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**A REMARKABLE NEW FUIRENA (CYPERACEAE)**

**FROM AFRICA**

by

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Abstract

*Fuirena bullifera* is described from Southern Tropical Africa, essentially distinct by its single asymmetrical hollow balloon-like hypogynous scale. Some further points of taxonomy and floristics of the genus are discussed.

Zusammenfassung

*Fuirena bullifera* aus dem südlichen tropischen Afrika wird neu beschrieben. Wichtigstes und auffälligstes Merkmal ist der Besitz einer einzigen, asymmetrisch stehenden, hohlen, ballonartigen hypogynen Schuppe. Einige weitere Anmerkungen zur Taxonomie und Chorologie der Gattung schließen sich an.

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Within the Cyperaceae, the genus *Fuirena* Rottb. displays a remarkable diversity of the hypogynous scales, whatever is the exact morphological status of the latter. A direct consequence is that for many species otherwise very similar, the shape of these scales, especially the inner ones, becomes the most important diagnostic feature.

Among the species more or less related to *F. ciliaris* (L.) Roxb. are probably found the most striking variants: typically the 3 inner hypogynous scales are composed of a more or less broadly expanded lamina borne on a thin erect stalk; the laminae of the scales are pressed against the three smooth faces of the trigonous achene. In *F. ciliaris* the lamina is nearly quadrangular, with 3 main nerves strongly raised; the truncate, shortly cuneate tip is folded above the top of the nut, the 3 scales thus forming

an involucre totally sheathing the upper half of the nut.

From this still simple model several types of modifications may occur, giving a variety of shapes:

- the reduction of the lamina gives shapes like the "reversed anchor" of *F. leptostachya* Oliv., *F. trilobites* C.B. Cl. or *F. sagittata* Lye. Total reduction of both rings of hypogynous scales may occur in *F. leptostachya* var. *nudiflora* C.B.Cl., or *F. ciliaris* var. *apetala* Wingfield.

- the reduction of the stalk leads to a sessile lamina, like in *F. umbellata* Rottb. The stalk is not totally suppressed, but is reduced to a very short, inconspicuous, sinuous-contracted structure at the very base of the large obovate lamina. In this species the outer setae are normally missing, but it is a derived condition, and developed outer setae can be found in certain Asian populations.

- the shape of the lamina may become more complex, with sinuations, lobes, cristae of various sorts (*F. ochreata* Nees ex Kunth, *F. zambesiaca* Lye, *F. bernieri* Cherm.)

- an interesting transformation is the progressive swelling of the lamina, the tissue of which becomes inflated and spongy. Such a swelling already affects the upper part of the scales in certain *F. ciliaris* (most of the E. Asian and Indonesian specimens) but this variation does not seem worth more than infraspecific level; it becomes consistent and affects the whole scale lamina in the Australian *F. incrassata* Blake or the African *F. claviseta* Peter and *F. angolensis* (C.B.Cl.) Lye<sup>1)</sup>. Such a differentiation is also commonplace in America (e.g. *F. scirpoidea* Michx., *F. robusta* Kunth).

The new species here described shows another quite original type of evolution of the inner scales. First of all, they are reduced to a single one, asymmetrically placed in front of one of the dorsal

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1) The validity of this recent combination (LYE, 1974) is rather doubtful, since there is no proper quotation of the basionym (ICBN, Art. 33). It should read "*Fuirena glomerata* var. *angolensis* C.B. Clarke, Fl. Trop. Afr. 8: 466 (1902)" instead of "*Fuirena ciliaris* (L.) Roxb. var. *angolensis* Schinz in Bull. Herb. Boiss. 4, App. 3: 31", which is an invalid nomen nudum coined in 1896 (date omitted). Art. 33, Note 2 forgives bibliographic errors, but here the basionym itself is wrong, which looks somewhat beyond mere bibliography.

faces of the nut. The development of that single scale is quite unique in the genus, and probably in the whole family; it can be deduced from the observation of the inner scale at various stages in a spikelet: at first the scale is rather "normal", with the lamina just a little concave, giving the whole scale with its stalk a spoon-shaped look; later the concavity grows deeper and deeper, without enlargement of the mouth, so that in the end the lamina is an inflated ellipsoid hollow balloon, truncate at the mouth facing the nut. Such a differentiation inevitably evokes a kind of buoy making the seed float better.

Fuirena bullifera J. Raynal & H. Roessler, sp. nov.

Herba annua pubescens, radice fasciculata. Caules plures 20-50 cm alti graciles trigoni, sub inflorescentia 2-3-nodosi. Folia vagina tubulosa 1-3 cm longa ore contraligula membranacea 2 mm longa cincta. Lamina linearis 3-11 cm longa, 3-5 mm lata. Inflorescentia e 2 (-3) paniculis corymbosis constituta. Spiculae dense subcapitato-confertae 6-10 mm longae 2-3 mm latae conoideae squarrosae. Squamae ovatae ca. 1,5 mm longae, apice in mucronem excurvatum 1 mm longum productae, concavae membranaceae haud carinatae dorso trinerves, basin versus stramineae, sursum pallide nigrescentes. Setae hypogynae exteriores 0, seta interior unica asymmetrica, faciem dorsalem unam achaenii adspectans, stipe 0,25 mm alto, lamina maturitate in vesiculam cavam ovoideam, 0,5 mm longam et latam, 0,4 mm altam, brunneam, ore truncatam, evoluta. Achaenium triquetrum obpyramidatum apice mucronatum, 0,9 x 0,5 mm, faciebus laevibus nitidis laete brunneis. - Pl. 1.

Namibia: Rautanen s.n., Amboland, Ondonga, Olukonda, 1. 1886, H! Z! - Mozambique: Quintas 187, Lourenço Marquês, Matola, 5. 1893, holotype, P!

Curiously enough, this striking novelty has been brought to light only recently, nearly simultaneously though independently, by the co-authors of this paper. In both instances the specimens had been collected long ago, but had been given wrong names: *F. cinerascens* and *F. glomerata* (this last identification, obviously founded on superficial examination, by C. B. CLARKE), despite the so remarkable outline of their numerous diaspores.

The species must be very rare: though apparently living in a vast territory (but how scattered?) it does not seem to have been collected for the last 80 years, unless - a likely guess - still hidden under *F. ciliaris* in several herbaria; in the same way it should be looked for in the field, where there is very little, as far as we know, to distinguish it at first sight from *F. ciliaris*.

This study gives us the opportunity to mention a few additional data concerning the group of species:

1. From apparently POIRET (1812: 681) on, *Fuirena glomerata* Lam. has consistently been considered as a synonym of *F. ciliaris* (L.) Roxb. LAMARCK's original description (1791: 150) is vague enough and might well fit that species. However, the holotype (P!) turns out to be a *Fuirena umbellata* Rottb., and the classical synonymy must be altered. The amended synonymy, which fortunately has no nomenclatural consequence, has appeared without comment in S. HOOPER (1972).

2. *Fuirena hildebrandtii* Böck., Flora 65: 15 (1882) has been treated by C. B. CLARKE (1902: 467) as a synonym of "*F. glomerata* Lam." (that is, *F. ciliaris* (L.) Roxb.), and by CHERMEZON (1931: 29) as a synonym of *F. umbellata* Rottb. Both authors were partly right, since the 3 sheets of the type-number, Hildebrandt 3303 g, kept at Paris, bear a mixture of *F. ciliaris* and of more numerous dwarf depauperate *F. umbellata*, all the individuals of both species looking at first sight very much alike. However BÖCKELER's description better fits the *F. umbellata* (culmis ... glabris; fol. ... utrinque subglabris), and CHERMEZON's synonymy must be considered the right one.

3. *Fuirena claviseta* Peter and *F. angolensis* (C. B. Clarke) Lye are very closely related, sharing the same type of swollen hypogynous scales. Though ignoring PETER's new taxon (1928: 50, 113), KÜKENTHAL (1937: 389) has treated his type-material of *F. claviseta* under *F. glomerata* var. *angolensis* C. B. Cl. The two species may be distinguished by the following features: *F. angolensis* is a very hispid annual, with leaves pilose all over and distinctly squarrose spikelets with long-awned glumes. *F. claviseta* is a rather stouter plant, possibly perennial, with glabrescent leaves (only ciliate on the margins) and shortly mucronate glumes. The former has been

found in a wide area from Kenya to Mozambique and Namibia; the latter is apparently restricted to Tanzania, but also occurs in Madagascar (Decary 15390, Bosser & Descoings 93, P!).

4. *Fuirena ochreata* Nees ex Kunth has been considered by CLARKE (1902: 466) as another synonym of *F. ciliaris* (L.) Roxb., and forgotten since. However KUNTH's protologue (1837: 184) describes several features foreign to that species: "culmo ... glabri; ... squamulis ... subovatis, retusis ... basi ungue- que ciliatis". Such a description exactly matches two sheets kept at Paris, one of which has been labeled in A. de JUSSIEU's hand "*Fuirena ochreata* Nees -Kunth, Madagascar (Zanzibar, ex Kunth)". In fact, both sheets are part of the same BOJER's collection, made in Zanzibar, and undoubtedly are isotypes of *F. ochreata*. These specimens definitely belong to the taxon named today *F. calolepis* K. Schum., a much later name which now must give way to the earlier *F. ochreata*. The synonymy reads as follows:

*Fuirena ochreata* Nees ex Kunth, Enum. Pl. 2: 184 (1837).  
Type: Bojer s.n., Zanzibar (iso-, P!).

- *F. calolepis* K. Schum., in Engl., Pflanzenw. Ostafri. C: 126 (1895), syn. nov. Syntypes: Hildebrandt 1057, Holst 2133, 4131, 4135, Tanzania.
- *F. cinerascens* Ridl. ex C.B. Clarke, Fl. Trop. Afr. 8: 467 (1902), nom. illeg. Several syntypes, including BOJER's and HILDEBRANDT's collections.
- *F. cristata* Turrill, Kew Bull.: 170 (1914). Syntypes: Baum 472, Gossweiler 2166, 2204, Angola.

The species exists across Africa from Angola to Tanzania, but not in Madagascar, where it is replaced by the closely related *F. bernieri* Boivin ex Cherm. The Madagascar record of *F. ochreata* (CLARKE, 1902; CHERMEZON, 1931) very probably originates in the mislabeled BOJER's specimen in JUSSIEU's herbarium, maybe also in confusion with *F. bernieri* as well.

5. *Fuirena zambesiaca* Lye, a species endemic to Mozambique and S. Tanzania, has been identified in the following specimens: Schlieben 2432, Tanzania, Mahenge - Likwa, 18. 6. 1932, M! P!; Schweickerdt 2333 a, 2334 a, Mozambique, Bandula, 4. 1952, M!

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Pl. 1 -- *Fuirena bullifera* J. Raynal & H. Roessler (Quintas 187, type): 1, general view x 2/3; 2, spikelet x 10; 3, mature diaspore, side view x 40; 4, detached hypogynous scale, oblique view x 40. Del. J. Raynal.



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