

A KEY TO THE IDENTIFICATION OF THE CYPERACEAE OF GUJARAT

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ABSTRACT

In order to facilitate identification, a key based on field and herbarium studies, is presented in this paper. Much importance, no doubt, has been given to the inflorescence character but other characters such as those of nut, stigma etc. have not been lost sight of. The key leads directly to the identification of the plant itself, which is a definite departure from the routine keys to genera and species.

The family Cyperaceae, because of the difficulty in identifying its members, has been utterly neglected. The author has completed the work on the sedge flora of Gujarat, based on available data and the data gathered by him during the course of various excursions to places in north, central and south Gujarat.

In order to facilitate identification, the authors present here a key based on field and herbarium studies. The clavises have been framed as practically as possible after fully taking into consideration Clarke's (1886) remarks: "While the inflorescence is thus flexible in character, it must remain a chief character in all species; but exactly the same kind of inflorescence meets us in various (and remote) sections of the genus, so that reliance on external general characters of the inflorescence without also examination of the nut and stigmas, had led Botanists into numerous errors for the last century."

Much importance, no doubt, has been given to the inflorescence characters (as it was inevitable) in the present key, but the other characters such as those of nut, stigma etc. have not been lost sight of.

The key leads directly to the identification of plant itself, which is a definite departure from the routine keys to genera and species.

Figures 1-14 explain some of the morphological terms used in this key.

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1. Inflorescence terminal, 2. Inflorescence lateral, 3. Inflorescence terminal and axillary, 4. Glumes of *Cyperus*, 5. Glumes spirally arranged, 6. Glume distichous, 7. Glume of *Cyperus metzii*, 8. Glume of *Courtoisia cyperoides*, 9. Nut with apical tumour, 10. Nut ribbed and trabeculate, 11. Cancellately tessellate nut with square depressions (*Scleria tessellata*), 12. Hypogynous bristles, 13. Petals quadrate and clawed (*Fuirena ciliaris*), 14. Bristles plumose with moniliform hairs.

LITERATURE CITED

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— *Illustrations of Cyperaceae*, London, 1909.

1. Inflorescence terminal,
 2. A solitary spikelet (*see also F. schoenoides*)
 3. Hypogynous bristles absent,
 4. Lower glumes of the spikelet distichous or nearly so *Fimbristylis monostachya* Hassk.
 4. Glumes not distichous,
 5. Nut narrowly elongate, cylindric, curved *Fimbristylis tetragona* R. Br.
 5. Nut obovoid with obcordate apex, minutely tuberculate *Fimbristylis polytrichoides* Vahl
 3. Hypogynous bristles present,
 6. Plants robust, stems terete, septate when dry *Eleocharis plantaginea* R. Br.
 6. Plant robust, stem triquetrous *Eleocharis fistulosa* Link.
 6. Plants small, slender, bristles white *Eleocharis atropurpurea* R. Br.
 6. Plants as the last one, bristles brown *Eleocharis capitata* R. Br.
 2. Spikelets in a sessile head or cluster,
 7. Glumes of the spikelet spirally arranged,
 8. Hypogynous bristles present ... *Scirpus maritimus* Linn. Var. *affinis* C. B. Clarke
 8. Hypogynous bristles 0,
 9. Style bifid *Fimbristylis argentea* Vahl
 9. Style trifid,
 10. Apical tumour on the nut present *Bulbostylis barbata* Kunth
 10. Nut without an apical tumour *Fimbristylis digitata* Boeck.
 7. Glumes of the spikelet distichously arranged,
 11. Heads usually greenish,
 12. Glumes winged in the lower half *Cyperus brevifolius* (Rottb.) Hassk.
 12. Glumes with a toothed wing at the back *Cyperus metzii* (Hochst.) Mattf. et Kulkenth.
 12. Glumes not winged *Cyperus michelianus* sub. sp. *Pygmaeus* (Rottb.) Aschers. et. Graeb.
 11. Heads white,
 13. Spikelets in angular or lobed heads *Cyperus triceps* (Rottb.) Endl.
 13. Spikelets in globose heads,
 14. Nut black with white reticulations *Cyperus leucocephalus* Retz. *
 14. Nut without reticulations *Cyperus niveus* Retz.
 11. Heads otherwise, rhizomes creeping, rootlets thick,
 15. Rootlets not woolly *Cyperus arenarius* Retz.
 15. Rootlets woolly *Cyperus conglomeratus* Rottb.
- (Inflorescence sometimes umbellate)
2. Spikelets in umbels,
 16. Umbels usually simple,
 17. Glumes of the spikelet spirally arranged,
 18. Style bifid,
 19. Spikelets 1-3, rarely upto 5, ovate, pale, glistening *Fimbristylis schoenoides* Vahl
 19. Spikelets more than 5,
 20. Glumes mucronulate, glabrous ; nut pale, trabeculate and ribbed *Fimbristylis diphylla* Var. *annua* (Inflorescence sometimes varying.)
 20. Glumes pubescent in the upper half ; nut pale, smooth *Fimbristylis ferruginea* Vahl
 18. Style trifid,
 21. Bristles absent ; nut round, trigonus, irregularly tuberculate *Fimbristylis tenera* R. et S.
 21. Bristles retrorsely scabrid ; nut smooth, black *Scirpus maritimus* Linn.
 17. Glumes of the spikelet distichously arranged,
 22. Spikelet 1-flowered *Cyperus paniceus* (Rottb.) Boeck.
 22. Spikelet more than 1-flowered,
 23. Style bifid,
 24. Stems strong and erect,
 25. Spikelets few, short and reddish *Cyperus sanguinolentus* Vahl
 25. Spikelets many, pale brown, roots strongly aromatic *Cyperus polystachyus* Rottb.
 24. Stems slender,
 26. Spikelets about 7-flowered ; nut brown *Cyperus hyalinus* Vahl
 26. Spikelets many-flowered, parallel sided,
 27. Stamen usually 1, glumes bifid with the keel cuspidately produced at the apex *Cyperus pumilus* Linn. (Spikelets sometimes in heads)
 27. Stamens 2, glumes obtuse, keel greenish-yellow with brownish-red veins *Cyperus globosus* All.
 23. Style trifid,
 28. Spikelets in globose heads on the rays of an umbel ; glumes obtuse *Cyperus difformis* Linn.
 28. Spikelets spicate on the umbel rays,
 29. Small or medium annuals,
 30. Spikelets golden yellow ; glumes with squarrosely recurved arista ...
..... *Cyperus aristatus* Rottb.
 30. Spikelets green, compressed but with a medium ridge on each side
..... *Cyperus compressus* Linn.
 29. Perennials,
 31. Stolons 0 ; rhizome short and woody ; glumes scarcely imbricate in fruit
..... *Cyperus macer* C. B. Clarke.
 31. Stolons slender, soon disappearing, terminating in tunicated bulbils ...,
..... *Cyperus bulbosus* Vahl

- 31. Stolons slender ; glumes closely imbricate *Cyperus rotundus* Linn.
- 31. Stolons slender, elongate ; glumes not closely imbricate.....*Cyperus rotundus* L. sub. sp. *tuberosus* (Rottb.) Kulkenthal
- 31. Stolons long, slender, glumes plicate-striate ; spikelet usually shorter and border than those of *C. rotundus* *Cyperus esculentus* Linn.
- 16. Umbels usually compound,
 - 32. Stigmas 2,
 - 33. Plants tall and robust ; glumes distichous *Cyperus alopecuroides* Rottb. (rarely stigmas 3)
 - 33. Plants short, not at all robust ; glumes spirally arranged.
 - 34. Nut dark, smooth or slightly rough *Fimbristylis spathacea* Rottb.
 - 34. Nut ribbed and trabeculate *Fimbristylis dichotoma* Vahl
 - 32. Stigmas 3,
 - 35. Plants not robust,
 - 36. Glumes distichously arranged,
 - 37. Spikelets yellowish brown in globose heads ; glumes with a continuous glistening wing at the back *Courtoisia cyperoides* Nees.
 - 37. Spikelets greenish yellow not in head ; glumes without a wing *Cyperus flavidus* Retz.
 - 36. Glumes spirally arranged,
 - 38. Nut obovoid, smooth *Fimbristylis junciformis* Vahl
 - 38. Nut faintly ribbed and trabeculate *Fimbristylis woodrowii* C. B. Clarke.
 - 35. Plants robust, 2-6 ft. high,
 - 39. Secondary rays of the umbels terminated by spikes or corymbs of less than 10 spikelets,
 - 40. Glumes close ; stems more or less articulate when dry, stolons long *Cyperus corymbosus* Rottb.
 - 40. Glumes remote, scarcely imbricating in fruit ; stolons 0 *Cyperus tegetum* Roxb.
 - 39. Secondary rays of the umbels terminated by spikes of more than 30 spikelets,
 - 41. Spikelets in dense globose head *Cyperus dilutus* Vahl
 - 41. Spikelets in somewhat cylindric and not globose spikes,
 - 42. Spikelets 8-20 flowered *Cyperus exaltatus* Retz.
 - 42. Spikelets many-flowered *Cyperus eleusinoides* Kunth
 - 16. Umbels usually decompound,
 - 43. Hypogynous bristles 6, divided to the base into many fine segments *Eriophorum comosum* Wall.
 - 43. Hypogynous bristles absent,
 - 44. Glumes distichous, obtuse, golden yellow *Cyperus iria* Linn. (in Var. *paniciformis*, the spikes are drawn out into almost linear racemes.)
 - 44. Glumes spirally arranged,
 - 45. Stems triquetrous above ; spikelets sub-globose *Fimbristylis miliacea* Vahl
 - 45. Stems 4-5 angled, spikelets longer and more acute than the last one *Fimbristylis quinquangularis* Kunth
 - 45. Stems flattened above ; spikelets longer than both the above ones *Fimbristylis complanata* Link.
- 1. Inflorescence lateral,
 - 46. Spikelets in sessile heads,
 - 47. Heads near the base of the stem ; bristles 0 *Scirpus articulatus* Linn.
 - 47. Heads usually near the apex of the stem,
 - 48. Bristles present *Scirpus mucronatus* Linn.
 - 48. Bristles absent,
 - 49. Glumes spirally arranged ; nut triquetrous,
 - 50. Spikelets golden-yellow ; glumes loose *Scirpus quinquefarius* Ham.
 - 50. Spikelets usually green ; glumes not loose *Scirpus subpinus* Linn.
 - 49. Glumes distichously arranged, nut dorsally compressed *Cyperus laevigatus* Linn.
 - 46. Spikelets on the rays of an umbel,
 - 51. Spikelets in pedunculate clusters ; bristles 0 *Scirpus corymbosus* Heyne.
 - 51. Spikelets on drooping rays of an umbel ; bristles plumose with moniliform hairs *Scirpus littoralis* Schrad.
- 1. Inflorescence terminal and/or axillary,
 - 52. Plants leafy throughout their length,
 - 53. Spikelets many-flowered in dense clusters ; petals (hypogynous bristles) quadrate and clawed *Fuirena ciliaris* (Linn.) Roxb.
 - 53. Spikelets in panicle spikes,
 - 54. Nuts cancellately tessellate with square depressions ; puberulous with reddish hairs *Scleria tessellata* Willd.
 - 54. Nuts shallowly corrugose, shining white with sub-umbonate apex *Scleria stocksiana* Boeck.