VEGETATION ON BAUXITIC SOILS IN JAMAICA, II

RICHARD A. HOWARD AND GEORGE R. PROCTOR

THE FIRST PART OF THIS PAPER (Jour. Arnold Arb. 38: 1–41. 1957) described the vegetation of Jamaica in areas of commercial accumulations of bauxite ores and considered the relationship of this vegetation to the aluminum ions in the soils. Also considered were the effects of the mining operations on the vegetation as well as the terrain. The surveys of the vegetation made by the authors on lands to be mined and on lands adjacent to the mined-out areas where seed trees could contribute to the revegetation of abandoned mine pits were described. Certain pits from which the available bauxitic ore has been removed were designated as control pits to observe the invasion, succession and competition of natural reseeding. Other mined-out pits have been resurfaced or recontoured and planted to pasture grasses, stands of forest trees, or agricultural crops of vegetables and fruits. We have commented on the success of these rehabilitation attempts to the present.

Throughout their study of the vegetation on bauxite soils in Jamaica both authors have searched for undisturbed areas of vegetation in which could be found indications of a selection through survival of plants tolerant to or requiring aluminum ions for their persistence. Such plants they felt might be considered as indicators of aluminum concentrations and therefore of further aid in both an interpretation of vegetation types in other parts of Jamaica as well as being a valuable aid in the search for additional aluminum deposits. They have indicated that in neither the parish of St. Ann near the operations of the Reynolds Jamaica Mines nor in the parish of St. Elizabeth near the mining operations of Kaiser Bauxite Company could they find undisturbed areas of forest, shrub or herbaceous vegetation. All have shown the effects of man's long occupancy of the respective areas through gardening, pasturage or forest utilization. Mining operations are to the present being conducted on lands with a long history of agricultural usage. Further development in the parishes of Trelawny and Portland should reveal less disturbed vegetation associated with bauxite.

The following tabulation is a summary of our findings to date. Listed are the species which we have found by a careful study of the existing vegetation in the two principal areas of commercial bauxite mining in Jamaica. Species are listed according to the genera and families of their relationship and, for the sake of convenience, are alphabetical. The ferns and allied non-flowering plants have been grouped together. The monocotyledons are listed before the dicotyledons. Species lists are presented for the area of Reynolds Jamaica Mines operations in the parish of St. Ann and for the area of mining operations of the Kaiser Bauxite Company in the parish of St. Elizabeth. We have tabulated the species as they occurred in three arbitrary divisions for each area. Representatives of

both the Reynolds Jamaica Mines and the Kaiser Bauxite Company were willing to indicate for us those areas which were to be mined immediately or in the near future. Our prime efforts were to obtain records, supported in most cases by herbarium vouchers, of the vegetative components on lands to be mined. Such areas comprised bauxite deposits at least five feet deep. They varied in surface area from two to nearly sixty acres. Many of these areas have since been mined out and of these some have been replanted. The species listed under the heading "To be Mined" were collected in such areas. Photographs document the original vegetation and subsequent stages of rehabilitation. Other areas too small or too shallow for commercial mining operations may have comparable concentrations of aluminum ions in the bauxitic soils. These were examined by us, but failed to yield any species not listed in the tabulation under "To be Mined."

Adjacent to, or intermingled with the bauxite ore bodies were limestone outcrops in the mining areas in both St. Ann and St. Elizabeth. The limit of bauxite soils in many cases was defined by the outcrop of limestone rock. Such areas of limestone rock will not be altered by mining operations. The vegetation on these outcrops has been studied and reported in the first part of this paper. One undisturbed, or at most slightly disturbed, unit of forest vegetation was found on such an outcrop in St. Elizabeth. In St. Ann every forest unit studied appears to have been cut selectively some time in the past. Nevertheless, one source of natural seeding in the mined-out pits will be from mature trees or shrubs located in the vegetation currently found on the limestone outcrops. The species we have collected in such areas are listed under the heading "Adjacent" for both St. Ann and St. Elizabeth. The vegetation of the limestone outcrops is perhaps the most typical expression of the native vegetation of each area. The differences between the native vegetation of the drier area in St. Elizabeth parish and that of the more moist area in St. Ann can be seen in these tabulations which are more complete than the quadrat and transect studies of PART I. We have listed the epiphytes and parasites for a complete record, even though the distribution of these cannot be attributed to the occurrence of bauxite soil.

A third tabulation under the heading of "Invaders" lists those species which have been observed in the control pits where only natural seeding and invasion has occurred as well as mined-out and rehabilitated pits where some species have been planted and others have appeared spontaneously. It is to be expected that this category will show additions as time goes by and some deletions as early invaders succumb to competition. All listings are based on field observations between December 1953 and September 1956. Specimens validating the species listed are filed in the herbarium of the Institute of Jamaica in Kingston, Jamaica, B.W.I., and in the Harvard University Herbarium in Cambridge, Massachusetts.

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
FERNS & FERN ALLIES						
Adiantum fragile			X			
Adiantum latifolium		X				
Adiantum pulverulentum		X				
Adiantum tenerum		X				
Aneimia adiantifolia		X				
Asplenium auritum		X				
Asplenium dentatum		X				
Asplenium jamaicense		X				
Cheilanthes microphylla		X			X	
Ctenitis effusa		X				
Dennstaedtia cicutaria			X			
Lomariopsis underwoodii		X				
Lycopodium linifolium		X				
Maxonia apiifolia		X				
Nephrolepis biserrata	X	X				
Nephrolepis exaltata	X	X		X		
Ophioglossum palmatum		X				
Paltonium lanceolatum		X				
Pityrogramma calomelanos		X				
Polypodium angustifolium		X				
Polypodium astrolepis		X				
Polypodium aureum		X				
Polypodium crassifolium		X				
Polypodium heterophyllum		X				
Polypodium lycopodioides		X				
Polypodium pectinatum		X				
Polypodium phyllitidis		X			X	
Polypodium phyllitidis f. latum		X				
Polypodium piloselloides		X				
Polypodium plumula		X			X	
Polypodium polypodioides		X			X	
Polystichum christianae		X				
Polystichum echinatum		X	X			
Psilotum nudum		X				
Pteridium caudatum		X	X			
Pteris grandifolia	X	X				
Pteris longifolia	X	X	X			
Tectaria apiifolia		X				
Tectaria heracleifolia		X				
Thelypteris asterothrix		X				
Thelypteris guadalupensis		X				
Thelypteris normalis		X				
Thelypteris oligophylla		X				
Thelypteris reptans		X				
Thelypteris serra		X				
Thelypteris serrulata		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Thelypteris tetragona		X	X			
Vittaria lineata		X				
MONOCOTYLEDONEAE						
Amaryllidaceae						
Agave sisalana					X	
Hypoxis decumbens			X			
Araceae						
Anthurium grandifolium		X				
Anthurium scandens		X				
Colocasia esculenta						P*
Philodendron lacerum	X		X		X	
Syngonium auritum					X	
Bromeliaceae						
Aechmea paniculigera		X				
Catopsis berteroniana		X				
Catopsis nutans		X				
Guzmania lingulata		X				
Guzmania monostachya		X				
Hohenbergia polycephala		X				
Hohenbergia spinulosa					X	
Tillandsia balbisiana		X			X	
Tillandsia compressa		X				
Tillandsia festucoides		X				
Tillandsia flexuosa					X	
Tillandsia recurvata		X			X	
Tillandsia schiedeana					X	
Tillandsia tenuifolia		X			X	
Tillandsia usenoides					X	
Tillandsia utriculata					X	
Tillandsia valenzuelana		X				
Commelinaceae						
Campelia zanonia		X				
Commelina elegans			X	X		
Tradescantia multiflora		X				
Cyperaceae						
Cyperus filiformis				X		
Cyperus ligularis		X				
Dichromena ciliata	X		X			
Fimbristylis annua			X			
Rhynchospora pusilla		X	X			
Scleria lithosperma		X			X	X
Scleria pterota			X			

* Species deliberately planted for cultivation are indicated with a "P". Cultigens occurring spontaneously as invaders are recorded with an "X".

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Dioscoreaceae						
Dioscorea alata		X				
Dioscorea polygonoides		X				
Gramineae						
Andropogon glomeratus	X		X	X		
Andropogon virginicus				X		
Anthephora hermaphrodita						X
Axonopus compressus			X	X		
Bambusa vulgaris	X					
Cenchrus brownii			X			
Cenchrus echinatus				X		X
Cenchrus gracillimus				X		
Chloris petraea				X		X
Chloris radiata			X			
Digitaria decumbens (Pangola Grass)	P					
Digitaria sanguinalis			X	X		X
Eleusine indica	X		X	X		X
Eragrostis ciliaris				X		
Ichnanthus pallens		X	X			
Lasiacis divaricata		X			X	
Lasiacis sloanei					X	
Lasiacis sorghoidea					X	
Leptochloa domingensis				X		
Melinis minutiflora (Wynne Grass)			P			P
Panicum adspersum				X		
Panicum maximum (Guinea Grass)			P			P
Panicum purpurascens (Para Grass)			P			P
Paspalum blodgettii	X		X			
Paspalum caespitosum				X	X	
Paspalum conjugatum	X		X			
Paspalum fimbriatum			X	X		X
Paspalum notatum	X		X	X		
Paspalum paniculatum	X	X				
Paspalum propinquum			X	X		
Pennisetum purpureum			X	X		
Pharus glaber					X	
Setaria geniculata	X		X	X		X
Sorghum bicolor			X			
Sporobolus indicus				X		X
Stenotaphrum secundatum	X	X	X	X		
Trichachne insularis		X	X	X		X
Zea mays			X			

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Iridaceae						
Trimezia martinicensis	X					
Lemnaceae						
Wolffia columbiana		X				
Liliaceae						
Smilax balbisiana		X				
Musaceae						
Musa sapientum			X			
Orchidaceae						
Bletia florida		X				
Brassia caudata		X				
Broughtonia sanguinea					X	
Campylocentrum barrettiae		X				
Centrogenium setaceum		X			X	
Dendrophylax funalis		X				
Elleanthus longibracteatus		X				
Epidendrum anceps		X				
Epidendrum difforme		X				
Epidendrum diffusum		X				
Epidendrum fragrans		X				
Epidendrum nutans var. *obtusifolium*		X				
Epidendrum polybulbon		X				
Galeandra beyrichii		X				
Govenia utriculata		X				
Habenaria alata		X				
Habenaria quinqueseta		X				
Ionopsis utricularioides		X				
Jacquiniella globosa		X				
Liparis elata		X				
Malaxis spicata		X				
Oncidium luridum		X				
Oncidium tetrapetalum					X	
Oncidium triquetrum		X				
Pleurothallis tribuloides		X				
Polystachya foliosa		X				
Ponthieva ventricosa		X				
Schomburgkia lyonsii		X				
Spiranthes adnata		X				
Spiranthes tortilis		X				
Palmae						
Cocos nucifera				X		
Thrinax parviflora					X	
Thrinax sp.		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
DICOTYLEDONEAE						
Acanthaceae						
Anthacanthus armatus		X			X	
Blechum brownei			X			
Dicliptera assurgens				X		
Salpixantha coccinea		X				
Thunbergia alata	X		X			
Thunbergia fragrans	X	X				
Amaranthaceae						
Achyranthes indica			X			
Amaranthus dubius			X			
Amaranthus polygonoides				X		
Amaranthus spinosus			X			
Celosia nitida					X	
Iresine paniculata		X				
Anacardiaceae						
Anacardium occidentale				X		
Comocladia pinnatifolia		X			X	
Mangifera indica				X		P
Metopium brownei					X	
Spondias purpurea	X					
Annonaceae						
Annona jamaicensis		X			X	
Annona muricata				X		
Xylopia muricata		X			X	
Apocynaceae						
Catharanthus roseus				X		X
Echites umbellata						X
Forsteronia floribunda		X				
Mandevilla torosa					X	
Plumeria obtusa		X	X	X	X	
Rauvolfia tetraphylla					X	
Urechites lutea	X	X	X	X		X
Aquifoliaceae						
Ilex uniflora		X				
Araliaceae						
Dendropanax arboreus		X			X	
Oreopanax capitatum		X				
Asclepiadaceae						
Asclepias curassavica	X		X	X		X
Asclepias nivea	X	X				
Metastelma ephedroides		X			X	
Metastelma filiforme		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Balanophoraceae						
Scybalium jamaicense		X				
Begoniaceae						
Begonia glabra		X				
Begonia purpurea		X				
Bignoniaceae						
Crescentia cujete	X			X		
Schlegelia parasitica		X			X	
Spathodia nilotica	X			X	X	
Tabebuia angustata		X			X	
Tabebuia riparia					X	
Tecoma stans	X	X		X	X	
Bombacaceae						
Ceiba pentandra	X	X	X	X	X	X
Ochroma pyramidale			X			
Boraginaceae						
Bourreria succulentata					X	
Cordia asperrima					X	
Cordia gerascanthus		X				
Cordia globosa	X	X	X	X	X	
Cordia jamaicensis				X	X	
Cordia macrophylla		X				
Cordia martinicensis				X		
Cordia nitida					X	
Ehretia tinifolia				X	X	
Heliotropium angiospermum				X		X
Heliotropium hirsutissimum	X	X		X	X	
Tournefortia hirsutissima	X	X	X			
Tournefortia volubilis				X	X	
Burseraceae						
Bursera simaruba				X	X	
Cactaceae						
Rhipsalis cassytha		X				
Rhipsalis jamaicensis	X	X				
Cereus swartzii					X	
Cereus triangularis					X	
Capparidaceae						
Capparis cynophallophora		X			X	
Capparis ferruginea				X	X	
Cleome gynandra		X	X			
Caprifoliaceae						
Viburnum alpinum		X				
Viburnum villosum		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Caryophyllaceae						
Drymaria cordata	X					
Celastraceae						
Elaeodendron dioecum		X				
Maytenus jamaicensis		X				
Schaefferia frutescens					X	
Combretaceae						
Terminalia latifolia		X	X			
Compositae						
Ageratum conyzoides			X			
Ambrosia paniculata	X	X	X			
Aster exilis			X			
Bidens cynapiifolia			X			
Bidens pilosa	X		X	X		X
Crepis japonica			X			
Eclipta alba			X			
Elephantopus mollis	X					
Eleutheranthera ruderalis			X			
Emilia sagittata	X		X			
Emilia sonchifolia	X		X	X		
Erechtites hieracifolia			X			X
Erigeron canadensis	X		X	X		X
Eupatorium dalea					X	
Eupatorium macrophyllum		X				
Eupatorium odoratum	X	X	X	X		
Eupatorium parviflorum		X				
Eupatorium villosum	X	X	X	X		X
Lactuca jamaicensis			X			X
Lagascea mollis				X		
Melanthera aspera						X
Mikania cordifolia		X				
Mikania micrantha	X	X	X			
Notoptera hirsuta		X				
Parthenium hysterophorus				X		
Pluchea odorata		X	X			
Porophyllum ellipticum			X			
Pseudelephantopus spicatus		X				
Salmea scandens		X			X	
Sonchus oleraceus			X			
Synedrella nodiflora			X			
Verbesina alata	X		X			X
Verbesina pinnatifida			X			
Vernonia acuminata		X	X			
Vernonia cinerea		X	X			X
Wedelia gracilis	X		X			

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Connaraceae						
Rourea paucifoliata		X				
Convolvulaceae						
Dichondra repens			X			X
Ipomoea cathartica	X	X	X			
Ipomoea dissecta				X		X
Ipomoea grisebachii		X			X	
Ipomoea ternata		X				
Ipomoea tiliacea	X		X			
Ipomoea triloba						X
Jacquemontia jamaicensis			X			
Crassulaceae						
Bryophyllum pinnatum				X	X	
Cruciferae						
Lepidium virginicum			X			
Cucurbitaceae						
Cionosicys pomiformis		X		X		
Cucumis anguria		X				
Momordica charantia	X					
Ebenaceae						
Diospyros tetrasperma		X			X	
Elaeocarpaceae						
Sloanea jamaicensis		X				
Erythroxylaceae						
Erythroxylum areolatum					X	
Erythroxylum confusum					X	
Erythroxylum incrassatum		X				
Erythroxylum rotundifolium					X	
Euphorbiaceae						
Acidoton urens	X	X			X	
Alchornea latifolia		X				
Bernardia carpinifolia				X	X	
Croton glabellus					X	X
Croton humilis				X	X	
Croton linearis					X	X
Croton lucidus				X		
Croton wilsonii					X	
Drypetes alba					X	
Drypetes lateriflora		X			X	
Euphorbia geniculata				X		
Euphorbia heterophylla	X			X		X
Euphorbia hirta var. *hirta*	X		X	X		X

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Euphorbia hirta var. *procumbens*	X		X			X
Euphorbia hypericifolia					X	
Euphorbia hyssopifolia	X		X		X	X
Euphorbia punicea		X				
Gymnanthes lucida					X	
Manihot utilissima						P
Omphalea triandra		X			X	
Pedilanthus tithymaloides				X		
Phyllanthus coxianus		X				
Phyllanthus inaequalifolius		X				
Phyllanthus montanus					X	
Phyllanthus nutans					X	
Ricinus communis	X		X	X		X
Tragia volubilis					X	
Flacourtiaceae						
Casearia aculeata		X		X	X	
Casearia guianensis	X	X			X	
Casearia hirsuta		X				
Casearia odorata		X				
Casearia sylvestris		X			X	
Laetia thamnia		X			X	
Xylosma fawcettii		X				
Gesneriaceae						
Columnea fawcettii		X				
Columnea sp.					X	
Gesneria acaulis		X				
Rhytidophyllum tomentosum	X	X				
Guttiferae						
Clusia flava		X			X	
Rheedia sessiliflora		X				
Labiatae						
Hyptis capitata	X	X	X			
Hyptis pectinata			X	X		
Leonurus sibiricus		X	X	X		
Ocimum micranthum				X		X
Salvia coccinea					X	X
Salvia micrantha	X				X	
Teucrium vesicarium	X		X			
Lauraceae						
Nectandra antillana		X	X			
Nectandra coriacea		X			X	
Nectandra patens		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Ocotea floribunda		X				
Ocotea staminea		X			X	
Persea americana			P			
Leguminosae						
Abrus precatorius		X			X	
Adenanthera pavonina		X				
Aeschynomene americana	X	X				
Albizzia berteriana					X	
Andira inermis		X				
Arachis hypogaea						P
Bauhinia divaricata	X	X		X	X	
Caesalpinia sepiaria		X				
Cajanus cajan				X		P
Calliandra portoricensis				X	X	X
Canavalia ensiformis		X				
Cassia ligustrina	X	X	X	X		X
Cassia occidentalis	X		X			X
Cassia siamea			P			P
Cassia uniflora	X			X		X
Centrosema virginianum	X			X		X
Crotalaria incana	X		X			X
Crotalaria retusa						X
Crotalaria verrucosa				X		X
Desmodium axillare var. *acutifolium*	X	X	X			
Desmodium canum	X		X	X		X
Desmodium scorpiurus				X		X
Desmodium tortuosum				X		
Flemingia strobilifera	X	X				
Galactia pendula					X	
Galactia striata				X		
Haematoxylon campechianum	X	X		X	X	X
Indigofera suffruticosa	X		X	X		X
Leucaena glauca				X	X	
Lonchocarpus domingensis					X	
Mimosa pudica	X		X	X		X
Peltophorum brasiliense		X				
Phaseolus lathyroides	X					
Pueraria lobata			P			
Piscidia piscipula	X	X		X	X	
Pithecellobium alexandri					X	
Pithecellobium arboreum		X			X	
Rhynchosia minima						X
Rhynchosia phaseoloides		X				
Sophora tomentosa						X
Stylosanthes hamata				X		X
Tamarindus indicus				X		

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Lobeliaceae						
Lobelia viridiflora	X	X	X			
Loganiaceae						
Spigelia anthelmia		X	X			X
Loranthaceae						
Phoradendron latifolium		X				
Oryctanthus occidentalis		X				
Lythraceae						
Cuphea parsonsia			X			
Malpighiaceae						
Bunchosia jamaicensis		X				
Bunchosia media					X	
Bunchosia swartziana		X		X	X	X
Byrsonima coriacea					X	
Malpighia glabra	X	X			X	
Malpighia urens		X				
Mascagnia hiraea					X	
Stigmaphyllon emarginatum				X		
Malvaceae						
Abutilon crispum					X	
Gossypium hirsutum			X			
Hibiscus clypeatus		X			X	
Hibiscus elatus			P			P
Malvastrum spicatum		X				
Malvaviscus arboreus		X				
Pavonia rosea		X				
Pavonia spinifex	X					
Sida acuta			X	X		X
Sida cordifolia				X	X	X
Sida glabra				X		
Sida rhombifolia	X		X			
Sida spinosa				X	X	
Sida urens	X		X			
Urena lobata	X		X			X
Wissadula amplissima		X		X	X	X
Wissadula fadyenii					X	
Melastomataceae						
Blakea trinervia		X				
Miconia laevigata		X	X			
Ossaea microphylla	X					
Tetrazygia hispida		X				
Tetrazygia pallens		X				
Meliaceae						
Cedrela odorata		X			X	P

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Guarea glabra	X	X			X	
Melia composita						P
Swietenia mahagoni					X	
Trichilia glabra					X	
Trichilia moschata					X	
Menispermaceae						
Cissampelos pareira	X	X		X	X	
Hyperbaena domingensis		X			X	
Hyperbaena laurifolia		X				
Moraceae						
Artocarpus communis	X			X		P
Artocarpus integrifolia	X	X				
Cecropia peltata	X	X	X		X	
Chlorophora tinctoria		X			X	
Ficus harrisii		X				
Ficus ochroleuca	X	X				
Ficus populnea		X			X	
Ficus suffocans		X	X	X	X	
Ficus wilsoni	X	X				
Trophis racemosa		X				
Myrsinaceae						
Rapanea guianensis					X	
Wallenia grisebachii					X	
Wallenia laurifolia		X		X	X	
Myristicaceae						
Myristica fragrans			P			
Myrtaceae						
Calyptranthes chytraculia		X			X	
Calyptranthes pallens		X			X	
Eugenia axillaris	X	X			X	
Eugenia biflora					X	
Eugenia disticha		X				
Eugenia eperforata		X				
Eugenia isosticta					X	
Eugenia monticola					X	
Pimenta dioica		X	P		X	
Psidium guajava	X	X		X		X
Nyctaginaceae						
Boerhavia diffusa				X		
Boerhavia erecta				X		
Pisonia aculeata					X	
Pisonia discolor					X	
Torrubia fragrans		X			X	

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Olacaceae						
Schoepfia multiflora		X				
Oxalidaceae						
Oxalis corniculata	X		X			
Oxalis martiana		X				
Papaveraceae						
Bocconia frutescens		X	X			
Passifloraceae						
Passiflora foetida var. *hispida*	X		X			
Peperomia clusiaefolia					X	
Passiflora perfoliata		X			X	
Passiflora rubra	X	X	X	X	X	
Passiflora suberosa	X	X	X	X		
Phytolaccaceae						
Phytolacca icosandra			X			
Rivina humilis					X	
Trichostigma octandrum		X			X	
Piperaceae						
Peperomia amplexicaulis		X			X	
Peperomia clusiaefolia					X	
Peperomia glabella		X				
Peperomia rotundifolia	X					
Peperomia serpens		X				
Piper aduncum	X	X	X			
Piper amalago			X	X		
Piper arboreum		X				
Piper jamaicense		X	X			
Piper umbellatum	X		X			
Plumbaginaceae						
Plumbago scandens				X		
Polygalaceae						
Polygala paniculata	X		X			
Securidaca brownei		X				
Polygonaceae						
Coccoloba diversifolia					X	
Coccoloba longifolia		X				
Coccoloba plumieri		X				
Coccoloba proctori					X	
Coccoloba swartzii		X			X	
Coccoloba tenuifolia					X	
Coccoloba uvifera			X	X		
Polygonum glabrum	X	X				

	REYNOLDS			KAISER		
	TO BE MINED	ADJACENT	INVADERS	TO BE MINED	ADJACENT	INVADERS
Portulacaceae						
Talinum triangulare				X		
Ranunculaceae						
Clematis dioica		X	X		X	
Rhamnaceae						
Colubrina ferruginosa		X		X	X	
Gouania lupuloides			X			
Krugiodendron ferreum					X	
Rhamnus sphaerosperma		X	X			
Sarcomphalus laurinus				X	X	
Zizyphus chloroxylon		X				
Rosaceae						
Prunus myrtifolia		X			X	
Rubus jamaicensis	X		X			
Rubiaceae						
Antirrhoea jamaicensis		X				
Borreria laevis	X		X	X		X
Borreria verticillata	X	X	X	X		X
Casasia longipes				X	X	
Casasia piricarpa		X				
Chiococca alba		X			X	
Chiococca parvifolia		X			X	
Coffea arabica	X					
Erithalis quadrangularis		X				
Exostema caribaeum					X	
Guettarda argentea		X				
Guettarda elliptica					X	
Hamelia chrysantha		X			X	
Hamelia cuprea		X				
Hamelia patens		X				
Hamelia ventricosa		X				
Hillia tetrandra		X				
Palicourea domingensis		X				
Portlandia grandiflora					X	
Portlandia microsepala		X				
Psychotria balbisiana					X	
Psychotria dura		X				
Psychotria fadyenii		X				
Psychotria myrstiphyllum					X	
Psychotria nervosa	X	X				
Psychotria patens		X				
Psychotria pedunculata	X	X				
Psychotria pubescens	X	X				
Richardia brasiliensis						X
Rondeletia polita		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Rondeletia trifolia					X	
Schradera involucrata		X				
Rutaceae						
Amyris elemifera				X		
Amyris plumieri					X	
Citrus aurantifolia				X		P
Citrus vulgaris	X	X		X	X	
Esenbeckia pentaphylla		X		X	X	
Spathelia sorbifolia					X	
Zanthoxylum elephantiasis		X				
Zanthoxylum flavum				X	X	X
Zanthoxylum insulare		X			X	
Zanthoxylum martinicense	X	X	X	X		
Sapindaceae						
Allophylus cominia	X	X			X	
Allophylus jamaicensis		X				
Blighia sapida				X		
Cardiospermum grandiflorum	X	X				
Cardiospermum microcarpum		X				
Cupania glabra		X	X	X	X	
Dodonaea viscosa				X		
Exothea paniculata		X		X	X	
Hypelate trifoliata					X	
Paullinia jamaicensis		X	X			
Sapotaceae						
Chrysophyllum cainito	X					
Dipholis nigra		X			X	
Dipholis salicifolia		X		X	X	X
Manilkara zapotilla		X		X		
Pouteria multiflora		X				
Simarubaceae						
Picramnia antidesma		X		X	X	
Picramnia pentandra					X	
Picrasma excelsa					X	
Simaruba glauca		X		X	X	
Solanaceae						
Brunfelsia americana		X				
Brunfelsia jamaicensis		X			X	
Capsicum baccatum	X				X	
Capsicum frutescens		X				
Cestrum diurnum		X	X			
Physalis pubescens	X		X			
Solandra grandiflora		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Solanum bahamensis var. *subarmata*				X	X	
Solanum ciliatum			X			
Solanum havanense					X	
Solanum jamaicense			X			
Solanum mammosum	X					
Solanum nigrum	X		X			
Solanum stellatum	X		X			
Solanum torvum	X		X	X	X	X
Solanum verbascifolium	X		X	X		
Sterculiaceae						
Ayenia pusilla				X		
Cola acuminata	X					
Guazuma ulmifolia				X	X	
Helicteres jamaicensis					X	X
Melochia pyramidata				X		X
Theobroma cacao	X				X	
Waltheria americana			X	X		X
Theaceae						
Ternstroemia hartii		X				
Thymelaeaceae						
Daphnopsis americana	X	X			X	
Tiliaceae						
Corchorus siliquosus		X	X			X
Muntingia calabura		X				
Triumfetta hispida	X		X			
Triumfetta lappula	X			X		
Turneraceae						
Piriqueta cistoides						X
Ulmaceae						
Celtis swartzii		X		X	X	X
Celtis trinervia		X				
Umbelliferae						
Apium leptophyllum	X					
Eryngium foetidum	X	X				
Hydrocotyle asiatica	X	X	X			
Urticaceae						
Boehmeria jamaicensis		X				
Pilea brevistipula		X				
Pilea crassifolia		X				
Pilea hollickii		X				

	REYNOLDS			KAISER		
	To be Mined	Adjacent	Invaders	To be Mined	Adjacent	Invaders
Pilea microphylla	X	X	X			
Urera expansa		X				
Verbenaceae						
Citharexylum spinosum	X	X		X	X	
Lantana angustifolia					X	
Lantana camara	X	X	X	X		
Lantana reticulata				X	X	X
Lantana trifolia	X		X			
Petitia domingensis	X	X	X			
Phyla nodiflora	X		X			
Phyla stoechadifolia	X					
Priva lappulacea	X		X	X		X
Stachytarpheta cayennensis			X			
Stachytarpheta jamaicensis	X	X	X	X		X
Tectona grandis						P
Vitaceae						
Cissus microcarpa	X	X				
Cissus sicyoides	X	X	X			
Zygophyllaceae						
Kallstroemia maxima						X

Arnold Arboretum
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