Kük.	<i>Juncellus inundatus</i> C. B. Clarke.	Common in marshy places	Meerut	(31*-32)
55	Cyperus sesquiflorus subsp. <i>cylindricus</i> (Nees) T.Koyama	<i>Kyllinga cylindrica</i> Nees; <i>Kyllinga odorata</i> subsp. <i>cylindrica</i> (Nees) T. Koyama*	Moist places	Meerut	(32, 34)
56	Cyperus silletensis Nees	<i>Cyperus silletensis</i> Nees	Roadsides	Pilibhit	(44)
57	Cyperus tenuispica Steud.	<i>Cyperus tenuispica</i> Steud.	Paddy fields and moist places	Meerut; Pilibhit; Saharanpur	(34, 44)
58	Cyperus tenuifolius (Steud.) Dandy	<i>Kyllinga tenuifolia</i> Steud.	Common	Baghpat	(37)
59	Eleocharis acutangula (Roxb.) Schult.	<i>Eleocharis acutangula</i> (Roxb.) Schult.	Marshy places	Meerut; Muzaffarnagar	(34-35)
60	Eleocharis atropurpurea (Retz.) J.Presl & C.Presl	<i>Eleocharis atropurpurea</i> (Retz.) J.Presl & C.Presl	Paddy fields and marshy places	Meerut; Pilibhit; Rampur; Saharanpur	(34, 44, 48)

61	<i>Eleocharis geniculata</i> (L.) Roem. & Schult.	<i>Eleocharis capitata</i> R. Br.	Common	Baghpat; Gautambudhnagar	(37, 39)
62	<i>Eleocharis congesta</i> D. Don	<i>Eleocharis congesta</i> D. Don	Paddy fields	Saharanpur	(44)
63	<i>Eleocharis dulcis</i> (Burm.f.) Trin. ex Hensch.	<i>Eleocharis dulcis</i> (Burm.f.) Trin. ex Hensch.	Paddy fields and marshy places	Gautambudhnagar; Meerut; Pilibhit; Saharanpur	(34, 42, 44)
64	<i>Eleocharis palustris</i> (L.) Roem. & Schult.	<i>Eleocharis palustris</i> (L.) Roem. & Schult.	Common in marshy places	Gautambudhnagar; Moradabad; Pilibhit; Saharanpur	(42, 44)
65	<i>Erioscirpus comosus</i> (Wall.) Palla	<i>Eriophorum comosum</i> (Wall.) Nees; <i>Scirpus comosus</i> Wall.*	Sandy places	Gautambudhnagar; Saharanpur	(39*, 44)
66	<i>Fimbristylis aestivalis</i> (Retz.) Vahl	<i>Fimbristylis aestivalis</i> Vahl; <i>Fimbristylis aestivalis</i> (Retz.) Vahl*	Damp soil and Rare	Gautambudhnagar; Meerut	(32, 34*, 39)
67	<i>Fimbristylis aphylla</i> Steud.	<i>Fimbristylis aphylla</i> Steud.	—	Pilibhit	(44)
68	<i>Fimbristylis bisumbellata</i> (Forsk.) Bubani	<i>Fimbristylis bisumbellata</i> (Forsk.) Bubani.	Near water bodies and marshy places	Meerut; Pilibhit; Saharanpur	(34, 44)
69	<i>Fimbristylis cymosa</i> R.Br.	<i>Fimbristylis cymosa</i> R. Br.; <i>Fimbristylis spathacea</i> Roth.*	Common	Baghpat; Gautambudhnagar; Meerut	(32*, 37*, 39)
70	<i>Fimbristylis dichotoma</i> (L.) Vahl	<i>Fimbristylis dichotoma</i> (L.) Vahl**; <i>Fimbristylis dichotoma</i> (L.) Vahl Subsp. <i>dichotoma</i> ; <i>Fimbristylis diphylla</i> Vahl*	Common in paddy fields	Bijnor; Meerut; Pilibhit; Rampur; Saharanpur	(30*- 32*; 33*, 34, 44, 48**)
71	<i>Fimbristylis dichotoma</i> subsp. <i>podocarpa</i> (Nees) T.Koyama	<i>Fimbristylis dichotoma</i> (L.) Vahl Subsp. <i>podocarpa</i> (Nees & Meyen ex Nees) Koyama	Marshy places	Meerut; Pilibhit	(34, 44)
72	<i>Fimbristylis falcata</i> (Vahl) Kunth	<i>Fimbristylis falcata</i> (Vahl) Kunth	—	Saharanpur	(44)
73	<i>Fimbristylis ferruginea</i> (L.) Vahl	<i>Fimbristylis ferruginea</i> (L.) Vahl	Common	Pilibhit; Saharanpur	(44)
74	<i>Fimbristylis littoralis</i> Gaudich.	<i>Fimbristylis littoralis</i> Gaudich.	—	Bijnor; Moradabad; Pilibhit; Saharanpur	(44)
75	<i>Fimbristylis quinquangularis</i> (Vahl) Kunth	<i>Fimbristylis quinquangularis</i> (Vahl) Kunth; <i>Fimbristylis miliacea</i> Vahl; <i>Fimbristylis miliacea</i> (L.) Vahl*	Frequent and moist places	Bijnor; Meerut; Pilibhit; Saharanpur	(30, 31*, 32, 34, 44)
76	<i>Fimbristylis rigidula</i> Nees	<i>Fimbristylis rigidula</i> Nees	—	Bijnor	(44)
77	<i>Fimbristylis schoenoides</i> (Retz.) Vahl	<i>Fimbristylis schoenoides</i> (Retz.) Vahl	Near water bodies	Rampur; Pilibhit; Saharanpur	(44, 48)
78	<i>Fimbristylis squarrosa</i> Vahl	<i>Fimbristylis squarrosa</i> Vahl	—	Pilibhit	(44)
79	<i>Fimbristylis tenera</i> Schult.	<i>Fimbristylis tenera</i> Roem. And Schult.; <i>Fimbristylis tenera</i> Schult. var. <i>oxylepis</i> (Steud.) C.B.Clarke*	Paddy fields	Gautambudhnagar; Meerut; Pilibhit; Saharanpur	(34, 39, 44*)
80	<i>Fimbristylis tetragona</i> R. Br.	<i>Fimbristylis tetragona</i> R. Br.	—	Saharanpur	(44)
81	<i>Rhynchospora colorata</i> (L.) H. Pfeiff.	<i>Kyllinga monocephala</i> Rottb.; <i>Rhynchospora colorata</i> (L.) H. Pfeiff.*; <i>Cyperus kyllingia</i> Endl.**	Common near river banks	Baghpat; Gautambudhnagar; Meerut; Rampur	(30, 32, 37**, 39**, 48*)
82	<i>Schoenoplectiella articulata</i> (L.) Lye	<i>Scirpus articulatus</i> L.; <i>Schoenoplectiella articulata</i> (L.) Lye*	Common near water bodies	Baghpat; Gautambudhnagar; Rampur; Saharanpur	(37, 39, 44*, 48*)
83	<i>Schoenoplectiella lateriflora</i> (J.F.Gmel.) Lye	<i>Schoenoplectus supinus</i> (L.) Palla subsp. <i>lateriflorus</i> (Gmelin) Koyama	Marshy places	Meerut; Pilibhit; Saharanpur	(34, 44)
84	<i>Schoenoplectiella mucronata</i> (L.) J. Jung & H.K. Choi	<i>Scirpus mucronatus</i> L.; <i>Schoenoplectiella mucronata</i> (L.) J. Jung & H.K. Choi*	Very common, Marshy places	Bijnor; Meerut; Pilibhit; Saharanpur	(30, 31*, 32, 44)
85	<i>Schoenoplectiella roylei</i> (Nees) Lye	<i>Scirpus roylei</i> (Nees) Parker.; <i>Schoenoplectus roylei</i> (Nees) Lye*; <i>Schoenoplectiella roylei</i> (Nees) Lye**	Common near water bodies	Baghpat; Meerut; Pilibhit; Rampur; Saharanpur	(32, 34*, 37, 44**, 48**)
86	<i>Schoenoplectiella supina</i> (L.) Lye	<i>Scirpus supinus</i> L.	Wet soil	Meerut; Muzaffarnagar; Pilibhit	(32, 38, 44)
87	<i>Schoenoplectus lacustris</i> (L.) Palla	<i>Schoenoplectus lacustris</i> (L.) Palla; <i>Scirpus lacustris</i> L.*	Frequent, Marshy places	Meerut; Pilibhit; Saharanpur	(31*, 32*, 34, 44*)
88	<i>Schoenoplectus litoralis</i> (Schrad.) Palla	<i>Schoenoplectus litoralis</i> (Schard.) Pall.	Rich in marshy places	Pilibhit; Rampur; Saharanpur	(44, 48)
89	<i>Scleria corymbosa</i> Roxb.	<i>Scleria corymbosa</i> Roxb.	—	Pilibhit	(44)
90	<i>Scleria annularis</i> Steud.	<i>Scleria annularis</i> Steud.	—	Pilibhit	(44)
91	<i>Fuirena umbellata</i> Rottb.	<i>Fuirena umbellata</i> Rottb.	—	Pilibhit	(44)

Table 2 . Changes in the binomials of sedges flora of western Uttar Pradesh.

Sl. No.	Old name	New name
1	<i>Fimbristylis monostachya</i> Hassk.; <i>Fimbristylis ovata</i> (Burm. f.) Kern*	<i>Abildgaardia ovata</i> (Burm.f.) Kral
2	<i>Scirpus grossus</i> L.	<i>Actinoscirpus grossus</i> (L.f.) Goetgh. & D.A.Simpson
3	<i>Scirpus tuberosus</i> Desf.	<i>Bolboschoenus glaucus</i> (Lam.) S.G.Sm.
4	<i>Scirpus affinis</i> Roth.	<i>Bolboschoenus maritimus</i> subsp. <i>affinis</i> (Roth) T.Koyama
5	<i>Scirpus maritimus</i> L.	<i>Bolboschoenus maritimus</i> (L.) Palla
6	<i>Carex cernua</i> Bott.	<i>Carex dimorpholepis</i> Steud.
7	<i>Juncellus alopecuroides</i> C. B. Clarke.	<i>Cyperus alopecuroides</i> Rottb.
8	<i>Cyperus flabelliformis</i> Rottb.; <i>Cyperus involucratus</i> Rottb.*	<i>Cyperus alternifolius</i> subsp. <i>flabelliformis</i> Kük.
9	<i>Kyllinga brevifolia</i> Rottb.	<i>Cyperus brevifolius</i> (Rottb.) Hassk.
10	<i>Mariscus compactus</i> (Retz.) Bold.*; <i>Mariscus dilutus</i> Nees**	<i>Cyperus compactus</i> Retz.
11	<i>Cyperus uncinatus</i> Poir.	<i>Cyperus cuspidatus</i> Kunth
12	<i>Mariscus sumatrensis</i> (Retz.) J. Raynal*	<i>Cyperus cyperoides</i> (L.) Kuntze
13	<i>Cyperus exaltatus</i> Retz. var. <i>dives</i> (Del.) Clarke	<i>Cyperus dives</i> Delile
14	<i>Kyllinga triceps</i> Rottb.*	<i>Cyperus dubius</i> Rottb.
15	<i>Pycrus flavidus</i> (Retz.) T.Koyama	<i>Cyperus flavidus</i> Retz.
16	<i>Juncellus laevigatus</i> C. B. Clarke.*	<i>Cyperus laevigatus</i> L.
17	<i>Juncellus pygmaeus</i> C. B. Clarke.; <i>Cyperus pygmaeus</i> Rottb.**	<i>Cyperus michelianus</i> subsp. <i>pygmaeus</i> (Rottb.) Asch. & Graebn.
18	<i>Kyllinga nemoralis</i> (J. R. & G. Forster) Dandy ex Hutch. & Dalz.	<i>Cyperus mindorensis</i> (Steud.) Huygh
19	<i>Lipocarpa squarrosa</i> (L.) Goetgh.	<i>Cyperus neochinensis</i> (Tang & F. T. Wang) Bauters
20	<i>Cyperus tegetum</i> *	<i>Cyperus pangorei</i> Rottb.
21	<i>Mariscus paniceus</i> (Rottb.) Vahl*; <i>Mariscus paniceus</i> Vahl Var. <i>roxburghianus</i> C. B. C.**	<i>Cyperus paniceus</i> (Rottb.) Boeckeler
22	<i>Pycrus pumilus</i> (L.) Nees	<i>Cyperus pumilus</i> L.
23	<i>Kyllinga bulbosa</i> Beauv.	<i>Cyperus richardii</i> Steud.
24	<i>Pycrus sanguinolentus</i> (Vahl) Nees	<i>Cyperus sanguinolentus</i> Vahl
25	<i>Juncellus inundatus</i> C. B. Clarke.	<i>Cyperus serotinus</i> var. <i>inundatus</i> Kük.
26	<i>Kyllinga cylindrica</i> Nees; <i>Kyllinga odorata</i> Subsp. <i>cylindrica</i> (Nees) T. Koyama*	<i>Cyperus sesquiflorus</i> subsp. <i>cylindricus</i> (Nees) T.Koyama
27	<i>Cyperus aristatus</i> Rottb.*; <i>Mariscus squarrosus</i> (L.) Clarke**	<i>Cyperus squarrosus</i> L.
28	<i>Kyllinga tenuifolia</i> Steud.	<i>Cyperus tenuifolius</i> (Steud.) Dandy
29	<i>Eleocharis capitata</i> R. Br.	<i>Eleocharis geniculata</i> (L.) Roem. & Schult.
30	<i>Eriophorum comosum</i> (Wall.) Nees; <i>Scirpus comosus</i> Wall.*	<i>Erioscirpus comosus</i> (Wall.) Palla
31	<i>Fimbristylis spathacea</i> Roth.	<i>Fimbristylis cymosa</i> R. Br.
32	<i>Fimbristylis diphylla</i> Vahl*	<i>Fimbristylis dichotoma</i> subsp. <i>dichotoma</i>
33	<i>Fimbristylis miliacea</i> Vahl; <i>Fimbristylis miliacea</i> (L.) Vahl*	<i>Fimbristylis quinquangularis</i> subsp. <i>quinquangularis</i>
34	<i>Fimbristylis tenera</i> Schult. var. <i>oxylepis</i> (Steud.) C.B.Clarke*	<i>Fimbristylis tenera</i> Schult.
35	<i>Kyllinga monocephala</i> Rottb.*; <i>Cyperus kyllingia</i> Endl.**	<i>Rhynchospora colorata</i> (L.) H.Pfeiff.
36	<i>Scirpus articulatus</i> L.	<i>Schoenoplectiella articulata</i> (L.) Lye
37	<i>Schoenoplectus supinus</i> (L.) Palla subsp. <i>lateriflorus</i> (Gmelin) Koyama	<i>Schoenoplectiella lateriflora</i> (J.F.Gmel.) Lye
38	<i>Scirpus mucronatus</i> L.	<i>Schoenoplectiella mucronata</i> (L.) J.Jung & H.K.Choi
39	<i>Scirpus roylei</i> (Nees) Parker	<i>Schoenoplectiella roylei</i> (Nees) Lye
40	<i>Scirpus supinus</i> L.	<i>Schoenoplectiella supina</i> (L.) Lye
41	<i>Scirpus lacustris</i> L.*	<i>Schoenoplectus lacustris</i> (L.) Palla

Table 3. Error in the binomials of sedges flora of western Uttar Pradesh.

Sl. No.	Name	Error in publish literatures	Corrections	Reference
1	<i>Bulbostylis barbata</i> Kunth	Error in authority	Correct name is <i>Bulbostylis barbata</i> (Rottb.) C.B. Clarke	(32, 33)
2	<i>Carex cernua</i> Bott.	Error in spellings of authority	Correct name is <i>Carex dimorpholepis</i> Steud.	(32)
3	<i>Cyperus</i> spp.	Species name has not been mentioned	—	(46)
4	<i>Cyperus alulatus</i> Retz.	Authority is different from accepted name	Correct name is <i>Cyperus alulatus</i> J.Kern	(32)
5	<i>Cyperus cuspidatus</i> H. B. & K.	Authority is different from accepted name	Correct name is <i>Cyperus cuspidatus</i> Kunth	(38)
6	<i>Eleocharis capitata</i> R. Br.	Authority is different from synonym name	Correct name is <i>Eleocharis geniculata</i> (L.) Roem. & Schult.	(39)
7	<i>Eleocharis capitata</i>	Error in spellings of epithet	Correct name is <i>Eleocharis geniculata</i> (L.) Roem. & Schult.	(47)
8	<i>Eleocharis palustris</i> R. Br.	Authority is different from accepted name	Correct name is <i>Eleocharis palustris</i> (L.) Roem. & Schult.	(37)
9	<i>Eleocharis palustris</i> (L.) R. Br.	Authority is different from accepted name	Correct name is <i>Eleocharis palustris</i> (L.) Roem. & Schult.	(34)
10	<i>Eleocharis plantaginea</i> R. Br.	<i>Eleocharis plantaginea</i> R.Br., Prodr. Fl. Nov. Holland. 224 (1810), nom. inval.	Nomenclature invalid	(31, 32)
11	<i>Fimbristylis dichotoma</i> Vahl	Authority is different from accepted name	Correct name is <i>Fimbristylis dichotoma</i> (L.) Vahl	(37)
12	<i>Fimbristylis ferruginea</i> Vahl	Authority is different from accepted name	Correct name is <i>Fimbristylis ferruginea</i> (L.) Vahl	(37)
13	<i>Fimbristylis quinquangularis</i> Kunth	Authority is different from accepted name	Correct name is <i>Fimbristylis quinquangularis</i> (Vahl) Kunth	(37)
14	<i>Fimbristylis tenera</i> Vahl	Authority is different from accepted name	Correct name is <i>Fimbristylis tenera</i> Schult.	(37)
15	<i>Heleocharis atropurpurea</i> Kunth.	Repeated mistakes in generic name	Correct name is <i>Eleocharis atropurpurea</i> (Retz.) J.Presl & C.Presl	(30-32)
16	<i>Eleocharis atropurpurea</i> (Retz.) Kunth	Authority is different from accepted name	Correct name is <i>Eleocharis atropurpurea</i> (Retz.) J.Presl & C.Presl	(38)
17	<i>Pycerus globosus</i> Reich	Error in spellings of generic name	Correct name is <i>Cyperus flavidus</i> Retz.	(31, 32)
18	<i>Pycerus pumilis</i> Turrill.	Could not find	—	(32)
19	<i>Scirpus grossus</i> L.	Error in authority	Correct name is <i>Actinoscirpus grossus</i> (L.f.) Goetgh. & D.A. Simpson	(39)
20	<i>Scirpus lacustris</i> L.	Error in spellings of epithet	Correct name is <i>Schoenoplectus lacustris</i> (L.) Palla	(32)
21	<i>Schoenoplectus litoralis</i> (Schrad.) Palla subsp. <i>subulatus</i> (Vahj)	Error in spellings of authority	Correct name is <i>Schoenoplectus litoralis</i> subsp. <i>subulatus</i> (Vahl) Soják	(34)
22	<i>Schoenoplectus raucronatus</i> (L.) Palla	Error in spellings of epithet	Correct name is <i>Schoenoplectus mucronatus</i> (L.) Palla	(34)
23	<i>Scirpus roylei</i> (Nees) Duthie	Authority is different	Correct name is <i>Schoenoplectiella roylei</i> (Nees) Lye	(38)
24	<i>Scirpus roylei</i> (Nees) Comb.	Authority is different	Correct name is <i>Schoenoplectiella roylei</i> (Nees) Lye	(31)
25	<i>Schoenoplectus supinus</i> (L.) Palla subsp. <i>lateriflorus</i> (Gmelin) Koyama	Authority is different	Correct name is <i>Schoenoplectiella lateriflora</i> (J.F.Gmel.) Lye	(34)

Table 4. Publication details from the study area.

Sl.No.	Authors	Study area	Genera	Species	Accepted name	Error
1	Murty & Singh (1959)	Hastinapur (Meerut)	9	14	4	1
2	Murty & Singh (1960)	Hastinapur (Meerut)	8	18	4	3
3	Murty & Singh (1961)	Hastinapur (Meerut)	11	36	8	8
4	Singh, (1963)	Meerut	3	7	5	1
5	Agarwal, (2009)	Hastinapur (Meerut)	10	45	27	5
6	Kumari, (2010)	Moradabad	1	1	1	0
7	Malik <i>et al.</i> , (2010)	Muzaffarnagar	2	3	3	0
8	Ahamed & Gupta (2010)	Baghpat	5	28	13	5
9	Chaudhary <i>et al.</i> , (2012)	Gautambudhnagar (Noida)	6	17	8	2
10	Malik <i>et al.</i> , (2012)	Muzaffarnagar	5	15	11	3
11	Chaudhary & Kumar (2015)a	Ghaziabad	1	1	1	0
12	Chaudhary & Kumar (2015)b	Bijnor	1	1	1	0
13	Ansari <i>et al.</i> , (2016)	Greater Noida	5	11	10	0
14	Prakash <i>et al.</i> , (2017)	Western Uttar Pradesh	1	1	1	0
15	Khanna, (2018)	Saharanpur	11	48	41	0
16	Khanna, (2018)	Bijnor	5	11	9	0
17	Khanna, (2018)	Moradabad	3	5	5	0
18	Khanna, (2018)	Pilibhit	12	49	45	0
19	Kumar <i>et al.</i> , (2018)	Moradabad	1	1	1	0
20	Kumar <i>et al.</i> , (2019)	Agra	1	1	0	1
21	Singh, (2020)	Rampur	10	21	19	0
22	Kumar, (2020)	Gautambudhnagar (Noida)	1	1	0	1

Results

In the published literature that covers ten districts of western Uttar Pradesh, one can find 18 genera and 158 species. Of the 158 species published, 57.59% (91 species) were found as accepted species name (Table 1). When the nomenclature of these published taxa was checked, it was found that most of the species names have become synonyms (Table 2). Besides synonyms, several spelling mistakes and problems related to authorities of the taxon names were also encountered. One such example can be seen in the name of *Heleocharis artopurpurea* Kunth, which was published chronologically (30-32) as *Heleocharis artopurpurea* Kunth.; however, here generic name is an orth. var. Thus, these authors repeatedly made mistakes in spelling *Eleocharis* as *Heleocharis* in their publication (Table 3). It has been observed that there is a difference in documented genera and species published year-wise. Such differences can be seen in many publications inspite of the same study area (Table 4). The accepted names of the binomials (Table 1), along with their type address are given below:

Updated names with addresses of protologues:

Abildgaardia ovata (Burm.f.) Kral, Sida 4: 72 (1971); *Carex ovata* Burm.f., Fl. Indica: 194 (1768).

Type: Java. Coll. ign. (Holotype G: G00801559!).

Link: <https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=599444&base=img&lang=en>

Actinoscirpus grossus (L.f.) Goetgh. & D.A. Simpson, Kew Bull. 46: 171 (1991); *Scirpus grossus* L.f., Suppl. Pl.: 104 (1782).

Type: India, Linnaean herbarium no 71/32 (lectotype LINN image!) designated by Goetghebeur & Simpson, 1991 (56).

Link: <https://linnean-online.org/1041/#?s=0&cv=0>

Bolboschoenus glaucus (Lam.) S.G.Sm., Novon 5: 101 (1995); *Scirpus glaucus* Lam., Tabl. Encycl. 1: 142 (1791).

Type: Holotype: Senegal, s.a., Roussilon s.n. (P. Lamarck 673/14; n.v.) designated by Marhold *et al.*, 2006 (57).

Bolboschoenus maritimus subsp. *affinis* (Roth) T.Koyama, Brittonia 31: 284 (1979); *Scirpus affinis* Roth J.J.Roemer & J.A.Schultes, Syst. Veg., ed. 15 bis 2: 140 (1817).

Type: Neotype: India, s. loc, Anon. s.n. [ex Herb. Ind. Or. Hook.fil.&Thomson] (C10010638!) designated by Norlindh, T., 1972 (58).

Link: <https://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.c10010638>

Bolboschoenus maritimus (L.) Palla W.D.J.Koch, Syn. Deut. Schweiz. Fl., ed. 3: 2532 (1905); *Scirpus maritimus* L., Sp. Pl.: 51 (1753).

Type: Lectotype: Herb.Celsius 2: 212 (UPS). - Epitype: Sweden. E. Roslagen, par. Borstill, 2km W Kallo, near Husbacka, 14 Oct 1995, Nilsson 9515 (UPS; iso- BM, H, MO, NU, NY) designated by Smith & Kukkonen, 1999 (59).

Carex dimorpholepis Steud., Syn. Pl. Glumac. 2: 214 (1855).

Type: Holotype of *Carex dimorpholepis* Steud. [family CYPERACEAE] (stored under name); Verified by Kern, JH, 1963/12, Naturalis Biodiversity Centre, formerly Leiden University (L), L0042255. (Global plants on JSTOR).

Cyperus alopecuroides Rottb., Descr. Icon.Rar. Pl.: 38 (1773); *Juncellus alopecuroides* (Rottb.) C.B.Clarke J.D.Hooker, Fl. Brit. India 6: 595 (1893).

Type: Neotype: Rottb., Descr. Icon.Rar. Pl.: tab. VIII, fig. 2. 1773 designated by Brullo & Sciandrello, 2006 (60).

Cyperus alternifolius subsp. *flabelliformis* Kuk. In: H.G.A.Engler (ed.), Pflanzenr., IV, 20(101): 193 (1936); *Cyperus alternifolius* var. *flabelliformis* (Rottb.) M.R.Almeida in Fl. Maharashtra 5B: 304 (2009).

Type address: Not found.

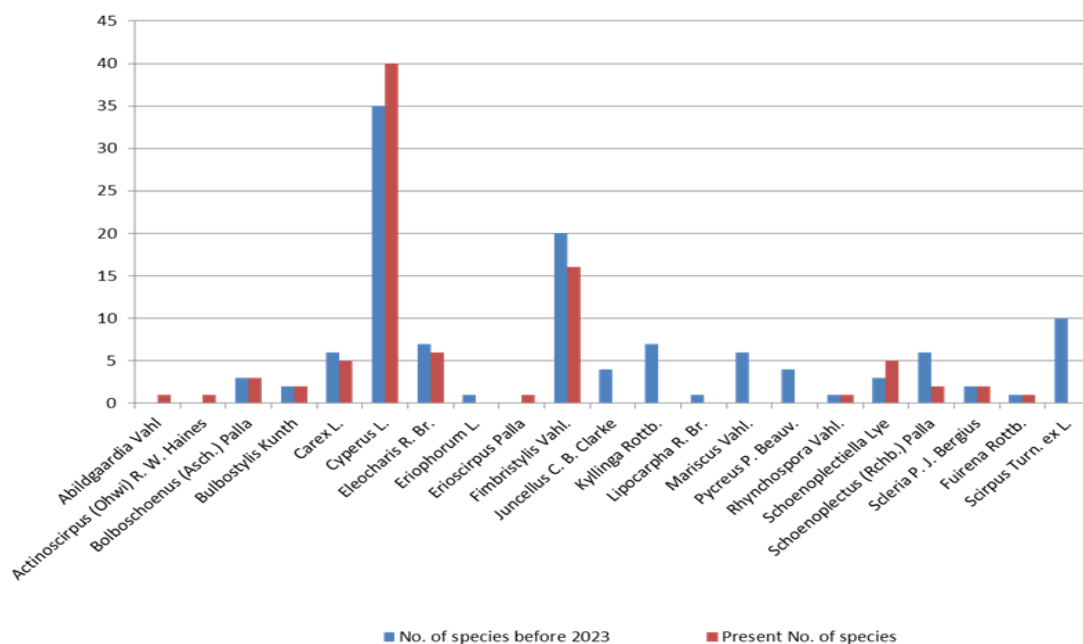


Fig. 2. Genera and species of sedges in western Uttar Pradesh.

- Cyperus brevifolius** (Rottb.) Hassk., Cat. Hort. Bot. Bogor. Alt.: 24 (1844); *Kyllinga brevifolia* Rottb., Descr. Icon. Rar. Pl.: 13 (1773).
- Type:** *König s.n.*, India, Kerala, Malabar (holotype C [C10013371!]).
- Link:** <https://plants.jstor.org/stable/10.5555/al.ap.specimen.c10013371>
- Cyperus compactus** Retz., Observ. Bot. 5: 10 (1788); *Cyperus dilutus* Vahl, Enum. Pl. Obs. 2: 357 (1805).
- Type:** *Osbeck s.n.*, China (holotype LD [LD1291427]) designated by Simpson, D. A., 2019 (61).
- Cyperus cuspidatus** Kunth, F.W.H.von Humboldt, A.J.A. Bonpland & C.S. Kunth, Nov. Gen. Sp. 1: 204 (1816).
- Type:** VENEZUELA: Bolívar[?]: Along the Orinoco River, s.d., Humboldt & Bonpland s.n. (holotype: B-W).
- Link:** <https://florida.plantatlas.usf.edu/plant.aspx?id=3378>
- Cyperus cyperoides** (L.) Kuntze, Revis. Gen. Pl. 3(2): 333 (1898); *Scirpus cyperoides* L., Mant. Pl. 2: 181 (1771).
- Type:** *König s.n.*, India (lectotype LINN [Herb. Linn.no. 71.42]) designated by Gordon-Gray, 1995(62).
- Link:** <https://linnean-online.org/1051/#?s=0&cv=0>
- Cyperus dives** Delile, Descr. Egypte, Hist. Nat. 2(Mém.): 149 (1813); *Cyperus exaltatus* var. *dives* (Delile) C.B. Clarke, J. Linn. Soc., Bot. 21: 187 (1884).
- Type:** Delile A.R., S.loc., Egypt (Holotype: Herbar de l'Universite Montpellier II (MPU), MPU007342).
- Link:** <https://plants.jstor.org/stable/pdf/10.5555/al.ap.specimen.mpu007342>
- Cyperus dubius** Rottb., Descr. Icon. Rar. Pl.: 20 (1773); *Mariscus dubius* (Rottb.) Kük.ex G.E.C. Fischer J.S. Gamble, Fl. Madras: 1644 (1931).
- Type:** *König s.n.*, India (lectotype C [C10010169]) designated by Simpson, D. A., 2019 (61).
- Link:** <https://plants.jstor.org/stable/pdf/10.5555/al.ap.specimen.c10010169>
- Cyperus flavidus** Retz., Observ. Bot. 5: 13 (1788); *Pycneus flavidus* (Retz.) T. Koyama, J. Jap. Bot. 51: 316 (1976).
- Type:** *König s.n.*, India: lectotype LD, designated by Fischer 1932 (63).
- Cyperus laevigatus** L., Mant. Pl. 2: 179 (1771); *Pycneus laevigatus* (L.) Nees, Linnaea 10: 130 (1835).
- Type:** Lectotype: South Africa. Cape of Good Hope, *Koenig s.n.* (LINN 70.13), designated by G.C. Tucker & McVaugh, 1993 (64).
- Link:** <https://linnean-online.org/365/#?s=0&cv=0&z=0.0603%2C0.1376%2C0.9697%2C0.9158>
- Cyperus michelianus** subsp. *pygmaeus* (Rottb.) Asch. & Graebn., Syn. Mitteleur. Fl. 2(2): 273 (1904); *Cyperus pygmaeus* Rottb., Descr. Icon. Rar. Pl.: 20 (1773).
- Type:** Lectotype: INDIA. Tranquebar [currently Tharangambadi, Tamil Nadu], s.d., s.n., Koenig L 60/84, No 288, [C10010316, image! n.v.] designated by Ghosh *et al.*, 2018 (65).
- Cyperus mindorensis** (Steud.) Huygh, Phytotaxa 166: 39 (2014); *Kyllinga mindorensis* Steud., Syn. Pl. Glumac. 2: 67 (1854).
- Type:** *Cuming 1558*, Philippines, Luzon, Calabarzon, Batangas, 1841 (holotype BM [BM000959042!]).
- Cyperus neochinensis** (Tang & F. T. Wang) Bauters, Phytotaxa 166: 21 (2014); *Scirpus neochinensis* Tang & F.T. Wang, Fl. Reipubl. Popularis Sin. 11: 223 (1961).
- Type:** *Scirpus neochinensis* Tang & F.T. Wang, in Fl. Reipubl. Popul. Sin. 11: 223 (Tang & Wang 1961). Type:— CHINA. Guangdong: Guangzhou, wasteland, 12 November 1952, S.H. Chen 8160 (holotype SCBI n.v.).
- Cyperus pangorei** Rottb., Descr. Icon. Rar. Pl.: 31 (1773).
- Type:** Not found.
- Cyperus paniceus** (Rottb.) Boeckler, Linnaea 36: 381 (1870); *Kyllinga panicea* Rottb., Descr. Icon. Rar. Pl.: 15 (1773).
- Type:** Not found.
- Cyperus pumilus** L., Cent. Pl. II: 6 (1756); *Cyperus pygmaeus* Retz., Observ. Bot. 4: 9 (1786).
- Type:** Lectotype: Herb. Linn. No. 70.34, right hand specimen (LINN) designated by Kukkonen in Cafferty & Jarvis, 2004 (66).
- Link:** <https://linnean-online.org/377/#?s=0&cv=0&z=-0.7736%2C-0.1367%2C1%2C0.9281>
- Cyperus richardii** Steud., Syn. Pl. Glumac. 2: 8 (1854).
- Type:** Not found.
- Cyperus sanguinolentus** Vahl, Enum. Pl. Obs. 2: 351 (1805); *Pycneus sanguinolentus* (Vahl) Nees, Linnaea 9: 283 (1834).
- Type:** *Gamble 15117*, India, Uttar Pradesh, Tehri Garhwal (neotype L [L0042450], designated by Kern, 1954 (67)).
- Cyperus serotinus** var. *inundatus* Kük., H.G.A. Engler (ed.), Pflanzenr., IV, 20(101): 318 (1936); *Juncellus serotinus* var. *inundatus* (Kük.) L.K. Dai, Fl. Reipubl. Popularis Sin. 11: 160 (1961).
- Type:** Not found.
- Cyperus sesquiflorus** subsp. *cylindricus* (Nees) T. Koyama, Bot. Mag. (Tokyo) 83: 187 (1970).
- Type:** Not found.
- Cyperus squarrosus** L., Cent. Pl. II: 6 (1756).
- Type:** Lectotype: India. *Koenig s.n.* (LINN 70.8 B right hand specimen; Isolectotype: S-LINN G-6816), designated by J. Kern, 1960 (68).
- Link:** <https://linnean-online.org/359/#?s=0&cv=0>
- Cyperus tenuifolius** (Steud.) Dandy, A.W. Exell, Cat. Vasc. Pl. S. Tomé: 363 (1944).
- Type:** Not found.
- Eleocharis geniculata** (L.) Roem. & Schult., Syst. Veg., ed. 15 [bis]. 2: 150 (1817).
- Type:** Without data, Herb. Clifford 21, *Scirpus* 1 (lectotype: BM) lectotypified by Furtado, 1937 (69).
- Link:** <https://florida.plantatlas.usf.edu/plant.aspx?id=916>

Erioscirpus comosus (Wall.) Palla, Bot. Zeitung (Berlin) 54: 151 (1896).

Type: Not found.

Fimbristylis cymosa R.Br., Prodr. Fl. Nov. Holland.: 228 (1810) subsp. *cymosa*

Type: Lectotype: Australia, Carpentaria, R. Brown s.n. [Iter Austral. 5959] (BM barcode BM000630190 [image!] n.v.) designated by St. John, 1952 (70).

Fimbristylis dichotoma (L.) Vahl, Enum. Pl. Obs. 2: 287 (1805) subsp. *dichotoma*

Type: Not found.

Fimbristylis quinquangularis (Vahl) Kunth, Enum. Pl. 2: 229 (1837) subsp. *quinquangularis*

Type: Lectotype: ["Habitat in India."] Herb. L. No. 71.40 (LINN), designated by Blake, 1954 (71).

Link: <https://linnean-online.org/1049/#?s=0&cv=0>

Fimbristylis tenera Schult., Mant. 2: 57 (1824).

Type: Lectotype: "India Orientalis" [India], Roxburgh s.n., (G00309005) designated by Halder, 2014 (72).

Rhynchospora colorata (L.) H.Pfeiff., Repert. Spec. Nov. Regni Veg. 38: 89 (1935); *Schoenus coloratus* L., Sp. Pl.: 43 (1753).

Type: Lectotype: Jamaica. Sloane, *Voy. Jamaica* 1: t.78, f. 1. 1707, designated by W.W. Thomas, 1984 (73).

Schoenoplectiella articulata (L.) Lye, Lidia 6: 20 (2003); *Scirpus articulatus* L., Sp. Pl.:47(1753).

Type: Lectotype: [icon] "Tsieli" in Rheede, Hort. Malab. 12: t. 71. 1693. - Epitype: [India], Kerala, Ramnanatukarat, 50 m, 16 Jan 1977, Suresh 22191 (BM, iso-CALI) designated by Simpson in Cafferty & Jarvis, 2004 (66).

Schoenoplectiella lateriflora (J.F.Gmel.) Lye, Lidia 6: 25 (2003); *Scirpus lateriflorus* J.F.Gmel., Syst. Nat., ed. 13[bis]: 127 (1791).

Type: Sri Lanka, König s.n. (holotype LD) designated by Xanthos, M., & Browning, J. 2015 (74).

Schoenoplectiella mucronata (L.) J.Jung & H.K.Choi, J. Pl. Biol. 53(3): 230 (2010); *Scirpus mucronatus* L., Sp. Pl.: 50 (1753).

Type: Lectotype: *Rathgebl*, Herb. Linn. No. 71.31 (LINN) designated by Kukkonen in Cafferty & Jarvis, 2004 (66).

Link: <https://linnean-online.org/1049/#?s=0&cv=0>

Schoenoplectiella roylei (Nees) Lye, Lidia 6: 26 (2003); *Isolepis roylei* Nees R.Wight, Contr. Bot. India: 107 (1834).

Type: Nepal, *Royle* 48 (B, holo.,n. v.) Powo, 2023 (75)

Schoenoplectiella supina (L.) Lye, Lidia 6: 27 (2003); *Scirpus supinus* L., Sp. Pl.: 49 (1753).

Type: Neotype (Raynal in *Adansonia*, n.s., 16: 145. 1976): Herb.Tournefort No. 5117 (P-TOURN).

Schoenoplectus lacustris (L.) Palla, Bot. Jahrb. Syst. 10: 299 (1888); *Scirpus lacustris* L., Sp. Pl.: 48 (1753).

Type: Lectotype: Europe. (LINN 71.15), designated by Kukkonen & Simpson in Cafferty & Jarvis (ed.), 2004 (66).

Link: <https://linnean-online.org/705/#?s=0&cv=0>

Discussion

Based on the result, we can say that out of the 158 binomials recorded in 10 districts of western Uttar Pradesh by different authors in different years, only 91 (57.59%) binomials are accepted. This is because, during the course of time, 25.94% of binomials have become synonyms, while the binomials published with error are 13.92%. *Cyperus* is paraphyletic if *Cyperus*s.s. and therefore should be viewed as part of a broadly circumscribed genus *Cyperus* and thus must firmly include the sedge genera like *Alinula*, *Ascolepis*, *Kyllinga*, *Lipocarpha*, *Pycreus*, *Queenslandiella*, *Remirea*, *Sphaerocyperus* and *Volkiella* into *Cyperus* as new combinations or new names (76). This publication bears a single name, *Kyllinga nemoralis* (J. R. & G. Forster) Dandy ex Hutch. & Dalzell-of the flora of western Uttar Pradesh. However, a recent checklist on Cyperaceae enumerates *Kyllinga*, *Lipocarpha*, *Pycreus*, *Queenslandiella* Domin and *Remirea* Aubl. as separate genera (2). Review of the literature reveals that Cyperaceae include 14 genera in western Uttar Pradesh, with *Cyperus* as the largest genus. The status of different genera is given below (Fig. 2). The sedges diversity is more or less different in all the parts of the study area. Meerut region has the highest sedges diversity while Ghaziabad has the lowest. District-wise decreasing order of sedges diversity is as follows: Meerut > Pilibhit > Saharanpur > Gautam Budh Nagar > Baghpat > Rampur > Muzaffarnagar > Bijnor > Moradabad > Ghaziabad. Based on the above study, we can say that all the species of sedges have unequal distribution in all the districts.

Conclusion

Taxonomic name changes due to modern molecular phylogenetics have resulted in a state of confusion among plant growers, gardeners, designers, consumers, land managers, ecologists, conservationists, home decorators, and students. Plant producers feel panic due to name changes. Such professionals remain in fear that the consumer will no longer recognize the name and consumer will not purchase the plant, due to which there are chances of a reduction of the market value of such plants. Name-changing is also a problem for those who write books on plant gardening. Name-changing also affects phytochemical, toxicological & clinical publications. During the last few years, a large amount of literature has been published. This literature includes errors in binomials and their authority. Many of the published literature related to phytochemicals mentions the name of the taxon without authority. Such publications create confusion among students, research scholars & teachers. Authors have observed a concerning trend among research scholars who submit their research work or Ph.D. thesis without verifying the accepted names, instead accepting synonyms as the accepted name. From a scientific perspective, this poses a significant issue, as future generations may inadvertently rely on inaccuracies in the accumulated information as references for their own work. In western Uttar Pradesh, there is no comprehensive report on sedges except a few deeds. Keeping this all in mind, a comprehensive study for solving and updating nomenclature issues has been carried out. We updated the nomenclature of all the publications on sedges of western Uttar Pradesh

published after 1959. During this study, we reported that several names mentioned in the published literature are not accepted. Such publications include synonyms as accepted names, as well as errors in authority. According to our findings, there are 14 genera and 91 species rather than 18 genera and 158 species in the study area. This is because of the 158 species published from 1959-2020, 51 names have become synonyms. Of the above-mentioned 25 names, 06 names have errors in binomials, and 17 names have spelling mistakes in authority. One binomial was found to be invalid. Besides, the names that have now become synonyms are given here with type, protologue address, and accepted names. We could not locate the type of 09 names (*Cyperus alternifolius* subsp. *Flabelliformis* Kuk.; *Cyperus pangorei* Rottb.; *Cyperus paniceus* (Rottb.) Boeckeler; *Cyperus richardii* Steud.; *Cyperus serotinus* var. *inundatus* Kük.; *Cyperus sesquiflorus* subsp. *cylindricus* (Nees) T. Koyama; *Cyperus tenuifolius* (Steud.) Dandy; *Erioscirpus comosus* (Wall.) Palla; *Fimbristylis dichotoma* subsp. *dichotoma*), which needs to be typified for the correct application of names.

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Authors' contributions

VK & VM collected data and literature. VM prepared and edited the manuscript. Both authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interest to declare.

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