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Notes on African plants

VARIOUS AUTHORS

ARECACEAE

LIVISTONA CHINENSIS, A FIRST RECORD OF A NATURALIZED PALM IN SOUTH AFRICA

Seven genera of the Arecaceae occur in southern Africa and southern tropical Africa, comprising 18 indigenous species (Table 1) (Glen 2000; Leistner 2005). Of these, only six palm species are indigenous to South Africa, probably due to prevailing climatic conditions that are unfavourable for tropical taxa, and it is therefore not surprising that no non-indigenous member of the Arecaceae has previously been regarded as naturalized or invasive in southern Africa (Henderson 2006).

The aim of this paper is to report on the first palm to have become semi-naturalized in South Africa, namely *Livistona chinensis* (Jacq.) R.Br. ex Mart. This palm is also considered as naturalized in some parts of the United States of America (Butts 1959; Oppenheimer 2003) and Mauritius (Maunder *et al.* 2002). The palm was introduced to South Africa as an ornamental during the early 1900s and has hitherto been widely planted throughout the eastern coastal regions of South Africa due to its availability, vigour and hardiness (Esterhuyse *et al.* 2001).

Although one of the most commonly cultivated ornamental palms in the world (Dowe 2009), *Livistona chinensis* is now 'Vulnerable' in its indigenous Japan, Taiwan and China (Hainan Island), where it occurs mostly in coastal forests on various soils, often in sand, sometimes in dense monospecific colonies, or isolated groups or individuals, up to 100 m in altitude. The species was first described as *Latania chinensis* (Jacquin 1801), from plants cultivated in Mauritius and brought to Schoenbrunn Gardens, Vienna in 1788. The species name was taken from that used for the palm in Mauritius, '*Latanier de la Chine*'. Bretschneider (1898) provided some evidence to suggest that the naturalist and traveller Pierre Poivre was responsible for introducing the palm, during the mid-1700s, to Mauritius where it became naturalized. The common name, Chinese fan palm, came into use very early (Jacquin 1801) and was based on the Latin name as well as subsequent knowledge of its distribution in eastern Asia (Yoshida *et al.* 2000). In South Africa it is also known as the Chinese fountain palm. An extensive search in southern African herbaria for *Livistona chinensis* revealed only two voucher specimens, both of garden origin, which were made by H.F. Glen on 23 March 1991 at Vaalwater, Limpopo, and by J.C. Scheepers in April 1992 in Pretoria, Gauteng.

TABLE 1.—Palm genera and no. species per genus occurring naturally in southern Africa and southern tropical Africa respectively and in totality

Genera	Species per genus		
	Southern Africa*	Southern tropical Africa**	Total
Borassus	1	1	1
Calamus	0	1	1
Eremospatha	0	3	3
Hyphaene	2	5	5
Jubaeopsis	1	0	1
Phoenix	1	1	1
Raphia	1	6	6
Total: 7	6	17	18
Livistona†	1	0	1
Total: 8	7	17	19

* Glen (2003); ** Leistner (2005); † alien.

Arecaceae (alt. Palmae), subfamily Coryphoideae, tribe Trachycarpeae, subtribe Livistoninae (Dransfield *et al.* 2008).

Livistona chinensis *(Jacq.) R.Br. ex Mart.*, Historia Naturalis Palmarum 3,7: 240 (1838). *Latania chinensis* Jacq.: t. 11, fig. 1 (1801). *Saribus chinensis* (Jacq.) Blume: 49 (1838). *Livistona sinensis* Griff.: 131 (1845), ortho. var. Type: without locality and collector [lecto., illustration in Jacquin: tab. 11, fig. 1 (1801), designated by Moore (1979)].

Latania borbonica auct. non Lam.: 427 (1792).

Livistona mauritiana Wall. ex Mart.: 240 (1838), nomen.

Chamaerops biroo Siebold: 11 (1830). Type: Japan, *Siebold s.n.* [L, lecto.!, designated by Dowe (2009)].

Livistona olivaeformis (Hassk.) Mart.: 319 (1850); Miquel: 59 (1855); Miquel: 13 (1868). *Saribus olivaeformis* Hassk.: 176 (1842). *Latania olivaeformis* (Hassk.) Devansaye: 34 (1875), nom. illeg. Type: Indonesia, cultivation, Bogor Botanic Gardens, 'nel viale presso la chieta', May 1878, *Beccari s.n.* [FI, lecto.!, sheets 1131, 1131-B & 1131-C, designated by Dowe (2009)].

Livistona subglobosa (Hassk.) Mart.: 319 (1850); Miquel: 59 (1855); Miquel: 13 (1868); Nakai: 224 (1935). *Saribus subglobosus* Hassk.: 177 (1842); Hassk.: 65 (1844). *Livistona chinensis* var. *subglobosa* (Hassk.) Becc.: 16 (1921). Type: Indonesia, cultivation, Bogor Botanic Gardens, May 1878, *Beccari s.n.* [FI, lecto.!, sheets 11333 & 11333-B, designated by Dowe (2009)].

Livistona japonica Nakai ex Masam. (as *Livistonia japonica*): 50 (1929); Masamune & Suzuki: 73 (1933). Type: not designated.

Diagnostic characters: monoecious hermaphroditic tree, single trunk up to 15 m tall, enveloped by dry leaf sheaths, dense crown of numerous divided, palmate and pendulous pale green leaves, up to 1.8 m long, prominent undivided central area and numerous deeply bifid segments, tips pendulous. Petioles armed with stout prickles. Flowers sessile, pale yellow, carried in clusters of up to seven, borne in 5–7 inflorescences up to 1 m or more long, of several branches along a single main rachis, each 2 or 3 times divided into rachillae; bracts

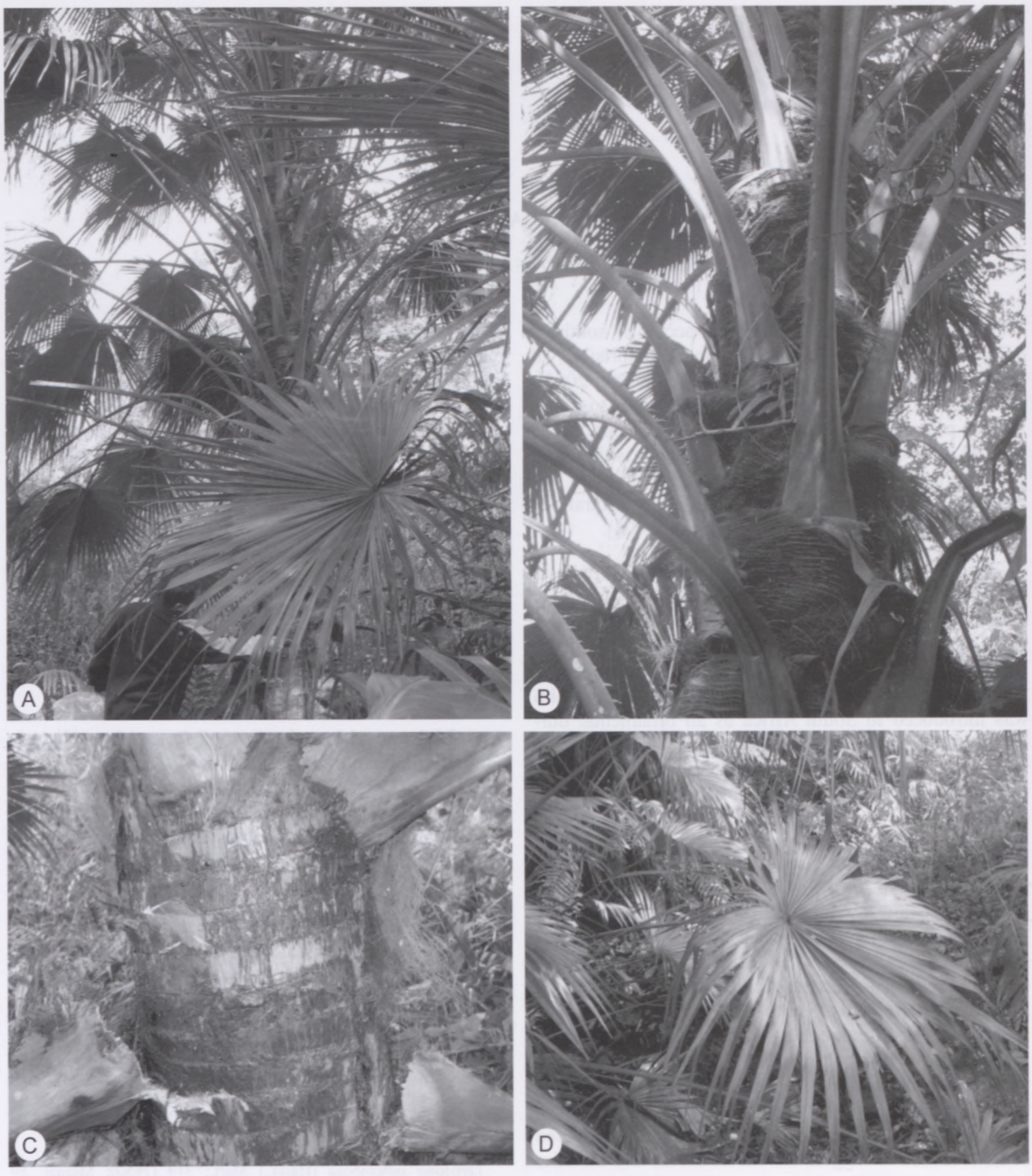

FIGURE 1.—*Livistona chinensis*. A, habit; B, trunk showing dry leaf sheaths and prickles on petioles; C, base of stem; D, leaf. Photographs: H. de Wet.

brown tomentose. Fruit ellipsoid to subglobose or pyriform, 15–26 × 9–18 mm; bright green to bluish green, china-blue-grey with age, in dense clusters. *Flowering time*: December to February. Figure 1.

Distribution and habitat: *Livistona chinensis* has become semi-naturalized in swamp forest in the subtropical coastal region of KwaZulu-Natal. Current, confirmed populations include three localities in the Empangeni-Richards Bay area, with sight records for the Durban area (Figure 2). In Zululand it occurs in forest dominated by the trees *Bridelia micrantha*, *Phoenix reclinata*, *Syzygium cordatum* and *Voacanga thouarsii*, and an understorey dominated by the ferns *Microsorum scolopendria* and *Nephrolepis biserrata*.

Studies by Siebert (2009) could not confirm any natural distribution vectors, but found that the masses of seed produced by these palms end up in garden dumping sites during autumn. Naturalized populations are only associated with garden refuse in swamp forest patches, as the prevailing microclimate here, which is predominantly warm and moist, is probably most suitable for germination. Siebert (2009) has reported that in these favourable habitats, single individuals reach maturity over time, but in turn these successful individuals produce masses of

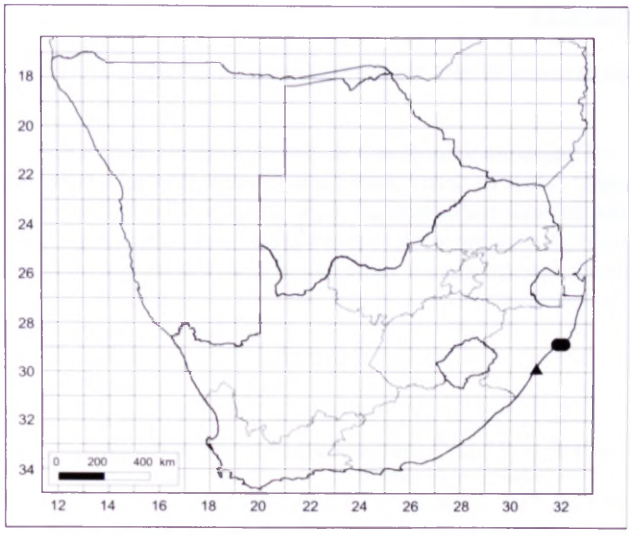

FIGURE 2.—Naturalized distribution of *Livistona chinensis* in South Africa. Voucher records, ●; sight record, ▲.

seed that lead to mass seedling establishment through gravitational dispersal. Although this only leads to localized, controllable invasions, it should serve as a warning sign, and calls for an urgent action to assess the invasive status and potential of cultivated palms in South Africa.

Voucher specimens

KWAZULU-NATAL.—2831 (Nkandla): KwaDlangezwa, swamp forest along Umhlatuze River, (–DD), *Siebert 2456* (NH, PRE, ZULU); Ngwelezana, swamp forest along Umhlatuze River, (–DD), *Siebert 3188* (ZULU). 2832 (Mtubatuba): Richards Bay, swamp forest along Thulazihleka Pan, (–CC), *Siebert 3499* (ZULU).

LIMPOPO.—2427 (Vaalwater): cultivated, Waterberg, (–BB), *Glen 2628* (PRE).

GAUTENG.—2528 (Pretoria): garden, Menlo Park, (–DB), *Scheepers s.n.* (PRE).

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