NOTES ON MOIST FOREST BAMBOOS AND BAMBUSOID GRASSES IN EASTERN TANZANIA

Jon C. Lovett

Bamboos and bambusoid grasses can be an important commercial and ecological component of moist forests in Tanzania. In addition a number of species are of phytogeographical interest. This note briefly reviews those species of interest and describes observations on the flowering of two montane species.

The montane and coastal moist forests of eastern Tanzania are rich in endemic species with affinities to the Guineo-Congolian forests of west and central Africa, and to a lesser extent, Madagascar (Lovett 1988). Other affinities are with the Neotropics and the Old World. These affinities can be demonstrated by examples in the bambusoid grasses. *Puelia olyriformis*, which occurs in the Mahenge (8° 58'S 36° 41'E) and Udzungwa mountains (7° 46'S 36° 54'E) (Clayton, 1970; Lovett et al., 1988) is otherwise only known from West Africa. *Humbertocholoa greenwayi* is restricted to the coastal forests of the Pugu Hills (6° 55'S 39° 02'E) (Clayton, 1970); the only other member of the genus occurs in Madagascar. *Hickelia* sp. aff. *madagascariensis* from montane forests in the southern Udzungwa at Luisenga (8° 26'S 35° 18'E) and Livingstone Mountains at Lisitu (09° 39'S 34° 29'E) belongs to an otherwise Madagascan genus. *Maltebrunia schliebenii* endemic to the Mahenge Mountains belongs to a genus of five species otherwise known from Madagascar and Gabon (Clayton, 1970). *Olyra latifolia*, a dominant herb in disturbed coastal and lowland forest, is the most widespread species of the neotropical genus *Olyra*. It has been suggested that *Olyra latifolia* is a weedy introduction into Africa (Soderstrom & Zuloaga, 1989), but it is readily dispersed and well established throughout Africa and so it is almost certainly indigenous (Davidse 1985). *Leptaspis zeylanica*, a broad-leaved species of shade in the wetter forests, is widespread throughout Africa and eastwards in the Old World to the Solomon Islands (Clayton, 1970; Soderstrom et al., 1987). Both *Leptaspis* and *Humbertocholoa* are recorded from the middle Miocene deposits in the Kenyan Rift (Jacobs & Kabuye, 1987).

The montane forest bamboo *Sinarundinaria alpina*, which occurs in dense stands and can reach 20 m in height, is sufficiently distinctive and useful to give its name to the mountains on which it grows. In northern Tanzania, the word Oldeani is derived from the Maasai for "Bamboo mountain" (Hanby & Bygott, 1989), and in southern Tanzania, Rungwe is the local name for *Sinarundinaria alpina* (Kerr-Cross 1895). It is used locally for building and basket-making. An inventory of government controlled natural bamboo stands in use in Tanzania
gave an area of 64.7 square km (Forest Department 1962). Production and value of bamboo from these stands for various years is given in Table 1. In Tanzania Sinarundinaria alpina occurs on the mountains of: Oldeani (03° 16' S 35° 26' E), Meru (03° 14' S 36° 45'E), possibly on Kilimanjaro (03° 04' S 37° 22' E), southern Uluguru (07° 08' S 37° 38' E), southern Nguru (06° 00' S 37° 30' E), Ugakuru (06° 25' S 36° 50' E), Udzungwa (08° 15' S 35° 50' E), Poroto (09° 00' S 33° 45' E), Rungwe (09° 08' S 33° 45' E), Livingstone (09° 25' S 34° 15' E), and Mahali (06° 12' S 29° 50' E) (Chao Chi-son & S.A. Renvoize, 1989; Clayton, 1970; Pocs, 1976; Greenway, 1965; Kielland, 1978; Nishida & Uehara, 1981; Brenan & Greenway, 1949; herbarium material at Kew, pers. obs.).

Herbarium material at Kew shows that Sinarundinaria alpina flowered on: Meru in 1946, Ugakuru in 1978, and Rungwe in 1898 and 1913. The flowering of Sinarundinaria alpina appears to be erratic. It flowered on Rungwe in 1986 and sporadic flowering continued on the adjacent Poroto mountains in 1989. After flowering the bamboo dies, leaving large gaps in the forest. In Mufindi on the southern Udzungwa, Sinarundinaria alpina has not flowered for at least forty years (T.C.E. Congdon, pers. comm.). In the southern Nguru mountains the montane forest at 1,800 to 2,160 m in altitude on the headwaters of the Chazi River is remarkably open and appears secondary. However, it still contains Polyscias stuhlmannii, a species of restricted distribution, which probably indicates undisturbed forest. Along the southern ridge of the upper Chazi valley, Sinarundinaria alpina is regenerating with culms only one to two cm in diameter. This suggests that dense stands of Sinarundinaria alpina flowered and died back at some time in the recent past and the species is now regenerating from seed. A few kilometers away in the forest above Maskati Sinarundinaria has not flowered in living memory and is large enough to be used for water pipes. In the southern Uluguru the distribution of Sinarundinaria alpina does not appear to be related to climatic conditions, suggesting a dynamic situation (Pocs 1976a). On Kilimanjaro small patches of bamboo have been reported but not confirmed, the absence or rarity of Sinarundinaria alpina on Kilimanjaro was considered by Greenway (1965) to be difficult to explain as it is a conspicuous feature of other tall East African mountains (Hedberg, 1951). The flowering and subsequent die-back of dense stands of Sinarundinaria alpina must have an important effect on regeneration in moist montane forests, and may account for its possible absence from Kilimanjaro.

Sinarundinaria is not alone in flowering once and then dying back, it is a common phenomenon amongst bamboos (Renvoize, 1991). Another Tanzanian example is the scrambling bamboo Hickelia sp. aff. madagascariensis, which forms dense thickets at 1,830
m in montane forests on the banks of the Luisenga River, flowered in October 1987 and continued flowering and fruiting for two years before dying back. I collected it sterile at this locality in 1979, and am certain that it did not flower in the interim period. This species was also collected in fruit at Lisitu and Lugalawa in the Livingstone Mountains in 1970.

Another bamboo which grows in Tanzania, *Oxytenanthera abvssinica*, is found in upland wooded grassland rather than moist forest. In Kenya it has attracted interest as a potential plantation species (Kigomo & Kamiri, 1985) and in the Iringa region of Tanzania on the Udzungwa Plateau *Oxytenanthera* is planted extensively under the local name "mianzi" to produce the alcoholic beverage "ulanzi" from sap oozing from the cut stem (Mgeni, 1983; Brenan & Greenway, 1949). It flowers sparodically in cultivation, and clumps of dying mianzi can be seen amongst healthy ones. The collection of ulanzi provides an example of the usefulness of bamboos. The hollow stems of *Sinarundinaria alpina* are used to make "mbeta" in which *Oxytenanthera* sap is gathered, and the slender stems of *Hickelia* are used as straws to drink the fermented brew.

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REFERENCES


Forest Department, Tanganyika. (1931). Quinquennial revision of forestry statement to date, 1931. Government Printer, Dar es Salaam.


Forest Department, Tanganyika. (1923). Tanganyika Territory. Second British Empire Forestry Conference, 1923. Forest Department, Lushoto.


TABLE 1.

Annual utilisation and value of bamboo poles from government controlled natural forests from government reports. NR = not recorded. Value in pounds sterling at date of production. Figures for 1932-1933 include poles in addition to bamboo.

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<thead>
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<td>7</td>
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<td>1939-1945</td>
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