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Florula of Lime Cay – an account of the vascular plants on a small Jamaican islet

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Abstract: Christenhusz, M.J.M. 2008: Florula of Lime Cay – an account of the vascular plants on a small Jamaican islet. Schlechtendalia **17**: 1–25.

In this article an account and descriptions of all vascular plants found on Lime Cay are given. Lime Cay is a small coral island, a 'key', which lies in front of the Jamaica coast, not far from Kingston, and is part of the Palisadoes-Port Royal Cays Protected Area. This tiny island has a rather diverse vascular flora of 46 species in 30 families. With seven species, the legumes (Fabaceae) are most diverse.

This study is based on specimens and data collected in February 2004, and includes previous records from literature and from herbarium specimens in IJ, TUR and UCWI. The species found on Lime Cay are able to avail themselves of avevectent and aquavectent transportation, and can withstand or need a saline soil and atmosphere. This florula may be an aid to the identification of plants on similar Caribbean keys.

Zusammenfassung: Christenhusz, M.J.M. 2008: Eine kleine Flora von Lime Cay – Aufzählung der Gefäßpflanzen einer kleinen Jamaikanischen Insel. Schlechtendalia **17**: 1–25.

In dieser Arbeit werden alle Gefäßpflanzen, die auf der Insel Lime Cay gefunden worden sind, aufgezählt und beschrieben. Lime Cay ist eine kleine Koralleninsel, also eine flache Insel, die vor der Küste Jamaikas liegt, unweit von Kingston. Sie ist Teil des ‚Palisadoes-Port Royal Cays'-Schutzgebietes. Diese winzige Insel hat eine reichhaltige Gefäßpflanzenflora von 46 Arten aus 30 Pflanzenfamilien, davon sind mit sieben Arten die Fabaceen am stärksten vertreten.

Die vorliegende Untersuchung beruht auf Kollektionen und Daten vom Februar 2004, einschließlich älterer Angaben aus der Literatur und aus den Herbarien IJ, TUR und UCWI. Die auf Lime Cay gefundenen Arten sind in der Lage, sich selbst durch Luft- und Wassertransport anzusiedeln und sie tolerieren Salzboden und saline Atmosphäre oder brauchen sie sogar. Diese kleine Flora ist vielleicht eine Hilfe zur Bestimmung von Pflanzen ähnlicher kleiner Karibikinseln.

Key words: Antilles, botanical diversity, Caribbean, islands, Jamaica, Port Royal Cays, sandy keys.

Introduction

The Antilles have recently been identified as one of the worlds 25 biodiversity hotspots (Myers, Mittermeier, Mittermeier, Da Fonseca & Kent 2000). This recognition of biological diversity initiated the creation of several new nature reserves in Jamaica (Smith Warner International 2004). The archipelago of the Port Royal Cays, and the nearby coastal region called the Palisadoes, have been united into a protected area preserving both the natural and cultural heritage (McHardy 2005). In this protected area we find many coral reefs and consequentially a wealth of marine life. In a marine

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dominated area, the terrestrial organisms generally receive less scientific attention, however, considering their small size, these tiny islets harbour a relatively high diversity. Studying the distribution of plants on small islands may provide new insights in island colonisation and their distribution patterns. This florula aims to increase the public awareness of botanical diversity on these small keys, and stresses the need to further study and explore the flora of the Antilles. The natural vegetations of these islets may thus be better preserved, and may increase the awareness and interest in this botanical diversity by the general public visiting the Port Royal Cays.

I chose Lime Cay as an example, because the island is easily accessible by regular ferry from Port Royal, and is a good representative of a human influenced islet.

Site description

Lime Cay is a small tropical islet 3.34 km south of Port Royal in the parish of Saint-Andrew (Fig. 1), with coordinates: 15˚55'N/76˚49'W. It is approximately 387 m long and 88 m wide. The climate is tropical and relatively dry with high annual temperatures and little seasonal change. The islet is part of the Port Royal Cays, and it is the only island of this archipelago that is frequented by tourists. There are small boats taking tourists from port Royal to the island to enjoy sun and sea, and additionally several private yachts commonly anchor in front of the beach. On the island there is a small open building (Fig. 2), that is used for the preparation and selling of food (Lime Cay Catering). There is no accommodation, but sometimes people spend the night on the beach. Unfortunately there is no trash management and the littering by visitors causes a serious problem. Trash blows off the island, endangering sea life in the surrounding coral reefs and sea grass beds. Despite human pressure, the island has a relatively well preserved terrestrial flora of 46 species in 30 families. The whole island receives salt spray or inundation during storms or hurricanes, resulting in all species being halophytes or at least having tolerance to salt spray. Some species which used to be known to the island but were not retrieved in 2004, may have perished after inundation. The legumes (Fabaceae sensu lato, incl. Mimosaceae and Caesalpiniaceae), is the most diverse family with seven species, followed by the Euphorbiaceae with three.

The inland parts and eastern coast of the islet are covered in open mangrove forests (Fig. 1; Fig. 3) mostly consisting of *Avicennia germinans*, *Conocarpus erectus*, *Laguncularia racemosa* and *Rhizophora mangle,* with a dominant undergrowth of *Batis maritima* (Fig. 4). The eastern and southern shore is rocky (Fig. 5). Between the reef and the sea shore in shallow water some sea grass beds consisting of *Halodule beaudettei* and *Thalassia testudinum* are present. Dry shrubberies can be found in the northern and western part of the island, which is also where the most frequently visited beach is located. Shade is provided there by isolated trees such as *Acacia tortuosa,* the planted *Casuarina equisetifolia* (Fig. 6), *Cordia sebestena, Piscidia piscipula, Pithecellobium unguis-cati,* and most commonly *Thespesia populnea* (Fig. 9).

Lime Cay is mainly consisting of leached calcareous limestone, hence the name of the island. The rocky chore is fringed by beaches of white coral sand, where typical beach flora such as *Ipomoea pes-caprae*, *Sesuvium portulacastrum*, *Sporobolus virginicus* and *Euphorbia mesembrianthemifolia* (Fig. 7) are abundant. These species are the first to colonise newly formed beaches, islets and sandy banks.

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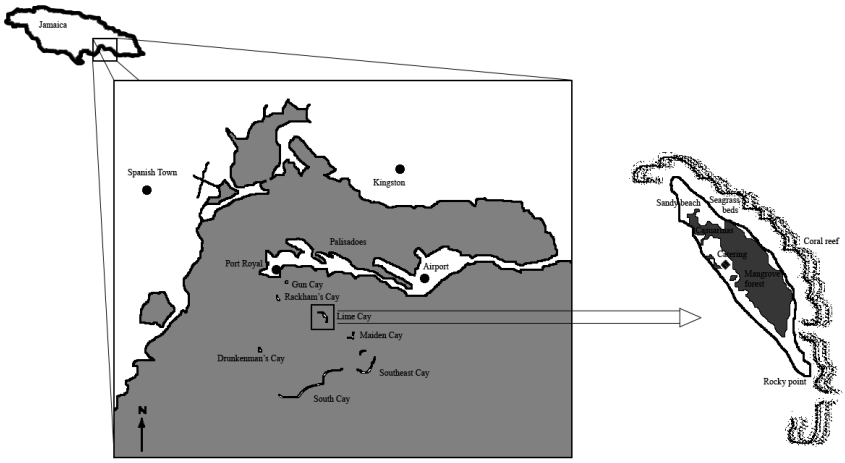

Fig. 1: Overview map.

Historical overview of botanical studies on Lime Cay

The Port Royal Cays were first visited by plant collector W. T. March in 1857–1858. In 1899 W. Fawcett collected plants on Lime Cay, for his studies of the Jamaican flora (Fawcett 1910–1936). Fawcett's collections are preserved at UCWI. It took nearly half a century before A.M. Barry (collections in IJ) visited Lime Cay on 12 June 1945 and 31 March 1946. Amy von der Porten a specialist in aquatic plants, collected mainly seaweeds on 27 May 1950, but she also gathered some marine vascular plants. G.F. Asprey (collections in UCWI) visited the island in November 1951 and a second time together with R.G. Robbins in July 1952, who carried out floristic studies. Their findings were published a year later (Asprey & Robbins 1953).

In the 1940th and 1950th further collections were made by Leaford A. Patrick (17 January 1945, IJ), J.H. Palmer (October 1945, UCWI), and A.R. Loveless (December 1952, UCWI). On 7 February 1963 and 28 November 1965, well known botanist C.D. Adams collected on Lime Cay, while he was working on his study of the 'Flowering Plants of Jamaica' (Adams 1972; collections at UCWI). Additionally Adams published two other works concerning the flora of the Port Royal Cays (Adams, Kasasian & Seeyave 1968; Adams 1989).

Myrna M. Wedderburn, who worked for George Proctor at the Institute of Jamaica, collected plants in Lime Cay on 15 March 1968. D.L. Kelly (of UCWI) carried out a botanical survey of the island in January 1977, and M. Brismacombe and P. Fairbairn studied the island's flora on 28 July 1979.

Extensive collecting on Lime Cay was carried out on 18 October 1985 by D.R. Stoddart and S.M. Head (collections in IJ). Dr. Stoddart has an interest in island biogeography and island floras, and published a checklist of the flora of the Jamaican Cays (Stoddart & Fosberg 1991).

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Fig. 2: Tourists in front of the catering building.

Fig. 3: Edge of the mangrove forest, with *Rhizophora mangle*.

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Fig. 4: *Conocarpus erectus* forest with undergrowth of *Batis maritima*.

Fig. 5: The rocky southern point of the island.

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Fig. 6: View on the sandy beach from the NW of the island. The tall trees are *Casuarina equisetifolia*, which were planted to break the wind. The other trees are mostly *Thespesia populnea*, providing shade.

Material and method

I have been fortunate to visit Lime Cay twice, on February 8 and February 21, 2004. During these two visits I was able to collect almost all vascular plants present on the island, which were deposited in the herbarium of the Institute of Jamaica, Kingston (IJ) and the herbarium of the University of Turku (TUR), Finland. In addition, specimens from the island present in IJ and the herbarium of the University of the West Indies (UCWI) were studied. The collections were morphologically compared and a checklist was compiled, which was supplemented with observational data from Asprey & Robbins (1953) and Stoddart & Fosberg (1991). There were five new records to the island, but almost a third of the species were not retrieved during my excursions in 2004, which is most likely due to seasonality or local extinction.

All 46 species listed in this florula are briefly described, based on photographs and available herbarium specimens preserved at TUR, with local names and missing characters added from Adams (1972). All studied material is cited under each species, with the collector's surname and collection numbers and herbarium acronyms (which follow Holmgren & Holmgren 1998–present).

Florula of Lime Cay

Acacia tortuosa (L.) Willd. in L., Sp. Pl. ed. 4, 4(2): 1803, 1806 (Fabaceae, Mimosoideae). Fig. 10.

≡ *Poponax tortuosa* (L.) Raf.

Wild Poponax.

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Large shrub or tree with spreading branches to 5m tall. Twigs grayish; stipular spines paired, thick, terete, 1–4 cm long, very sharp and can cause nasty wounds when trodden on barefooted. Leaves with an oblong gland on the petiole and circular glands between distal pinnae; short stalked, twice pinnate, with 2–6 pinnate pinnae; the leaflets 20–40 per pinna, oblong-linear, 3–5×1 mm, oblique at base. Flowers yellow, many together in 1–1.3 cm large globular inflorescences, these solitary (or clustered) in the leaf axils; inflorescence stalks to 3.5 cm long; calyx with 5 teeth; corolla 5-lobed; stamens 10, far exceeding the corolla. Fruit an elongated, rounded, hard pod, irregularly constricted between the seeds, reddish-brown to black, 8–14×0.8 cm, with up to 13 seeds per pod. Common along the west coast of Lime Cay, and occurs commonly along the saline margins and limestone hills along all of the Jamaican south coast, also on Hispaniola, Puerto Rico, and the Lesser Antilles.

Material examined: Lime Cay: Palmer s.n. anno 1952 (UWCI), Wedderburn 308 (IJ), Stoddart & Head 9040 (IJ), Stoddart & Head 9045 (IJ), Stoddart & Head 9062 (IJ), Christenhusz 3411 (HAL, IJ, TUR).

Alternanthera halimifolia (Lam.) Standl. in Pittier, Pl. Us. Venez.: 145, 1926 (Amaranthaceae).

≡ *Achyranthes halimifolia* Lam.
= *Alternanthera ficoidea* (L.) Roem. & Schult. in L. var. *flavogrisea* (Urb.) Fawc. & Rendle
= *Telanthera flavogrisea* Urb.
= *Telanthera frutescens* Moq. in DC.

Gray Crab Withe.

Prostrate to ascending herb, woody at the base, completely covered in gray feltlike (tomentose) indumentum; stems to 1 m long, gray, later turning reddish. Leaves opposite, short-stalked, elongate to elliptic, 1.5–4(–9)×1–2(–3.5) cm. Inflorescence an axillary, simple, densely globular spike, 0.5–1.5 cm long, sessile. Flowers bisexual; bracts 3; tepals 5, 2.5–3.5 mm long, whitish; stamens 5. Common species of dryer habitats throughout the Caribbean.

Material examined: Lime Cay: Stoddart & Head 9048 (IJ).

Ateramnus lucidus (Sw.) Rothm., Fedde Repert. Sp. Nov. 53: 5, 1944 (Euphorbiaceae).

≡ *Gymnanthes lucida* Sw.

Crab Wood.

Large shrub to 4 m tall with clear sap. Leaves oblanceolate, leathery, shiny above, obtusely pointed to rounded at apex, narrowly rounded at base, 3–13×1.5–3 cm. Flowering spikes terminal or axillary, male or bisexual; male bracts three-flowered; peduncles up to 3 cm long; pedicel up to 2 cm long in fruit. Fruit a globose, three-lobed capsule, about 1 cm in diameter. Seeds globose, dark brown up to 5 mm in diameter.
Forming thickets on limestone rocks or sand along the sea. This species was listed by Adams (1969) as rare on Lime Cay, but was not retrieved there in 2004.

Avicennia germinans (L.) L., Sp. Pl. ed. 3, 2: 891, 1764 (Avicenniaceae).

≡ *Bontia germinans* L.
= *Avicennia nitida* Jacq.

Black Mangrove.

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Large shrub or tree to about 10 m tall; roots growing pneumatophores (aerial roots) around the plant, these erect blunt branches, up to 30 cm tall, projecting above the mud in low tide; stems white tomentose. Leaves pubescent when young, opposite, short-stalked, oblong to oblong-lanceolate, rounded to cuneate at base, obtuse at apex, 3–10(–15)×1–5 cm, leathery, upper side glabrous and covered in salt crystals, lower side white powdery, margin entire. Inflorescences paniculate to 6 cm long. Flowers sessile; corolla tubular, about 1 cm wide, white, with a yellow throat of the tube; the 4 irregular lobes rounded. Fruit an apiculate oblique capsule, to 4cm long; seeds germinating on the tree.

An avevectent species, common in saline swamps and on the drying border of the mangrove (Millspaugh 1907) found along the eastern and southern part of Lime Cay. The species occurs along coasts from Florida, throughout the Caribbean and Central America, to Brazil, Ecuador, Peru and West-Africa. The bark can be used for tanning; the wood for timber (Mabberley 1997).

Material examined: Lime Cay: Wedderburn 301 (IJ), Stoddart & Head 9042 (IJ), Christenhusz 3378 (HAL, IJ, TUR, U).

Batis maritima L., Syst. Nat. ed. 10, 2: 1289, 1759 (Batidaceae). Fig. 4.

Beachwort, Jamaican Samphire, Saltwort.

Small succulent subshrub; stems trailing or ascending to 80 cm tall, and up to 1.5 cm long, often looping and rooting; branches erect, silvery gray when older, young stems and leaves light yellowish green. Leaves thick, opposite, sessile, entire, fleshy, linear to linear-oblong, 1–3×0.2×0.3 cm, without stipules; in cross-section round or triangular. Flowering spikes solitary in the leaf axils, about 1cm long; to 2cm long in fruit. Flowers dioecious, in cone-like bracteate spikes; male flowers in sessile catkins with free bracts, tightly overlapping in 4 rows, persistent with 1 flower in each bract-axil, perianth campanulate, shallowly 2-lipped, membranaceous, stamens 4, alternating with the 4 petaloid staminodes, filaments free, anthers dorsifixed, 2-locular, opening vertically; female flowers in stalked spikes, 4 to 12-flowered, bracts small, rounded, deciduous, perianth absent, ovary superior, 4-locular, each locule with a solitary basal ovule, stigma sessile, capitate. Fruit fleshy, composed of the cohering berry-like pistils.

Common avevectent species found throughout the island. A locally common species forming large ‘meadows’ in saliñas, salt flats and estuaries from the SE United States, throughout the Caribbean, the coasts of continental tropical America, and on Hawaii. The fresh herb can be used in salads; the ash of the burned plants was formerly used in glass staining, and for making soap (Mabberley 1997).

Material examined: Lime Cay: Without collector (UCWI), Wedderburn 302 (IJ), Stoddart & Head 9063 (IJ), Christenhusz 3406 (IJ, TUR).

Blutapharon vermiculare (L.) Mears, Taxon, 31(1): 113, 1982 (Amaranthaceae).

≡ *Gomphrena vermicularis* (L.) Beauv.
≡ *Philoxerus vermicularis* (L.) Sm.

Beach Calalu.

Creeping, partly erected herb to 35 cm tall, with a taproot, and with reddish or pink stems to 1.8 m long, sometimes rooting from the lower nodes. Leaves succulent, opposite, sessile, linear to narrow lanceolate. 1.5–4×0.4–1.2 cm, base acute, apex acute to obtuse. Inflorescence a terminal, globular or somewhat elongate ovoid-cylindri-

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cal, 0.8–3 cm long spike, sessile or short-stalked. Flowers bisexual; bracts 3; tepals 5, 2–4 mm long, unequal in size, whitish, woolly at base; stamens 5. On Lime Cay once found on exposed littoral coral rocks, the species is found on low-lying sandy places near the sea, at brackish swamp margins throughout Tropical America and West Africa.

Material examined: Lime Cay: Adams 12348 (UCWI), Wedderburn 229 (IJ).

Boerhavia scandens L., Sp. Pl. 1: 3, 1753 (Nyctaginaceae).

≡ *Commicarpus scandens* (L.) Standl.

Easy-to-Break, Rat Ears.

Scrambling herb to 2(–4) m tall, seeking support of other plants. Leaves succulent, opposite, long-stalked, triangular to ovate to ovate-lanceolate, cordate (obtuse, acute or acuminate) at base, 1.5–5×1–4.5 cm, light green, thinly puberulous. Flowers 5–12 together in small glabrous umbels; the pedicels elongating to 5–10 cm long in fruit; perianth (2–)3–5(–7) mm long, whitish; stamens 2. Fruit club-shaped, 8–10 mm long, at the tip with a corona or sticky glands. Locally common species of waste places, coastal thickets and sand dunes, on Lime Cay climbing in *Harrisia gracilis* shrubbery. Distributed from the southern USA to Peru, and throughout the West Indies.

Material examined: Lime Cay: Stoddart & Head 9065 (IJ), Wedderburn 303 (IJ), Christenhusz 3402 (IJ, TUR, U). Asprey & Robbins (1953) listed *B. coccinea* Mill. for Lime Cay, but this was based on confusion of this species with *B. scandens*.

Caesalpinia bonduc (L.) Roxb., Fl. Ind. 2: 362, 1832 (Fabaceae, Caesalpinioideae).

≡ *Guilandina bonduc* L.
= *Caesalpinia bonducella* Flem.

Bonduc, Gray Nickal, Nicker Bean.

Woody liana with scrambling or trailing branches to 5 m long. Stem hairy with straight ferocious prickles. Leaves unevenly bipinnate, with curved prickles on the rachises; pinnae 5–9 pairs per leaf, up to about 15 cm long; leaflets 5–7 pairs per pinna, hairy, up to 5 cm long and 2.5 cm wide, elliptic, widest in the middle. Flowers yellow, in axillary racemes; petals about 12 mm long; stamens shorter than the petals. Fruit a 5–7 cm long and 3–5 cm wide pod, with 1 or 2 subglobose black seeds. Seeds are viable for at least 2.5 years in sea water, and are used as beads (Mabberley 1997). Aquavectent species, the seeds float well, washing ashore throughout tropical and subtropical thickets near the sea, sometimes seeds even washing ashore in England. On Lime Cay a single plant grows in a thicket in the central part of the island.

Material examined: Lime Cay: Asprey s.n. anno 1952 (UCWI), Christenhusz 3418 (IJ, TUR).

Cakile lanceolata (Willd.) O.E.Schultz in Urb., Symb. Ant. 3: 504, 1903 (Brassicaceae).

≡ *Raphanus lanceolatus* Willd.

Jamaican Sea Rocket.

Succulent, suffruticose, erect annual; stems weak, herbaceous, growing out of a woody base, to about 1 m long. Leaves succulent, alternate, short-stalked, mostly oblanceolate to elliptic, entire to coarsely serrate-dentate, to 10 cm long and about 0.5–3.5 cm wide, glabrous. Flowers in terminal racemes; sepals with a white (hyaline) margin; petals 4,

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white to very light purple, 4.5–7 mm long; stamens 6. Fruit fleshy, 2–3×0.2–0.4 cm, articulated in and split in two parts when dry, the top part 2–4 times as long as the basal part. The fruiting racemes elongated; fruiting plant dries and gets detached from the rootstock, the twigs curl inwards, creating a 'rolling bush', which is moved by the wind so to spreads its seeds along the shore, the seeds are aquavectent.
The taproots were formerly powdered and mixed with other flower for bread by Native North Americans as food in periods of famine (Mabberley 1997). In Jamaica this species is locally common on sandy beaches in the flood line, and on salt marshes; occurs from the southern United States throughout Central America and the West Indies, south to northern South America.

Material examined: Lime Cay: Wedderburn 307 (IJ), Adams 12254 (UCWI).

Calotropis procera (Aiton) Aiton f. in Aiton, Hort. Kew. ed. 2, 2: 78, 1811 (Apocynaceae).

≡ *Asclepias procera* Aiton.

Apple of Sodom, Auricula Tree, Dumb Cotton, French Cotton.

Large, wide growing, open shrub or small tree to 5.5 m tall; twigs erect, fibrous, succulent and with white powder when young; later woody, with a white sticky milky sap when damaged. Leaves succulent, opposite, subsessile, oblong-obovate to round-elliptic, cordate at the base, short acuminate at the apex, 4–25×1–15 cm wide, glabrous. Flowers in axillary, umbelliform cymes on a 4–9 cm long stalk; calyx 5-lobed, purplish within, white on the outside, the lobes 5–6 mm long; corolla 5-parted, dish-shaped, about 2 cm across, greenish white outside, with a purple blotch at the top of the corolla lobe within; nectaries erect, white with a purple tip; pollen conglomerated in pollinia. Fruit an egg-shaped inflated follicle, 3–10×2–6 cm, containing many, flattened, brown seeds with a silky white tuft, which are distributed by wind. This native of West Africa and the Middle East is commonly naturalized on arid, sandy or gravelly waste places and coastal shrub in many tropical regions; common throughout the West Indies. The strong fibres are used in West Africa and Middle East; the fine wood-ash was formerly used in the preparation of gun-powder; the roots are used as chew sticks (Mabberley 1997). It has since long been cultivated and is now naturalized in many (sub-)tropical parts of the world.

Material examined: Lime Cay: Christenhusz 3408 (TUR) This specimen is a seedling, but adult plants are very common in Port Royal and the Palisadoes.

Canavalia rosea (Sw.) DC., Prodromus 2: 404, 1825 (Fabaceae, Faboideae).

= *Dolichos maritimus* Aublet.
= *Canavalia maritima* (Aublet) Urban.
= *Canavalia obtusifolia* (Lam.) DC.

Seaside Bean.

Trailing or climbing plant with rounded to obovate leaflets, these 4–10×5–10 cm. Flowers papilionate, in a 30 cm long raceme; standard petal 3 cm long, purple, fading to rose-violet. Pod 5–15 cm long, 2.5 cm broad. Seeds brown-marbled, about 1.5 cm across. An aquavectent species of beaches and waste places.

Material examined: Lime Cay: Fawcett s.n. anno 1899 (UCWI), not retrieved in 2004, but common on beaches along the nearby Palisadoes.

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Capparis ferruginea L., Syst. Nat. ed. 10, 2: 1071, 1759 (Capparidaceae).

Mustard Shrub.

Shrub or tree to 8m tall with pinkish bark. Leaves elliptic to oblanceolate, acute or acuminate to apiculate at apex, narrowly rounded and cordulate at base, 3–10 cm long, 1–4 cm wide. Inflorescences corymbose, small, in the upper axils; sepals 2–2.5 cm long, reflexed; petals about 5 mm long, white or cream; stamens usually 8, pilose at base. Fruit a dehiscing pod-like follicle. Seeds compressed, brown, smooth, 6–7 mm broad. Common species in thickets, mainly in the southern half of Lime Cay, a species of arid limestone in coastal areas on Jamaica, Cuba, Hispaniola, the Cayman Islands, and adjacent small cays.

Material examined: Lime Cay: Stoddart & Head 9044 (IJ), Stoddart & Head 9060 (IJ), Stoddart & Head 9069 (IJ), Christenhusz 3375 (HAL, IJ, TUR).

Capparis flexuosa (L.) L., Sp. Pl. ed. 2, 1: 722, 1762 (Capparidaceae).

≡ *Morisonia flexuosa* L.

Bottle-cod Root.

Shrub to 5 m tall, sometimes a scrambling vine, or a tree up to 9 m tall, with drooping branches, these distichous and sometimes trailing in the undergrowth or scrambling on the ground; densely branched; bark silver-gray, smooth, with transverse ridges; twigs, petioles and midrib puberulent beneath. Leaves of mature plant oblong, of juveniles linear, rather leathery, 4–12 cm long, 1–5 cm wide, dull above, glabrous below, often with emarginate apex. Flowers ca. 5 cm across, few together in a small corymb, fragrant, opening in the evening and at night, probably bat or moth pollinated; sepals 4, overlapping, unequal, 4–7 mm long; petals 4, usually white, rarely rose-pink or greenish, to 2 cm long; stamens numerous, filaments white, far exceeding the petals; gynophore red. Fruit a pod-like follicle, 4–15×1–2 cm, yellow, often tinged red outside, smooth, bright red within, contracted between the seeds. Seeds ellipsoid, white, covered with oily white pulp, 8–11 mm long. Quite rare on Lime Cay, only five specimens seen in 2004, scattered over the island. In Jamaica a common species in thickets and in arid scrub along the coast or inland; distributed from Florida and Honduras to northern South America, throughout the West Indies, rare on Aruba (Proosdij 2001).

Material examined: Lime Cay: Christenhusz 3413 (IJ, TUR), new record for Lime Cay. Asprey & Robbins (1953) erroneously listed *Capparis cynophallophora* L. for Lime Cay, which was most probably an error of identification.

Casuarina equisetifolia J.R.&G.Forst., Charact. Gen. Pl.: 104, 1776 (Casuarinaceae).

Australian Pine, Yar, Jau, Whistling Pine, Willow, Beefwood.

Tall evergreen tree to 35 m high, with a slender trunk and ascending, slender, jointed, whorled and striate branches; first-season branches 10–30 cm long, with 4–8 cm long internodes, which have 7–8 longitudinal grooves, these young branches are slender and drooping. Leaves reduced to toothed sheaths. Flowers monoecious; male flowers in terminal spikes of mostly about 20 mm long; female flowers in heads, each subtended by a bract and a pair of bracteoles, ovary superior. Fruits crowded in a woody cone of bracts (12–22 mm in diameter) in which the paired bracteoles have become fused and open like a capsule to expose a winged indehiscent 1-seeded nut (samara). Half a dozen trees were observed in 2004 on Lime Cay, which were planted on the north-western shore. In the West Indies this is a commonly planted ornamental tree from Indo-Malaysia and

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Australia, which naturalises locally. This pioneer seashore tree is good for hedging and wind brakes; timber is used for shingles, fencing, etc. and burns with great heat; the bark is used for tanning in Madagascar (Mabberley 1997).

Material examined: Lime Cay: Stoddart & Head 9066 (IJ).

Cenchrus echinatus L., Sp. Pl. 2: 1050, 1753 (Poaceae).

Hedgehog Grass.

Culm-forming annual grass of 15–60 cm tall, with spreading and ascending culms, 25–60(–100) cm long; these branching and sometimes rooting from the basal nodes. Leaves thin flat, 4–20×0.3–1.1 cm, hairy and eared at the base of the blade; ligule hairy, ca. 1 mm long. Spikes 2–6 together in short stalked hard burs, these in a 3–10 cm long, open plume; axes of inflorescences twisted an angular. Burs hard, formed out of fused bracts, hairy with usually 4 spikelets in each, globular, 5–8×3–6 mm, falling off the plant entirely when ripe; bracts fused for about 1/3, spiny, at the base with 2–4 mm long, hard, reflexed spines; spikelet has one bisexual flower at the top and a male flower at the base. Fruits are especially adapted for clinging to the feet of marine birds (Millspaugh 1907).

It is common as a weed of open fields and stony waste places throughout the Neotropics, but not common on Lime Cay.

Material examined: Lime Cay: Stoddart & Head 9064a (IJ).

Citrullus lanatus (Thunb.) Matsum. & Nakai, Cat. Sem. & Spor. Hort. Bot. Univ. Imp. Tokyo: 30, 1916, var. ***caffrorum*** (Alefeld) F.R.Fosberg, Smithsonian Contr. Bot. 45: 15 (Cucurbitaceae).

Water Melon.

Trailing herb with thick, watery, prostrate stems; stem and leaves softly woolly. Leaves deeply pinnatisect, hand-shaped (palmate-pedate). Tendrils axillary, usually 3 or more branched. Flowers yellow, rather small; calyx and corolla 5-lobed, the latter yellow; anthers free. Fruit globose, smooth, dark green, the flesh bright pink, edible, seeds black, shiny. A native of tropical Africa with succulent, refreshing fruits, which can be eaten fresh or used for preserves or syrup; seeds can be used in soups; also an ingredient of sun lotions and other cosmetics (Mabberley 1997).

Material examined: Lime Cay: Stoddart & Head 9058 (IJ). The species most likely reached Lime Cay through human visitors that ate the fruit and left the seeds.

Coccoloba uvifera (L.) L., Syst. Nat. ed. 10, 2: 1007, 1759 (Polygonaceae).

≡ *Polygonum uvifera* L.

Seaside Grape, Jamaican Kino.

Shrub or large tree, to 8(–15) m tall, dioecious. Leaves very stiff, alternate, short-stalked, kidney-shaped to almost round. Petioles up to 1 cm long, with sheathing stipules surrounding the stem basally. Flowering branches with leaves up to about 15 cm long and 18 cm wide; on sterile branches often larger, 10–27×10–30 cm; base cordate; apex rounded. Racemes 8–20 cm long. Flowers unisexual, ca. 5 mm across; tepals 5, white; stamens 8, connate. Fruit pedicelled, a fleshy grape-like drupe, tinged purple, to 1–2 cm in diameter, edible and can be used to make juices or jelly (Mabberley 1997). A typical species of the littoral zone, the species is distributed along seacoasts, strands, sand dunes and thi-

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ckets from Florida and the Bahamas, throughout the West Indies and all along the Atlantic Coasts from Mexico to the Guianas and Brazil, and is introduced in the Pacific.

Material examined: Lime Cay: Stoddart & Head 9043 (IJ), Christenhusz 3420 (IJ, TUR).

Colubrina asiatica (L.) Brongn., Ann. Sci. Nat. sér. 1, 10: 369, 1827 (Rhamnaceae).

≡ *Ceanothus asiaticus* L.

Hoop Withe.

Scandent shrub; branches trailing up to 5 m long. Leaves three-nerved at base, broadly ovate, 4–9×5.5 cm, serrate, acuminate at apex. Flowers minute, yellowish green. Fruit a subspherical capsule, 8 mm in diameter. Seeds smooth, with two flat inner faces and a rounded outer face. This native of the East Indies and the Pacific is commonly naturalised in coastal thickets; rare on Lime Cay, only known from a single collection.

Material examined: Lime Cay: Adams 12248 (UCWI).

Conocarpus erectus L., Sp. Pl. 1: 176, 1753 (Combretaceae).

Button Wood, Button Mangrove.

Large shrub or small tree to 8 m tall, rarely much larger to over 20 m tall. Leaves soft-leathery, alternate, very short-stalked, variable, elliptic to linear-lanceolate, apex long-acute to suborbicular and rounded or emarginate, upper side dull, lower side with some glands in pits along either side of the midvein beneath, and on either side of the blade near the base, 2–11×1.5–4 cm, glabrous or becoming glabrous. Flowers male or bisexual, in stalked heads, commonly in axillary or terminal plumes; sepals 5, greenish; petals absent; stamens (5 -) 10. Fruit 7 mm wide, winged, and grouped in a 1–1.4 cm large head, which easily disintegrates. Common in the mangrove swamp forming thickets on Lime Cay; widely distributed from Florida, throughout the West Indies and all coasts of continental tropical America and West Africa. The bark is used for tanning and the wood is burned into charcoal, the latter being a danger to the rapidly disappearing to the mangrove forests (Mabberley 1997).

Material examined: Lime Cay: Without collector (Fawcett?) anno 1899 (UCWI), Stoddart & Head 9034 (IJ), Christenhusz 3404 (IJ, TUR).

Cordia sebestena L. Sp. Pl. 190, 1753 (Boraginaceae).

Geiger Tree, Scarlet Cordia.

Shrub or tree to 6 m tall. Leaves ovate, mostly obtusely pointed, shortly cordate at base, up to 20 cm long or longer, and 15 cm wide. Inflorescence corymbose. Flowers showy; calyx tubular, 10–15 mm long, short-lobed; corolla salver-shaped, orange or red; stamens 5–7. Ripe fruits pear-shaped, white, up to 4cm long.
A single tree in the south-western tip of Lime Cay at the beach (Fig. 10). A species of sandy thickets and limestone rocks, in arid coastal areas of Florida, continental Tropical America and most of the West Indies; introduced to the Old World as an ornamental. Fruits are used medicinally (Mabberley 1997). Even though this tree is commonly planted, I believe that the occurrence on Lime Cay may be natural; the trees spread rapidly from seeds (Millspaugh 1907).

Material examined: Lime Cay: Stoddart & Head 9050 (IJ), Christenhusz 3414 (IJ, M, TUR).

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Echites umbellata Jacq., Enum. Syst. Pl. Carib.: 13, 1760 (Apocynaceae).

Deadly Nightshade.

Twining, woody climber with clear sap. Leaves opposite, broadly ovate to oblong-elliptical, rounded or subcordate at base, obtuse or short-cuspidate at apex, 4–12×2–8 cm, glabrous or minutely pubescent on the veins beneath. Inflorescence few flowered, shorter than the leaves, peduncled. Calyx scaly within, lobes to 5 mm long, ovate; corolla salver shaped, the tube 3–4 cm long, twisted, slightly expanded at the insertion of the stamens, the lobes up to 3 cm long; stamens adhering to the stigma. A common species in woodland margins and grassy wastelands throughout the Caribbean, a new record for Lime Cay.

Material examined: Lime Cay: Christenhusz 3417 (IJ, TUR).

Euphorbia blodgettii Engelm. ex Hitchc., Rep. Missouri Bot. Gard. 4: 126, t. 13, 1893 (Euphorbiaceae).

≡ *Chamaesyce blodgettii* (Engelm.) Small.

Milkweed, Seaside Spurge.

Herb to 60 cm tall, with 10–50 cm long, glabrous branches spreading from a taproot, forming small mats prostrate on the sand at exposed localities, not rooting at the nodes; sap white and milky. Leaves opposite, subsessile, glabrous, margin serrulate, elliptical to obovate-elliptical, apex rounded, base oblique, 0.3–0.9×0.5–0.6 cm; stipules pale, triangular, and fimbriate along the margin. Flowers minute, in cyathia, these few together or solitary, axillary or in terminal clusters; cyathia with 4 glands, these with regular, white, narrow appendages along the glands. Capsule glabrous, 1.5–2 mm in diameter. Seeds about 1 mm long, oblong, tetragonal. A species of sand or gravel often near the sea, distributed along the coasts of Florida, the Greater Antilles and surrounding islands.

Material examined: Lime Cay: Adams 12750 (UCWI), Kelly s.n. anno 1977 (UCWI), Stoddart & Head 9053 (IJ).

Euphorbia mesembrianthemifolia Jacq., Enum. Syst. Pl. Carib.: 22, 1760 (Euphorbiaceae). Fig. 7.

≡ *Chamaesyce mesembryanthemifolia* (Jacq.) Dugand
= *Euphorbia buxifolia* Lam.
= *Chamaesyce buxifolia* (Lam.) Small
= *Euphorbia glabrata* Sw.
= *Euphorbia littoralis* Kunth

Seaside Spurge, Purslane Spurge, Boxwood Spurge.

Suffruticose shrub or woody herb to 60 cm tall, woody at least at the base, usually branched, erect and bushy, sometimes prostrate on the sand at exposed localities; sap white and milky. Leaves opposite, overlapping, succulent, subsessile, gray-green, glabrous, margin entire, more or less folded upwards along the midvein, ovate-obovate to broadly oblong, apex acute, base oblique, 0.5–1.2×0.4–0.7 cm; stipules conspicuous, 1.5–2 mm long, white, fringed. Flowers minute, in cyathia, these few together or solitary, axillary or in terminal clusters, with 4 white, narrow, sometimes bifid, petal-like appendages along the glands. Capsule glabrous, 1.8 mm in diameter. Seeds 1.4×1.1 mm, inconspicuously

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Fig. 7: *Euphorbia mesembrianthemifolia*, Christenhusz 3400.

angled and slightly transverse anastomosing rugose. Very common spurge, fringing the seaside; on beaches, seaside meadows and limestone rocks. It is spread from island to island and to new shores by the clinging of the seeds to the feet of aquatic birds; once established on the shore, it spreads by the catapulting fruits and with the shifting of the beach sand (Millspaugh 1907). Caribbean shores, from Southern Florida, Bermuda, The Bahamas and Mexico, throughout the West Indies and eastern shores of Central America to Colombia, Venezuela, and French Guiana.

Material examined: Lime Cay: Barry s.n. anno 1946 (IJ), Palmer s.n. anno 1952 (UCWI), Patrick 86 (IJ), Wedderburn 298 (IJ), Stoddart & Head 9056 (IJ), Christenhusz 3377 (IJ, TUR), Christenhusz 3400 (IJ, M, TUR), Christenhusz 3412 (IJ, M, TUR).

Halodule beaudettei (den Hartog) den Hartog, Blumea 12(2): 303, 1964 (Zosteraceae).

Sea Grass.

Submerged marine herbs; rhizome creeping; shoots erect to 10 cm long. Leafs linear, 0.6–1.3 mm wide, sheathing at the base; sheaths ligulate; blades flat, tridentate at the apex, median tooth acute, 1–10 times as long as the lateral teeth. Flowers unisexual, axillary; periath trimerous, strongly reduced; a single stamen per flower; anthers 1–2 locular, inserted at the same height, opening by longitudinal slits; pollen thread-like; Style simple, stipitate. Occasional species of lagoons on sand or coral.

Material examined: Lime Cay: *Barry s.n.* anno 1945 (IJ).

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Harrisia gracilis (Mill.) Britton, Bull. Torrey Bot. Club 35: 563, 1908 (Cactaceae). Fig. 8.

≡ *Cereus gracilis* Mill.

Torchwood Dildo.

Fig. 8: *Harrisia gracilis*, Christenhusz 3416.

Shrubby, slender ribbed columnar cactus to 6 m tall; branches mostly divergent-ascending, 4–5 cm in diameter. Spines dark or pale with dark tips, unequal, 8–11 per areole, straight. Flower to 20 cm long, white inside. Ripe fruit yellow with green fleshy bracteoles, later orange, 5–6.5 cm long and 4.5–5 cm wide, pulp white. Seeds black, shiny, obliquely pear-shaped, coarsely papillose at the broader end, floating in (sea-) water when fresh. A large clump of this mostly vegetatively spreading cactus grows on Lime Cay in the higher area near the catering building. Rather common in arid areas along the south coast of Jamaica, and also on the Cayman Islands, it is restricted to these islands. This species contains large quantities of caffeine and is a potential drug.

Material examined: Lime Cay: Christenhusz 3416 (IJ, TUR).

Note: The species was listed as '*Cereus* sp.' by Stoddart & Fosberg (1991) as being juvenile. In 2004 I encountered a large and adult tree (Fig. 8).

Stoddart & Fosberg (1991) also listed two other Cactaceae for Lime Cay, namely *Opuntia tuna* (L.) Mill. and *Stenocereus hystrix* (Haw.) Buxb., but there are no known specimens and they were not retrieved in 2004.

Heliotropium curassavicum L., Sp. Pl. 1: 130, 1753 (Boraginaceae).

Scorpion Weed.

Suffruticose, glabrous, glaucous herb up to about 50 cm tall; branches sprouting from a central woody stock. Leaves fleshy, linear to oblanceolate, up to 3(–5) cm long. Inflorescence a simple or forked cyme, up to 5 cm long. Flowers small; calyx about 1.5 mm long; corolla white with green-yellow spot at the throat. Locally common weed on sand or limestone. This species was listed for Lime Cay by Asprey & Robbins (1953) and Stoddart & Fosberg (1991), but no collections are known, and the species has not been found on the island in 2004.

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Ipomoea pes-caprae (L.) R.Br. in Tuckey, Narr. Exped. Zaire, 477, 1818, subsp. ***brasiliensis*** (L.) Ooststr., Blumea 3: 533, 1940 (Convolvulaceae).

= *Convolvulus brasiliensis* L.
= *Ipomoea brasiliensis* (L.) Sweet

Beach Morning Glory.

Trailing, somewhat succulent, glabrous herb, to 20 cm tall; stems trailing to 6 m or more long; sap milky, white. Leaves alternate, entire, 6–10×4–8 cm, elongate to orbicular, glabrous, apex cleft to emarginate. Flowers solitary or in few flowered cymes, peduncle stout; flowers pointed upwards; sepals ovate-oblong, the outer 6–10 mm long, the inner longer, 8–15 mm; corolla trumpet shaped, 3–6 cm long, pink to purplish-red, anthers included. Fruit a dry, bilocular, subglobose, capsule, about 1.5 cm in diameter. Seeds rather big, the seed coat with brown woolly hairs. Common on beaches and sandy waste places near the sea. Even though the seeds float well, and aquavectent transportation is therefore likely, the plants occur on high localities on rocky islands, and therefore spread by birds may also play a role (Millspaugh 1907). The subspecies is spread pantropically on beaches and along shores. It is a good sand binder, preventing erosion by the sea, and is also used as an ornamental, and for these reasons sometimes planted near hotels (Proosdij 2001).

Material examined: Lime Cay: Stoddart & Head 9057 (IJ), Christenhusz 3415 (IJ, TUR).

Ipomoea violacea L., Sp. Pl. 161, 1753 (Convolvulaceae).

= *Ipomoea macrantha* Roem. & Schult. in L.
= *Convolvulus tuba* Schltdl.
= *Ipomoea tuba* (Schltdl.) G.Don
= *Calonyction tuba* (Schltdl.) Colla

Wild Moonflower.

Perennial twining tough herb, with stems trailing to 8 m long. Leaves fleshy, entire or shallowly three-lobed. Flowers nocturnal, axillary; outer sepals mucronate; corolla tube 7–12 cm long, (almost) linear, white, 8–14 cm across when open. Capsule subglobose, 2–2.5 cm wide, truncate or shortly and abruptly pointed. Seeds about 1 cm across, densely puberulous, long brown-hairy on the ridges. Locally common species in seaside thickets on rocky shores.

Material examined: Lime Cay: Loveless s.n. (UCWI), Adams 12250 (UCWI).

Laguncularia racemosa (L.) Gaertn.f. in Gaertn., Fruct. & Sem. Pl. 3: 209, t. 217, f. 3, 1807 (Combretaceae).

≡ *Conocarpus racemosus* L.

White Mangrove, Button Wood.

Shrub to 5 m or tree up to 20 m tall. Leaves opposite, leathery, oblong or oblong-elliptical, 2–8×1–4 cm, rounded or retuse at the apex, rounded or cuneate at base, glabrous, very glossy above, lower side with minute glands along the leaf margin, and two dark glands at the base of the petiole. Flowers male or bisexual, ca. 4 mm long, in a 3–6 cm long spike; calyx 5-parted; petals 5, to 2 mm long, white or creamy white; stamens 10. Fruit obovoid, unequally ribbed, 1.5–2×0.5×1 cm, silky hairy. The bark can be used for tanning and the timber is durable for outdoor use (Mabberley 1997). Common along

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the margins of lagoons, brackish creeks, in or near salt water, widely distributed in eastern Tropical America, the West Indies, and western Tropical Africa. On the cays they are usually found on the receding border of a mangrove colony (Millspaugh 1907).

Material examined: Lime Cay: Without collector (Fawcett?) anno 1899 (UCWI), Stoddart & Head 9038 (IJ), Stoddart & Head 9041 (IJ), Stoddart & Head 9059 (IJ), Stoddart & Head 9061 (IJ), Christenhusz 3405 (IJ, TUR).

Morinda royoc L., Sp. Pl. 1: 176, 1753 (Rubiaceae).

Red Gal.

Lax trailing or climbing shrub with slender, flexible stems to 2 m tall; wood of the roots yellow when cut; stipules acuminate. Leaves linear-lanceolate to oblong-lanceolate, 4–11×1–3.5 cm, acute at base and apex. Flower hears axillary, subsessile; corolla white, tube 5 mm long, lobes valvate. Fruit a fleshy compound berry derived from a tight head of flowers without an involucre, subspherical, about 2 cm in diameter, white when ripe.
Very common species of thickets on limestone or coral sand.

Material examined: Lime Cay: Adams 12253 (UCWI).

Note: Asprey & Robbins (1953) confused this species with *M. citrifolia* L., which is a non-climbing shrub with rounded stipules and much larger fruits, and has not been found on Lime Cay.

Passiflora suberosa L., Sp. Pl. 2: 958, 1753 (Passifloraceae).

Passion Flower.

Twining or trailing herb. Leaves entire or three-lobed, subglabrous to very hairy; entire leaves lanceolate to broad-elliptical, up to 9×5.5 cm.; three-lobed leaves with the middle lobe always much longer than the lateral, linear-lanceolate to oblong, mucronate; petioles with two stalked glands near the blade base; bracts small, inconspicuous. Flowers often paired, mostly about 1.5 cm in diameter; calyx yellowish green; corona in four series, the outer two filamentous, the third a continuous pleated membrane, and the innermost a low ridge on the disc. Fruit ellipsoid to subglobose, bluish black, glaucous, variable in size. A common plant of thickets and waste places, especially on limestone.

Material examined: Lime Cay: Fawcett s.n. anno 1899 (UCWI), Robbins s.n. anno 1952 (UCWI), Adams 12285 (UCWI).

Phoenix canariensis Hort. ex Chabaud, La Provence Agric. 19: 293, figs 66–68, 1882 (Arecaceae).

Canarian Date Palm.

Cultivated palm, a single young specimen was found, planted in front of the Lime Cay catering building. This hardy palm from the Canary Islands has pinnate leaves and is commonly planted as an ornamental throughout the tropics and subtropics. It is tolerant to drought, salt spray and even a few degrees of frost. The bright orange fruit is very decorative, but is not good for consumption. No collections have been made in 2004.

Piscidia piscipula (L.) Sarg., Gard. & Forest. 4: 436, 1891 (Fabaceae, Faboideae).

≡ *Erythrina piscipula* L.

Dogwood.

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Deciduous tree to 20 m tall; young twigs and flowers silky-puberulous. Stipules broadly orbicular, 4 mm broad, caducous. Leaves imparipinnate; leaflets opposite, 3–5 pairs, oblong or elliptical, obtuse or acute, 4–11×2.5–5.5 cm. Flowers in many-flowered axillary panicles; calyx purple, 4-toothed; corolla white or tinged purple, standard greenish and 13–15 mm long; filaments connate. Fruit a 4–8 cm long pod with four 1–2 cm broad wings, 3–7-seeded. A common species of arid woodlands on sand or limestone.

Material examined: Lime Cay: Adams 12249 (UCWI), Christenhusz 3419 (IJ, TUR).

Pithecellobium unguis-cati (L.) Benth. in Hook., Lond. Journ. Bot. 3: 200, 1844 (Fabaceae, Mimosoideae).

≡ *Mimosa unguis-cati* L.

Bread-and-Cheese, Privet, Cat's Claw.

Shrub or tree 4–6 m tall, with conic spines in pairs at the base of the petiole. Leaves alternate, bipinnate, with one pair of pinnae; every pinna with two leaflets, and with a gland between pinna and leaflet; leaflets obovoid, oblique, 2–6×0.8–5 cm, the young foliage tinged red. Flowers in globose heads 1.5–2 cm, with about 20 flowers; heads arranged in plumes; flowers, fragrant; calyx 5-toothed, about 2 mm long; corolla white to light-yellow, 5-lobed, 5 mm long; stamens many, far exceeding the tube 16–17 mm long, white or purplish. Fruit a reddish pod, more or less round in cross-section, spirally curled in several directions, 5–10×0.7–1 cm, bright orange-red (or sometimes white) inside. Seeds black with an edible white aril. A common tree of thickets on arid limestone, saliña margins and on Lime Cay an important shade tree. The fleshy aril attracts birds, and is transported by larger migrating land birds (Millspaugh 1907). Sometimes cultivated as an impenetrable hedgerow. Occurs from Florida to northern South America, and throughout the West Indies. Sometimes introduced in other arid tropical areas.

Material examined: Lime Cay: Stoddart & Head 9046 (IJ), Christenhusz 3403 (IJ, TUR).

Portulaca oleracea L., Sp. Pl. 1: 445, 1753 (Portulacaceae).

Pussley, Purslane.

Annual, prostrate, sometimes erected herb, 20–40 cm long. Leaves softly fleshy, succulent, fragile, alternate to more or less opposite, subsessile, spathulate, 0.4–3.5×0.2–2.2 cm, shiny dark-green, in the axils with several white hairs. Flowers solitary or in terminal heads, surrounded by leaf-like bracts, variable in size, 6–14 mm across when open; sepals 2; petals (4–)5(–6), yellow, deeply notched; stamens (5–)9–12(–15), stigmas up to 7. Fruit a dry capsule, ovate, 5–9 mm long, 3 mm in diameter, opening with a lid. Seeds minute, black. Cultivated and sometimes eaten fresh in salads or cooked. A very common weed of cultivated ground and waste places, roadsides and sea shores. A native of the Old World tropics, but now a cosmopolitan weed, probably avevectent.

Material examined: Lime Cay: Wedderburn 304 (IJ), Stoddart & Head 9037 (IJ), Stoddart & Head 9054 (IJ).

Rhizophora mangle L., Sp. Pl. 1: 443, 1753 (Rhizophoraceae). Fig. 3.

Red Mangrove.

Trees or large shrubs with tall stilt roots, and hanging, adventitious prop-roots, 1–8(–16) m tall. Leaves opposite, elliptical, thick, leathery, glabrous, mostly 5–15×2.5–7.5 cm, elliptic, glossy, tapering at the base; stipules 2.5–4 cm long. Flowers about 2 cm across,

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in forked few branched inflorescences; sepals 4, about 1 cm long, often yellowish green; petals 7–8 mm long, woolly within, white or yellow, often with a brownish fragrant resin; stamens 8. Fruit 2–3.5 cm long, germinating on the tree, with a radicle up to at least 25 cm long, breaking through the tip of the fruit. The seedlings fall from the tree and stick up straight in the mud. the seedlings float and also continue to grow when washed ashore in a suitable place. Common in or near salt water, along muddy shores and in estuarine swamps. On Lime Cay this species grows mostly along the east shore. This mangrove species occurs along the coasts of continental tropical America, West Africa, the Pacific Islands and the West Indies. The bark can be used for tanning, the timber for building (Mabberley 1997). The wood produces good charcoal, which was burned on the Portland Cays. This is still a major threat to the mangrove forests in Jamaica. There are now reforestation programs to re-establish the mangroves, and to protect the Jamaican coastline for erosion.

Material examined: Lime Cay: Without collector (UCWI), Wedderburn 300 (IJ), Stoddart & Head 9049 (IJ), Christenhusz 3376 (HAL, IJ, K, TUR).

Sabal jamaicensis Beccari, Fedde Repert. Sp. Nov. 6: 94, 1909 (Arecaceae).

Jamaican Thatch Palm.

Fan-palm growing up to 10 m tall. Leaves costapalmate, up to 4 m long, hastula 15 cm long, the blade up to 2.5 m long, strongly plicate, segments deeply split, with a long filament arising from each sinus. A young specimen was found planted as an ornamental in 2004 in front of the Lime Cay catering building on the beach. No collection was made of this juvenile palm.

Scaevola plumieri (L.) Vahl, Symb. Bot. 2: 36, 1791 (Goodeniaceae).

≡ *Lobelia plumieri* L.

Seaside Lobelia.

Shrub to 2 m tall. Leaves alternate, obovate, 4–8×1–3.5 cm, fleshy, with a tuft of hairs in the axil; petiole narrowly winged. Flowers zygomorphic, in cymes; corolla about 2.5 cm long, green, glabrous outside, 5-lobed, tube filled with short woolly hairs white within, lobes winged; stamens 5; anthers free; nectaries extrafloral. Fruit a soft, ovoid to subglobose drupe, dark purple to bluish-black, 1–2 cm long. The seeds are viable for long periods in sea water, but germinate only in fresh water. Occasional in sandy places near the sea. The black pulpy fruits form an attractive food for coastal birds (Millspaugh 1907). Widespread species of tropical shores.

Material examined: Lime Cay: Barry s.n. anno 1946 (IJ), Adams 12256 (UCWI), Patrick 87 (IJ), Wedderburn 310 (IJ), Stoddart & Head 9051 (IJ).

Senna atomaria (L.) Irwin & Barneby, Mem. New York Bot. Gard. 35: 588, 1982 (Fabaceae, Caesalpinioideae).

≡ *Cassia atomaria* L.
= *Cassia emarginata* L.
= *Isandrina emarginata* (L.) Britton & Rose

Senna Tree, Yellow Candle Wood.

Deciduous shrub to 2 m or tree to 6 m tall; wood and leaves with pungent odour. Leaves alternate, pinnate with 6–10 leaflets; leaflets elliptic to obovate-elliptic, rounded or

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emarginate apex, hairy on both sides, 1.5–6.5 cm long and 1–3 cm wide; stipules bristle-like, 3 mm long; glands absent. Flowers in axillary racemes. Flowers about 2.5 cm across; sepals 5, hairy; petals 5 yellow, with dark venation, unequal; smaller petals 8–10 mm long; one petal strongly twisted, stamens 10 of which 3 sterile. Pods more or less flat, straight, 10–25(–35)×1 cm. Rather common in coastal areas of Jamaica and on arid limestone, distributed from Mexico to Venezuela, throughout the Greater Antilles, Antigua, Guadeloupe, Aruba and Curaçao (Proosdij 2001).

Material examined: Lime Cay: Asprey s.n. anno 1952 (UCWI), Stoddart & Head 9036 (IJ), Wedderburn 309 (IJ).

Sesuvium portulacastrum (L.) L., Syst. Nat. ed. 10, 2: 1058, 1759 (Aizoaceae). Fig. 10.

≡ *Portulaca portulacastrum* L.

Seaside Purslane.

Prostrate perennial herb, branches trailing and rooting at the nodes, to 2 m long; stem and leaves succulent, often reddish; flowering branches short ascending, variable in shape and colour. Leaves opposite, linear to elliptic, base and apex acute, 1–5×0.3–1 cm, often 3–6 mm thick and cylindrical; petiole 1–4 mm long, sheathing. Flowers solitary in leaf-axils; pedicels up to 15 mm long; perianth deeply 5-lobed, 1–1.5 cm across, green outside, pinkish-red to deep magenta-purple within; stamens many, purple; ovary superior, usually 3-locular. Fruit an elongated capsule, 9–11×5–6 mm. Seeds black, smooth. This aquavectent plant is common on saliñas, at mangrove margins and on sandy or rocky brackish waste places; it is common on Lime Cay. The species grows throughout subtropical and tropical shores; in Asia it is sold as a vegetable on markets (Mabberley 1997). The bladder-like leaves are excellent floaters for the light axillary capsules, making it often the first herb to find anchorage on newly formed sandy islets and beaches (Millspaugh 1907).

Material examined: Lime Cay: Wedderburn 305 (IJ), Stoddart & Head 9052 (IJ), Stoddart & Head 9064b (IJ), Christenhusz 3407 (IJ, TUR).

Sporobolus virginicus (L.) Kunth, Révis. Gram.: 67, 1829 (Poaceae).

Beach Grass.

Mat-forming perennial grass; flowering culms 10–50 cm tall; rhizomes hard and scaly; stems erect, often sterile. Leaf blades firm, in two rows, often rolled inwards, sharply pointed, very variable in length and width, 3–15×0.2–0.5 cm, mostly glabrous; ligules 0.5–1 mm long, hairy. Spikelets 2–3×1 mm long, in a 2–8 cm long spike; lower glume a little more than half as long as the spikelet, the upper as long as the spikelet; a single complete flower per spikelet. Abundant grass, sometimes forming a continuous area of sward along sandy shores and mangrove margins. The species occurs along most tropical shores.

Material examined: Lime Cay: Asprey s.n. anno 1951 (UCWI), Stoddart & Head 9032 (IJ), Stoddart & Head 9035 (IJ), Stoddart & Head 9039 (IJ), Christenhusz 3401 (IJ, TUR).

Stachytarpheta jamaicensis (L.) Vahl., Enum. Pl. 1: 206, 1804 (Verbenaceae).

≡ *Verbena jamaicensis* L.

Vervaine, Verbena, Porter Weed.

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Herb to 1 m tall. Leaves more or less glabrous, oblong-elliptical, long-cuneate at base, obtuse at tip, margin crenate dentate, up to 9×4.5 cm. Flower spike to 55 cm long, 2.5–3 mm thick; bracts ovate-lanceolate, 3–6 mm long, 2 mm broad, about 6 cm long; calyx equally 4-toothed; corolla 5-lobed, deep blue-violet, 8–10 cm long, 9 mm across. Fruit 7 mm long. A common weed of waste places and in thickets on sand near the sea, occurs throughout the Neotropics.

Material examined: Lime Cay: Adams 12255 (UCWI).

Tephrosia cinerea (L.) Pers., Synops. Pl. 2: 328, 1807 (Fabaceae, Faboideae).

≡ *Galega cinerea* L.

Surinam Poison.

Variable plant, erect up to 60 cm tall, or prostrate with branches to 120 cm long, woody at base. Leafs alternate, imparipinnate with (4–)9–17 pairs of leaflets; leaflets oblong-elliptic to linear, thinly silvery appressed-hairy, 0.4–5×0.2–0.88(–1) cm. Flowers papillionate, usually about 14–15 mm long, in a 5–15 cm long corymb; calyx 5 parted; petals 5, unequal, 1–1.5 cm long, usually deep bluish-pink; standard petal 10–12 mm long, dull yellowish outside; keel bright pink, sometimes completely white; wings directed forward, longer than keel; stamens 10, connate. Fruit a 6–10-seeded pod, flat, 4–5.5 ×0.4–0.5 cm. In sandy places near the sea, occurs in Jamaica only locally in St. Andrews Parish; distributed throughout the Neotropics.

Material examined: Lime Cay: Adams 11951 (UCWI), Stoddart & Head 9055 (IJ), Christenhusz 3410 (HAL, IJ, TUR).

Thalassia testudinum Banks & Sol. ex König, in König & Sims, Ann. Bot. 2: 96, 1805 (Hydrocharitaceae).

Turtle Grass.

Marine dioecious herbs growing submerged to 30 cm deep in sea water; rhizosphere with nitrogen fixing bacteria; rhizomes stout, covered in leaf remains. Leaves sheaths brown; blades green, several together in a rosette, sessile, linear, 5–35×0.8–1.5 cm, apex blunt. Flowers pollinated by water currents, unisexual, 2–3 together, long-stalked; tepals 3, white; stamens 6–9; pollen in strings; styles 9–12. Fruit ovate, 1.5–2 cm long. Plants forming large submerged meadows in protected lagoons and coasts protected by coral reefs throughout the West Indies in salt or brackish water; it can be found in large groups along most of the shores of Lime Cay, especially along the eastern side. Sea grass beds are an important habitat for many marine organisms; destruction of these beds has endangered many species and additionally makes the land more susceptible to erosion. Since the protection of this area, sea grass beds have gradually started to regenerate.

Material examined: Lime Cay: Von der Porten s.n. anno 1950 (IJ), Stoddart & Head 9031 (IJ), Christenhusz 3399 (IJ, TUR).

Thespesia populnea (L.) Sol. ex Correa, Ann. Mus. Hist. Nat. Paris 9: 290, t. 25, f. 1, 1807 (Malvaceae). Fig. 6, 9.

≡ *Hibiscus populneus* L.

Seaside Mahoe.

Shrub or tree (1–)3–6(–20) m tall. Leaves alternate, long-petioled, ovate-cordate, cordate base, acute or acuminate apex, (5–)8–18(–22)×(3–)7–12(–16) cm, margin en-

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tire; stipules subulate, 3–10 mm long. Flowers solitary, axillary, showy, opening in the evenings; bracteoles lanceolate, 5–15 mm long; epicalyx (bracts) 3-parted; calyx cupular, entire or minutely 5-toothed, 9–14 mm long; petals 5, 4–7 cm long, whitish to yellow, or becoming purplish, with a red spot at the base of each, oblique at the apex. Fruit a depressed-globose, angular, dry capsule, 2–4.5 cm broad; mesocarp soft with yellow sap, drying blackish; skin leathery. Very common tree, often in littoral situations, often also planted as an ornamental and shade tree; a native species of sandy or gravelly shores and mangrove margins throughout the tropics.

Fig. 9: *Thespesia populnea*.

Material examined: Lime Cay: Stoddart & Head 9033 (IJ), Stoddart & Head 9068 (IJ).

Tribulus cistoides L., Sp. Pl. 1: 387, 1753 (Zygophyllaceae).

Turkey Blossom, Kill Bukra, Kingston Buttercup.

Low spreading, softly hairy subshrub, with jointed branches up to 1 m long. Leaves opposite, often unequal; pinnate with 12–16 pairs; pinnae oblong, unequal-sided, silvery-silky, 0.4–1.5×0.3–0.6 cm; stipules 4–9 mm long. Flowers solitary in the axil of the smaller leaf of a pair; petals yellow or cream-colored, variable up to 2.5 cm long; stamens 10. Fruit a spiny cupule splitting in 5 parts, up to about 1×1 cm with stiff sharp spines and long white hairs; distributed on the legs of animals; unpleasant when trod on barefooted.

A locally abundant species of well drained roadsides and dry waste places; not usually along the sea, and rare on the cays. Widely distributed in the south-eastern United States, throughout the Neotropics and the south-western Pacific; introduced in Asia and Africa.

Material examined: Lime Cay: Wedderburn 306 (IJ).

Acknowledgements

This study was facilitated by the help of George Proctor, Keron Campbell and Tracy Commock of the Institute of Jamaica. I thank them here for their help in the herbarium and in the field, and for supporting me during my stay in Jamaica in 2004, especially when it was unexpectedly prolonged. Funding for this research was provided by the Academy of Finland through a grant to Hanna Tuomisto.

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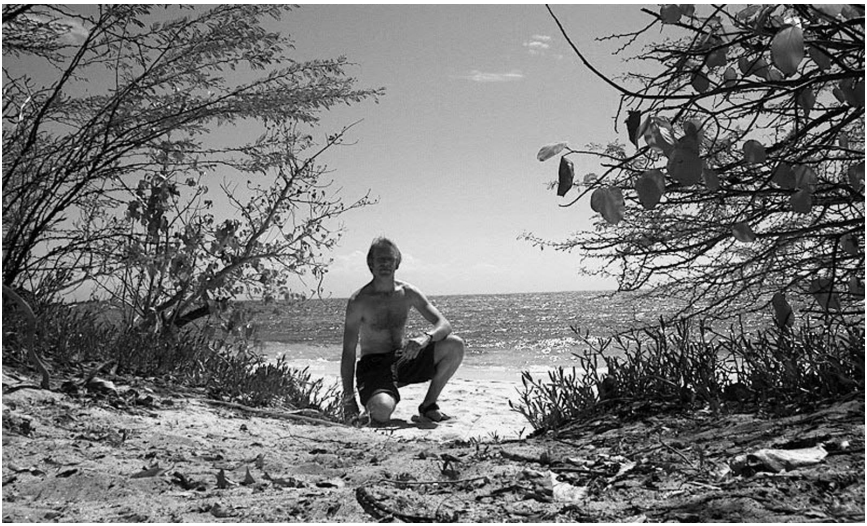

Fig. 10: The author on Lime Cay, with *Cordia sebestena* on his left, *Acacia tortuosa* on his right and *Sesuvium portulacastrum* on the beach.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: Schlechtendalia

Jahr/Year: 2008

Band/Volume: 17

Autor(en)/Author(s): Christenhusz Maarten J. M.

Artikel/Article: Florula of Lime Cay - an account of the vascular plants on a small Jamaican islet 1-25