

in light shade under the tree canopy.

Impatiens halongensis belongs to a group of Vietnamese balsams, which includes *I. boni* Hook. f. and *I. verrucifer* Hook. f., that are glabrous, have axillary flowers, four lateral sepals of which the outer ones are free, a short spur and connate lateral petals. It would not be mistaken for *I. boni* and *I. verrucifer*, which have large 3-cm wide, pink flowers with a deeply divided lip and a pedicel that is longer than the petiole.

Some plants of *I. boni* (formerly described as distinct and called *I. pygmaea* Hook. f.) have basically white flowers and pedicels shorter than the petioles, but *I. halongensis* is clearly distinct from them in the number of lateral veins (3—5 pairs in *I. boni*), in flower shape (the distal lobes of the lateral petals are not recurved in *I. boni*), and colour (the white flowers of *I. boni* have violet apices).

***Livistona halongensis* T.H. Nguyen & Kiew, sp. nov.**

(Palmae)

Nguyen & Kiew, Wild Plants of Ha Long Bay (2000) Plate 24.

Forma foliorum et magnitudine fructuum *Livistonae endauensi* J. Dransf. & K.M. Wong similis, sed inflorescentiis erectis et multo longioribus praecipue differt.

Typus: Ha Long Bay, *Nguyen Tien Hiep, L. Averyanov & Nguyen Van Can NTII 2630* 12 May 1999 flowers (holo HN, iso SING)

Plate 1a

Solitary palm. *Stem* to c. 10 m tall and c. 20 cm diam., flowering at c. 5 m tall, leaf scars conspicuous and close. *Leaf* with petiole longer than lamina. Leaf base and leaf sheath clasping the stem, c. 15 cm wide at base, thickly woody; ligule rich brown, triangular and fibrous, the proximal 35—38 cm stretched to form a fibrous network, the distal c. 70 cm tattered into ribbons. *Petiole* glabrous, 1.25—1.30 m long, c. 2 cm wide at base, c. 1.5 cm wide distally, adaxially flat and green with light yellow band along the margin, abaxially green and rounded, proximal 15 cm without spines, distally with 77—86 irregularly spaced spines per side: spines dull orange, paler green towards centre, 10—12 mm long, woody, hooked, underside strongly keeled. Adaxial hastula persistent, papery, broadly ovate, c. 3 x 2.5 cm (hastula absent on the abaxial surface). *Lamina* unsplit at base, then splitting into one-veined segments which ultimately split along the single vein to become bifid, segments slightly pendant; near the margin, lamina c. 47 cm long and splitting c. 6 cm from base, in the centre c. 77 cm long and splitting c. 23—25 cm from base, veins c. 64; lower surface at base with pale fawn scurfy

indumentum wearing off distally; intercostal veins fine and slightly darker green, just visible to the naked eye; margin at base with a c. 2 cm-long row of very fine teeth. Old leaves forming a conspicuous skirt beneath the crown, ultimately marcescent. *Inflorescence* solitary, interfoliar, green, glabrous, c. 3.4 m long, more or less erect and projecting above crown; prophyll and 10 upper bracts tubular and thick leathery-fibrous, prophyll 2-keeled, c. 33 x 5 cm at base tapering to 3 cm wide; bracts each c. 50 cm long and terete, the upper 7 with partial inflorescences; peduncle c. 1.6 m x 2 cm with 5 bracts; partial inflorescences divaricate, softly pale fawn velvety, with one bracteole c. 27 cm long, proximally stalk flat, terete distally, c. 95 cm long of which stalk is 60 cm long, arching outwards and downwards with c. 10 second order rachillae, lower with third order rachillae, ultimate rachillae c. 1—1.5 mm thick. *Flowers* minute in distant pairs on common stalk c. 0.3 mm long, bud obovoid, flowers pale creamy yellow, c. 2 mm long; *calyx* c. 1 mm long, glabrous, tubular dividing c. halfway, lobes 3 acute; *corolla* c. 2 mm long, divided c. halfway, lobes 3, cucullate; *stamens* 6, c. 1 mm long, staminal tube rich brown, narrowing abruptly into short filament, anthers subglobose, glistening white, c. 0.3 mm long; *ovary* obovoid, deeply ridged, dark reddish brown, c. 1 mm long; single united style, pale brown, c. 0.3 mm long; stigma minute. *Fruit* stalk to (2—)3—5 mm long, fruit globose 10—12 mm across, smooth, glossy bright dark green, epicarp and mesocarp leathery, endocarp crustaceous and brittle, c. 0.75 mm thick, single-seeded, endosperm homogeneous with an intrusion of testa in the centre.

Distribution: Vietnam: Quang Ninh Province, endemic to Ha Long Bay.

Habitat: Limestone islands, in soil-filled crevices on rocky limestone substrate, sometimes gregarious but it is not present on all islands.

Specimens: collections from same plant, all numbered *NTH 2630* (12 May 1999 – type); *Nguyen Tien Hiep & Ruth Kiew* 15 July 1999 (fruits); 11 April 2000 (immature inflorescences).

Notes: This is the first *Livistona* species to be described from limestone. It flowers in May, when it produces spectacular large, cream inflorescences above the green leaf canopy. It fruits in July.

It is clearly different from the other Vietnamese species of *Livistona* as indicated in the key.