

NOTES RELATING TO THE FLORA OF BHUTAN: XXVIII
 Eriocaulaceae (*Eriocaulon*), Musaceae (*Musa*),
 Cyperaceae (*Actinoscirpus*)

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The following new taxa and combinations of plants from India and Bhutan are made: *Eriocaulon bhutanicum* Noltie *sp. nov.*; *Musa griersonii* Noltie *sp. nov.*; *Actinoscirpus grossus* (L.f.) Goetghebeur & D.A. Simpson var. *kysoor* (Roxb.) Noltie, *comb. nov.*

ERIOCAULACEAE

Eriocaulaceae (represented by only one genus, *Eriocaulon*) is a small, but under-collected, family in the *Flora of Bhutan* area. The *Flora* account covers six species with two additional doubtful ones. This is rather fewer than expected when compared with adjacent regions, although the majority of the 50+ Indian species (Fyson, 1923) occur in subtropical areas, and the number recorded for Nepal (13; Hara et al., 1978) includes some doubtfully distinct, recently described, taxa. Regardless of number of taxa, *Eriocaulon* species appear from field experience to be genuinely much commoner in Nepal, where they occur as frequent rice-field weeds. Parker (1991, 1992) made a detailed study of the weeds of Bhutan and found *Eriocaulon* to be very rare, so the difference appears to be genuine.

Nevertheless, when revising the group one of John Wood's collections was found to represent an undescribed species.

Eriocaulon bhutanicum* Noltie, *sp. nov.

Type: Bhutan, Thimphu District, above Serbitang, 2600m, 18 ix 1988, *J.R.I. Wood* 6689 (holo. E).

Ab *E. rockiana* Hand.-Mazz. petalis florum femineorum angustissimis (0.1mm latis, non 0.2mm), albis (non griseis), apicibus glandulosis, et seminibus tenuiter transverse elongato-reticulatis et papillis parvis obtectis (haud longitudinaliter sulcatis epapillosis) differt. **Fig. 1.**

Differs from *E. rockianum* Hand.-Mazz. as follows: female petals very narrow (0.1 not 0.2mm), white (not grey), gland-tipped (vs. not gland-tipped); seeds with fine, transversely elongate reticulation and covered in small white papillae (not longitudinally grooved and epapillose).

Tufted, ?annual rosette herb. *Leaves* gradually tapered to acute apex, less than 1/3 length of scape, c.0.8mm wide at base. *Scape* filiform, weak, 2–6cm, 3–5-grooved. *Capitulum* hemispherical, 1.5–3mm diam., black and white (from white hairs on dark floral parts); receptacle slightly convex, glabrous. *Involucral bracts* erect, broadly oblong to obovate, blunt, 1.3–1.5 × 0.8–1.2mm,

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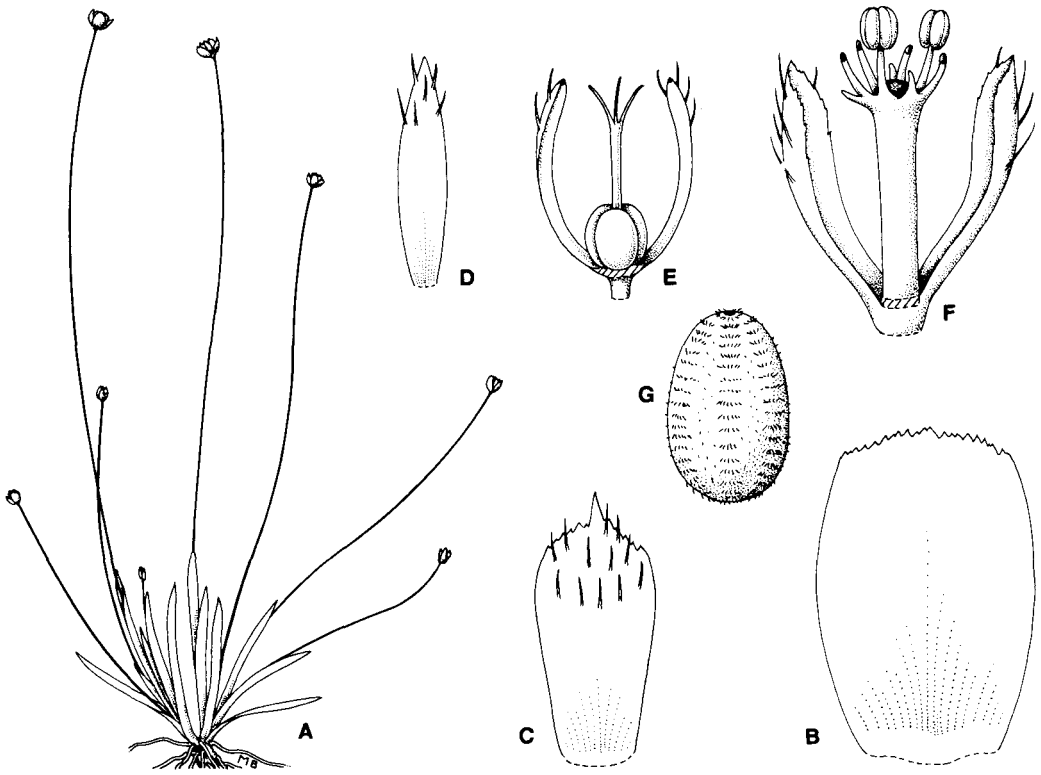


FIG. 1. *Eriocaulon bhutanicum* Noltie. A, habit ($\times 1.5$); B, involucral bract; C, floral bract; D, female sepal; E, female flower, 1 petal removed; F, male flower, 1 sepal removed (B–F, $\times 27$); G, seed ($\times 54$). Drawn by Mary Bates.

glabrous, blackish-hyaline. *Floral bracts* finely acuminate, c. 1.2×0.4 mm, black above with short white hairs. *Female flowers* sessile; sepals 3, oblong-elliptic, acute, c. 1×0.3 mm, grey, white-hairy; petals linear, black-gland-tipped, c. 0.8×0.1 mm, membranous, white, hairy; ovary sessile; style c. 1 mm, divided $\frac{1}{3}$ to halfway. *Male flowers* c. 1.3 mm long; calyx 3-lobed for $\frac{2}{3}$, lobes c. 0.8×0.2 mm, grey, hairy; petals minute, subequal; anthers 1–2(–3?), black. *Seeds* oblong in outline, c. 0.4×0.3 mm, pale brown, marked with fine, transversely elongate reticulation and densely covered with rows of minute white papillae.

Habitat: in open swamp with scattered, grazed *Arundinaria*.

There are few collections of *Eriocaulon* from natural (or at least semi-natural) habitats at high altitude in the Himalaya and China. An exception is the widespread *E. alpestre*, which has been collected from Kumaon, Nepal, Sikkim, SE Tibet, Khasia, Yunnan and Sichuan and grows up to an altitude of 3960 m. This and two Chinese species superficially resemble *E. bhutanicum*, having slender scapes and very small, black capitula. They can be distinguished from it as follows:

E. alpestre Hook.f. & Thoms. ex Körn. has distinctive female petals which are white, swollen, gland-tipped and glabrous and differentiated into a claw and blade; female calyx spathe-like, scarcely 3-lobed, glabrous.

E. rockianum Hand.-Mazz. (Yunnan) has broader, grey female petals which are not gland-tipped, and the seeds are epapillate and grooved.

E. leianthum W.L. Ma (Yunnan: 3100m) has female petals similar in shape (and likewise gland-tipped) to those of *E. alpestre* but they are hairy; floral bracts broad ($\times 0.9\text{mm}$), blunt, glabrous; female sepals glabrous.

MUSACEAE

The native bananas of Sikkim/Darjeeling and Bhutan have been severely neglected taxonomically since the late nineteenth century, when George King made pioneering descriptions of four native taxa from the former area. These descriptions have never been completely published, although they were taken up in various ways by Baker (1893), Schumann (1900) and Cowan & Cowan (1929). A copy made by Hooker of King's manuscript fortunately survives at Kew and this might be worth publishing at a later stage of studies of the bananas of the whole NE Indian region: this would be a worthwhile future project, given their neglect and importance as wild relatives of a very important group of crop plants. Additional species are highly likely to occur in the area covered by the *Flora of Bhutan*, particularly in the lower, forested parts of Bhutan, where, for example, no member of Section *Rhodochlamys* has yet been recorded. The forthcoming account for the *Flora* is far from satisfactory, but one of the species for which there are good recent photographs resembles no known species and is worth describing at this stage, despite the lack of notes on certain critical characters such as growth habit and seeds. It is named in honour of the late Andrew Grierson, who discovered the plant with David Long.

Musa griersonii Noltie, sp. nov.

Holotype: Bhutan, Sarbhang District, above Jhogi Dhanra, 11km above Sarbhang on Chirang road, 740m, 8 iii 1982, *Grierson & Long* 3566 (E).

A *M. balbisiana* Colla alis petioli horizontaliter patentibus (non involutis), foliis infra haud ceraceis, bracteis florum masculorum extus fuscopurpureis (non glaucis rubropurpureis), intus pallide roseis (non kermesinis), apice reflexo (non recto) differt; a grege *M. acuminati* Colla margine vaginae folii distaliter valde scarioso recedit. **Fig. 2.**

Differs from *M. balbisiana* Colla as follows: petiole wings spreading horizontally (not inrolled), leaves not waxy beneath, male bracts brownish-purple (not glaucous reddish-purple) outside, and pale pink (not crimson) inside, tip reflexed (not straight). Differs from the *M. acuminata* Colla complex in not having a pronounced scarious margin on the upper part of the leaf sheath.

Pseudostem 3m, stout, marked with purplish-brown below, waxy, glaucous green above with upper margins of leaf sheaths \pm smoothly appressed, with a narrow black line at the edge not or only minutely and irregularly scarious. *Leaf blades* scarcely spreading, oblong, base rounded, 2–2.5m; midrib blackish-purple beneath. *Petiole* to 50cm, lower part glaucous, dark purple on abaxial side, margins developed into outward-curving, green wings. *Inflorescence* pendent, axis



FIG. 2. *Musa griersonii* Noltie. *Left*, upper part of stem, leaves and inflorescence; *right*, close-up of inflorescence. Photographs by D.G. Long.

glabrous. *Bracts* of male flowers recurving at tip, deciduous, dark brownish-purple outside, inside pinkish with cream margins. *Male bud* elongate, acute, twice as long as broad, almost totally convolute. *Female flowers* borne in 7 or more hands, each of 22 or more flowers borne in 2 rows on small callosities; compound tepal pinkish-cream, c.3.5cm, teeth c.4mm, free tepal c.2.5cm, staminodes 5, shorter than free tepal. *Immature fruits* forwardly directed, very shortly pedicellate, sharply angled. *Male flowers*: compound tepal c.4.5 × 1cm, orange-yellow, teeth to 4mm; free tepal c.2cm; stamens shorter than compound tepal.

Easily spotted at some distance by the very distinctive blackish-purple midribs, and confirmed by the winged petioles.

Habit and mature fruit/seeds not known.

Known with certainty only from the type; more collections required.

This taxon might, perhaps, be the same as King's inadequately described 'var. *dubia*' (*M. sapientum* L. var. *dubia* (King ex Schumann) Cowan & Cowan); Lepcha name 'luxom'. King distinguished this from his 'var. *pruinosa*' (i.e. *M. balbisiana* Colla) as follows: less tall (stem 3.6–4.5m) and robust; leaves glaucous only when young; bracts deciduous; fruit thinner, brown; seeds smaller (6.3 × 8.4mm). Leaf blade elliptic, 1.65 × 0.5m; petiole 0.6m. Sikkim/Darjeeling from 457–1676m (common between 610 and 914m).

CYPERACEAE

Actinoscirpus grossus

When Goetghebeur & Simpson (1991) made the combination *Actinoscirpus grossus* for a widespread SE Asian sedge of wandering generic habits, they commented that the species showed 'a wide range of morphological variation and closer study may reveal the presence of infraspecific taxa . . .'. It appears that one Indian form of the plant is a case in point, and worthy of retaining at varietal rank. The plant was originally described as *Scirpus kysoor* by Roxburgh. Nees (1834) seemed to regard it as distinct from *Scirpus grossus*, but was evidently not certain enough to make the combination under *Hymenochaete* to which he transferred *S. grossus*. For discussion of the complicated generic history see Goetghebeur & Simpson (1991). Clarke (1893) reduced the taxon to a variety of *Scirpus grossus*.

The taxa can be separated on a number of vegetative and floral characters, as clearly established by Roxburgh.

var. **kysoor**: stem angles hispid; glumes commonly narrowed towards apex, strongly mucronate; hypogynous bristles 'plumose' with twisted, multicellular, spreading, glandular hairs.

var. **grossus**: stem angles smooth; glumes wide just below rounded apex, minutely apiculate; hypogynous bristles with sharp, backward-pointing, unicellular hairs.

In Indian material, the stem and glume characters appear to be diagnostic by themselves, which is convenient since the nature of the hairs on the bristles is difficult to see without a good microscope. A further important character is shown on the Roxburgh drawing, in that var. *kysoor* bears tubers on its roots (?stolons) and a footnote to his listing of the name in *Hortus Bengalensis* (Roxburgh, 1814) states it to have esculent roots, a character not given for var. *grossus* in the same work. Several more recent specimens bear annotations mentioning edible tubers in var. *kysoor*, which suggest that the plant might at some point have been deliberately cultivated or spread about.

TYPIFICATION

In the absence of specimens, species published in Roxburgh's *Flora Indica* are normally typified by the Roxburgh Icones at Kew, in this case No. 2017 labelled *Scirpus kysoor* Roxb. This illustration is not particularly good; although it shows a root tuber, the shape of the glume is closer to var. *grossus*, and the stem angles and hypogynous bristles are not at high enough magnification to show. I therefore propose as an epitype (Art. 9.7 of forthcoming Code) *Buchanan-Hamilton* 173 to back up the lectotype. This material is immature and does not show the diagnostic bristle character. However, it does show both glume and stem angle characters, and these, together with the annotation of the Hindi name on which Roxburgh based his specific epithet, are justification for this designation.

Actinoscirpus grossus (L.f.) Goetghebeur & D.A. Simpson var. **kysoor** (Roxb.) Noltie, **comb. nov.**

Lectotype (chosen here): Roxburgh Icones No. 2017 (K).

Epitype (chosen here): *Buchanan-Hamilton* 173 (E; dupl. in K-W). The epitype has the following supporting documentation:

Field ticket: *Scirpus kesor*. Nathpur 10th Sept. 1810.

Entry in Buchanan-Hamilton's manuscript catalogue (E): 'Scirpus kysoor Hort. Beng: 6 [Roxb: Fl: Ind: i, 235 in later writing] Kesor Hindice. Habitat in stagnis et arvis inundatis Mithila'.

Syn.: *Scirpus kysoor* Roxb. *nom. nud.*, Hort. Bengalensis 6 (1814).

S. kysoor Roxb., Fl. Indica 1: 235–6 (1820).

S. grossus var. *kysoor* (Roxb.) C.B. Clarke in Fl. Brit. India 6: 660 (1893).

Distribution: India (mainly North, Central and East), Pakistan, Nepal, Bangladesh and Burma.

Specimens seen from India (W Bengal, Assam, ?Arunachal Pradesh, Maharashtra, Bihar, Orissa); Bangladesh (Chittagong); Nepal; Pakistan (Sind); Burma (Lower Burma).

Var. *grossus* is more widespread, occurring in China, Japan, Malesia and Australia. A very few specimens from these regions have scabrid stem angles, but none have plumose bristles.

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