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# FLORA OF VIRGIN GORDA (BRITISH VIRGIN ISLANDS)

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BY ELBERT L. LITTLE, JR., ROY O. WOODBURY,  
AND FRANK H. WADSWORTH



INSTITUTE OF TROPICAL FORESTRY  
RIO PIEDRAS, PUERTO RICO

FOREST SERVICE  
U.S. DEPARTMENT OF AGRICULTURE

## RESUMEN

Virgin Gorda, la tercera más grande de las Islas Vírgenes Británicas, tiene una flora tropical igual que la de las otras islas. Esta lista anotada de 403 especies de plantas vasculares nativas e introducidas (6 especies de helechos y 397 fanerógamas) está basada en las colecciones por los autores en 1969, 1972 y 1973. Esta provee información sobre la distribución de las plantas y contiene información sobre 154 especies que no habían sido informadas previamente. También incluye una lista de 57 especies cultivadas. Numerosas especies de plantas son raras pero existen en mayor número en otras islas. Muchas de ellas están protegidas dentro del Parque Nacional Gorda Peak.

## ABSTRACT

Virgin Gorda, third largest of the British Virgin Islands, has a tropical flora like that of the other islands. This annotated list of 403 species of native and introduced vascular plants (6 species of ferns and 397 of seed plants) is based upon collections by the authors in 1969, 1972, and 1973. It provides information on plant distribution and contributes records of about 154 species not previously reported. A list of 57 cultivated species is added. Numerous plant species are rare but present in greater numbers on other islands. Many are protected within Gorda Peak National Park.

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Key Words: plants (West Indies); plants (Virgin Islands); rare and endangered plants

# FLORA OF VIRGIN GORDA (BRITISH VIRGIN ISLANDS)<sup>1</sup>

by

Elbert L. Little, Jr.,<sup>2</sup> Roy O. Woodbury,<sup>3</sup>  
and Frank H. Wadsworth<sup>4</sup>

Virgin Gorda, third largest in size among the British Virgin Islands, has a tropical flora like that of the others. The annotated list of 403 species of native and naturalized vascular plants (6 species of ferns and 397 of seed plants) is based upon collections by the authors in 1969, 1972, and 1973. It provides information on plant distribution and contributes records of about 154 species not previously reported. A list of 57 cultivated species is added.

This publication is one of a series prepared as part of the 2-volume reference on the trees of Puerto Rico and the Virgin Islands (Little and Wadsworth 1964, Little, Woodbury, and Wadsworth 1974). It is also a contribution to the International Biological Program from the United States Department of Agriculture Forest Service and its project on forest trees of the Caribbean area. Others in the series are "Trees of Jost Van Dyke (British Virgin Islands)" (Little 1969) and "Flora of Buck Island Reef National Monument (U.S. Virgin Islands)" (Woodbury and Little 1976). Additional titles will follow soon.

The present study was made primarily to get additional tree species distribution records. In the second volume on trees of Puerto Rico and the Virgin Islands, each island and national park is mentioned. No list of the trees of this island nor of the newly established Gorda Peak National Park had been prepared. Also, the summit Virgin Gorda Peak, merited exploration in search for a moist mountain forest like that on the summit of Sage Mountain, Tortola (Beard 1945, p. 4, 8).

Tortola, largest of the British Virgin Islands and only about 10 miles west, has a published list of dicotyledons (D'Arcy 1967). Also, Anegada, 15 miles north, has a recent flora (D'Arcy 1971). Much general information about Tortola, such as climate, history, and floristic relations, applies also to nearby Virgin Gorda. However, the climate is drier and the type of cultivation has been somewhat different.

<sup>1</sup> In cooperation with the University of Puerto Rico.

<sup>2</sup> Chief dendrologist, Timber Management Research, Forest Service, United States Department of Agriculture, Washington, D.C. 20250.

<sup>3</sup> Plant taxonomist, University of Puerto Rico, Río Piedras, Puerto Rico 00928.

<sup>4</sup> Director, Institute of Tropical Forestry, Forest Service, United States Department of Agriculture, Río Piedras, Puerto Rico 00928.

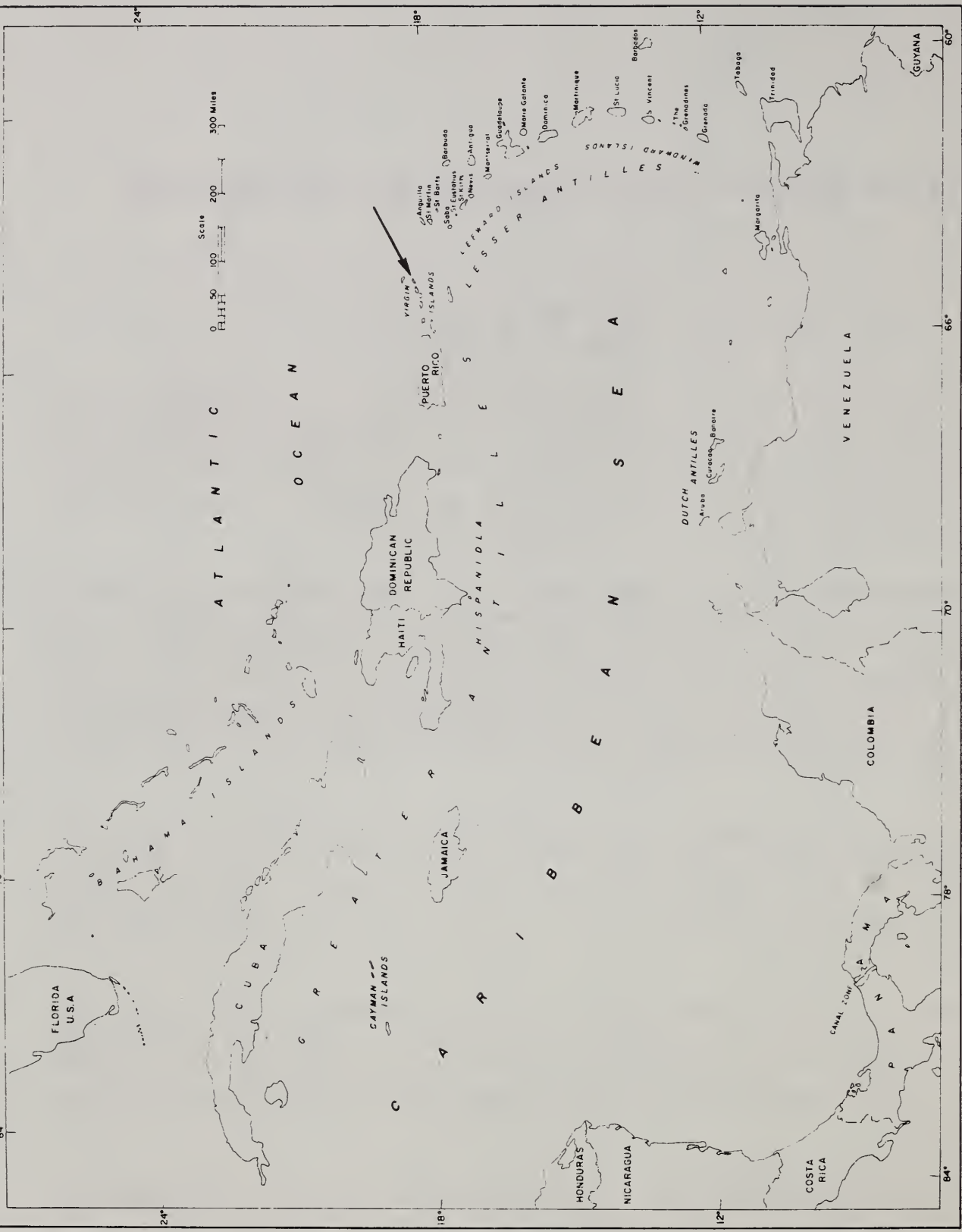


Figure 1. - West Indies, showing principal islands and location of Puerto Rico and Virgin Islands with reference to Florida, Central America, and northern South America. The arrow points to Virgin Gorda. (Little, Woodbury, and Wadsworth 1974, fig. 1.)

## DESCRIPTION OF VIRGIN GORDA

Virgin Gorda is located near the northeast border of the Caribbean Sea about 75 miles east of the northeast end of Puerto Rico and about 1,100 miles east-southeast of Miami, Florida (figs. 1, 2, from Little, Woodbury, and Wadsworth 1974). This island is the farthest east of the island chain forming the Greater Antilles and also of the Puerto Rican Insular Shelf. Other distances are less than 10 miles east of Road Town, Tortola, which is the capital of the British Virgin Islands, and about 15 miles northeast of St. John, U.S. Virgin Islands. These islands rise from a shallow bank with water mostly less than 15 fathoms deep.

This small volcanic island is within 18°25' and 18°31' North Latitude and 64°19' and 64°31' West Longitude. The irregular shape is that of an old, eroded and partly submerged or drowned mountain, a long and very narrow ridge extending almost 10 miles from northeast to southwest. Width is mostly under 1 mile and in several places less than 1/4 mile. The area is cited as about 8 1/3 square miles.

Near the center, Virgin Gorda Peak rises from the sea as a large land mass about 2 miles in diameter. It has steep slopes and a long rounded summit. In altitude this peak 1,359 ft. (1,371 ft. on one map) is third highest in the Virgin Islands, next to Sage Mt. on Tortola, 1,780 ft., and Crown Mt. on St. Thomas, 1,550 ft. Several smaller hills along the narrow axis rise above 300 ft., and Great Hill on the east exceeds 625 ft.

Topography is partly rugged, steep, and rocky, but large areas have gentle slopes. The irregular shoreline includes cliffs, narrow sandy beaches, and small bays with silt shores. A few small, nearly level areas of plains occur along the shores, the largest in the southwestern part.

There are several ravines but no permanent streams nor fresh water ponds. However, water is available in seasonal springs and wells. The larger channels may have had flowing water before the original vegetation was changed. One very early report (1541?) mentioned a river, apparently Gun Creek, now dry. In flats near sea level a few coastal ponds of salt or brackish water remain. However, other salt ponds have been filled in, for example, at Long Bay and St. Thomas Bay.

In summarizing the geology, Beard (1945) noted that the Virgin Islands are a structural continuation of Puerto Rico. The rocks consist largely of metamorphosed volcanic tuffs from submarine volcanoes of Cretaceous age, with later intrusions of several kinds. Virgin Gorda consists mainly of diorite and gabbro, originally intrusive bosses. At the southwestern end of this island and mapped as Outcrop Rock, or Boulder area, is a formation containing numerous giant, often piled, granitoid boulders. They result from weathering of very resistant masses (xenoliths) from the diorite. These boulders are scenic and spectacular along the narrow sandy shore known as The Baths from pools of water. Within this area are ruins of a copper mine.

The earliest radiocarbon date for agricultural people on this island was about A.D. 400, according to Alfredo E. Figueredo. He has made a study of Virgin Gorda's prehistory and has kindly reviewed the manuscript and supplied additional information. The island's name attributed to the discoverer, Christopher Columbus, suggests a large size. Perhaps the long narrow shape, as seen from a ship, may be misleading. The main agricultural crop on Virgin Gorda was cotton and was followed by truck crops, also discontinued, while Tortola produced sugar cane.



## CLIMATE

The climate of Virgin Gorda is like that of other small West Indian islands of low altitude: tropical, warm, and slightly humid and dry, with frequent brief showers and steady easterly trade winds. Mean temperatures vary only a few degrees between the warmest and coolest months.

The best available climatic records are at nearby Tortola, as summarized by D'Arcy (1967). At Road Town the mean annual precipitation is about 52 inches. Annual rainfall in the southern lowland area of Virgin Gorda is about 35 to 40 inches (Bowden and others 1970, p. 15, 124). Both the total and the distribution by months vary somewhat from year to year. A relatively dry season occurs in December and January, and droughts at other times are frequent. However, there is no sharply defined period without precipitation. The limited and irregular water supply restricts both the natural vegetation and agriculture.

The heaviest rains generally are recorded from August to November, at the height of the tropical storm season. Infrequent hurricanes during that period sweep directly over the islands, producing torrential rains.

Rainfall apparently is higher on Virgin Gorda Peak than in the lowlands. This mountain induces some precipitation. However, the increase obviously is less than at the higher peak of Sage Mountain on Tortola.

## VEGETATION

The vegetation of Virgin Gorda resembles that of other small West Indian islands. The relatively dry vegetation varies from low deciduous forest to shrub thickets and cactus scrub. There are no luxuriant rain forests nor giant trees clothed with air plants and vines. Ferns and orchids are scarce. Water plants of stream banks and ponds are absent, because permanent fresh water is now lacking.

Nearly a century ago, Eggers (1879, p. 6-13) described briefly the vegetation of the Virgin Islands. At that time large areas cultivated with sugar cane had been abandoned or had been used for pasture by cattle, sheep, and goats. Thickets of grayish or yellowish shrubs (*Croton*) covered more than one-third of the islands.

The vegetation of the British Virgin Islands including Virgin Gorda has been described also and mapped by Beard (1945). The greater part of these islands originally was covered by a deciduous seasonal forest of two stories, the canopy of partly deciduous trees and an understory containing evergreen shrubs. Twelve tree species were listed among the principal components of these islands. However, he noted that the original forests had been thoroughly cut over and reduced to a much smaller bush. Also, land abandoned by shifting cultivation reverted to thickets of croton (*Croton* spp.). Cactus shrub was a relatively undisturbed type of exposed steep slopes and sea cliffs. Along the coasts were some small stands of stunted mangrove swamp forests. In the boulder country of Virgin Gorda and the smaller adjacent island, Fallen Jerusalem, were two species of trees, pitch-apple (*Clusia rosea*) and bearded fig (*Ficus* sp.). Both were able to subsist by their long trailing aerial roots from top of boulders down to the ground.

The vegetation of Virgin Gorda at present is similar to that described and mapped by Beard about 30 years earlier. The lowland hills and slopes are degraded and mostly covered by croton shrub thickets. The dominant species, *Croton astroites* and *C. rigidus*, are gray shrubs 6-12 feet high. Being unpalatable to livestock, they withstand heavy grazing and may increase while forage plants become scarce. Other common shrubs are *Lantana urticifolia*, *Sida* spp. and others of Malvaceae, and *Leucaena leucocephala* (also a small tree). Scattered trees remaining from the forest are *Tabebuia heterophylla*, *Ficus citrifolia*, *Guapira fragrans*, and *Pisonia subcordata*.

The mangrove swamp forest occupies silt shores of a few bays, for example, at Gun Creek on North Sound east of Virgin Gorda Peak. There, *Rhizophora mangle* is a tree 20 feet high with stilt roots. The 3 associated species of mangroves present in this type on Virgin Gorda are: *Avicennia germinans*, *Conocarpus erectus*, and *Laguncularia racemosa*. The only mangrove cited for this island by Britton and Wilson was *C. erectus*. *Bontia daphnoides* L., an associated species on some islands and perhaps introduced on others, was not found. Pond-apple, *Annona glabra*, and manchineel, *Hippomane mancinella*, are present at the landward edge of this type.

Salt ponds, which are rare now, are bordered by mangroves of *Laguncularia racemosa* and *Avicennia germinans* and inland by *Annona glabra*. *Pluchea odorata* (shrub) and *Sporobolus virginicus* (grass) are also present.

The seasonal deciduous forest is present over most of the southern slopes of Virgin Gorda Peak. However, the northern and northwestern slopes have been partly cleared. This tropical forest is composed of small trees of many species mostly about 20 feet high and less than 6 inches in trunk diameter. The leaves commonly are small, and some species are deciduous. At higher altitudes the forest is richer. On the lee side and in ravines the trees become larger, as much as 40 to 55 feet in height and 1 foot in trunk diameter.

Characteristic tree species of this type are: *Ficus citrifolia*, *Coccoloba microstachys*, *Pisonia subcordata*, *Acacia muricata*, *Bursera simaruba*, *Adelia ricinella*, *Spondias mombin*, *Maytenus cymosa*, *Krugiodendron ferreum*, *Eugenia cordata*, *Tetrazygia angustifolia*, *Ardisia obovata*, *Bumelia obovata*, *Citharexylum fruticosum*, and *Exostema caribaeum*.

Some of the tallest trees belong to these species: *Guapira fragrans*, *Clusia rosea*, *Tabebuia heterophylla*, and *Hymenaea courbaril*. Rare small trees seen only in this forest type are: *Psidium amplexicaule*, *Cestrum laurifolia*, *Brunfelsia americana*, and *Tetrazygia angustifolia*. Also limited to this type is *Peperomia myrtifolia*, a rare herb.

In the dense forest near the summit of the south side of Virgin Gorda Peak, these species of rare trees newly recorded for the island were found: *Nectandra coriacea*, *Maytenus cymosa*, *Xylosma buxifolium*, and *Pimenta racemosa*. A ravine in the dense forest on the southwestern slope contributed these additional tree records: *Coccothrinax alta*, *Hymenaea courbaril*, *Margaritaria nobilis*, *Helicteres jamaicensis*, *Myrciaria floribunda*, *Tetrazygia elaeagnoides*, and *Cordia alliodora*.

Characteristic, shorter trees of the wind-swept slopes of Gorda Peak are: *Acacia muricata*, *Pisonia subcordata*, *Coccoloba microstachya*, *Randia aculeata*, and *Guettarda scabra*. The bases of



trees and stones are covered with *Tillandsia utriculata* and these orchids: *Epidendrum bifidum*, *E. ciliare*, *Oncidium prionichilum*, and *Vanilla barbellata*.

Near the summit on exposed degraded sites these spiny plants are characteristic: *Pithecellobium unguis-cati*, *Acacia farnesiana*, *Randia aculeata*, *Smilax coriacea* (vine), and *Anthacanthus spinosus* (shrub).

In cutover and cleared areas, conspicuous tree species are *Inga fagifolia*, *Byrsonima coriacea*, and *Bourreria succulenta*.

Thickets on dry exposed slopes of low hills have the island's only treelike cactus, *Cephalocereus royenii*. *Plumeria alba* is conspicuous with showy white flowers. *Agave missionum* is very colorful with its giant stalked clusters of yellow flowers.

As noted earlier, *Clusia rosea* is a characteristic species on the granitoid boulders at the southwest end of Virgin Gorda. Other tree species here are *Coccoloba unifera* and *Chrysobalanus icaco*. Near the beach in the Boulder Area are these shrubs and herbs: *Caesalpinia crista*,



Figure 3. - Virgin Gorda, looking northeast. Little Dix Bay resort in foreground, Gorda Peak in distance. Photograph by Paul Barton, from Rockresorts, Inc.

*C. divergens*, *Suriana maritima*, *Lantana involucrata*, *Scaevola plumierii*, and *Tournefortia gnaphalodes*.

Shrubby trees characteristic of thickets on sandy shores are: *Capparis flexuosa*, *Acacia farnesiana*, *Pithecellobium unguis-cati*, *Cassine xylocarpa*, *Crossopetalum rhacoma*, and *Colubrina arborescens*. A boat trip along the shore to the northeast end of the island yielded one addition, *Eugenia sessiliflora*.

The largest tree observed on Virgin Gorda was a ceiba, *Ceiba pentandra*. This lowland tree, possibly introduced, was 50 feet high and more than 2 feet in trunk diameter above the swollen and buttressed base. Another large tree was *Hymenaea courbaril*, to 50 feet high and 1 1/2 feet d.b.h.

The moist mountain forest on the summit and west slope of Sage Mountain, Tortola, is absent from Virgin Gorda Peak, which is about 400 feet lower in altitude. *Manilkara bidentata* (A. DC.) Chev. and most of the associated tree species of that mountain forest type are not found on the drier summit of Virgin Gorda.

## PLANT COLLECTIONS

Virgin Gorda has been visited by fewer botanical collectors than nearby islands of comparable size. N.L. Britton and associates made collections on various small islands in preparation of the flora of Puerto Rico and the Virgin Islands. He published plant lists for Anegada and Mona but apparently did not collect on Virgin Gorda.

The first extensive plant collections on Virgin Gorda were made by Walter Charles Fishlock (1875-1932), from England. He was in charge of the Agricultural Experiment Station on Tortola from 1902 to 1919 (D'Arcy 1967). His collections on Virgin Gorda apparently were the source of most records from that island cited by Britton and Wilson, more than 200 species. *Croton fishlockii* Britton (1920), Virgin Gorda's only known endemic, was discovered in 1919. Has now also been found on the top of a small island near Tortola, Great Camanoe, by one of the authors.

Albert C. Smith, then of the United States National Museum of Natural History, collected on Virgin Gorda in April 1956 with the Smithsonian-Bredin Caribbean Expedition through the West Indies. His specimens are in that museum.

W.G. D'Arcy (1967, p. 497) visited Virgin Gorda while making collections in 1964 to 1966 for his list of the dicotyledons of Tortola. He cited 2 species, *Mollugo verticillata* L. and *Piptocoma antillana* Urban (not found on Tortola). Also, he reported (personal communication) these species not observed by the authors: *Justicia culebritae* Urban, (earlier known only from Culebrita, a small island northeast of Puerto Rico), *Cynanchium grisebachianum* (Schltr.) Alain, and *Cordia sebestena* L. (cultivated).

The plant collections upon which this list is based were made on three field trips to Virgin Gorda. The first was by the three authors on June 19-23, 1969, and the second was by the first

author on March 16-18, 1972. Woodbury made the third on October 20-21, 1973. Three climbs to the summit of Virgin Gorda Peak were made. A boat trip, kindly arranged by Euan P. McFarlane, was made to Oil Nut Bay at the northeast end of the island.

About 160 numbers of trees and large shrubs were collected and identified by the authors. Duplicate sets of the specimens are being distributed to the following herbaria: United States National Museum of Natural History (US); Institute of Tropical Forestry (RPPR), U.S. Forest Service, Río Piedras, Puerto Rico; New York Botanical Garden (NY); and British Museum (Natural History (BM)).

Additional collections of the herbs and shrubs were obtained and identified by Woodbury. The main set is deposited in the herbarium of the University of Puerto Rico at Río Piedras.

## STATISTICAL SUMMARY

The native and introduced species of vascular plants of Virgin Gorda are summarized in Table 1. Plant families represented total 78, of which 1 is of ferns, 9 are monocotyledons, and 68 are dicotyledons. The total number of species is 403, of which 6 are ferns and 397 are seed plants (78 monocotyledons, and 319 dicotyledons). (There are no native gymnosperms.) Of the 403 species, 367 are native and 36 introduced, indicated by an asterisk (\*) in the annotated list (page 14).

Species not cited from Virgin Gorda by Britton and Wilson (1923-1930), designated by a dagger (†), total 154, of which 128 are native and 26 introduced. Nearly all are new distribution records for this island. Thus, more than one-third of the native species represent range extensions.

A separate list of cultivated plants on Virgin Gorda (page 32) contains 57 additional species not counted in the totals.

Table 1. Summary of native and introduced species of vascular plants of Virgin Gorda.

	Ferns	Gymnosperms	Monocotyledons	Dicotyledons	Totals
Families	1		9	68	78
Genera	5		49	214	268
Species	6		78	319	403
Native	6		69	292	367
Introduced (*)			9	27	36
Species New to Virgin Gorda	1		46	107	154
Native (†)	1		38	89	128
Introduced (†*)			8	18	26
Tree Species New to Virgin Gorda			2	41	43
Cultivated Species (Not Counted Above)		2	13	42	57

The largest plant families with numbers of species are listed below.

Leguminosae	41
Gramineae	34
Euphorbiaceae	24
Cyperaceae	18
Malvaceae	17
Rubiaceae	16
Compositae	16
Myrtaceae	14

Largest genera with numbers of species are: *Cyperus* and *Sida*, 10 species each; *Amaranthus*, 6; and *Solanum*, 5.

The number of species attaining tree size on Virgin Gorda is approximately 94, of which 79 are native and 15 introduced (\*). Of these, 43 (31 native and 12 introduced), indicated by a dagger (†), apparently are new island records and range extensions. Twenty-five additional species observed here as large shrubs have been found as trees on other islands. Thirteen of these (11 native and 2 introduced), indicated by a dagger (†), apparently are new island records. Thus, 119 species, including 56 range extensions, are cited from Virgin Gorda in the authors' illustrated tree reference.

The count of tree species depends upon the definition used. Trees may be defined as woody plants having one erect perennial stem or trunk at least 3 inches (7.5 centimeters) in diameter at breast height (d.b.h. or 4 1/2 feet or 1.4 meters), a more or less definitely formed crown of foliage, and a height of at least 12 to 15 feet (about 4 meters).

Most of these range extensions of tree species were expected, because the same species were cited from nearby Tortola by Britton and Wilson and by D'Arcy. However, these 6 additions to Virgin Gorda were not listed from Tortola: *Calyptanthes pallens*, *Coccothrinax alta*, *Eugenia ligustrina*, *Maytenus cymosa*, *Rochefortia acanthophora*, and *Xylosma buxifolium*. They are all now found in Tortola by one of the authors.

Jost Van Dyke, a smaller island with fewer species, lacks besides the 6 just named the following 15 tree species, which are common to the other two islands: *Brunfelsia americana*, *Byrsonima coriacea*, *Calyptanthes pallens*, *Capparis cynophallophora*, *Chrysobalanus icaco*,

*Eugenia ligustrina*, *E. pseudopsidium*, *E. sessiliflora*, *Forestiera segregata*, *Helicteres jamaicensis*, *Hymenaea courbaril*, *Ixora ferrea*, *Margaritaria nobilis*, *Pimenta racemosa*, and *Tetrazygia elaeagnoides*.

All species cited from Virgin Gorda by Britton and Wilson were found there again by the authors with 2 exceptions. *Ziziphus rignonii* Delpon ( *Sarcomphalus domingensis* (Spreng.) Krug & Urban) was cited also from Tortola but not found there by D'Arcy. *Sida alba* L. was added by Britton and Wilson in their Supplement (6: 550) from roadsides, Virgin Gorda, as the only record within their flora. That species is closely related to and doubtfully distinct from *S. spinosa* L.

Six species, listed below, were found by the authors on Virgin Gorda but not mentioned by Britton and Wilson from any island within their flora. They include taxonomic and nomenclatorial changes and introductions (\*).

- \* *Digitaria decumbens*
- Lantana urticifolia*
- Oncidium prionichilum*
- Panicum repens*
- \* *Solanum elaeagnifolium*
- Vanilla barbellata*

#### RARE AND ENDEMIC SPECIES

Species of local distribution within one or a few islands are of special interest. Some may be endangered or threatened with extinction and may need protection. Also, the relationships and origin may merit further study.

Rare species occur in small numbers, usually in limited range, or in such restricted or specialized habitat that they could disappear, though not in immediate danger of extinction.

Endemic, or local, species are those whose natural range is local or limited to the area of study, usually small.

*Calyptranthes kiaerskovii* Krug & Urban, the lone Tortola endemic, was based on a single sterile collection by Eggers. A collection by the authors on Virgin Gorda may be the same. Further study is needed.

*Sida eggersii* E.G. Baker was not seen on Virgin Gorda. This very rare tree was found first on Tortola and then was lost for nearly a century until rediscovered there recently. It is now known also from a single tree located in 1967 on Jost Van Dyke (Little 1969) but was collected twice on Culebra.

The endemic, rare, and endangered tree species of the Virgin Islands have been listed (Little, Woodbury, and Wadsworth 1974, p. 15-19, iv-xiv). Of the 141 endemic tree species, only the following 10 are native on Virgin Gorda: *Coccothrinax alta*, *Cordia rickseckeri*, *Croton rigidus*,

*Eugenia sessiliflora*, *Malpighia infestissima*, *Maytenus cymosa*, *Ouratea littoralis*, *Psidium amplexicaule* (recorded also from Nevis), *Reynosa guama*, and *Sabinea florida*.

A search through Britton and Wilson's flora revealed only 6 species of shrubs and herbs of Virgin Gorda that are restricted to Puerto Rico and the Virgin Islands. A few species known by them only from the Virgin Islands have been found since in dry areas of Puerto Rico, such as the southwestern part or northeastern corner. The list includes *Agave missionum*, *Justicia culebritae* Urban (collected by W.G. D'Arcy), *Opuntia repens*, *Scolasanthus versicolor*, *Trichachne aggersi* (St. Thomas and Virgin Gorda only), and *Triumfetta excisa*.

A few more are known now from other islands. *Forestiera eggersiana*, a shrub or small tree named from the Virgin Islands, has been found later in Puerto Rico, Desecheo, St. Martin, Mona, and St. Barts. *Peperomia myrtifolia*, a small herb named from the Virgin Islands, ranges at least to Martinique, where *P. broadwayi* C. DC. has been united as a synonym.

Several records from Virgin Gorda may represent range extensions to the northeast. These 5 species were cited by Britton and Wilson from Puerto Rico and beyond but not from the Virgin Islands: *Cassia aeschinomene*, *Catesbaea parviflora*, *Epidendrum anceps*, *Polystachya cerea*, and *Scleria microcarpa*.

Besides the endemic species, other tree species of broader distribution in the West Indies have been classed as rare or endangered with respect to Puerto Rico and the Virgin Islands. Of the list compiled by the authors, the 4 following rare tree species are native on Virgin Gorda: *Tetrazygia angustifolia*, *Rochefortia acanthophora*, *Solanum polygamum*, and *Rondeletia pilosa*. They are protected within Gorda Peak National Park.

Many plant species are rare on Virgin Gorda because of the small size of the island and the smaller areas with suitable habitats for each. Some may be confined to a fraction of a square mile or even a few acres. Destruction or change of the habitats could result in disappearance of these species from Virgin Gorda.

Fortunately, these peripheral or border species are not endangered nor in danger of extinction. Though rare at the edges of their ranges, they are present in greater numbers on other, mostly larger islands. Nevertheless, some species with small numbers could become threatened through loss of or changes in habitat or other factors and could become endangered or in danger of extinction. Survival of an endangered species requires assistance.

Many rare plant species are protected within Gorda Peak National Park. It preserves a large area of natural forest on the southwest side of Gorda Peak. Thus, *Croton fishlockii*, apparently is not endangered but perhaps should be classed as threatened.

An explanation for the small number of endemic plant species is apparent. Relatively few of the many local species of Puerto Rico are native also on Virgin Gorda, mainly because of differences in habitats. Puerto Rico has rain forests and much higher mountains.

Puerto Rico and the Virgin Islands arose in the geological past from submarine volcanoes on the ocean floor. As oceanic islands, they have been isolated and not been connected with a

continent. Land plants arrived from continents through accidental migration by air or water. Under isolation, these original immigrants produced local species in different islands.

However, the Virgin Islands, except perhaps St. Croix, have not long been isolated from each other. They are peaks of a drowned mountain range now separated by shallow seas. The ocean level has fluctuated from time to time, particularly in relation to glaciation. At maximum advance of the last continental ice sheets, as recently as 11,000 to 20,000 years ago, sea level was about 200 feet lower. Then, all the Virgin Islands (except St. Croix) apparently were connected to Puerto Rico to form one somewhat larger island. Also, the zones of dry and seasonal forests along the shores were broader. Plant migration could have been more rapid in the absence of the sea barrier. Any newly evolved species could have spread among what are now distinct islands, so that their place of origin remains obscure.

## ANNOTATED LIST

Species of ferns and seed plants of Virgin Gorda are arranged by plant families in the usual botanical arrangement and then in alphabetical order by scientific name. Introduced species are distinguished from native by an asterisk (\*). Species not cited from Virgin Gorda by Britton and Wilson (1923-1930) are designated by a dagger (†). Nearly all are new distribution records for this island.

Page numbers have been added (as "Trees P.R.") for descriptions and illustrations of trees and large shrubs in the 2-volume reference (Little and Wadsworth 1964; Little, Woodbury, and Wadsworth 1974). New records of occurrence on Virgin Gorda were included in the second volume also.

Nomenclature of trees follows Little, Woodbury, and Wadsworth (1974). That of shrubs and herbs is from the revision by Liogier (1965, 1967) and the flora of Jamaica (Adams 1972). Where scientific names have been changed, those of Britton and Wilson have been added in parenthesis.

### FERNS AND FERN-ALLIES

#### Polypodiaceae (Fern Family)

*Cheilanthes microphylla* (Sw.) Sw. Small fern on dry slopes.

†*Nephrolepis exaltata* (L.) Scott, Boston-fern, swordfern. Rare on rocky banks and tree trunks.

*Paltonium lanceolatum* (L.) Presl. Fern epiphytic on tree trunks, upland forest, Gorda Peak.

†*Pityrogramma calomelanos* (L.) Link, silver-fern. Uncommon in open soil.

*Polypodium aureum* L. Fern on rocks and tree trunks in upland forest, summit of Gorda Peak.

*Polypodium heterophyllum* L. Fern on small trees and occasionally on rocks, upland forest, summit of Gorda Peak.

### MONOCOTYLEDONS

#### Gramineae (Grass family)

†\**Andropogon aristatus* Poir. (*A. annulatum* auth., *Dicanthium annulatum* auth.), hurricane-grass. Common weed.

†*Andropogon bicornis* L., broomgrass. Very rare on open moist upper northeast slope.



*Antheophora hermaphrodita* (L.) Kuntze. Fairly common grass of open and coastal areas.  
†*Cenchrus brownii* Roem. & Schults. (*C. viridis* Spreng.), sandbur. Weed in cultivated areas.  
*Cenchrus echinatus* L., sandbur. Weed along beaches.  
*Chloris inflata* Link (*C. paraguayensis* Steud.). Common weedy fingergrass.  
†*Chloris petraea* Sw. (*Eustachys petraea* (Sw.) Desv.). Fingergrass, coastal.  
†*Chloris radiata* (L.) Sw. Rare weedy fingergrass.  
†\**Cynodon dactylon* (L.) Pers. (*Capriola dactylon* (L.) Kuntze), Bermuda-grass. Weed.  
†*Dactyloctenium aegyptium* (L.) Willd., Egyptian-grass. Uncommon weed.  
†\**Digitaria decumbens* Stent, Pangola-grass. Cultivated grass and weed in pastures. Not listed by Britton and Wilson.  
†*Digitaria insularis* (L.) Mez ex Ekman (*Trichachne insularis* (L.) Nees, *Valota insularis* (L.) Chase). Uncommon in open areas.  
*Digitaria sanguinalis* (L.) Scop. (*Syntherisma sanguinalis* (L.) Dulac), crabgrass. Weed.  
†\**Elusine indica* (L.) Gaertn., wiregrass, goosegrass. Weed.  
†*Eragrostis ciliaris* (L.) Link. Common weed.  
†\**Eragrostis tenella* (L.) Beauv. (*E. amabilis* (L.) Wr. & Arn., *E. plumosa* (Retz.) Link). Common weed.  
*Heteropogon contortus* (L.) Beauv., speargrass. Uncommon annual of open slopes.  
†*Lasiacis divaricata* (L.) Hitchc., bamboograss. Common on hillsides and ravines.  
*Lasiacis sorghoidea* (Desv.) Hitchc. & Chase, bamboograss. Rare on hillsides and ravines.  
*Oplismenus hirtellus* (L.) Beauv. Local in ravines.  
*Panicum adspersum* Trin. Rare coastal grass.  
†*Panicum fasciculatum* Sw. Rare on uppermost open slopes.  
†\**Panicum maximum* Jacq., Guinea-grass. Weed of open areas.  
†*Panicum repens* L. Rare coastal grass. Not listed by Britton and Wilson.  
†*Paspalum distichum* L. At salt pond.  
†*Paspalum fimbriatum* H.B.K. Weed.  
*Paspalum laxum* Lam. (*P. glabrum* Poir.). Most common grass of forests.  
*Paspalum plicatulum* Michx. Uncommon weedy grass on moist slopes.  
*Setaria setosa* (Sw.) Beauv. (*Chaetochloa setosa* (Sw.) Scribn.), Common on hillsides.  
†*Setaria utowanaea* (Scribn.) Pilger (*Panicum utowanaeum* Scribn.). Common grass of forests.  
†*Sporobolus indicus* (L.) R. Br. Weed in disturbed areas.  
†*Sporobolus pyramidatus* (Lam.) Hitch. (?). Common around salt pond.  
†*Sporobolus virginicus* (L.) Kunth, saltgrass. At salt pond and on beaches.  
*Trichachne eggersii* (Hack.) Henr. (*Valota eggersii* (Hack.) Hitchc. & Chase). Rare in open areas. Endemic to St. Thomas and Virgin Gorda, according to Britton and Wilson.

#### Cyperaceae (Sedge Family)

*Cyperus compressus* L. Rare on wet slopes.  
*Cyperus confertus* Sw. Rare on slopes. Coastal open forests.  
†*Cyperus elegans* L. Rare viscid sedge of coastal areas and salt pond.  
*Cyperus laevigatus* L. Coastal pond; rare.  
†*Cyperus ligularis* L. Uncommon sedge of coastal and open areas.  
*Cyperus nanus* Willd. (*C. granularis* (Desf.) Britton). Rare on top of hill.  
†*Cyperus odoratus* L. (*C. ferax* L. C. Rich.). Very rare in upper wet areas.  
*Cyperus planifolius* L. C. Rich. Rare near Little Dix.

- Cyperus polystachyos* Rottb. (*C. odoratus* auth.). Very rare in wet areas.  
*Cyperus rotundus* L., nutgrass. Common weed of gardens.  
*Fimbristylis dichotoma* (L.) Vahl (*F. diphylla* (Retz.) Vahl). Weed of moist areas.  
*Fimbristylis ferruginea* (L.) Vahl. Rare in coastal marsh.  
†*Fimbristylis monostachyos* (L.) Hassk. (*Cyperus monostachyos* L., *Abildgaardia monostachya* (L.) Vahl). Rare on wet slopes.  
†*Rhynchospora micrantha* Vahl (*Rhynchospora berterii* (Spreng.) Clarke). Very rare annual sedge of upper moist trails or open areas.  
†*Rhynchospora pusilla* (Sw.) Griseb. Uncommon but local in open woods.  
*Scleria lithosperma* (L.) Sw. Common on hillsides.  
†*Scleria microcarpa* Nees. Rare in wet upper areas.  
*Scleria scindens* Nees. Rare on moist slopes.

#### Palmae (Palm Family)

- †*Coccothrinax alta* (O. F. Cook) Beccari (*C. argentea* auth.), tyre-palm. Shrub 7 ft. or a tree to 15 ft. or more. Rare in ravines, upland forest, southwest side of Gorda Peak. (Trees P.R. 2: 74.)  
†\**Cocos nucifera* L., coconut. Small tree, uncommon on sandy beaches, formerly planted. (Trees P.R. 1: 38.)

#### Araceae (Arum Family)

- †*Anthurium cordifolium* Kunth (*A. cordatum* (Willd.) G. Don). Rare in boulder area; on Gorda Peak.

#### Bromeliaceae (Pineapple Family)

- Aechmea lingulata* (L.) Baker (*Wittmackia lingulata* (L.) Mez). Local and rare near top of hills. Leaves less spiny than *Bromelia pinguin*.  
†*Bromelia pinguin* L. Terrestrial, near summit and north slope. Very spiny-leaved, ornamental in flower.  
†*Catopsis floribunda* (Brongn.) L. B. Smith (*C. nutans* (Sw.) Griseb.). Uncommon epiphyte on upper slopes.  
†*Tillandsia recurvata* L. Common epiphyte on upper slopes.  
†*Tillandsia utriculata* L. Common as an epiphyte or on ground, slopes near peaks.

#### Commelinaceae (Spiderwort Family)

- †*Callisia repens* L. Rare and local in mats, summit.  
†*Commelina diffusa* Burm. f. (*C. longicaulis* Jacq.). Common weed.  
†*Commelina virginica* L. (*C. elegans* H.B.K.). Common on slopes.  
*Rhoeo spathacea* (Sw.) Stearn (*R. discolor* (L'Her.) Hance), oysterplant. Rare on upper slopes.

#### Liliaceae (Lily Family)

- \**Aloe vera* (L.) Burm. f. (*A. vulgaris* Lam.), aloe. Rare about homes and upper slopes.  
*Smilax coriacea* Spreng. Uncommon spiny vine on hillsides.

## Amaryllidaceae (Amaryllis Family)

*Agave missionum* Trel. Frequent on hillsides.

†\**Agave sisalana* Perrine, sisal. Rare naturalized weed.

†*Furcraea tuberosa* (Mill.) Ait. f. Local on moist slopes.

†*Hymenocallis declinata* (Jacq.) M. Roem., spiderlily. Top of hills, north side. Usually a beach plant elsewhere.

*Hypoxis decumbens* L. Rare small yellow-flowered grasslike herb of upper slopes.

## Orchidaceae (Orchid Family)

†*Epidendrum anceps* Jacq. (*Amphiglottis anceps* (Jacq.) Britton). Epiphyte and on rocks, common near peaks.

*Epidendrum brittonianum* A. D. Hawkes (*Ep. bifidum* Aubl., *Encyclia bifida* (Aubl.) Britton & Wils., *En. papilionacea* (Vahl) Schlechter). Epiphyte of woodlands and shrub thickets.

*Epidendrum ciliare* L. (*Auliza ciliaris* (L.) Salisb.). Epiphyte and on rocks in woodland, abundant on peaks.

†*Oncidium prionichilum* Krzl. Common on rocks and trees, peaks and slopes. Collected on Gorda Peak by Albert C. Smith in 1956 and by the authors. Known also from Tortola. Not in Britton and Wilson.

*Oncidium variegatum* Sw. Difficult to identify from above when not in flower.

†*Polystachya cerea* Lindl. (*P. minor* Fawcett & Rendle). Common epiphyte on upper slopes.

†*Vanilla barbellata* Reichb. f. Common epiphytic vine of woodlands and thickets. Known also from Hispaniola. Not in Britton and Wilson.

## DICOTYLEDONS

### Piperaceae (Pepper Family)

†*Peperomia glabella* (Sw.) A. Dietr. Frequent on upper slopes and peaks.

*Peperomia myrtifolia* (Vahl) A. Dietr. Rare herb on rocks, north slope and peaks. Doubtfully recorded from Virgin Gorda by Britton and Wilson and found by the authors.

### Ulmaceae (Elm Family)

†*Trema micrantha* (L.) Blume, false jacocalalu, Florida trema. Small tree 15 ft. high, 4 in. d.b.h. Common in open areas along road, upland forest, west side of Gorda Peak. (Trees P.R. 1: 58.)

### Moraceae (Mulberry Family)

†*Ficus citrifolia* Mill. (*F. laevigata* Vahl), shortleaf fig. Small tree 15-30 ft. high, 1 ft. d.b.h., with prop roots. Frequent at edge of mangrove swamp forest, Boulder area, and upland forest. (Trees P.R. 1: 70.)

### Urticaceae (Nettle Family)

*Pilea herniarioides* (Sw.) Lindl. Rare in moist drainage areas.

### Loranthaceae (Mistletoe Family)

*Dendropemon caribaeum* Krug & Urban (*Phthirusa caribaea* (Krug & Urban) Engler). Parasitic shrub, slopes and summit.

†*Phoradendron racemosum* (Aubl.) Krug & Urban. Rare parasitic shrub on *Pisonia subcordata*, ravine and top of hill.

Polygonaceae (Buckwheat Family)

†\**Antigonon leptopus* Hook. & Arn., corallina, coralillo. Ornamental garden plant.

†*Coccoloba krugii* X *uvifera*. Small tree 15-20 ft. high, 5 in. d.b.h. Rare at edge of mangrove swamp forest, salt pond area. Hybrid not mentioned by Britton and Wilson. (Trees P.R. 2: 150.)

*Coccoloba microstachya* Willd. (*C. obtusifolia* auth.), uverillo. Small tree 15-35 ft. high, 4-6 in. d.b.h. Abundant on slopes, upland forest. (Trees P.R. 2: 152.)

*Coccoloba swartzii* Meisn. (*C. diversifolia* auth.), ortegón. Small tree 15-25 ft. high, 5 in. d.b.h. Frequent on slopes and Boulder area, upland forest. (Trees P.R. 1: 80.)

*Coccoloba uvifera* (L.) L., seagrape. Tree 25 ft. high, 1 1/2 ft. d.b.h. Very small-leaf form common in coastal and Boulder areas. (Trees P.R. 1: 82.)

Chenopodiaceae (Goosefoot Family)

*Suaeda fruticosa* (L.) Forsk. (?) (*Dondia fruticosa* (L.) Northrop). Salt pond area. Virgin Gorda was the only island cited by Britton and Wilson. Perhaps now referred to a related species.

Amaranthaceae (Amaranth Family)

†*Achyranthes aspera* L. (*Centrostachya aspera* (L.) Standl.). Weed.

*Amaranthus crassipes* Schlecht. Weed.

†*Amaranthus dubius* Mart. Weed.

†*Amaranthus gracilis* Desf. Weed.

†*Amaranthus polygonoides* L. Salt pond area.

*Amaranthus spinosus* L. Weed.

*Celosia nitida* Vahl. Coastal woodland.

*Philoxerus vermicularis* (L.) Nutt. Coastal.

Nyctaginaceae (Four o'clock Family)

*Boerhaavea diffusa* Sw. (*B. coccinea* Mill.). Common weed.

†*Boerhaavea erecta* L. Local weed.

*Commicarpus scandens* (L.) Standl. Fairly common, Boulder area and open slopes.

*Guapira fragrans* (Dum.-Cours.) Little (*Torrubia fragrans* (Dum.-Cours.) Standl.), black mampoo. Tree 45 ft. high, 10 in. d.b.h. Frequent on hillsides, upland forest, and Boulder area. (Trees P.R. 1: 92.)

†*Pisonia subcordata* Sw., black manchineel, mampoo. Tree 25 ft. high, 1 ft. d.b.h. Common on slopes, upland forest, and Boulder area. (Trees P.R. 1: 90.)

Phytolaccaceae (Pokeweed Family)

*Rivina humilis* L. On hills and slopes.

Aizoaceae (Carpetweed Family)

*Mollugo nudicaulis* Lam. Rare on upper slopes.

*Mollugo verticillata* L. Weed in Boulder area.

†*Sesuvium portulacastrum* L. Locally abundant in coastal areas.

Portulacaceae (Purslane Family)

*Portulaca halimoides* L. Uncommon in coastal areas.

†*Portulaca oleracea* L. Common weed.

*Portulaca phaeosperma* Urban. Weed on top of hills.

†\**Portulaca quadrifida* L. Uncommon in coastal areas.

*Talinum paniculatum* (Jacq.) Gaertn. Common, also variegated form in cultivation.

†*Talinum triangulare* (Jacq.) Willd. Common.

#### Annonaceae (Annona Family)

*Annona glabra* L., pond-apple. Tree 15 ft. high, 3 in. d.b.h. Local at edge of mangrove swamp forest, salt pond. (Trees P.R. 2: 172.)

*Annona muricata* L., soursop. Rare small tree in Boulder area. (Trees P.R. 1: 102.)

*Annona squamosa* L., apple, sugar-apple. Tree 15 ft. high, 4 in. d.b.h. Common in boulder area. (Trees P.R. 1: 104.)

#### Lauraceae (Laurel Family)

†*Cassytha filiformis* L. Slender parasitic vine of coastal and Boulder areas.

†*Nectandra coriacea* (Sw.) Griseb., Jamaica nectandra. Small tree 20 ft. high, 2 in. d.b.h. Rare in upland forest and clearing, Gorda Peak. (Trees P.R. 1: 116.)

#### Papaveraceae (Poppy Family)

*Argemone mexicana* L., Mexican-poppy. Weed in open areas.

#### Cruciferae (Mustard Family)

\**Brassica integrifolia* (West) O. E. Schulz. Uncommon naturalized weed.

*Cakile lanceolata* (Willd.) O. E. Schulz. Common in coastal sands.

#### Capparaceae (Caper Family)

†*Capparis cynophallophora* L., Jamaica caper. Shrub or small tree 12-15 ft. high, 3 in. d.b.h. Widespread, including thicket on sandy shore and upland forest, Gorda Peak. (Trees P.R. 1: 132.)

*Capparis flexuosa* (L.) L., limber caper. Shrub or vinelike tree to 15 ft. high, 2 in. d.b.h. Widespread, including thickets on sandy shore and Boulder area. (Trees P.R. 2: 220.)

*Capparis indica* (L.) Fawc. & Rendle, linguam. Small tree 20 ft. high, 2 in. d.b.h. Boulder area and cutover and cleared areas, upland forest, Gorda Peak. (Trees P.R. 2: 226.)

†*Cleome serrata* Jacq. (? ) (*C. triphylla* DC.). Weed along roadsides.

†\**Cleome viscosa* L. (*C. icosandra* L.). Weed in Boulder area.

#### \*Moringaceae (Horseradish-tree Family)

\**Moringa oleifera* Lam. (*M. moringa* (L.) Millsp.), horseradish-tree. Small tree near homes. (Trees P.R. 1: 134.)

#### Crassulaceae (Orpine Family)

†\**Kalanchoë tubiflora* (Harv.) Hamet. Top of hill.

#### Rosaceae (Rose Family)

†*Chrysobalanus icaco* L., cocoplum. Small tree 18 ft. high, 4 in. d.b.h. Climbing in granite boulders near beach. (Trees P.R. 2: 230.)

Leguminosae (Legume Family)  
Mimosoideae (Mimosa Subfamily)

*Acacia farnesiana* (L.) Willd. (*Vachellia farnesiana* (L.) Wight & Arn.), cashatree, sweet acacia. Shrub 8-10 ft. high with several spreading stems, also a small tree on other islands. Forming thickets on sandy shore, Boulder area and slopes. (Trees P.R. 1: 142.)

*Acacia muricata* (L.) Willd. (*Senegalia muricata* (L.) Britton & Rose), spineless acacia. Small tree 20 ft. high, 4 in. d.b.h. Common on slopes, upland forest. (Trees P.R. 2: 246.)

†*Acacia riparia* H.B.K. (*Senegalia westiana* (DC.) Britton & Rose). Large woody vine, widespread but not abundant.

*Desmanthus virgatus* (L.) Willd. (*Acuan virgatum* (L.) Medic.). Weed in Boulder area and top of hills.

*Inga fagifolia* (L.) Willd. (*I. laurina* (Sw.) Willd.), "sweetpea." Small tree 30 ft. high, 8 in. d.b.h. Rare and scattered in open areas, upland forest, including top and west slope of Gorda Peak. (Trees P.R. 1: 150.)

*Leucaena latisquama* (L.) W. T. Gillis (*L. leucocephala* (Lam.) DeWit, *L. glauca* (L.) Benth.), tantan, leadtree. Shrub or small tree 15 ft. high, 2 in. d.b.h. Uncommon in weedy areas, thickets. (Trees P.R. 1: 156.)

†*Mimosa ceratonia* L. Spiny woody vine, weed in open forest.

†*Mimosa pudica* L., sensitive-plant. Herbaceous weed.

*Pithecellobium unguis-cati* (L.) Benth., bread-and-cheese, catclaw. Small tree or vinelike shrub 12-15 ft. high, 2-3 in. d.b.h. Common in thickets, sandy shores, Boulder area, and slopes. (Trees P.R. 2: 262.)

Caesalpinioideae (Cassia Subfamily)

*Caesalpinia crista* L. (*Guilandina crista* (L.) Small). Uncommon woody, spiny vine in Boulder area.

*Caesalpinia divergens* Urban (*Guilandina divergens* (Urban) Britton). Spiny shrub in Boulder area.

†*Cassia aeschinomene* DC. (*Chamaecrista aeschinomene* (DC.) Greene). Weed along roadsides and slopes.

†*Cassia bicapsularis* L. (*Adipera bicapsularis* (L.) Britton & Rose). Rare shrub in Boulder area.

*Cassia glandulosa* L. var. *swartzii* (Wickstr.) Macbr. (*C. swartzii* Wickstr.). Shrub, scattered.

*Cassia occidentalis* L. (*Ditremexa occidentalis* (L.) Britton & Rose). Herbaceous weed.

†*Hymenaea courbaril* L., West-Indian-locust, courbaril. Tree 50 ft. high, 1 1/2 ft. d.b.h. Rare in ravines in upland forest of Gorda Peak. (Trees P.R. 1: 178.)

\**Parkinsonia aculeata* L., Jerusalem-thorn. Uncommon shrub or small tree in waste places, Boulder area, and thicket in clearing. (Trees P.R. 1: 180.)

†\**Tamarindus indica* L., tamarind. Tree to 40 ft. high, 1 1/2 ft. d.b.h. Scattered in clearings and planted. (Trees P.R. 1: 186.)

Faboideae (Pea Subfamily)

*Abrus praecatorius* L. (*A. abrus* (L.) W. F. Wight), jumbie-bead. Rare weedy, herbaceous or slightly woody vine. The red-and-black seeds are deadly poisonous.

*Alysicarpus vaginalis* (L.) DC. Weedy herb in Boulder area.

*Canavalia maritima* (Aubl.) Urban. Prostrate or climbing herb, coastal area.

*Centrosema virginianum* (L.) Benth. (*Bradburya virginiana* (L.) Kuntze). Very common herbaceous vine, weed in Boulder area.

*Crotalaria incana* L. Annual or biennial herb in coastal and Boulder areas.

*Crotalaria lotifolia* L. Shrub of slopes and summit of Gorda Peak.

*Crotalaria retusa* L. Annual herb of coastal and Boulder areas.

*Dalbergia ecastophyllum* (L.) Taub. (*Ecastophyllum ecastophyllum* (L.) Britton). Woody vine of coastal area.

†*Desmodium canum* (J. F. Gmel.) Schinz & Thell. (*Meibomia supina* (Sw.) Britton). Rare weed at summit of Gorda Peak.

*Desmodium glabrum* (Mill.) DC. (*Meibomia mollis* (Vahl) Kuntze). Herbaceous weed of Boulder area.

*Desmodium triflorum* (L.) DC. (*Sagotia triflora* (L.) Duch. & Walp.). Low herbaceous weed of Boulder area.

*Galactia striata* (Jacq.) Urban. Slender vine of slopes and Boulder area.

*Indigofera suffruticosa* Mill. Weedy shrub.

\**Indigofera sumatrana* Gaertn. Weedy shrub.

*Pictetia aculeata* (Vahl) Urban, fustic. Shrub or tree to 30 ft. high, 6 in. d.b.h. In thickets and upland forest, also Boulder area. (Trees P.R. 1: 202.)

†*Piscidia carthagenensis* Jacq. (*Ichthyomethia pisicipula* auth.), dogwood, fish-poison. Tree 15 ft. high, 5 in. d.b.h. Scattered. (Trees P.R. 2: 306.)

*Rhynchosia minima* (L.) DC. (*Dolicholus minimus* (L.) Medic.). Herbaceous vine of slopes and Boulder area.

*Rhynchosia reticulata* (*Dolicholus reticulatus* (Sw.) Millsp.). Herbaceous vine of slopes and Boulder area.

*Sabinea florida* (Vahl) DC., retama, wattapania. Shrub 12 ft. high, 1 1/2 in. d.b.h., also a tree on other islands. Common in upland forest and slope of Gorda Peak. (Trees P.R. 2: 310.)

*Stylosanthes hamata* (L.) Taub. Herbaceous weed of Boulder area.

*Tephrosia cinerea* (L.) Pers. (*Cracca cinerea* (L.) Morong). Herbaceous or slightly woody weed on coasts.

*Tephrosia senna* H.B.K. (*Cracca cathartica* (Sessé & Moc.) Britton & Millsp.). Herbaceous weed on coasts.

†*Teramnus labialis* (L. f.) Spreng. Herbaceous vine on slopes and coasts.

#### Erythroxylaceae (Coca Family)

*Erythroxylum rotundifolium* Lunan (*E. brevipes* DC.), brisselet. Tree to 18 ft. high, 4 in. d.b.h. Frequent in Boulder area and upland forest. (Trees P.R. 2: 314.)

#### Zygophyllaceae (Caltrop Family)

*Tribulus cistoides* L. Perennial herb, Little Dix area.

#### Rutaceae (Rue Family)

†*Amyris elemifera* L., sea amyris. Shrub 10 ft. high, also a small tree on other islands. Rare on slopes, upland forest. (Trees P.R. 1: 216.)

†\**Citrus aurantifolia* (L.) Swingle, lime. Small tree 15 ft. high, 3 in. d.b.h. Cultivated fruit tree, also in Boulder area. (Trees P.R. 2: 218.)

#### Simaroubaceae (Ailanthus Family)

*Suriana maritima* L., baycedar. Shrub 2-5 ft. high, also a small tree on other islands. Rare on sandy beaches. (Trees P.R. 2: 354.)

Burseraceae (Bursera Family)

†*Bursera simaruba* (L.) Sarg. (*Elaphrium simaruba* (L.) Rose), turpentine tree, gumbo-limbo. Small tree 20 ft. high, 1 ft. d.b.h. Scattered in Boulder area. (Trees P.R. 1: 236.)

Malpighiaceae (Malpighia Family)

†*Byrsonima coriacea* (Sw.) DC. (*B. spicata* (Cav.) DC.), maricao. Small tree 20 ft. high, 4 in. d.b.h. Scattered in cleared areas of upland forest, Gorda Peak. (Trees P.R. 1: 256.)

*Heteropteris purpurea* (L.) H.B.K. (*Banisteria purpurea* L.). Woody vine on slopes.

*Malpighia infestissima* (A. Juss.) A. Rich., cowhage-cherry. Shrub 10 ft. high, also a small tree on other islands. Rare in upland forest. (Trees P.R. 2: 374.)

*Stigmaphyllon periplocifolium* (Desf.) A. Juss. (*S. lingulatum* (Poir.) Small). Common woody vine on slopes, upland forest.

*Stigmaphyllon tomentosum* (Desf.) Ndz. Common woody vine, scattered.

Polygalaceae (Milkwort Family)

*Polygala penaea* L. (*Badiera penaea* (L.) DC.). Shrub or small tree 8-16 ft. high, 1-5 in. d.b.h. Uncommon on slopes, upland forest. (Trees P.R. 2: 382.)

Euphorbiaceae (Euphorbia Family)

*Adelia ricinella* L. (*Ricinella ricinella* (L.) Britton), Shrub or small tree 15-20 ft. high, 3 in. d.b.h. Scattered in upland forest. (Trees P.R. 2: 386.)

†*Argythamnia candicans* Sw. Shrub on slopes.

*Argythamnia fasciculata* (Vahl) Muell. Arg. (*Ditaxis fasciculata* Vahl). Shrub on slopes.

*Chamaesyce articulata* (Aubl.) Britton. Large shrub near coast. Also a small tree on other islands. (Trees P.R. 2: 392.)

*Chamaesyce buxifolia* (Lam.) Small. Low fleshy shrub in coastal sands.

*Chamaesyce hirta* (L.) Millsp. Annual herb, nearly prostrate, perhaps an introduced weed.

*Chamaesyce prostrata* (Ait.) Small. Low annual herbaceous weed.

*Croton astroites* Dryand., marán. Shrub 6-12 ft. high, also rarely a small tree on other islands. Dominant weed in shrub thickets, Boulder area. (Trees P.R. 2: 396.)

*Croton betulinus* Vahl. Low shrub on slopes, upland forest.

*Croton fishlockii* Britton (Torreya 20: 84. 1920). Low, much-branched shrub, discovered by Fishlock on summit of Gorda Peak on May 9, 1919. A second collection on the southeast slope near summit of Gorda Peak was made by the authors in 1969. Walter Charles Fishlock (1875-1932), from England, for many years was in charge of the agricultural experiment station at Road Town, Tortola. While there, he collected plant specimens on Virgin Gorda and Anegada as well as Tortola.

*Croton ovalifolius* Vahl. Low shrub.

*Croton rigidus* (Muell. Arg.) Britton, adormidera. Shrub 7 ft. high, also rarely treelike on other islands. Dominant weed in shrub thickets, Boulder area. (Trees P.R. 2: 398.)

*Dalechampia scandens* L. Slightly woody twining vine in ravines, upland forest of Gorda Peak.

\**Euphorbia cyathophora* Murr. (*Poinsettia cyathora* (Murr.) Kl. & Garcke). Annual or perennial weed.

*Euphorbia petiolaris* Sims (*Aklema petiolare* (Sims) Millsp.), rascaso. Shrub or small tree in lower coastal thickets. (Trees P.R. 1: 270.)

*Gymnanthes lucida* Sw., oysterwood. Shrub 12 ft. high, also a small tree on other islands. Uncommon in thickets and slopes. (Trees P.R. 1: 272.)



*Hippomane manchinella* L., manchineel. Tree 35 ft. high, 2 ft. d.h.b. At edge of mangrove swamp forest, coasts and ponds. The fruits, which resemble small apples, and the milky sap are poisonous. (Trees P.R. 1: 274.)

\**Jatropha gossypifolia* L. (*Adenoropium gossypifolium* (L.) Pohl), tuatua. Rare shrub at settlement.

†*Margaritaria nobilis* L. f. (*Phyllanthus nobilis* (L. f.) Muell. Arg.), millo. Shrub or tree to 25 ft. high. Rare in ravines and west slopes, upland forest of Gorda Peak. (Trees P.R. 1: 282.)

†*Phyllanthus amarus* Schumach. (*Ph. niruri* auth.). Annual weed.

*Phyllanthus epiphyllanthus* L. (*Xylophylla epiphyllanthus* (L.) Britton). Shrub to 10 ft. high, odd, leafless, with flat leaflike branches. Uncommon and local on upper slopes and ridges, upland forest.

†*Phyllanthus niruri* L., niruri. Annual herbaceous weed. Specimens named as *Ph. latyroides* H.B.K. (Britton & Wilson) belong to this species, according to Liogier.

†\**Ricinus communis* L., castorbean. Large treelike weedy shrub, also a small tree on other islands. (Trees P.R. 2: 422.)

†*Tragia volubilis* L., stingingvine. Slender perennial twining vine with stinging hairs. On slopes and ravines, upland forest.

#### Anacardiaceae (Cashew Family)

\**Anacardium occidentale* L., cashew. Tree 20 ft. high, 10 in. d.b.h. Planted for nuts and fruits in Boulder area. (Trees P.R. 1: 286.)

*Comocladia dodonaea* (L.) Urban, chicharrón. Shrub 6 ft. high on slopes, upland forest, also a small tree on other islands. (Trees P.R. 2: 436.)

†*Spondias mombin* L., yellow mombin. Tree 20-30 ft. high 8 in. d.b.h., upland forest, Gorda Peak. (Trees P.R. 1: 294.)

#### Celastraceae (Bittersweet Family)

*Cassine xylocarpa* Vent. (*Elaeodendron xylocarpum* (Vent.) DC.), marbletree. Small tree 12 ft. high, 3 in. d.b.h. Common on slopes, upland forest and thicket on sandy shore. (Trees P.R. 2: 460.)

*Crossopetalum rhacoma* Crantz (*Rhacoma crossopetalum* L.), Florida crossopetalum. Shrub or small tree 15 ft. high, 3 in. d.b.h. In thicket on sandy shore and on slopes, upland forest. (Trees P.R. 2: 462.)

†*Maytenus cymosa* Krug & Urban. Small tree 20 ft. high, 5 in. d.b.h. Rare on slopes, upland forest. First collected on Virgin Gorda by Albert C. Smith in 1956. (Trees P.R. 2: 466.)

*Schaefferia frutescens* Jacq., Florida-boxwood. Shrub or small tree 12 ft. high. In thicket on sandy shore, Boulder area, and slopes, upland forest. (Trees P.R. 2: 474.)

#### Sapindaceae (Soapberry Family)

*Serjania polyphylla* (L.) Radlk. Woody vine on slopes, upland forest.

#### Rhamnaceae (Buckthorn Family)

*Colubrina arborescens* (Mill.) Sarg. (*C. colubrina* (Jacq.) Millsp.), coffee colubrina. Small tree 15 ft. high, 3 in. d.b.h. Common in thickets on sandy shore, also Boulder area. (Trees P.R. 1: 316.)

†*Colubrina elliptica* (Sw.) Briz. & Stern (*C. reclinata* (L'Her.) Brongn.), mabi, soldierwood. Shrub 12 ft. high, also a small tree on other islands. Boulder area and slopes, upland forest. (Trees P.R. 1: 318.)

†*Gouania lupuloides* (L.) Urban. Woody vine on slopes.

†*Krugiodendron ferreum* (Vahl) Urban, "ironwood," leadwood. Small tree 18 ft. high, 2 in. d.b.h. Rare in Boulder area and on slopes, upland forest. (Trees P.R. 1: 320.)

*Reynosia guama* Urban, guamá. Small tree 18 ft. high, 3 in. d.b.h. Occasional on slopes, upland forest. (Trees P.R. 2: 498.)

*Ziziphus rignonii* Delponte (*Sarcomphalus domingensis* (Spreng.) Krug & Urban). Small tree, listed by Britton and Wilson (5: 534), not collected by the authors. (Trees P.R. 2: 508.)

#### Vitaceae (Grape Family)

*Cissus sicyoides* L. Climbing woody vine on slopes and boulders.

*Cissus trifoliata* L. Climbing woody vine on slopes.

#### Tiliaceae (Basswood Family)

*Corchorus aestuans* L. Annual weed.

*Corchorus hirsutus* L. Shrub in Boulder area and coasts.

*Triumfetta bartramia* L. Low weedy shrub.

*Triumfetta excisa* Urban. Low weedy shrub.

#### Malvaceae (Mallow Family)

*Abutilon umbellatum* (L.) Sweet. Low weedy herb or shrub on slopes.

*Bastardia viscosa* (L.) H.B.K. Low weedy shrub.

†*Gossypium barbadense* L., wild cotton. Rare weedy shrub, also a small tree on other islands. (Trees P.R. 2: 516.)

†*Malachra capitata* L. Weedy shrub.

*Malvastrum americanum* (L.) Torr. (*M. spicatum* (L.) A. Gray). Perennial herbaceous weed.

*Malvastrum corchorifolium* (Desv.) Britton. Perennial herbaceous weed.

*Sida acuminata* DC. Weedy herb or slightly woody.

*Sida acuta* Burm. f. (*S. carpinifolia* L. f.), teaweed. Low shrub.

*Sida ciliaris* L. Perennial herbaceous weed.

*Sida cordifolia* L. Herbaceous or slightly woody weed on slopes.

*Sida glabra* Mill. Perennial weed on slopes.

*Sida glomerata* Cav. Slightly woody weed.

*Sida humilis* Cav. Perennial weed on slopes.

*Sida jamaicensis* L. Perennial weed.

*Sida salviifolia* C. Presl (*S. erecta* Macf.).

*Sida spinosa* L. Annual herbaceous weed. *Sida alba* L., which is doubtfully distinct, was listed by Britton and Wilson (6: 550) from Virgin Gorda but not others of Virgin Islands.

†*Urena lobata* L. Weedy shrub.

#### Bombacaceae (Bombax Family)

†*Ceiba pentandra* (L.) Gaertn., ceiba, silk-cotton tree. Spreading tree 50 ft. high, more than 2 ft. in trunk diameter above enlarged buttressed base. One of the largest trees on the island. Scattered in low area, possibly introduced. (Trees P.R. 1: 332.)

### Sterculiaceae (Chocolate Family)

*Ayenia ardua* Cristobal (*A. pusilla* auth.). Low shrub on slopes.

†*Helicteres jamaicensis* Jacq., cowbush. Shrub 10 ft. high, also a small tree on other islands. Rare in Boulder area and on open slopes. (Trees P.R. 2: 534.)

*Melochia tomentosa* L. (*Moluchia tomentosa* (L.) Britton). Weedy shrub.

†*Melochia villosa* (Mill.) Fawc. & Rendle (*Riedlea hirsuta* (Cav.) DC.). Weedy low shrub or herb on slopes.

*Waltheria indica* L. (*W. americana* L.). Weedy or low shrub.

### Ochnaceae (Ochna Family)

*Ouratea littoralis* Urban, abey amarillo. Shrub or small tree to 16 ft. high, 2 in. d.b.h. Rare in upland forest, Gorda Peak. (Trees P.R. 2: 544.)

### Guttiferae (Mangosteen Family)

*Clusia rosea* Jacq., pitch-apple, wild-mamme. Tree 20-40 ft. high, 6-9 in. d.b.h. Common and scattered in upland forest. Also characteristic and dominant in the Boulder area. Cited from Virgin Gorda by Beard (1945) but not by Britton and Wilson. (Trees P.R. 1: 352.)

### Flacourtiaceae (Flacourtia Family)

*Casearia decandra* Jacq., wild honeytree. Shrub on slopes, also a small tree on other islands. (Trees P.R. 1: 366.)

*Samyda dodecandra* Jacq., guayabilla. Shrub on slopes, rarely treelike on other islands. (Trees P.R. 2: 590.)

†*Xylosma buxifolium* A. Gray (*Myroxylon buxifolium* (A. Gray) Krug & Urban), roseta. Small tree 15 ft. high. Rare in upland forest near summit of Gorda Peak. (Trees P.R. 2: 592.)

### Turneraceae (Turnera Family)

*Turnera diffusa* Willd. Shrub on slopes.

*Turnera ulmifolia* L. Shrub; near Little Dix.

### Passifloraceae (Passion-flower Family)

*Passiflora suberosa* L. (*P. pallida* L.). Herbaceous vine, slopes and Boulder area.

### Cactaceae (Castuc Family)

*Cephalocereus royenii* (L.) Britton & Rose (*Pilosocereus royenii* (L.) Byles & Rowley), dildo. Columnar, treelike cactus to 20 ft. high, 4 in. d.b.h., with red, almost tasteless fruits. Common in thickets, Boulder area, and slopes. (Trees P.R. 1: 376.)

*Hylocereus trigonus* (Haw.) Safford, pitajaya. Climbing cactus with large red edible fruit, rare on Boulder area and slopes.

*Melocactus intortus* (Mill.) Urban (*Cactus intortus* Mill.), Turks-cap cactus. Dwarf cactus near coasts.

†*Opuntia cochenillifera* (L.) Mill. (*Nopalea cochenillifera* (L.) Salm-Dyck), cochineal cactus. Shrub on slopes. The pads are used as a poultice for sores.

†*Opuntia dillenii* (Ker-Gawl.) Haw., pricklypear. Shrubby cactus with large pads, on slopes.

*Opuntia repens* Bello, jumping cactus. Shrubby cactus on slopes.

### Lythraceae (Loosestrife Family)

*Ginoria rohrii* (Vahl) Koehne, rosa de ciénega. Small tree 15 ft. high, Boulder area and upland forest. (Trees P.R. 2: 608.)

### Rhizophoraceae (Mangrove Family)

†*Rhizophora mangle* L., mangrove. Small tree 20 ft. high, 5 in. d.b.h., with stilt roots. Common locally on silt shores at Gun Creek, mangrove swamp forest. (Trees P.R. 1: 384.)

### Combretaceae (Combretum Family)

*Conocarpus erectus* L., button-mangrove. Shrub or small tree 12 ft. high. Mangrove swamp forest on silt shores, also common locally along sandy shores. (Trees P.R. 1: 390.)

†*Languncularia racemosa* (L.) Gaertn. f., white-mangrove. Tree 15 ft. high, 3 in. d.b.h. Common in mangrove swamp forest on silt shores. (Trees P.R. 1: 392.)

### Myrtaceae (Myrtle Family)

†*Calypttranthes kierskovii* Krug & Urban (?). This woody species was known only from a sterile specimen collected by Eggers on Tortola. (Trees P.R. 2: 630.)

†*Calypttranthes pallens* Griseb., pale lidflower. Rare shrub on upper slopes, also a small tree on other islands. (Trees P.R. 2: 632.)

†*Eugenia axillaris* (Sw.) Willd., white-stopper eugenia. Shrub on slopes and boulders, also a small tree on other islands. (Trees P.R. 2: 642.)

*Eugenia biflora* (L.) DC. (*E. lancea* Poir.), pitangueira. Small tree 15 ft. high, 3 in. d.b.h. Scattered in thickets on sandy shore and Boulder area. (Trees P.R. 2: 644.)

†*Eugenia cordata* (Sw.) DC., lathberry. Small tree 15 ft. high. Common on slopes, upland forest, also a windshaped shrub 5 ft. high on exposed slopes. (Trees P.R. 2: 652.)

†*Eugenia ligustrina* (Sw.) Willd., palo de muleta. Rare shrub of upper slopes, also a small tree on other islands. (Trees P.R. 2: 658.)

*Eugenia monticola* (Sw.) DC., blackcherry. Small tree 15 ft. high, upland forest. (Trees P.R. 2: 662.)

†*Eugenia pseudopsidium* Jacq., quiebrahacha. Shrub of upland forest, also rarely a small tree on other islands. (Trees P.R. 2: 666.)

†*Eugenia sessiliflora* Vahl. Shrub 10 ft. high, also a small tree on other islands. Rare in thickets on sandy shore between Deep and Oil Nut Bays near northeast end of island. (Trees P.R. 2: 668.)

*Myrcia citrifolia* (Aubl.) Urban (*Aulomyrcia citrifolia* (Aubl.) Amsh.), limoncillo del monte. Small tree 15 ft. high. In upland forest near summit of Gorda Peak. (Trees P.R. 2: 624.)

†*Myrciaria floribunda* (West ex Willd.) Berg (*Eugenia floribunda* West ex Willd.), guavaberry. Small tree 15 ft. high. In ravines, upland forest. The reddish fruits are used in making jam and formerly in guavaberry rum. (Trees P.R. 2: 688.)

†*Pimenta racemosa* (Mill.) J. W. Moore (*Amomis caryophyllata* (Jacq.) Krug & Urban), bay-rum-tree. Small trees 20 ft. high, 4 in. d.b.h. Rare in upland forest near summit of Gorda Peak. (Trees P.R. 2: 414.)

*Psidium amplexicaule* Pers., mountain guava. Small tree 20 ft. high. Common in upland forest near summit of Gorda Peak. (Trees P.R. 2: 692.)

†\**Psidium guajava* L., guava. Cultivated and naturalized fruit tree, summit and slopes. (Trees P.R. 1: 416.)

Melastomataceae (Melastome Family)

†*Miconia laevigata* (L.) DC., camasey de paloma. Rare shrub in upland forest, summit and slopes of Gorda Peak. Also a small tree on other islands. (Trees P.R. 2: 714.)

*Tetrazygia angustifolia* (Sw.) DC., stinking-fish. Small tree 20 ft. high, 4 in. d.b.h. In upland forest on upper slopes and summit of Gorda Peak. (Trees P.R. 2: 744.)

†*Tetrazygia elaeagnoides* (Sw.) DC., verdiseco. Tree 30 ft. high, 5 in. d.b.h. Rare in ravines, upland forest, Gorda Peak. (Trees P.R. 2: 424.)

Theophrastaceae (Theophrasta Family)

*Jacquinia arborea* Vahl (*J. barbasco* in part), barbasco. Small tree 15 ft. high, 4 in. d.b.h. Croton shrub thicket and slopes. (Trees P.R. 2: 762.)

†*Jacquinia berterii* Spreng. Small tree 18 ft. high, 4 in. d.b.h. On slopes, upland forest. (Trees P.R. 2: 764.)

Myrsinaceae (Myrsine Family)

*Ardisia obovata* Desv. (*Ikacorea guadalupensis* (Duch.) Britton), mameyuelo. Small tree 20 ft. high, 3 in. d.b.h. Upland forest, slopes and summit of Gorda Peak. (Trees P.R. 1: 430.)

Sapotaceae (Sapodilla Family)

*Bumelia obovata* (Lam.) A. DC., arañagato. Small tree to 20 ft. high, 4 in. d.b.h. Uncommon on slopes, upland forest and in Boulder area near beach. (Trees P.R. 2: 778.)

Oleaceae (Olive Family)

*Forestiera eggersiniana* Krug & Urban. Small tree 20 ft. high. Rare on slopes, upland forest, Gorda Peak. (Trees P.R. 2: 804.)

†*Forestiera segregata* (Jacq.) Krug & Urban, Florida-privet. Small tree. (Trees P.R. 2: 808.) Rare on slopes.

Loganiaceae (Logania Family)

†*Spigelia anthelmia* L. Annual weedy herb.

Apocynaceae (Dogbane Family)

*Plumeria alba* L., milktree. Small tree 15 ft. high. Common in shrub thicket and slopes, upland forest. (Trees P.R. 1: 460.)

*Rauwolfia viridis* Roem. & Schult. (*Rauwolfia lamarckii* A. DC.), bitterbush. Shrub to 12 ft. high. Thickets, Boulder area and slopes.

†*Urechites lutea* (L.) Britton. Woody vine in Boulder area.

Asclepiadaceae (Milkweed Family)

†*Asclepias currassavica* L. Perennial herb at salt pond.

†*\*Calotropis procera* (Ait.) R. Br., giant milkweed. Shrub 10 ft. high, rarely treelike on other islands. Scattered in lowland pastures and Boulder area. (Trees P.R. 2: 836.)

†*Cynanchium grisebachianum* (Schltr.) Alain. Collected by W. G. D'Arcy (personal communication).

*Cynanchum parviflorum* Sw. (*Metastelma parviflorum* R. Br.) Perennial vine in Boulder area and on slopes.

*Matelea maritima* (Jacq.) Woods. (*Ibatia maritima* (Jacq.) Woods.), beach milkvine. Woody vine in Boulder area.

#### Convolvulaceae (Morning-glory Family)

*Cuscuta americana* L., dodder. Parasitic yellow vine in Boulder area.

*Evolvulus glaber* Spreng. Low herb in Boulder area.

*Evolvulus linifolius* L. Low herb.

*Ipomoea steudelii* Millsp. (*Exogonium arenarium* Choisy). Herbaceous vine, woody at base, on slopes.

†*Ipomoea tiliacea* (Willd.) Choisy, wild-potato. Weedy herbaceous vine.

†*Ipomoea triloba* L. Weedy herbaceous vine.

†*Jacquemontia jamaicensis* (Jacq.) Hallier f. Herbaceous vine on slopes.

*Jacquemontia nodiflora* (Desv.) G. Don. Herbaceous vine on slopes.

*Jacquemontia pentantha* (Jacq.) G. Don. Herbaceous vine on slopes and in Boulder area.

*Merremia aegyptia* (L.) Urban (*Ipomoea aegyptia* L.). Herbaceous vine in Boulder area.

†*Merremia quinquefolia* (L.) Hall. f. (*Ipomoea quinquefolia* L.). Weedy herbaceous vine.

*Rivea campanulata* (L.) House. Woody vine in Boulder area.

#### Boraginaceae (Borage Family)

*Bourreria succulenta* Jacq., pigeonberry. Small tree 15-25 ft. high, 8 in. d.b.h. Scattered in shrub thickets, cleared areas, and upland forest. (Trees P.R. 1: 466.)

†*Cordia alliodora* (Ruíz & Pav.) Oken (*Cerdana alliodora* Ruíz & Pav.), capa. Small tree 30 ft. high, 4 in. d.b.h. Rare in ravines, upland forest, Gorda Peak. (Trees P.R. 1: 468.)

†*Cordia collococca* L. (*C. glabra* L.), red manjack. Rare tree in Boulder area. (Trees P.R. 2: 842.)

†\**Cordia obliqua* Willd., manjack. Small tree, rare introduction at roadsides, Boulder area, and in cultivation. (Trees P.R. 2: 844.)

†*Cordia polycephala* (Lam.) Johnst. (*Varronia corymbosa* auth.). Rare shrub on slopes.

†*Cordia rickseckeri* Millsp. (*Sebesten rickseckeri* (Millsp.) Britton), manjack. Small tree 15 ft. high, 3 in. d.b.h. In thicket near beach, Boulder area, and lower slopes. (Trees P.R. 2: 846.)

*Heliotropium angiospermum* Murr. (*Schobera angiosperma* (Murr.) Britton). Annual weedy herb on slopes.

*Heliotropium curassavicum* L., seaside heliotrope. Annual fleshy herb on beach at salt pond.

\**Heliotropium indicum* L. (*Tiaridium indicum* (L.) Lehm.), India heliotrope. Annual weedy herb.

*Heliotropium ternatum* Vahl, bushy heliotrope. Low shrub on sandy beach and dry slopes.

†*Rochefortia acanthophora* (DC.) Griseb., juso. Small tree to 15 ft. high on slopes. (Trees P.R. 2: 850.)

*Tournefortia gnaphalodes* L. (*Mallotona gnaphalodes* (L.) Britton). Fleshy low shrub on sandy beach.

*Tournefortia volubilia* L. (*T. microphylla* Bert.). Woody vine, somewhat fleshy, in Boulder area and on slopes.

#### Verbenaceae (Verbena Family)

†*Avicennia germinans* (L.) L. (*A. nitida* Jacq.), black-mangrove. Tree 25 ft. high, 6 in. d.b.h. Common locally at lagoon and mangrove swamp forest. (Trees P.R. 1: 476.)

*Citharexylum fruticosum* L., pasture fiddlewood, Florida fiddlewood. Shrub or small tree to 30 ft. high, 1 ft. d.b.h. Scattered in Boulder area and upland forest, Gorda Peak. (Trees P.R. 1: 480.)

*Clerodendron aculeatum* (L.) Schlecht. (*Volkameria aculeata* L.), haggarbush. Spiny woody vine climbing on trees, Boulder area, pond, and slopes. Also sometimes treelike on other islands. (Trees P.R. 2: 860.)

*Duranta repens* L., skyflower. Vinelike shrub on dry slopes. Also a small tree on other islands. (Trees P.R. 2: 864.)

*Lantana camara* L. Weedy shrub. Represented by 2 varieties, var. *camara* and var. *aculeata* (L.) Moldenke (*L. aculeata* L.).

*Lantana involucrata* L. Large shrub in Boulder area and open areas.

†*Lantana urticifolia* Mill. Common shrub on slopes and Boulder area. West Indies but not mentioned by Britton and Wilson in their flora.

*Phyla nodiflora* (L.) Greene var. *reptans* (H.B.K.) Moldenke (*Lippia reptans* H.B.K.). Creeping perennial herb at edge of mangrove swamp forest and beaches.

†*Staphytarpheta cayennensis* (L. C. Rich.) Vahl (*Valerianoides cayennense* (L. C. Rich.) Kuntze). Weedy shrub.

*Staphytarpheta jamaicense* (L.) Vahl (*Valerianoides jamaicense* (L.) Kuntze). Common weedy herb.

#### Labiatae (Mint Family)

\**Coleus amboinicus* Lour. Fleshy weedy shrub, cultivated and naturalized.

*Hyptis pectinata* (L.) Poit. Weedy shrub.

*Hyptis suaveolens* (L.) Poit. Weedy shrub.

*Leonotis nepetaefolia* (L.) R. Br. Annual weedy herb.

*Ocimum micranthum* Willd. Annual herb on slopes and Boulder area.

#### Solanaceae (Nightshade Family)

†*Brunfelsia americana* L., aguacero. Shrub 10 ft., also a small tree on other islands. On upper slopes, upland forest, Gorda Peak. (Trees P.R. 2: 868.)

†*Capsicum frutescens* L. Shrub on slopes.

*Cestrum laurifolium* L'Her., galán del monte. Shrub on slopes, upland forest, Gorda Peak.

†\**Datura innoxia* Mill. (*D. metel* auth.), thornapple. Weedy shrub.

†\**Datura metel* L. (*D. fastuosa* auth.), thornapple. Weedy shrub.

*Solanum americanum* Mill. (*S. nigrum* auth., *S. nodiflorum* Jacq., *S. caribaeum* Dunal), black nightshade. Annual weedy herb.

†\**Solanum elaeagnifolium* Cav. Perennial weedy herb, apparently a recent introduction. Not mentioned by Britton and Wilson.

*Solanum persicifolium* Dunal, berenjena de playa. Shrub in thickets on beach, Boulder area, and slopes.

*Solanum polygamum* Vahl, cakalakaberry. Spreading shrub 10-12 ft. high, rarely a tree on other islands. Common on slopes, upland forest. (Trees P.R. 2: 886.)

*Solanum torvum* Sw., (*S. ficifolium* Ort.), turkeyberry. Weedy shrub in clearing at summit of Gorda Peak. Sometimes treelike on other islands. (Trees P.R. 2: 888.)

Scrophulariaceae (Figwort Family)

*Bacopa monnieri* (L.) Pennell (*Bramia monnieri* (L.) Drake). Perennial fleshy creeping herb at salt pond.

*Capraria biflora* L. Perennial weedy herb in coastal areas.

*Scoparia dulcis* L. Annual weedy herb.

Bignoniaceae (Bignonia Family)

†\**Crescentia cujete* L., calabash-tree. Small tree in Boulder area. (Trees P.R. 1: 490.)

*Doxantha unguis-cati* (L.) Miers (*Botocytia unguis* (L.) Mart.). Woody vine on slopes and in Boulder area.

*Tabebuia heterophylla* (DC.) Britton, "white-cedar." Tree 30 ft. high, 1 ft. d.b.h. Scattered in Boulder area and upland forest. (Trees P.R. 1: 498.)

†*Tecoma stans* (L.) H.B.K., ginger-thomas. Small tree in Boulder area, also planted for the showy yellow flowers. (Trees P.R. 1: 502.)

Acanthaceae (Acanthus Family)

*Anthacanthus spinosus* (Jacq.) Nees. Spiny shrub local on slopes.

†*Blechum pyramidatum* (Lam.) Urban (*B. brownei* Juss., *B. Blechum* (L.) Millsp.) Annual weedy herb.

†*Justicia culebritae* Urban. Collected by W.G. D'Arcy (personal communication). Earlier known only from Culebrita, a small island northeast of Puerto Rico.

†*Justicia sessilis* Jacq. Low shrub on dry slopes and Boulder area.

*Ruellia tuberosa* L. Herb only on open dry slopes.

Rubiaceae (Madder Family)

†*Catesbaea parviflora* Sw. Rare shrub on rocky slopes.

*Chiococca alba* (L.) Hitchc. Woody vine on slopes and in Boulder area.

*Erithalis fruticosa* L., black torch. Large shrub in thickets, coastal areas, and slopes. Sometimes a small tree on other islands. (Trees P.R. 2: 930.)

*Ernodea littoralis* Sw. Shrub local on coastal sands.

*Exostema caribaeum* (Jacq.) Roem. & Schult., Caribbean princewood. Small tree to 20 ft. high, 4 in. d.b.h. On slopes, upland forest. (Trees P.R. 1: 508.)

*Faramea occidentalis* (L.) A. Rich., false-coffee. Small tree on upper slopes, upland forest, Gorda Peak. (Trees P.R. 1: 510.)

*Guettarda parviflora* Vahl, "blackberry." Tree to 30 ft. high, 5 in. d.b.h. Rare in ravines and slopes, upland forest, Gorda Peak. (Trees P.R. 2: 940.)

*Guettarda scabra* (L.) Vent., roughleaf velvetseed. Small tree 25 ft. high, 5 in. d.b.h. Very common on slopes, upland forest, Gorda Peak. (Trees P.R. 1: 514.)

†*Ixora ferrea* (Jacq.) Benth., cafeillo. Shrub in upland forest near summit of Gorda Peak, elsewhere a small tree. (Trees P.R. 1: 516.)

†\**Morinda citrifolia* L., painkiller. Small tree in Boulder area. (Trees P.R. 1: 518.)

†*Psychotria brownei* Spreng. Shrub in ravines, upland forest, Gorda Peak.

*Psychotria microdon* (DC.) Urban (*Ps. pinularis* Sessé & Moc.). Shrub of upland forest, slopes, Gorda Peak.

*Psychotria nervosa* Sw. (*Ps. undata* Jacq.). Shrub, common in understory of upland forest, slopes, Gorda Peak.



†*Randia aculeata* L. (*R. mitis* L.), box-briar. Spiny shrub in thickets, Boulder area and slopes. Also a small tree on other islands. (Trees P.R. 1: 520.)

*Rondeletia pilosa* Sw., cordobancillo peludo. Shrub or small tree to 15 ft. high. On slopes, upland forest. (Trees P.R. 2: 976.)

*Scolosanthus versicolor* Vahl. Rare shrub on south slope, Gorda Peak.

#### Cucurbitaceae (Gourd Family)

*Cayaponia americana* (Lam.) Cogn. Herbaceous vine on slopes.

†*Melothria guadalupensis* (Spreng.) Cogn., pepinillo. Herbaceous weedy vine.

†*Momordica charantia* L., wild balsamapple. Herbaceous vine.

#### Goodeniaceae (Goodenia Family)

*Scaevola plumieri* (L.) Vahl. Fleshy herb, more or less shrubby, on sandy beach.

#### Compositae (Composit Family)

*Acanthospermum hispidum* DC. Weedy herb.

*Ambrosia hispida* Pursh. Perennial herb on coasts.

*Bidens cynapiifolia* H.B.K., beggarticks. Annual herb at summit of Gorda Peak and in Boulder area.

†\**Emilia coccinea* (Sims) Sweet. Annual weedy herb.

*Eupatorium corymbosum* Aubl. (*Osmia corymbosa* (Aubl.) Britton & Wils.). Shrub in coastal area.

*Eupatorium sinuatum* Lam. (*Osmia sinuata* (Lam.) Britton & Wils.). Shrub on slopes.

†*Lanunaea intybacea* (Jacq.) Beauverd (*Brachyramphus intybaceus* (Jacq.) DC., *Lactuca intybacea* Jacq.), wild lettuce. Herb on coasts.

†*Parthenium hysterophorus* L. Annual weedy herb.

*Pectis febrifuga* van Hall. Low herb in Boulder area.

†*Pectis humifusa* Sw. Rare prostrate herb in Boulder area.

*Piptocoma antillana* Urban (*P. rufescens* auth.). Frequent but local shrub on slopes. D'Arcy (1967, p. 394, 449) recorded this species from Virgin Gorda and Peter Island but did not see it on Tortola.

*Pluchea odorata* (L.) Cass. Large shrub to 12 ft. high. Edge of mangrove swamp forest at pond.

†*Pterocaulon virgatum* (L.) DC. Rare herb on open slopes.

*Vernonia albicaulis* Pers. Frequent shrub on slopes.

†*Vernonia cinerea* (L.) Less. (*Senecioides cinerea* (L.) Kuntze). Annual weedy herb.

*Wedelia parviflora* L. C. Rich. Uncommon shrub on slopes.

## CULTIVATED PLANTS ON VIRGIN GORDA

More than 50 additional species of seed plants were observed on Virgin Gorda to be in cultivation for various purposes. Many are trees for shade, ornament and fruit. Twenty-five of these are trees described and illustrated in the 2-volume reference, from which page numbers have been added (Little and Wadsworth 1964; Little, Woodbury, and Wadsworth, 1974). Planted shrubs and herbs include ornamentals, some with showy flowers, vegetables, fruits, and field crops. Where scientific names have been changed, those of Britton and Wilson have been added in parenthesis.

The list of 57 species was prepared by Woodbury and is arranged in alphabetical order. Alfred E. Figueredo has suggested 4 additions. He reports also that *Coffea arabica* L., coffee, and *Theobroma cacao* L., chocolate-tree, formerly were grown and might still persist as wild.

*Acalypha wilkesiana* Muell. Arg., Jacobs-coat, copperleaf. Cultivated ornamental shrub.

*Agave fourcroydes* Lemaire, hennequen.

*Alternanthera amoena* (Lem.) Voss (*Achyranthes amoena*). Herb planted in hedges.

*Amaryllis punicea* Lam. (*Hippeastrum puniceum* (Lam.) Kuntze), Easter-lily. A West Indian herb with large orange-red flowers at Easter.

*Barringtonia asistrica* (L.) Kurz, barringtonia. Planted shade tree. (Trees P.R. 2: 616).

*Bauhinia purpurea* L. (*Phanera purpurea* (L.) Benth.), purple bauhinia. Small tree with large purple orchidlike flowers. (Trees P.R. 2: 366).

*Breynia disticha* J. R. & G. Forst. (*B. nivos*a (W. G. Smith) Small), showbush.

*Bucida buceras* L., oxhorn bucida. Planted shade tree. (Trees P.R. 1: 388).

*Caesalpinia pulcherrima* (L.) Sw. (*Poinciana pulcherrima* L.), flowerfence. Shrub or small tree planted around homes for the large showy flowers, both yellow and red. (Trees P.R. 2: 272).

*Cajanus cajan* (L.) Millsp. (*Cajan cajan* (L.) Millsp.), gandule, pigeon-pea. Bushy and slightly woody herb, cultivated for the edible beanlike seeds.

*Caladium bicolor* (Ait.) Vent. (*Crytospadix bicolor* (Ait.) Britton), caladium. Cultivated for its large colored leaves.

*Canna indica* L., India canna. Grown for its large variegated flowers.

*Carica papaya* L., papaya. Small fruit tree, cultivated. (Trees P.R. 1: 374).

*Clitoria ternatea* L. Herbaceous vine, cultivated for the large blue and white flowers.

*Cordia sebestena* L. Geiger-tree. Small ornamental tree collected by W.G. D'Arcy (Personal communication). (Trees P.R. 2: 848).

*Cosmos caudatus* H.B.K., cosmos. Shrub, flowers with pink rays.

*Cosmos sulphureus* Cav., yellow cosmos. Shrub with bright yellow flowers.

*Crinum zeylanicum* L., crinum. This and two other species are grown for their large lilylike flowers.

*Cryptostegia grandiflora* R. Br., cryptostegia, India rubber-vine. Ornamental woody vine with large showy purple tubular flowers, formerly a minor source of rubber.

*Cucurbita moschata* Duschesne (*Pepo moschata* (Duchesne) Britton), squash. Cultivated vegetable.

*Cycas circinalis* L., crozier cycas, sago-palm. Ornamental shrub, sometimes a small tree. (Trees P.R. 2: 52).

*Cycas revoluta* Thunb., sago-palm. Ornamental shrub.

*Delonix regia* (Bojer) Raf., flamboyant-tree. Small spreading tree, cultivated for the large showy orange-red flowers. (Trees P.R. 1: 176.)

*Erythrina variegata* L. (*E. indica* Lam.), immortal. Roadside tree planted for the large showy scarlet flowers. (Trees P.R. 2: 298.)

*Eucalyptus camaldulensis* Dehn. (*E. rostrata* Schlecht.), longbeak eucalyptus. Large ornamental tree.

*Eugenia uniflora* L., Surinam-cherry. Small tree planted for the edible red fruits. (Trees P.R. 2: 674.)

*Euphorbia geniculata* Ortega (*Poinsettia geniculata* (Ortega) Kl. & Garcke). Annual herb, cultivated for ornament, also weedy. Regarded also as a variation of the next species.

*Euphorbia heterophylla* L. (*Poinsettia heterophylla* (L.) Kl. & Garcke). Annual or perennial herb, planted for ornament, also weedy.

*Gliricidia sepium* (Jacq.) Kunth ex Griseb., mother-of-cocoa. Small tree of roadsides and fences, rare. (Trees P.R. 1: 196.)

*Hibiscus elatus* Sw., mahoe. Cultivated ornamental tree. (Trees P.R. 2: 518.)

*Hibiscus tiliaceus* L. (*Pariti tiliaceum* (L.) St. Hil.), sea hibiscus. Cultivated ornamental tree. (Trees P.R. 1: 326.)

*Ipomoea batatas* (L.) Lam., sweet potato.

*Ipomoea crassicaulis* (Benth.) B. L. Robinson. Ornamental shrub with large pinkish flowers.

*Jatropha curcas* L. (*Curcas curcas* (L.) Britton & Millsp.), physic-nut. Small tree planted for ornament. (Trees P.R. 2: 416.)

*Mangifera indica* L., mango. Tree, planted for the edible fruits. (Trees P.R. 1: 288.)

*Melicoccus bijugatus* Jacq. (*Melicocca bijuga* L.), kiniep, Spanish-lime. Small tree, cultivated for edible fruits. (Trees P.R. 1: 306.)

*Murraya paniculata* (L.) Jack (*Chalcas exotica* (L.) Millsp.), orange-jessamine. Shrub or sometimes small tree, cultivated for ornament and hedges. (Trees P.R. 2: 328.)

*Musa* spp., plantain and banana.

*Nerium indicum* Mill., oleander. Cultivated ornamental shrub.

*Nerium oleander* L., oleander. Cultivated ornamental shrub, sometimes a small tree. (Trees P.R. 2: 828.)

*Pandanus* sp., screw-pine. (Trees P.R. 2: 66.)

*Pedilanthus tithymaloides* (L.) Poit. Shrub, planted for ornament and hedges.

*Pithecellobium saman* (Jacq.) Benth. (*Samanea saman* (Jacq.) Merrill), saman, raintree. Large, spreading shade tree. (Trees P.R. 1: 164.)

*Plumeria rubra* L., frangipani. Cultivated ornamental tree with large fragrant red, yellow, or white flowers. (Trees P.R. 1: 462.)

*Portulaca grandiflora* Hook., rose-moss. Herb grown for its double magenta flowers.

*Pritchardia pacifica* Seem. & Wendl., pritchardia. Ornamental fan-palm.

*Roystonea oleracea* (Mart.) O. F. Cook, South American royalpalm.

*Sabal causiarum* (O. F. Cook) Beccari, Puerto Rico palmetto, cabbage-palm (Trees P.R. 1: 46.)

*Saccharum officinarum* L., sugar cane.

*Sansevieria trifasciata* Prain, sansevieria. An ornamental with variegated straplike leaves.

*Sapindus saponaria* L., wingleaf soapberry. Cultivated shade tree. (Trees P.R. 1: 308.)

*Spondias purpurea* L., purple mombin, Small tree, planted for the edible fruits. (Trees P.R. 1: 296.)

*Tabernaemontana divaricata* (L.) R. Br. (*T. coronaria* (Jacq.) Willd.), crape-jasmine. Ornamental shrub with large white flowers.

*Terminalia catappa* L., Indian-almond. Planted shade and ornamental tree. (Trees P.R. 1: 394.)

*Vinca rosea* L. (*Catharanthus roseus* (L.) G. Don), periwinkle. Ornamental herb or shrub with white or pink flowers.

*Zea mays* L., corn.

*Zinnia peruviana* (L.) L. (*Z. elegans* Jacq., *Crassina elegans* (Jacq.) Kuntze), zinnia. Low herbaceous shrub, flowers with orange to yellow disk and purple to red rays.

## SUMMARY

Virgin Gorda, third largest of the British Virgin Islands, is located in the Caribbean Sea about 75 miles east of Puerto Rico and about 1,100 miles east-southeast of Miami, Florida.

This small volcanic island has an area probably less than 8 square miles. Near the center is Virgin Gorda Peak, altitude 1,359 ft., third highest in the Virgin Islands.

Several types of vegetation are represented. The lowland hills and slopes are mostly covered by croton shrub thickets. Mangrove swamp forest occupies silt shores of a few bays. The seasonal deciduous forest, composed of small, partly deciduous trees of many species, is present on the slopes of Virgin Gorda Peak. Thickets on dry exposed slopes of low hills have a treelike cactus.

Virgin Gorda has a tropical flora like that of the other islands. The annotated list of 403 species of native and naturalized vascular plants (6 species of ferns and 397 of seed plants) is based upon collections by the authors in 1969, 1972, and 1973. It provides information on plant distribution and contributes records of about 154 species not previously reported. A list of 57 cultivated species is added.

The number of species attaining tree size on Virgin Gorda is approximately 94, of which 79 are native and 15 introduced. Of these, 43 (31 native and 12 introduced) apparently are new island records and range extensions. Twenty-five additional species observed here as large shrubs have been found as trees on other islands.

Numerous plant species are rare on this small island. Fortunately, these peripheral or border species are present in greater numbers on other, mostly larger islands. Many rare plant species are protected within Gorda Peak National Park.

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Virgin Gorda, third largest of the British Virgin Islands, has a tropical flora like that of the other islands. This annotated list of 403 species of native and introduced vascular plants (6 species of ferns and 397 of seed plants) is based upon collections by the authors in 1969, 1972, and 1973. It provides information on plant distribution and contributes records of about 154 species not previously reported. A list of 57 cultivated species is added. Numerous plant species are rare but present in greater numbers on other islands. Many are protected within Gorda Peak National Park.

O.DC.: 174(729)

Key Words: plants (West Indies); plants (Virgin Islands); rare and endangered plants.

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## ILLUSTRATIONS

Figure 1. - West Indies, showing principal islands and location of Puerto Rico and Virgin Islands with reference to Florida, Central America, and northern South America. The arrow points to Virgin Gorda. (Little, Woodbury, and Wadsworth 1974, fig. 1.)

Figure 2. - Puerto Rico and the Virgin Islands, showing principal islands. Virgin Gorda is near upper right border. (Little, Woodbury, and Wadsworth 1974, fig. 2.)

Figure 3. - Virgin Gorda, looking northeast. Little Dix Bay resort in foreground, Gorda Peak in distance. Photograph by Paul Barton, from Rockresorts, Inc.

