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CYPERACEAE OF EAST AFRICA—V

(Continued from *J.E. Afr. nat. Hist. Soc. Vol. xxvi No 1 (113) June 1966*)

By

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PYCREUS Beauv.

Like the following genera *Pycrus* has been regarded as a subgenus of *Cyperus* by a number of notable cyperologists. Recent work in related studies, especially anatomy, emphasises the lack of homogeneity in this vast complex and supports the return to a more practicable classification such as is used here.

A large genus spread widely in all tropical and subtropical regions of the world *Pycrus* may be found in most suitably damp localities. Superficially it has a close resemblance to *Cyperus* in the leafy habit and the inflorescence of spikelets borne in ebracteate clusters and umbels. The spikelets themselves are compressed and many-flowered with a persistent but not winged rhachilla. The style bears 2 stigmas and the ellipsoid or obovoid nutlet is laterally compressed (where the stigmas are reduced to 2 in *Cyperus* the nutlets are usually vertically compressed). The surface of the nutlet is smooth except in the section *Zonatae* where distinct continuous or interrupted horizontal lines or minute tubercles are apparent.

Key to Species

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|---|--|
| 1. Glumes with a deep furrow down each side; stems leafy throughout | 2 |
| Glumes not furrowed; leaves mostly on the lower half of the stem | 4 |
| 2. Stems creeping at the base, stoloniferous | 3 |
| Stems erect, without stolons | 2. <i>P. sanguinolentus</i> |
| 3. Inflorescence with several rays; spikelets ovate, obtuse | 1. <i>P. mundtii</i> var <i>mundtii</i> |
| Inflorescence capitate or with 1-3 short rays; spikelets lanceolate, subacute | 1. <i>P. mundtii</i> var. <i>uniceps</i> |
| 4. Spikelets up to 2.8 mm wide, linear to narrowly lanceolate; glumes up to 3 mm long | 5 |
| Spikelets 3-5 mm wide, oblong to lanceolate; glumes large, 3-4 mm long | 23 |
| 5. Margins of the glumes very conspicuously white hyaline | 6 |
| Margins of the glumes narrowly hyaline or not distinct | 7 |
| 6. Spikelets 2-3.5 mm wide; glumes 2.4-3 mm long; nutlets distinctly obovate | 3. <i>P. albomarginatus</i> |
| Spikelets 1-1.5 mm wide; glumes up to 2.2 mm long; nutlet obovate-oblong | 4. <i>P. tremulus</i> |
| 7. Nutlets conspicuously transversely wrinkled or tuberculate | 8 |
| Nutlets smooth or faintly tubercled or very faintly wrinkled | 9 |
| 8. Glumes yellow; spikelets and bracts spreading; nutlets wrinkled | 5. <i>P. flavescens</i> |
| Glumes orange to dark red-brown | 6. <i>P. rehmannianus</i> |

9. Spikelets linear, less than 1 mm wide (up to 2 mm in <i>P. pelophilus</i>); glumes up to 2.2. mm long	10
Spikelets linear-lanceolate or more broadly linear, 2-3 mm wide; glumes 2.5-3 mm long	20
10. Glumes up to 1 mm long; slender or very slender annuals	11
Glumes 2 mm long; perennials or annuals	14
11. Glumes truncate, mucicous or with a short mucro	7. <i>P. pumilus</i>
Glumes obtuse or acute but never truncate	12
12. Inflorescence compound, rays several; spikelets red-brown in lax spikes	10. <i>P. hildebrandtii</i>
Inflorescence a simple cluster of sessile spikelets with one very long and 2-3 short bracts, the long erect bract making the head appear lateral	13
13. Spikelets purple-black	8. <i>P. melas</i>
Spikelets light yellowish buff	9. <i>P. capillifolius</i>
14. Glumes dark brown or black, usually with a green keel	15
Glumes golden or gold and brown, green-keeled	17
15. Annual; spikelets 5-8 mm long; glumes black, obtuse or subacute with a conspicuous green keel	12. <i>P. elegantulus</i>
Perennials; spikelets 10-20 mm long; glumes brown or black; achenes oblong	
16. Base of stem sheathed in thick black leaf-bases for 1-2.5 cm. roots very thick, about 1.5 mm wide	13. <i>P. aethiops</i>
Base of stem less tightly sheathed, leaves usually diverging from the base; roots moderately thick but less than 1 mm wide	14. <i>P. nuerensis</i>
17. Spikelets spreading, distant in pendunculate spikes	18
Spikelets erect, very numerous and densely congested; glumes buff or light brown	15 <i>P. polystachyos</i> var. <i>polystachyos</i>
18. Annual	11. <i>P. pelophilus</i>
Perennial	19
19. Spikelets 1-2 cm long, 1.5 - 2 mm wide, linear-lanceolate; culms stout; leaves 2-4 mm wide	15. <i>P. polystachyos</i> var. <i>laxiflorus</i>
Spikelets 1-3 cm long, 1-1.5 mm wide, linear; culms narrow, wiry; leaves 1-3 mm wide	16. <i>P. atribulbus</i>
20. Perennials; spikelets variously coloured	21
Annuals; spikelets gold and green	11. <i>P. pelophilus</i>
21. Basal leaf-sheaths shredded into coarse fibres	20. <i>P. permutatus</i>
Basal leaf-sheaths entire	22
22. Spikelets yellow or light-brown	18. <i>P. lanceolatus</i>
Spikelets white	19. <i>P. smithianus</i>
23. Nutlets conspicuously transversely wrinkled or tuberculate	24
Nutlets smooth or minutely pitted	26
24. Slender annuals; glumes light brown with dark tips	17. <i>P. pauper</i>
Stoutly based perennials	25
25. Spikes both subsessile and pedunculate together; spikelets brown; nutlet tuberculate	21. <i>P. muricatus</i>
Spikes all subsessile; spikelets black; nutlet wrinkled	22. <i>P. macranthus</i>
26. Spikelets 2.5-3 mm wide; glumes mucronate; stolons long and slender	23. <i>P. longistolon</i>
Spikelets 3-5 mm wide; glumes mucicous, obtuse	27
27. Glumes black; leaves narrow, folded	24. <i>P. nigricans</i>
Glumes brown or buff; leaves flat	28
28. Stolons present, long and stout	25. <i>P. nitidus</i>
Stolons never present	26. <i>P. uniolooides</i>

1. *P. mundtii* Nees var. *mundtii*
(*Cyperus mundtii* (Nees) Kunth)

Stoloniferous perennial up to 25 cm (10 ins.) high with thick leafy decumbent stems.
Inflorescences bracteate with short or very short branches bearing digitate or shortly

racemose heads of brown spikelets 2-4 mm wide. River banks, swamps and marshy places; sea-level to 1829 m (6000 ft)

KENYA-Masailand, Rift Valley and Nyanza Regions.

TANZANIA-Widespread; Pemba.

UGANDA-Mengo and western regions.

var. *uniceps* (C.B.Cl.) Napper, comb. nov.

(*Cyperus sanguinolentus* var. *uniceps* C.B.Cl. in Engl., *Engl. Jahrb.* 38: 132 (1906); *Cyperus mundtii* (Nees) Kunth var. *uniceps* (C.B.Cl.) Kük.)

Differs in the more slender habit, the contracted inflorescence and the slightly more acute dark spikelets. In swamps and running water, also damp places in forest; 1219-2133 m (4000-7000 ft.)

KENYA-Highlands east of the Rift Valley.

TANZANIA-Widespread on mountains.

UGANDA-Kigezi.

2. *P. sanguinolentus* (Vahl) Nees

(*Cyperus sanguinolentus* Vahl, *C. eragrostis* Vahl)

Herb in dense clumps 15 cm-45 cm (6-18 ins.) high with stems leafy throughout. Inflorescence dense with numerous linear-oblong spikelets 2 mm wide with obtuse dark brown glumes with black keels. Streams, waterholes and saline places; 1066-1676 m (3500-5500 ft.)

KENYA-Nairobi district.

TANZANIA-Northern and Central areas.

3. *P. albomarginatus* Nees

(*Cyperus albomarginatus* (Nees) Steud.)

Stout annual up to 30.5 cm (1 ft) high with leaves 5-8 mm wide. Inflorescence of lax pedunculate spikes of oblong-lanceolate orange-brown spikelets. Nutlets obovate-oblong, apiculate. In standing water, swamps and ditches.

KENYA-Nyanza Region.

TANZANIA-Widespread but not common.

UGANDA-Western areas and Soroti.

More slender plants with very narrow leaves found in the Malagarassi Swamps have been described as *C. hochstetteri* Krauss var. *tenuis* Boeck. but the differences are too slight to justify the maintenance of this form.

4. *P. tremulus* (Poir.) C.B.Cl.

(*Cyperus tremulus* Poir.)

Very similar to *P. albomarginatus* but more slender and with much narrower spikelets having narrower erect glumes 1.2-2 mm long, and narrower oblong nutlets. Damp places and in standing water; sea-level to 1219 m (4000 ft).

TANZANIA-Eastern areas from Kilosa to the Pare Mts.

UGANDA-Mengo and eastern areas.

5. *P. flavescens* (L.) Reichenb.

(*Cyperus flavescens* L.)

Densely tufted annual up to 30.5 cm (1 ft) high with short narrow leaves. Inflorescences simple with 3-10 clusters of spikelets which are linear-oblong, 6-10 mm long, with closely overlapping glumes. Swampy grasslands, river banks and forest clearings; 914-1981 m (3000-6500 ft.)

KENYA-Central Province and western areas.

TANZANIA-Widespread.

UGANDA-Widespread.

6. *P. rehmannianus* C.B.Cl.

(*Cyperus rehmannianus* (C.B.Cl.) Boeck.)

Slender annual up to 45 cm (18 ins) high with narrow leaves. Spikelets congested in a single head 10-15 mm wide, rarely with rays up to 5 cm long. Glumes subacute, mucronate, chestnut brown with a green keel. Nutlets wrinkled to almost smooth. Damp places on rocky outcrops, woodland and as a weed; 914-2743 m (3000-9000 ft).

KENYA-Nairobi district, central and western highland areas.

TANZANIA-Western and Southern Regions.

UGANDA-Lower slopes of Mt. Elgon.

7. *P. pumilus* Domin

(*Cyperus pumilus* L., *P. patens* (Vahl) Cherm.)

Slender annual up to 22.5 cm (9 ins) high with a few slender leaves and a several-rayed inflorescence of capitate cluster of brown or orange spikelets up to 2.5 mm wide with truncate, mucronate or muticous glumes. Margins of pools, vleis, seepage areas and rock outcrops; sea-level to 1676 m (5500 ft).

KENYA-Central Region and Nairobi.

TANZANIA-Widespread but not abundant; Pemba.

UGANDA-Mengo and western regions.

8. *P. melas* (Ridley) C.B.Cl.

(*Cyperus melas* Ridley, *Pyreus ater* (C.B.Cl.) Cherm.)

Slender annual up to 15 cm (6 ins) high with few slender basal leaves and a single head of up to 15 black spikelets 1.2 mm wide with obtuse glumes and faintly rugose nutlets. Damp places in grassland; 1828-1981 m (6000-6500 ft).

TANZANIA-Central and western areas.

UGANDA-Mt. Elgon.

9. *P. capillifolius* (A.Rich.) C.B.Cl.

(*Cyperus capillifolius* A.Rich.)

Annual similar to *P. flavescens* but more slender. Spikelets only slightly longer than those of *P. melas* but pale. Swamps and grassland; 609-1219 m (2000-4000 ft.)

UGANDA-West Nile and Mengo.

10. *P. hildebrandtii* C.B.Cl.

(*Cyperus pseudohildebrandtii* Kük., *P. minimus* C.B.Cl.)

Densely tufted leafy perennial up to 45.5 cm (18 ins) high with pedunculate heads of red or chestnut linear spikelets. Swampy places and ricefields; sea level to 122 m (400 ft).

KENYA-Coast.

TANZANIA-Tanga to Dar es Salaam; Zanzibar and Pemba.

11. *P. pelophilus* (Ridley) Ridley

(*Cyperus pelophilus* Ridley, *P. sulcinus* of Fl. Trop. Africa not of Fl. Brit. India)

Slender annual 10-30.5 cm (4-12 ins) high with umbellate heads of orange-red or golden linear spikelets 2 mm wide with broadly ovate mucronate glumes. Damp places among grasses, laterite outcrops, stream-banks etc.; sea level to 167 m (56500 ft).

TANZANIA-Uncommon but widely scattered; Zanzibar.

UGANDA-Karamoja, Busoga and Mengo.

12. *P. elegantulus* (Steud.) C.B.Cl.

(*Cyperus elegantulus* Steud.)

Shortly rhizomatous perennial or tufted annual up to 76 cm (2½ ft.) high with a solitary or several-rayed inflorescence with black spikelets 1-2 mm wide, the glumes

green-keeled, rarely brown with a black margin. Pools and damp grasslands; 914-3200 m (3000-10,500 ft).

KENYA-Widespread and fairly common.

TANZANIA-Widespread, more common in the north.

UGANDA-Widespread.

13. *P. aethiops* (Ridley) C.B.Cl.
(*Cyperus aethiops* Ridley)

Tufted leafy perennial up to 45.5 cm (18 ins) high with a few-rayed inflorescence of dense or elongated spikes with brown linear or linear-lanceolate spikelets 2 mm wide. As a weed.

TANZANIA-Southern Region.

14. *P. nuerensis* (Boeck.) Hooper
(*Cyperus nuerensis* Boeck., *P. globosus* (All.) Reichenb. var. *nuerensis* (Boeck.) Troupin, *C. globosus* All. var. *nuerensis* (Boeck.) Kük.)

A tufted leafy perennial very similar to *P. aethiops* but lacking the very thick roots and thick black base. Glumes and nutlets also similar but the inflorescence much denser. Swamps and ditches; 609-1828-(2000-6000 ft).

KENYA-Kitale district.

UGANDA-West Nile.

15. *P. polystachyos* (Rottb.) Beauv. var. *polystachyos*
(*Cyperus polystachyos* Rottb.)

Tufted plant up to 132 cm (5 ft.) high with very dense clusters of linear-elliptic brown spikelets 1 mm wide. Wet places in grasslands and in rivers.

KENYA-Kisumu district.

TANZANIA-Widespread; Zanzibar and Pemba.

UGANDA-Widespread.

var. *laxiflorus* (Benth.) C.B.Cl.

(*Cyperus polystachyos* var. *laxiflorus* Benth.)

Differs in its more lax inflorescence and its close resemblance to *P. atribulbus*. Wet places in bush and grassland; coastal.

KENYA-Kwale District.

TANZANIA-Dar es Salaam; Zanzibar and Pemba.

16. *P. atribulbus* (Kük.) Napper, comb. nov.
(*Cyperus atribulbus* Kük., Engl. & Diels, *Pflanzenreich iv*, 20 : 363 (1936))

Tufted perennial with thick stem-bases surrounded by the fibrous remains of old sheaths. Inflorescence spreading with pedunculate, elongate heads of linear light brown spikelets 2.5 mm wide. Ditches and swampy grasslands; sea-level to 304 m (1000 ft).

TANZANIA-Korogwe to Southern Region.

Some specimens show an interesting development towards a form of spikelet dehiscence similar to *Queenslandiella*.

17. *P. pauper* (A.Rich.) C.B.Cl.
(*Cyperus pauper* A.Rich., *P. melanacme* Nelmes)

Slender plant up to 45.5 cm (1½ ft) high, annual with very fine rhizomes and linear leaves. Head of 1-3 oblong-lanceolate spikelets up to 15 mm wide. Swamps and boggy places; 914-1219 m (3000-4000 ft).

TANZANIA-Songea District.

UGANDA-Karamoja.

18. *P. lanceolatus* (Poir.) C.B.Cl.

(*Cyperus lanceolatus* Poir., *Pycreus propinquus* Nees)

Tufted perennial up to 61 cm (2 ft) high with contracted inflorescences of large yellow linear spikelets 3-4 mm wide, lanceolate when young. Damp places, especially on sandy soils; 609-1981 m (2000-6500 ft).

KENYA - Kitale District.

TANZANIA-Western and Southern Regions.

UGANDA-Widespread.

19. *P. smithianus* (Ridley) C.B.Cl.

(*Cyperus smithianus* Ridley)

Tufted rhizomatous perennial with a rosette of leaves and a dense head of white lanceolate spikelets 2-3 mm wide with obtuse or subacute glumes.

TANZANIA-Bukoba District.

UGANDA-Sese Islands.

20. *P. permutatus* (Boeck.) Napper, comb. nov.

(*Cyperus permutatus* Boeck. in *Linnaea* 25: 477 (1868), *C. macranthus* var. *mucronatus* (Kunth) Kük)

Tufted perennial about 61 cm (2 ft) high with leafy stems surrounded at the base by black or brown coarse hairlike fibres, remnants of the old sheath-bases. Spikelets in dense heads, narrowly oblong-lanceolate, black or brown. Swampy grasslands; 914-2286 m (3000-7500 ft).

KENYA-Western Region.

TANZANIA-Central and western areas.

UGANDA-Widespread.

21. *P. muricatus* (Kük.) Napper, comb. nov.

(*Cyperus muricatus* Kük. in *Fedde Rep.* 12 : 92 (1913), *P. rehmannianus* C.B.Cl. of Fl. Trop. Africa not of Flora Capensis)

Tufted perennial 30.5-76 cm (1-2½ ft.) high, often fibrous coated at the base. Inflorescence of several pedunculate loose spikes of broadly lanceolate spikelets up to 3.5 mm wide, with light golden-brown glumes. Seepage zones, swamps etc.

TANZANIA-Central and southern regions.

UGANDA-Western Region.

22. *P. macranthus* (Boeck.) C.B.Cl.

(*Cyperus macranthus* Boeck.)

Perennial up to 61 cm (2 ft) high with woody rhizomes and stolons. Lower leaf-sheaths often hard and blackish-red: Spikelets oblong-lanceolate, dark brown to ferruginous, 3-5 mm wide with subacute glumes. Swamp grassland; 914-2133 m (3000-7000 ft).

KENYA-Eldoret and Nairobi districts.

TANZANIA-Western, central and southern areas.

UGANDA-Western and central areas.

23. *P. longistolon* (Peter & Kük.) Napper, comb. nov.

(*Cyperus longistolon* Peter & Kük., Engl. & Diels, *Pflanzenreich* iv, 20 : 333 (1936))

Perennial up to 61 cm (2 ft) high with long slender stolons. Spikelets oblong lanceolate, 2.5-3 mm wide, compressed. Lake shores and damp places in bush; 609-1371 m (2000-4500 ft).

TANZANIA-Lake and Western Regions.

24. *P. nigricans* (Steud.) C.B.Cl.

(*Cyperus nigricans* Steud., *P. niasensis* C.B.Cl.)

Tufted perennial with persistent black or dark brown leaf-bases, very thick roots and

a dense head of black lanceolate spikelets 5-6 mm wide with green-keeled glumes. In upland and alpine swamps and bogs; 1676-3353 m (5500-11,000 ft).

KENYA—Most highland areas.

TANZANIA—All highland areas.

UGANDA—Kigezi and the Ruwenzori Mts.

25. *P. nitidus* (Lam.) J. Raynal

(*Cyperus nitidus* Lam., *C. lanceus* Thunb., *P. lanceus* (Thunb.) Turrill, *P. umbrosus* Nees)

Woody-based perennial with long stout stolons and simple spreading inflorescence with brown or black spikelets 3-4 mm wide. Swamps and lake shores; 762-2438 m (2500-8000 ft.).

KENYA—Widespread in highland areas above 1524 m (5000 ft).

TANZANIA—Widespread.

UGANDA—Widespread.

26. *P. uniolooides* (R.Br.) Urb.

(*Cyperus uniolooides* R.Br.)

Tufted perennial without stolons. Inflorescence few-rayed with lanceolate or oblong-lanceolate yellowish or brown shining spikelets 3-5 mm wide and very compressed. Swamps and seasonally flooded grasslands; 914-1981 m (3000-6500 ft).

TANZANIA—Western and southwestern regions.

UGANDA—Widespread.

QUEENSLANDIELLA Domin

A monotypic genus of coastal grasslands and sandy soils, widespread in the tropics as a subaritime weed.

Leafy annual herb with lax spikes of compressed, many-flowered spikelets; the style is bifid and the achene laterally compressed as in *Pycneus* but the glumes are shed together with the rhachilla as in *Mariscus*.

In the key to genera given in part I of this series (*J.E.Afr. nat. Hist. Soc.* 24: 2 (106); 3-6 (1963)) *Queenslandiella* will key out with *Pycneus*.

Q. hyalina (Vahl) Ballard

(*Cyperinus hyalinus* Vahl, *Mariscopsis hyalinus* (Vahl) Ballard)

Tufted aromatic herb with numerous leaves and long leafy bracts. Spikes lax, pedunculate, with pale golden-brown compressed elliptic spikelets having ovate, scabrid-keeled glumes. Sandy coastal grasslands and as a weed.

KENYA—Coast.

TANZANIA—Coast and Zanzibar Island.

Not unlike small plants of *Mariscus assimilis* but with the pungent odour associated with *M. aristatus*.

MARISCUS Gaertn.

Though regarded by some cyperologists as a subgenus of *Cyperus* since the distinctions between the two are rather narrow and sometimes almost completely break down, they are nevertheless sufficiently important for *Mariscus* to be maintained as a separate genus. Likewise *Pycneus* and *Kyllinga* are distinct, though *Courtoisia*, where the only appreciable morphological difference is in the winged glumes, is here included with *Mariscus*.

In its present connotation *Mariscus* is a large genus and is widespread across the tropical and subtropical regions of the world. As with most cyperaceous genera it is to be

found in damp places and near water, but there is also a large group of species (the section *Bulbocaulis*) in which the lower part of the leaf-sheaths form swollen storage organs, an ovate or elongated bulb-like base, the pseudobulb, and these species manage to thrive in semi-arid conditions and crevices of rock outcrops.

Apart from the section *Bulbocaulis* mentioned above which comprises about half of the species recorded in East Africa, the leafy perennial or annual habit of most *Mariscus* species differs little from that of *Cyperus*. There is also little difference in the structure of the inflorescence, especially in the species without pseudobulbs. But the spikelets of *Mariscus* are very commonly 1-4-flowered with 3-1 nutlets whereas those of *Cyperus* have many-flowered spikelets. The two genera may be distinguished most easily by differences in the mode of shedding the nutlets; in *Cyperus* it is usual for the glumes and nutlets to be shed progressively as they age until the naked rhachilla alone remains, whereas in *Mariscus* the rhachilla fractures immediately above the lowest pair of glumes and the spikelet is shed entire. Though this is a practical character for separating most species of these two genera, there is a small group of superficially very similar species close to *Mariscus keniensis* and *Cyperus distans* where it needs to be used with caution.

Key to Species

1. Annuals; glumes with recurved tips or awns 2
Perennials; rarely annual and the glumes lacking a long recurving tip 5
2. Stems 30.5-91.4 cm (1-3 ft) tall; leaves 2-5 mm wide with green sheaths; glumes narrowly keeled and winged, acuminate 3
Stems short, up to 22.5 cm (9 ins) high; leaves not over 2 mm wide with purplish sheaths; glumes keeled but not winged and with a long subulate awn 4
3. Spikelets 1-2-flowered, 3-4 mm long; glumes with a straight tip 2. *M. cyperoides* subsp. *africanus*
Spikelets 4-12-flowered, 4-8 mm long; glumes with a recurved tip 1. *M. assimilis*
4. Glumes 2.5 mm long, compressed; spikes crowded, forming a single hemispheric head 3. *M. maderaspatanus*
Glumes 2-2.5 mm long, rounded on the back; spikes cylindric to ovoid-oblong, some of them pedunculate 4. *M. squarrosus*
5. Stem-bases tuberous or not swollen; leaf-sheaths not semisucculent at the base 6
Stem and leaf-bases bulbous-swollen 20
6. Inflorescence spreading with distant or pedunculate spikes 7
Inflorescence a solitary globose head 28. *M. chrysocephalus*
7. Mature spikelets with 3 or more nutlets (see also *M. sieberianus*) 8
Mature spikelets with 1-2 nutlets only 17
8. Spikelets 1.5-2 mm wide, whitish or sulphur yellow, with or without green keels to the glumes and brownish veining 9
Spikelets up to 1 mm wide, red or rust or golden-green or white 10
9. Spikes ovate to ovate-cylindric, 1-2 cm long; spikelets terete or subterete, 8-20 mm long; glumes not green-keeled, 3-4 mm long 5. *M. hemisphaericus*
Spikes cylindric, 2.5-4 cm long; spikelets subcompressed, 6-14 mm long; glumes green-keeled, 4-5 mm long 6. *M. tomaiophyllus*
10. Glumes conspicuously veined on the back only, sides smooth, tip and margins often scarious, white, red or golden-orange with a green keel 11
Glumes very conspicuously veined on the back and sides, red except for the green keel; stems moderately stout from a tuberously swollen base on a woody rhizome 14. *M. impubes*
11. Glumes 2-3 mm long, whitish or red; inflorescence compound 12
Glumes 3.4-5 mm long, often orange-red on the sides; inflorescence simple 15
12. Glumes whitish except for the green midrib, the veins reaching the entire or emarginate tip, the sides often with hyaline margins 13
Glumes black or red except for the midrib, the veins reaching only to the base of the conspicuously hyaline tip 14
13. Leaves reduced to bladeless sheaths 7. *M. socialis*
Leaves with well developed blades 9. *M. longibracteatus*

14. Spikelets reddish, 1–1.5 mm wide 10. *M. rubrotinctus*
Spikelets dark chestnut or black, less than 1 mm wide. 11. *M. keniensis*
15. Spikes dense with a hairy axis; leaves 2–3 mm wide; 13. *M. pubens*
bracts 4; rhizome stout, elongated
Spikes loose with a glabrous axis; leaves 3–8 mm wide, bracts 6–12; plants
stoloniferous, rarely merely tufted 16
16. Glumes greenish white 8. *M. luteus*
Glumes orange 12. *M. ferrugineoviridis*
17. Mature spikes sessile or very shortly pedunculate, simple, 1–2 cm long,
4–15 mm wide 18
Mature spikes pedunculate, usually simple, 1.2–3 cm long, not above 10 mm wide;
peduncles at least as long as the spikes 19
18. Spikes ovoid to shortly cylindrical, 1–1.5 cm long, 10–15 mm wide (but
narrower if only 1-flowered); glumes 3–4 mm long 15. *M. macrocarpus*
Spikes cylindrical 1.5–2 cm long, 4–9 mm wide; glumes 2–2.5 mm long, broader
than in the above 16. *M. macer*
19. Spikes 15–30 mm long, 5–10 mm wide; spikelets usually 1-flowered but
sometimes 2–3 18. *M. sieberianus*
Spikes very dense, 5–10 mm long, 3–5 mm wide; spikelets 1-flowered with
mucronate glumes 17. *M. umbellatus*
20. Heads spreading with pedunculate spikes, or contracted but with distinct spikes 21
Heads capitate, globose, rarely obscurely lobed 32
21. Plant pubescent to hairy, or only the glumes pubescent; pseudobulbs with withered
keel-less outer sheaths; glumes mucronate 22
Plant and glumes glabrous 23
22. Pseudobulbs oblong with withered outer sheaths; shortly rhizomatous
perennial 20. *M. psilostachys*
Pseudobulbs ovate with the outer sheaths becoming fibrous; stoloniferous
perennial 21. *M. hirtellus*
23. Sheaths round the stem-bases without keels, more or less withered and fibrous;
spikes pedunculate 24
Sheaths round the stem-bases more or less acutely keeled, usually hard,
entire 30
24. Pseudobulbs short, broadly ovoid 22. *M. vestitus*
Pseudobulbs narrowly ovoid to cylindrical 25
25. Outer sheaths short, hard, yellow-brown 25. *M. amauropus*
Outer sheaths long, membranous, brown or yellow-purple 26
26. Glumes rust-coloured to red or green 27
Glumes white and rust, spikelets pale 29
27. Spikelets acute, pale green 19. *M. phillipsiae*
Spikelets rust or red 28
28. Spikes 1.5–2 cm long, 8–10 mm wide 23. *M. taylori* var. *taylori*
Spikes 5–6 cm long, 12–14 mm wide 23. *M. taylori* var. *groteanus*
29. Spikes 2 cm long, 15 mm wide 23. *M. taylori* var. *udigensis*
Spikes 3–5 cm long 6–8 mm wide 24. *M. rohlfssii*
30. Spikes ovoid to shortly cylindrical, little longer than broad 31
Spikes long cylindrical, up to 5 cm long 24. *M. rohlfssii*
31. Inflorescence spreading with pedunculate spikes 26. *M. obsoletinervosus*
Inflorescence contracted into a subglobose head of sessile spikes 27. *M. pseudovestitus*
32. Glumes dark red throughout, rarely tipped with white. 29. *M. kerstenii*
Glumes variously coloured, or white variegated with red at the base only 33
33. Glumes variegated 34
Glumes white or yellow or tinged with rust 36
34. Stem-bases coated with the fibrous remains of old leaves 35
Stem-bases with the entire bases of old leaves 31. *M. sp.* near *plateilema*
35. Pseudobulbs cylindrical, finely fibrous, scarcely swollen; glume-tips white, often
marked with buff 30. *M. plateilema*
Pseudobulbs ovate; glumes-tips creamy-white 32. *M. albosanguineus*

36. Glumes bright yellow or brownish	37
Glumes white or cream, rarely pale green	38
37. Spikelets 4-5 mm long, ovate-oblong	33. <i>M. stramineo-ferrugineus</i>
Spikelets 5-6 mm long, linear-lanceolate	36. <i>M. remotus</i>
38. Plants with long slender stolons	34. <i>M. diurensis</i>
Plants without stolons	39
39. Stems, leaves and bracts pubescent	35. <i>M. albopilosus</i>
Stems, leaves and bracts glabrous	40
40. Spikelets with 1 nutlet (rarely 2)	41
Spikelets with 2-10 nutlets; bracts not or only slightly dilated at the base	43
41. Stem-bases coated with fibrous remains of old leaves	42
Stem-bases coated with subentire sheaths; bracts conspicuously dilated at the base	38. <i>M. circumclusus</i>
42. Leaves filiform; heads up to 6 mm long	31. <i>M. stramineoferrugineus</i>
Leaves over 1 mm wide; heads 8-16 mm long	37. <i>M. mollipes</i>
43. Heads up to 15 mm diam.	44
Heads 15-20 mm diam.	45
44. Stem-bases coated with entire or subentire sheaths; spikelets with 2-4 nutlets	39. <i>M. dubius</i> var. <i>dubius</i>
Stem-bases coated with fibrous remains of old leaves; spikelets compressed, oblong, obtuse	40. <i>M. macropus</i>
45. Stem-bases sparingly or densely coated with fibres; spikelets subcompressed, creamy white	40. <i>M. macropus</i>
Stem-bases coated with subentire sheaths; spikelets subterete, white or greenish white	39. <i>M. dubius</i> var. <i>macrocephalus</i>

1. *M. assimilis* (Steud.) Podl.(*Cyperus assimilis* Steud., *Courtoisia assimilis* (Steud.) C.B.Cl.)

Tufted leafy annual up to 45.5 cm (3½ ft) high with 3 long leafy bracts. Spikes globose pedunculate 3-8, 8-12 mm diam. with oblong-elliptic compressed spikelets. Heavy seasonally waterlogged soils and by pools; 1066-2133 m (3500-7000 ft).

KENYA—Widespread in western and central areas east to Kibwezi.

TANZANIA—Northern and Lake Regions.

UGANDA—Central and Western Provinces, Mt. Elgon.

2. *M. cyperoides* (Roxb.) Dietr. subsp. *africanus* (Kük.) Podl.(*Cyperus pseudokyllingioides* Kük., *Courtoisia cyperoides* (Roxb.) Nees)

Tufted annual up to 76 cm (2½ ft) high differing from the above only in the shorter fewer-flowered spikelets. Seasonally waterlogged places; 762-1676 m (2500-5500 ft).

TANZANIA—Central and Western Regions, also Mahenge.

3. *M. maderaspatanus* (Willd.) Napper, comb. nov.(*Cyperus maderaspatanus* Willd., *Sp.Pl.1*; 278 (1797), *Mariscus squarrosus* C.B.Cl. not *Cyperus squarrosus* L.)

Slender narrow-leaved annual with pinkish purple leaf-bases. Spikes hemispheric, sessile or pedunculate, 10-20 mm diam. with linear spikelets 1 mm wide. Damp places in forest and grassland; sea-level to 762 m (2500 ft).

KENYA—Coast only.

TANZANIA—All eastern areas and the vicinity of Lake Tanganyika; also Zanzibar.

4. *M. squarrosus* (L.) C.B.Cl.(*Cyperus aristatus* Rottb., *M. aristatus* (Rottb.) Cherm.)

Aromatic small herb with reddish leaf-bases. Spikes ovate to cylindrical, sessile and pedunculate, 8-10 mm diam. with linear-oblong spikelets 1-1.5 mm wide. Rocky places in bush and grassland; sea-level to 1981 m (6500 ft).

KENYA—Widespread.

TANZANIA—Widespread but not abundant.

UGANDA—Eastern regions and Mengo.

5. *M. hemisphaericus* (Boeck.) C.B.Cl.
(*M. hemisphaericus* var. *gregorii* C.B.Cl., *Cyperus hemisphaericus* Boeck.)
Coarse tufted plants 30.5–152 cm (1–5 ft) high with tuberous-based stems and 6–10 mm wide flat or pleated leaves with scabrid margins. Heads simple or compound with dense white or light sulphur yellow spikes. Common in damp grasslands on clay soils, forest margins and road-sides; sea-level 1828 m (6000 ft).
KENYA–Nairobi, Central and Coast Regions.
TANZANIA–Eastern, southern and coastal areas, also Zanzibar and Pemba.
6. *M. tomaiophyllus* (K.Schum.) C.B.Cl.
(*Cyperus tomaiophyllus* K. Schum.)
Stout tufted perennial 30.5–122 cm (1–4 ft) high with flat, scabrid-margined leaves 6–10 mm wide. Heads simple with greenish white or brownish dense spikes. Montaine forest glades, boggy places and moorland; 1828–3048 m, (6000–10,000 ft).
KENYA–All mountain ranges except Cherangani.
TANZANIA–All mountains south of the Uluguru Mts., also Kilimanjaro.
UGANDA–Mt. Elgon. Kigezi.
7. *M. socialis* (C.B.Cl.) Hooper
(*Cyperus socialis* C.B.Cl., *M. trinervius* C.B.Cl.)
Stout rhizomatous perennial 122–182.8 m (4–6 ft.) high. Spikelets spreading, glumes obtuse, 1.7–2 mm long, spreading. Forest fringes; 609–1219 m (2000–4000 ft).
UGANDA–Budongo Forest, Entebbe.
8. *M. luteus* (Boeck.) C.B.Cl.
(*Cyperus luteus* Boeck., *M. foliosus* C.B.Cl.)
Tufted or stoloniferous plants 30.5–106.4 m (1–3½ ft) high with swollen stem-bases. Leaves mostly scabrid-margined. Inflorescence with simple or compound spikes of usually crowded linear greenish spikelets up to 1 mm wide; glumes 3.4–5 mm long. Swamps and forests; sea-level to 2438 m (8000 ft).
KENYA–Sokoke forest, Mt. Elgon.
TANZANIA–Coast, Kilimanjaro and Kigoma areas.
UGANDA–Mt. Elgon and western areas.
Of the material included in this species the up land specimens commonly have a contracted inflorescence with spreading spikelets, while the coastal ones have a spreading inflorescence with somewhat reflexed spikelets. These latter plants may not be distinct from the Madagascan *M. splendens* Cherm., though the glumes are rather smaller than in that species.
9. *M. longibracteatus* Cherm.
(*Cyperus longibracteatus* (Cherm.) Kük., and var. *subdistans* Kük., *C. distans* of Fl. Trop. Afr. in part)
Tufted plants 30.5–76 cm (1–2½ ft) high with the stems swollen at the base. Stolons absent. Bracts 4–8 and very long, usually over 25 cm. Inflorescence compound with dense hemispheric spikes 2.5 cm diam. having 6–12-flowered greenish spikelets. Glumes 2.5–3 mm long. Damp ground and near water in grassland and shady places; 152–1981 m (500–6500 ft).
KENYA–Coastal regions.
TANZANIA–Widespread but not common.
UGANDA–Central and Western Provinces.
10. *M. rubrotinctus* Cherm.
(*C. distans* of Fl. Trop. Afr. in part, *C. longibracteatus* var. *rubrotinctus* (Cherm.) Kük.)
Very close to the above but usually smaller with 7–10 shorter bracts and denser.

inflorescences of reddish spikelets. Swamps, river banks and damp ground in plantation crops; sea-level 2286 m (7500 ft).

KENYA—Widespread.

TANZANIA—Northern and western regions.

UGANDA—Kampala and the west.

11. *M. keniensis* (Kük.) Hooper

(*Cyperus keniensis* Kük. as '*keniaensis*', *C. distans* var. *niger* C.B.Cl.)

Stout perennial up to 61 cm (2 ft) high. Bracts 3–5. Umbels compound with fairly dense spikes of subcompressed spreading spikelets up to 2 cm long. Very like *Cyperus distans* but more robust, the spikelets darker and the glumes longer. Forest, grassland and rivers; 609–2438 m (2000–8000 ft).

KENYA—Widespread.

TANZANIA—Uluguru Mts., and north-eastern areas.

UGANDA—Mt. Elgon and Kigezi.

This, with the preceding two species, was included by C.B. Clarke in the Flora of Tropical Africa under *Cyperus distans* to which all three are superficially very similar but, which normally sheds the glumes and retains the rhachilla of the spikelet. Detailed field observations on all these species is needed for a full understanding of their relationships.

12. *M. ferrugineoviridis* (C.B.Cl.) Cherm.

(*Cyperus maranguensis* var. *ferrugineoviridis* C.B.Cl., *Cyperus ferrugineoviridis* (C.B.Cl.) Kük. including var. *luteiformis* Kük. in part)

Stout perennial up to 91.4 cm (3 ft) high with tuberous stem-base and numerous thick stolons. Inflorescence with long rays and lax ovate cylindric spikes with spreading linear spikelets 12–25 mm long, 1 mm wide, having orange green-keeled glumes with narrow hyaline margins. Damp grasslands and forest clearings, a weed; 1066–2133 m (3500–7000 ft).

KENYA—Upland areas west of the Rift Valley.

TANZANIA—Kondoa and Iringa regions.

UGANDA—Busoga, Kampala and western areas.

13. *M. pubens* (Kük.) Podl.

(*Cyperus pubens* Kük.)

Plants 30.5–61 cm (1–2 ft) high with long woody rhizomes coated with brown sheaths. Stems hairy below the inflorescence. Inflorescence simple with 4–7 pedunculate spikes 1.5–2 cm diam., with narrow linear subterete spikelets having distant glumes. Woodland and forest.

TANZANIA—Southern Highlands and the Lupa Forest Reserve.

14. *M. impubes* (Steud.) Napper, comb. nov.

(*Cyperus impubes* Steud., *Syn. Pl. Glum.* 2: 45 (1855), *M. richardi* Steud., *M. procerus* A.Rich. not of Nees)

Thick creeping rhizome with tuberous nodes. Stem 45.5–91.4 cm (1½–3 ft) high. Inflorescence simple with 6–10 pedunculate cylindric spikes 10–12 mm wide. Grassland 1219–2286 m (4000–7500 ft.)

KENYA—Rift Valley, Central Region and Kajiado district, also Cherangani.

TANZANIA—Serengeti Plains.

The inflorescence of this species is very similar to *Mariscus taylori* but the rhizome is distinctive.

15. *M. macrocarpus* Kunth

(*Cyperus macrocarpus* (Kunth) Boeck.)

Rhizomatous plant up to 61 cm (2 ft) high with tuberous stem-bases. Inflorescences of 10–12 subsessile or shortly pedunculate cylindric brownish green spikes of 3–4 glumes.

Savanna, woodland, damp places and as a weed; 762–2133 m (2500–7000 ft).

KENYA–Widespread.

TANZANIA–Widespread in the north.

UGANDA–Widespread but not common.

16. *M. macer* Kunth

(*Cyperus macer* (Kunth) K.Schum.)

Slender plant similar to the above but with 4–7 sessile or subsessile cylindrical greenish spikes of usually 1-flowered spikelets. Dry bushland and rocky hills; 1066–1524 m (3500–5000 ft).

KENYA–Turkana & West Pokot.

TANZANIA–North-western areas only.

UGANDA–Karamoja.

17. *M. umbellatus* (Rottb.) Vahl

(*Cyperus subumbellatus* Kük.)

Tufted plant similar to *M. macrocarpus* but smaller. Inflorescence of dense yellow-green spikes of small 1-flowered spikelets up to 2.5 mm long. Rocky hills, grassland, rain-forest etc.; 152–2138 m (500–7000 ft).

KENYA–Rift Valley and Western areas.

TANZANIA–Widespread in northern areas.

UGANDA–Mengo and Busoga, also the Ishasha Forest.

The name used here, and by which this plant has hitherto been known is unfortunately erroneous, but until this whole group of species is fully revised the correct name remains in doubt.

18. *M. sieberianus* Steud.

(*Cyperus cyperoides* (L.) O.Ktze, *M. sublimus* C.B.Cl.)

Tufted perennial 22.5–76 cm (9 ins–2½ ft) high. Inflorescence usually simple of 5–14, long pedunculate, cylindrical spikes with spreading spikelets or the lower ones reflexed, and usually 1-flowered, rarely more. Grasslands, bush, swampy places and sometimes as a weed; 304–2133 m (1000–7000 ft).

KENYA–West of the Rift Valley, rarely in the eastern upland areas.

TANZANIA–Widespread.

UGANDA–Widespread.

A particularly large form of this species was distinguished as *C. nossibeensis* Steud. but the differences are so slight as to make the two virtually indistinguishable.

19. *M. phillipsiae* C. B. Cl.

(*Cyperus phillipsiae* (C.B.Cl.) Kük.)

Tufted perennial 30.5–61 cm (1–2 ft) high with cylindrical swollen stem-bases. Inflorescences similar to small forms of *M. umbellatus* but the glumes and spikelets are very acute. Savanna, forest glades and as a weed; sea level to 762 m (2500 ft.)

KENYA–Coast north of Mombasa.

20. *M. psilostachys* C.B.Cl.

(*Cyperus psilostachys* (C.B.Cl.) Kük.)

Tufted perennial up to 39.5 cm (1 ft) high with narrowly oblong or ovoid pseudobulbs having the scarious remains of old leaf-sheaths. The whole plant normally hairy, though a glabrous state may be occasionally found. Inflorescence of simple pedunculate spikes up to 1.5 cm long with spreading terete spikelets having conspicuously recurved glumes. Rocky outcrops in open woodland and grassland; 1066–2133 m (3500–7000 ft).

KENYA–Rift Valley, northern and western areas.

TANZANIA–Throughout western and central regions, also the Usambara Mts.

UGANDA–Central and Eastern Provinces, also Karamoja.

21. *M. hirtellus* Chiov.

(*Cyperus hirtellus* (Chiov.) Kük.)

Similar to the above but with several stout stolons. *Brachystegia* and *Isoberlimia* woodlands; 914-1219 m (3000-4000 ft).

TANZANIA—Central and Western Regions.

22. *M. vestitus* (Krauss) C.B.Cl.

(*Cyperus vestitus* Krauss)

Tufted or stoloniferous plants up to 15 cm (6 ins) high with ovoid pseudobulbs. Spikes 4-5, dense, with subterete spreading red spikelets. Rocky outcrops and in stony, sandy savanna; 1219-1828 m (4000-6000 ft.).

KENYA—Widespread in suitable habitats.

TANZANIA—Throughout Masailand and the Usambara Mts.

UGANDA—Ankole.

23. *M. taylori* C.B.Cl. var. *taylori*

(*Cyperus oblongo-incrassatus* Kük.)

Tufted plants with or without stolons, stems up to 61 cm (2 ft) high with membranous sheaths coating an oblong-cylindric pseudobulb. Inflorescence of simple pedunculate cylindrical spikes with subterete oblong-lanceolate spikelets 1.5 mm wide. Rocky scrub and grassland; sea-level to 1828 m (6000 ft).

KENYA—Rift Valley and Eastern Regions to the Chyulu Hills.

TANZANIA—E. Usambara Mts. and Handemi District.

var. *groteanus* (Kük.) Napper, comb. nov.

(*Cyperus oblongo-incrassatus* var. *groteanus* Kük., Engl. & Diels, *Pflanzenreich iv*, 20: 550 (1936))

Differs in its greater stature and broader spikelets. Rocky places; 914-1219 m (3000-4000 ft).

TANZANIA—East Usambara Mts.

var. *udigensis* (Kük.) Napper, comb. nov.

(*Cyperus oblongo-incrassatus* var. *udigensis* Kük., Engl. & Diels, *Pflanzenreich iv* 20 : 550 (1936))

Differs in the very pale inflorescences and short, wide spikes.

KENYA—Coast.

TANZANIA—Sigi River.

24. *M. rohlfsii* (Boeck.) C.B.Cl.

(*Cyperus rohlfsii* Boeck., *C. procerus* var. *rohlfsii* (Boeck.) Kük., *C. oblongo-incrassatus* var. *clarior* Kük.)

Tufted plant with hard, keeled or subterete leaf-bases covering the pseudobulb, and long thick stolons. Inflorescence of 5-8 pedunculate pale or red-brown spikes with terete spikelets less than 1 mm wide and up to 3 mm long. Dry bush; 304-1371 m (1000-4500 ft).

KENYA—Widespread in dry bushland areas.

TANZANIA—Lake Natron.

25. *M. amauropus* (Steud.) Cuf.

(*Cyperus amauropus* Steud., *M. leptophyllus* C.B.Cl. *M. concinnus* C.B.Cl. not of Schrad.)

A very variable plant 15-45.5 cm (6-18 ins). high with the pseudobulbs covered with tough, rarely keeled leaf-bases, sometimes stoloniferous. Leaves up to 2 mm. wide. Inflorescence of 3-5 pedunculate rather lax spikes of 6-12 reddish compressed spikelets up to 10 mm long, rarely more. Rocky outcrops and stony soils in grassland and bush;

457-2133 m (1500-7000 ft).

KENYA-Widespread.

TANZANIA-Widespread in the north of the country.

UGANDA-Widespread in dry areas, especially Karamoja.

26. *M. obsoletinervosus* (Peter & Kük.) Greenway

(*Cyperus obsoletinervosus* Peter & Kük as *obsoletenervosus*)

Robust tufted plants, usually stoloniferous. Inflorescence similar to the above, but the spikelets more numerous, terete and paler. Dry bush; 304-609 m (1000-2000 ft).

KENYA-Machakos District and Tsavo National Park.

TANZANIA-Umba Steppe.

27. *M. pseudovestitus* C.B.Cl.

(*Cyperus pseudovestitus* (C.B.Cl.) Kük.)

Robust tufted plant without stolons, sheathing leaf-bases purplish, dark, keeled. Inflorescence of 3-4 dense spikes sessile in a dense head or very shortly pedunculate with terete spikelets similar to the above but broader, 1.5-2.5 mm wide. Rocky outcrops and stony hillsides in dry grassland and bush; sea level to 1981 m (6500 ft).

KENYA-Widespread.

TANZANIA-In the northern half of the country only.

UGANDA-Karamoja.

28. *M. chrysocephalus* K.Schum.

(*Cyperus chrysocephalus* (K.Schum.) Kük.)

Tufted plant 30.5-61 cm (1-2 ft) high with black, usually wiry-fibrous sheathing bases only slightly swollen; leaves rigid, linear. Inflorescences a solitary brilliant yellow globose head of 8-10 mm diam. Swamps, dambos and peat bogs; 1219-1676 m (4000-5500 ft).

TANZANIA-Western and Southern Highland areas.

29. *M. kerstenii* (Boeck.) C.B.Cl.

(*Cyperus kerstenii* Boeck.)

Stout tufted perennial up to 61 cm (2 ft) high, the elongated pseudobulbs covered with many-ribbed coriaceous sheaths. Leaves 3-7 mm wide. Bracts scabrous margined. Head capitate, dark red, 1-2.5 cm diam., dense and more or less distinctly 3-lobed, rarely with distinct lateral heads. Mountain moorland; 2590-4266 m (8500-14,000 ft).

KENYA-Aberdare Mts., Mt. Kenya, West Pokot.

TANZANIA-Mt. Meru & Kilimanjaro.

UGANDA-Elgon, Dabasien.

More slender plants from the upper bamboo *Hagenia* forest of Mt. Kenya and Kilimanjaro which were given the name *M. karisimbiensis* Cherm. var. *longinux* (Kük.) Kük. are probably no more than reduced plants of *M. kerstenii*.

30. *M. plateilema* Steud.

(*Cyperus plateilema* (Steud.) Kük.)

Tufted plant 15-38 cm (6-15 ins) high with cylindric slightly swollen stem-bases often coated with fine fibres. Leaves narrow. Bracts 2-4 dilated at the base. Heads variegated blackish red and white, from almost all white to almost all black. Spikelets crowded, 5-8 mm long; glumes 4-8 mm long. Mountain streams and damp moorland and forest; 1828-3658 m (6000-12000 ft).

KENYA-Mt. Elgon.

TANZANIA-Kilimanjaro.

UGANDA-Mt. Elgon, Kigezi.

31. *M. sp.* near *M. plateilema*

Tufted plant up to 45.5 cm (1½ ft) high with ovate to oblong pseudobulbs and 2 mm wide leaves. Heads more or less distinctly lobed with 3-4 bracts dilated at the base and purple-black spikelets with white tips. Swampy grassland, stream banks etc.; 1981-3048 m (6500-10,000 ft).

KENYA-Mt. Elgon and the Narok District.

UGANDA-Karamoja, Mt. Elgon and the Western Region.

32. *M. albosanguineus* (Kük.) Napper, comb. nov.

(*Cyperus albosanguineus* Kük.)

Tufted plant rarely over 25 cm (10 ins) high, with ovate pseudobulbs. Heads globose, not lobed, 9-14 mm diam. Spikelets with small dark red lower glumes and white or variegated upper ones 3-4 mm long. Damp grassland and moorland; 1676-3353 m (5500-11,000 ft).

KENYA-Chyulu Hills, Narok and Naivasha Districts to Laikipia.

TANZANIA-Kilimanjaro and mountains in Masailand and western regions.

UGANDA-Mt. Elgon and Karamoja.

33. *M. stramineoferrugineus* (Kük.) Napper, comb. nov.

(*Cyperus stramineoferrugineus* Kük. in Engl. & Diels, *Pflanzenreich*, iv, 20 : 550 (1936))

Tufted plant to 25 cm (10 ins) high with ovate-oblong pseudobulbs densely covered with dark brown fibres. Head 6-10 mm diam. with spikelets up to 5 mm long; glumes subobtuse. Grassland; 1219-1981 m (4000-6500 ft).

TANZANIA-Usumbari.

34. *M. diurensis* (Boeck.) C.B.Cl.

(*Cyperus diurensis* Boeck.)

Erect stems up to 30.5 cm (1 ft) high growing singly on a long slender stolon, pseudobulbs cylindrical with paper sheaths. Leaves very long, up to 4 mm wide. Heads 12-18 mm wide with ovate-oblong spikelets 3 mm wide. Grassland and *Brachystegia* woodland, sandy soils; sea level to 1371 m (4500 ft).

KENYA-Sokoke Forest.

TANZANIA-Central and western areas, widespread but not common.

UGANDA-West Nile.

35. *M. albopilosus* C.B.Cl.

(*Cyperus albopilosus* (C.B.Cl.) Kük.)

Pseudobulbs short with scarios outer sheaths, crowded on a short rhizome. Stems, leaves and bracts pubescent. Heads white, globose, 6-10 mm diam. Uncommon in savannah and grassland 914-1828 m (3000-6000 ft).

KENYA-Kitale District.

TANZANIA-Songea District.

36. *M. remotus* C.B.Cl.

(*Cyperus remotus* (C.B.Cl.) Kük.)

Tufted plant up to 61 cm (2 ft) high with ovate pseudobulbs rarely with a few outer fibres. Heads globose, lemon yellow, 10-15 mm diam. with terete spikelets up to 8 mm long and subacute glumes. Damp places in grassland; 1524-2133 m (5000-7000 ft).

KENYA-Widespread west of the Rift Valley.

TANZANIA-Masailand.

UGANDA-Karamoja.

37. *M. mollipes* C.B.Cl.(*Cyperus mollipes* (C.B.Cl.) K.Schum.)

Tufted plant up to 15–30 cm (6 or 12 ins) high with ovate to ovate-oblong pseudobulbs surrounded by a dense mat of fibrous remains of the outer sheaths. Heads white, globose, 8–15 mm diam. Grassland and woodland; sea-level to 1676 m (5500 ft).

KENYA—Coast to Kajiado District, Isiolo and Turkana.

TANZANIA—Widespread

UGANDA—Karamoja, Ankole.

38. *M. circumclusus* C.B.Cl.(*Cyperus circumclusus* (C.B.Cl.) Kük.)

Tufted plant up to 45.5 cm (1½ ft) high with ovate oblong pseudobulbs rarely becoming fibrous coated as in *M. mollipes*. Bracts conspicuously dilated at the base. Heads white with acute spikelets. Grassland; 304–2138 m (1000–7000 ft).

KENYA—Widespread.

TANZANIA—Widespread in the centre and the north.

UGANDA—Widespread in the west and in Busoga District.

39. *M. dubius* (Rottb.) Hutch.(*Cyperus dubius* Rottb.)

Slender tufted plants up to 30.5 cm (1 ft.) high with ovate pseudobulbs covered with membranous old brown sheath-bases. Leaves 2–4 mm. wide. Heads ovoid, white or greenish white, dense, 8–16 mm long, up to 12 mm diam. Rocky places, limestone cliffs, acid soils and grassland; sea level to 1838 m (6000 ft).

KENYA—Mara Plains and the coast.

TANZANIA—Widely scattered in northern, coastal and southern regions; Zanzibar Island.

UGANDA—Murchison Falls National Park.

var. *macrocephalus* (Boeck.) Chiov.(*Cyperus dubius* var. *macrocephalus* Boeck.)

A stouter plant than the above, up to 45.5 cm (1½ ft) high with with ovoid-cylindric pseudobulbs and leaves 4–8 mm wide. Heads greenish white, lobed, 15–20 mm diam. Rocky places, grassland and woodland; sea-level to 1828 m (6000 ft).

KENYA—Widely scattered in semi-arid areas.

TANZANIA—Widely scattered in central and northern areas; Zanzibar.

UGANDA—Karamoja and Ankole.

40. *M. macropus* C.B.Cl.(*Cyperus submacropus* Kük.)

Tufted plant up to 30.5 cm (1 ft) or more high with oblong pseudobulbs covered in a brown fibrous mat. Head off-white or greenish, subglobose, 10–25 mm diam. with wide spikelets having few to 12 glumes. Swampy places and forest glades; sea-level to 1371 m (4500 ft.)

KENYA—Coast, and widely scattered inland.

TANZANIA—Widely scattered in northern and central areas, and Usaramo.

UGANDA—Widely scattered.

Occasionally exceptionally robust forms occur. These have been described under the name *C. submacropus* var. *calocephalus* Kük. but in the apparent absence of supporting characters this variety does not seem to be worth maintaining.

KYLINGA Rottb.

This is the third of the major genera which have been included by Boeckeler, Kükenthal and others in *Cyperus*. It has a similar distribution to *Pycneus* and *Mariscus*.

Both the annual and perennial members of this genus commonly make very leafy tufts, though there are a number of perennial species which throw up single often distant stems from a horizontal rhizome. It seems that under different ecological conditions some species, which normally produce rhizomes with well-spaced nodes and distant stems, may produce forms with a more compact rhizome bearing more closely approximated stems. The inflorescence has one to many bracts at the base and consists of a sessile head comprising one or more dense globose or shortly cylindrical spikes. The spikelets are 1-6-flowered with 2 empty glumes at the base followed by one or more bisexual fertile florets and usually one or more sterile glumes at the top. The nutlets are oblong to ellipsoid, laterally compressed and smooth; the style has 2 stigmas.

Key to Species

1. Glumes dark red, with or without a green keel; perennial up to 36 cm high with swollen stem-bases 22. *K. pulchella*
Glumes white or variously coloured 3
2. Glumes yellow, golden or brown, rarely green 2
Glumes white or very pale straw-coloured or very pale green 16
3. Keel of the glumes conspicuously winged; glumes light brown or gold 4
Keel of the glumes rounded or acute, rarely very obscurely winged 5
4. Annual; keel of the glume with a deeply incised wing 1. *K. squamulata*
Perennials with the stems thickened at the base and usually covered with fibrous remnants of the old leaf-sheaths; keel of the glumes dentate or serrate 2. *K. alata*
5. Stems not conspicuously thickened at the base 6
Stems conspicuously thickened at the base, often bulbous 9
6. Spikelets lanceolate, 4-4.5 mm long; stems tufted or on a short rhizome; spikes loose with few spikelets 10. *K. pauciflora*
Spikelets oblong-elliptic, 2.5-3.5 mm long; culms distant on a long rhizome; spikes dense with many spikelets 7
7. Glumes rust-coloured with a green often spinulose keel 8
Glumes golden or rust-coloured tinged with black, keel not spinulose 9. *K. aurata* var. *lurida*
8. Bracts long and flaccid, spreading or reflexed; glumes yellowish or whitish green on the sides 8. *K. colorata*
Bracts short and rigid with one usually stiffly erect 9. *K. aurata* var. *aurata*
9. Stem-bases covered with the entire or tufted remains of the outer leaf-sheaths; plants tufted 10
Stem-bases coated with entire, short, bladeless sheaths; plant rhizomatous 12
10. Glumes with a long mucro 11
Glumes obtuse; spikelets 3-4.5 mm long; central spike ovate to subcylindric, yellow 23. *K. chrysantha*
11. Spike solitary, ovate to cylindrical, 5-8 mm wide, greenish when young with the glumes becoming black at the tip 6. *K. nervosa*
Spike narrowly cylindrical, 4-5 mm wide, rarely more but then with 1-2 small lateral spikes at the base, golden or brownish gold 7. *K. flava*
12. Bracts 2-4; stems slender, crowded on a long rhizome; heads greenish or golden 15. *K. erecta*
Bracts 4-8 or more; stems stout, usually distant but sometimes approximate, rarely crowded 13
13. Stout plants with a stout rhizome bearing distant erect stems; head cylindrical, usually greenish gold or brownish 11. *K. elatior*
Moderately stout plants with the stems more crowded on the rhizome; heads globose to ovoid 14
14. Bracts 4-5, usually short and rigidly reflexed but sometimes longer and flexuous; heads golden or brownish 13. *K. melanosper*
Bracts very numerous, 5-11, spreading or reflexed 15
15. Rhizomes stout with short internodes and dark purple leathery, usually shining bracts 1-1.5 cm long; heads golden 12. *K. elata*
Rhizome bearing swollen stem-bases with pale or purplish bracts not over 1 cm long; stems leafy; heads pale green or yellowish green 14. *K. polyphylla*

16. Keel of the glumes conspicuously winged, at least in the middle; spikes solitary . 17
Keel of the glumes not winged; spikes 1-3 19
17. Stems distant on a long rhizome; stem-bases not swollen 5. *K. nemoralis*
Stems crowded; stem-bases bulbous or tuberous 18
18. Stems slender or stout, tufted and surrounded at the base by fibrous remnants of old
leaf-bases, but these not always conspicuous 3. *K. alba*
Stems stout, rather crowded on a creeping woody rhizome 4. *K. cartilaginea*
19. Stem-bases swollen, bulbous tuberous or a stout rhizome 20
Stem-bases not swollen 25
20. Leaves and bracts pubescent to almost tomentose 25. *K. platyphylla*
Leaves and bracts glabrous, occasionally with ciliate margins 21
21. Stolons present, slender; stem-bases surrounded by old leaf-sheaths 24. *K. bulbosa*
Stolons absent 22
22. Stem-bases covered with short bladeless sheaths, crowded on a creeping rhizome 23
Stem-bases surrounded by the short fibrous remnants of old leaves 24
23. Rhizome unbranched straight, the stems crowded in almost straight lines;
glumes mucronate 15. *K. erecta*
Rhizome much branched and the stems appearing tufted; glume-tips attenuate,
obtuse to subacute 16. *K. crassipes*
24. Leaves 2-5.5 mm wide, flaccid, flat 26. *K. comosipes* var. *comosipes*
Leaves 1-2.5 mm wide, more rigid, folded 26. *K. comosipes* var. *angustata*
25. Central spike less than 4 mm wide, shortly cylindric to ovoid; plants
tufted, stem-bases fibrous-coated 26
Central spike 4-12 mm wide; plants stoloniferous or rhizomatous 27
26. Keel of the glumes obscurely winged, ciliate 19. *K. welwitschii*
Keel of the glumes neither winged nor keeled 20. *K. microstylis*
27. Central spike globose or ovoid 28
Central spike cylindric 30
28. Tufted annual or perennial without stolons or rhizomes 17. *K. pumila*
Rhizomatous or stoloniferous perennial 29
29. Stems distant on a slender rhizome 8. *K. colorata*
Stems tufted, slender stolons usually present 24. *K. bulbosa*
30. Glumes up to 2 mm long, broadly ovate, subacute; spike narrow up to
5.5 mm wide 21. *K. odorata* var. *odorata*
Glumes 3-4 mm long, lanceolate; spike 6-9 mm wide 31
31. Lateral spikes absent; glumes broadly lanceolate, white 18. *K. triceps*
Lateral spikes present; glumes lanceolate, acuminate, white with a
conspicuous green keel 21. *K. odorata* var. *major*

1. *K. squamulata* Vahl(*Cyperus metzii* (Hochst.) Mattf. & Kük.)

Tufted annual up to 30 cm high though usually much less, with solitary green to light brown subglobose spikes 6-10 mm diam. of numerous ovate 1-flowered spikelets 2.5-4 mm long. Damp places in grass and bushland, sometimes as a weed; 762-1371 m (2500-4050 ft).

TANZANIA-Lake and Southern Regions.

UGANDA-Central and Eastern Provinces.

2. *K. alata* Nees(*Cyperus alatus* (Nees) F. Meull., *K. alba* Nees var. *alata* (Nees) C.B. Cl.)

Tufted perennial with an aromatic base differing from *K. alba* in its smaller size, narrower leaves and yellow-green head. Spike solitary, ovate-globose or oblong-cylindric with broadly ovate spikelets and acute glumes. Damp places in grassland, especially on sandy soils and around rock outcrops; 1066-1676 m (3500-5500 ft).

KENYA-Northern Region.

TANZANIA-Common in the north-west.

3. *K. alba* Nees

(*Cyperus cristatus* (Kunth) Mattf. & Kük.)

Tufted perennial up to 30.5 cm (1 ft) high with aromatic base and solitary off-white globose spikes with lanceolate-elliptic spikelets and subacuminate glumes. In dry areas, grassland, open bushland and on rock outcrops; 457-2590 m (1500-8500 ft).

KENYA—Apparently widespread, but rarely collected.

TANZANIA—Widespread.

UGANDA—Karamoja.

4. *K. cartilaginea* K. Schum.

(*Cyperus cartilagineus* (K. Schum.) Mattf. & Kük.)

Stout perennial with thick creeping rhizome and closely set stems up to 38.1 cm (15 ins) high with solitary globose-ovate spikes up to 10 mm diam. and oblong-elliptic spikelets having unequal obtuse, narrowly winged glumes. Coastal forest and bushland; sea-level to 914 m (3000 ft).

KENYA—Coastal.

TANZANIA—Coastal and central regions; also Zanzibar.

5. *K. nemoralis* (Forst.) Hutch.

(*Cyperus kyllingia* Endl., *K. monocephala* Rottb. in part)

Small creeping perennial with widely spaced stems up to 38.1 cm (15 ins) high and solitary whitish globose or ovate spikes 4-6 mm wide with ovate-elliptic spikelets 2-2.5 mm long, the glumes terminating in a long curved mucro. Clearing in rain- and swamp-forests; 457-1219 m (1500-4000 ft).

TANZANIA—East Usambara Mts.

UGANDA—Western and Central Provinces.

6. *K. nervosa* Steud.

(*Cyperus costatus* Mattf. & Kük.)

Small tufted perennial to 22.5 cm (9 ins) high with swollen, fibrous-coated often aromatic stem-bases having a solitary ovate to shortly cylindrical spike 5-8 mm wide; spikelets broadly ovate, 1-2-flowered, 2-3 mm long with awned glumes becoming blackish especially on drying. Grassland and savanna, often on rock pavements; 762-2133 m (2500-7000 ft).

KENYA—Elgon, Nairobi and Central Regions, also Masailand.

TANZANIA—Widespread in the northern half of the country.

UGANDA—Ankole.

7. *K. flava* C. B. Cl.

(*Cyperus oblongus* (C. B. Cl.) Kük., *K. ruwenzoriensis* C.B. Cl.)

Tufted fibrous-coated perennial with stems rarely exceeding 30.5 cm (1 ft) high and solitary cylindrical golden yellow spikes 10-12 mm long, 4-5 mm wide with 1-2 small lateral ones; spikelets ovate with ovate-elliptic glumes having a green wingless ciliate keel and a subulate mucro. Damp places in savanna and swamps; sea-level to 1524 m (5000 ft).

KENYA—Northern and eastern areas, also the coast.

TANZANIA—Masailand to the Uluguru Mts.

UGANDA—Ruwenzori Mts.

The winged glumes of *K. alata* separate the occasional plant with rather elongated heads from *K. flava*, and the small lateral spikes help to separate young plants from *K. nervosa*.

8. *K. colorata* (L.) Druce

(*Cyperus brevifolius* (Rottb.) Hassk., *K. brevifolia* Rottb., *Schoenus coloratus* L.)

Creeping perennial with the habit of *K. nemoralis* and *K. aurata*; spikes solitary ovate or ovate-globose, 4-8 mm long with lanceolate-oblong spikelets; the glumes

whitish with a green, often spinulose keel, long recurved mucro and long flaccid bracts. Roadsides, damp places and swamps in grassland and forest clearings; 76–1828 m (250–6000 ft).

KENYA–Nyanza and Central Regions.

TANZANIA–Frequent in the north-east and the north.

UGANDA–Central and western areas.

9. *K. aurata* Nees var. *aurata*

(*Cyperus erectus* (Schumach.) Mattf. & Kük. .. var. *auratus* (Nees) Kük.)

Perennial with creeping rhizome and distant erect stems up to 45.5 cm (18 ins) high; spikes usually solitary, ovate or ovate-globose, 4–8 mm wide with 3–4 short, rigid bracts of which one is almost always stiffly erect; spikelets elliptic to lanceolate-oblong with subulate-tipped glumes having a green often spinulose keel. Damp places in grassland, by roads, in swamps and as a weed; 76–1828 m (250–6000 ft).

KENYA–Nyanza and Central Regions.

TANZANIA–Frequent in the north, rare in the south.

UGANDA–Widespread, but not recorded in Karamoja.

This is easily confused with *K. nemoralis*, which however has whitish winged glumes, and with *K. colorata* which is a more leafy plant with long soft drooping bracts and whitish spikes.

var. *lurida* (Kük.) Napper, comb. nov.

(*Cyperus erectus* (Schumach.) Mattf. & Kük. var. *luridus* (Kük.) Kük. *Kyllinga erecta* Schumach. var. *lurida* Kük. in *Notizbl. bot. Gart. Berl.* 9: 300 (1925))

Spikelets ovate-lanceolate with golden or rust-coloured obscurely veined glumes tipped with black. Grassland; 1371–2590 m (4500–8500 ft).

KENYA–Central and Rift Valley Regions.

TANZANIA–Not uncommon in the north, more rare towards the south.

10. *K. pauciflora* Ridl.

(*Cyperus ridleyi* Mattf. & Kük.)

Tufted perennial with short creeping rhizome and solitary globose spikes of 6–12 yellow to brown spikelets having green-keeled subulate-tipped glumes. Grassland and savanna; 914–1524 m (3000–5000 ft).

TANZANIA–South-western and southern areas.

11. *K. elatior* Kunth

(*K. pinguis* C. B. Cl. in part, *Cyperus aromaticus* (Ridl.) Mattf. & Kük. var. *elatior* (Kunth) Kük.)

Perennial herb with long stout rhizome with distant erect culms with purplish bracts at the base, differing from *K. melanosperma* chiefly in the greater robustness, the longer internodes and the cylindrical head. Damp places in grassland and forest, also in swamps; 1066–1981 m (3500–6500 ft).

KENYA–From the Aberdare Mts. and Mt. Kenya to Nairobi and Machakos.

TANZANIA–Widespread throughout the country but not recorded from the Southern Region.

UGANDA–Central and Western areas.

12. *K. elata* Steud.

(*Cyperus aromaticus* (Ridl.) Kük. var. *elatus* (Steud.) Kük.)

Perennial herb similar to *K. elatior* but with shorter internodes to the rhizome and dark purple, leathery, often shining bracts. Involucral bracts 5–11, long and flexuous, or short and stiffly reflexed; spike solitary or with small laterals, gold or whitish. Stream banks and swamps; sea-level to 1219 m (4000 ft).

KENYA–Coast.

TANZANIA–Songea, Ruaha National Park, Uluguru Mts. and the coast; also Zanzibar and Pemba.

13. *K. melanosperma* Nees

(*Cyperus melanospermus* (Nees) Suringar)

Perennial herb with straight or contorted rhizome and crowded rigid culms with purplish bracts. Spike solitary, ovoid or globose with 4-5 short, rigidly reflexed or long flexuous bracts. Swamps, damp grassland and stream-banks; 1066-2286 m (3500-7500 ft).

KENYA-Kitale and Mt. Elgon.

TANZANIA-Serengeti, Njombe and the Mbosi Districts.

UGANDA-West Nile and Busoga Districts.

14. *K. polyphylla* Kunth

(*Cyperus pinguis* (C. B. Cl.) Mattf. & Kük., *K. pinguis* C.B. Cl. in part)

A variable perennial with stout creeping rhizome and crowded stems. Spikes ovate to globose with 5-8 bracts and oblong-elliptic spikelets 2.5-3.5 mm long; glumes ovate to ovate-lanceolate mucronate. Grassland, moist savanna, swamps, streamsides, dams etc.; sea level to 914 m (3000 ft).

KENYA-Coastal regions and Mt. Elgon.

TANZANIA-Central, Southern and Coastal Regions, rare in the West. The rigid forms of this species may be readily confused with *K. elata*.

15. *K. erecta* Schumach.

(*Cyperus erectus* (Schumach.) Kük.)

Slender perennial herb with creeping rhizome coated with pale or purplish sheaths and erect stems up to 30.5 cm (1 ft.) high swollen at the base; spike solitary, globose to ovate-globose, 4-8 mm diam. 2-4 short reflexed bracts and ovate-lanceolate spikelets. Swampy grassland; 914-1981 m (3000-6500 ft).

KENYA-Nairobi and Western Region.

TANZANIA-Southern Region.

16. *K. crassipes* Boeck.

(*Cyperus bulbipes* Mattf. & Kük.)

Perennial herb with short creeping aromatic rhizome having purplish sheaths, and crowded bulbous-based stems up to 30.5 cm (12 ins) high; spike solitary, globose, 4-8 mm wide. Woodland, riversides, and as a weed in badly drained ground; sea-level to 1371 m (4500 ft).

KENYA-Widely scattered in the east, also in the Central Region.

TANZANIA-Widely scattered especially in the east; Zanzibar Island.

UGANDA-Widespread.

17. *K. pumila* Michx.

(*Cyperus densicaesпитosus* Mattf. & Kük.)

Tufted annual or perennial up to 61 cm (2 ft) high with greenish heads having reflexed bracts noticeably widening at the base; centre spike ovate to subcylindric with 2 small lateral ones; glumes shortly mucronate with spinulose green keels. In swamps and near water; 762-1371 m (2500-4500 ft).

KENYA-Central Region.

TANZANIA-Widespread but not common.

UGANDA-Western areas and Mengo, nowhere common.

18. *K. triceps* Rottb.

(*Cyperus triceps* (Rottb.) Endl.)

Rhizomatous perennial up to 38.1 cm (15 ins) high with white or off-white heads of 3-1 spikes, the central spike subcylindric to cylindric, up to 1 cm long with 3-3.5 mm

long spikelets. Grassland and shady places; sea-level to 1828m (6000 ft).

KENYA—Western Region.

TANZANIA—Northern and Lake Regions, also Southern Region.

UGANDA—Karamoja.

19. *K. welwitschii* Ridley

(*Cyperus triceps* (Rottb.) Endl. var. *ciliata* (Boeck.) Kük. in part, *K. triceps* Rottb. var. *ciliata* Boeck.)

Small tufted perennial up to 22.5 cm (9 ins) high, with swollen stem-bases and off-white heads of 3 spikes, the centre one ovate to ovate-oblong. Damp hollows in bushland; 304–1524 m (1000–5000 ft).

KENYA—Turkana.

UGANDA—Karamoja.

20. *K. microstyla* C.B. Cl.

(*Cyperus microstylus* (C.B. Cl.) Mattf & Kük.)

Small tufted perennial up to 15 cm (6 ins) high with the habit of *K. welwitschii* but smaller spikelets and scarcely keeled glumes. Open bushland; up to 457 m (1500 ft).

KENYA—Tsavo National Park.

21. *K. odorata* Vahl var. *odorata*

(*Cyperus sesquiflorus* var. *cylindricus* (Nees) Kük.)

Very variable shortly rhizomatous plant up to 30.5 cm (1 ft) high with creamy-white heads of 3–4 spikes, the central one 4–6.5 mm wide, and broadly ovate spikelets not over 2 mm long. Grassland, savanna, swamps, etc.; 914–1981 m (3000–6500 ft).

KENYA—Western Region.

TANZANIA—Lake, Western and Southern regions.

UGANDA—Widespread.

var. *major* (C.B. Cl.) Chiov.

(*Cyperus sesquiflorus* var. *major* (C.B. Cl.) Kük., *K. cylindrica* Nees var. *major* C.B. Cl.)

Tufted perennial up to 45.5 cm (18 ins) high, stout; central spike cylindric to ovate, up to 1.2 cm long and 9 mm wide with ovate-oblong spikelets 4–4.5 mm long; glumes long acuminate. Grasslands, forests and shady places; 1524–3048 m (5000–10,000 ft), rarely lower.

KENYA—Widespread.

TANZANIA—Widespread.

UGANDA—In all upland areas.

22. *K. pulchella* Kunth

(*Cyperus teneristolon* Mattf. & Kük., *C. transitorius* Kük., *K. anomala* Kük.)

A very variable tufted or shortly rhizomatous perennial up to 45.5 cm (18 ins) high with long slender stolons; heads dark red with a cylindric central spike 6–10 mm wide and small usually sessile lateral spikes; spikelets with ovate-lanceolate mucronate glumes and 2–3 nutlets.

KENYA—Mt. Elgon, Rift Valley and the Nairobi area.

TANZANIA—Scattered localities in the northern half of the country.

23. *K. chrysantha* K. Schum.

(*Cyperus aureostramineus* Mattf. & Kük.)

Tufted perennial up to 30.5 cm (12 ins) high with slender stolons and golden-yellow heads with an ovate or subcylindric central spike up to 9 mm long. Damp places in grassland; 1066–1676 m (3500–5500 ft).

KENYA—Western Region.

TANZANIA—Western Region and in the vicinity of Lake Victoria.

UGANDA—Western Region near Lake Victoria.

24. *K. bulbosa* P. Beauv.

(*Cyperus richardii* Steud., *K. macrocephala* A. Rich., *K. sphaerocephala* Boeck.)

Rhizomatous perennial with long slender stolons and stems up to 30.5 cm (1 ft) high. Heads of 3-1 spikes, the central one ovate to subcylindric, 6-11 mm wide and the lateral ones smaller; glumes ovate-lanceolate, often purple-dotted. Grassland and damp places generally; 914-2590 m (3000-8500 ft).

KENYA-Widespread.

TANZANIA-Widespread in the west of the country.

UGANDA-Widespread except in the north.

25. *K. platyphylla* K. Schum.

(*Cyperus ciliato-pilosus* Mattf. & Kük.)

Densely tufted perennial up to 22.5 cm (9 ins) high with fibrous-coated stem-bases and hemispheric cream heads of 3-1 spikes. Woodland and grassland; 1066-1524 m (3500-5000 ft).

TANZANIA-In the south and south-west.

26. *K. comosipes* (Mattf. & Kük.) Napper, comb. nov. var. *comosipes*

(*Cyperus comosipes* Mattf. & Kük. in Engl. & Diels, *Pflanzenreich* iv, 20: 568 (1936), *K. leucocephala* Boeck. not of Baldwin)

Tufted perennial up to 45.5 cm (18 ins) high with a solitary globose spike 6-12 mm wide and oblong-elliptic spikelets each with 2-4 nutlets. Grassland and bushland, usually in damp depressions; 609-1828 m (2000-6000 ft).

KENYA-Nairobi and Central Region.

TANZANIA-Widespread, often common in central regions.

UGANDA-Mengo.

var. *angustata* (Peter & Kük.) Napper, comb. nov.

(*Cyperus cartilagineus* var. *angustatus* Peter & Kük. in Engl. & Diels, *Pflanzenreich* iv, 20: 609 (1936)).

Differs from the species in its more slender habit, much narrower leaves and light brown fibrous base to the tuft; heads small and usually distinctly compound. Damp places in grassland and thicket woodland; 914-2133 m (3000-7000 ft).

TANZANIA-Central regions from Shinyanga to Iringa District,

UGANDA-Karamoja.

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