

TERRESTRIAL FIELD CHARACTERISATIONS AND ASSESSMENTS

For the

**ASSESSMENT AND MAPPING OF THE SOUTHWEST REGION OF ANTIGUA
FOR THE RIDGE TO REEF DEMONSTRATION PROJECT
OF THE SUSTAINABLE ISLAND RESOURCE MANAGEMENT MECHANISM**

SUBMITTED TO:

Small Island Resource Management Mechanism (SIRMM) Project

**Environment Division (National Executing Agency, NEA)
Government of Antigua and Barbuda**



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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Meaning
ABPCP	Antigua and Barbuda Plant Conservation Project
ANU	Antigua
APUA	Antigua Public Utilities Authority
ArcGIS	Commonly used GIS software
CARDI	Caribbean Agricultural and Rural Development Institute
CBMR	Cades Bay Marine Reserve
CERMES	Center for Environmental Resource Management and Ecological Studies
DEM	Digital Elevation Model for providing contours and 3D mapping
DOS	Directorate of Overseas Surveys, UK – suppliers of older topological maps
EAG	Environmental Awareness Group
ED	Environment Division
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIMAS	Environmental Information Management System
ETC	Environment Tourism Consulting
FAO	Food and Agriculture Organisation of the United Nations
FD	Fisheries Division
GIS	Geographic Information System
GPS	Global Positioning System (Also refers to the units that access this system)
IRF	Island Resources Foundation
JPEG	Bitmap (Raster) file format
MONP	Mount Obama National Park
NDNP	Nelson's Dockyard National Park
NODS	National Office of Disaster Services
NEA	National Executing Agency

Acronym/Abbreviation	Meaning
NW	North west
OAS	Organisation of American States
PAs	Protected Areas
PCC	Project Coordinating Committee
PGDM	Post Georges Disaster Management (Project) which provided digital maps of Antigua
PI	Principal/Project Investigator
PPAs	Parks and Protected Areas
PWD	Public Works Department
RTRDP	Ridge to Reef Demonstration Project
SCSCB	Society for the Conservation and Study of Caribbean Birds
SIRMM	Sustainable Island Resources Management Mechanism
SOP	Standard Operating Procedure
SRC	Seismic Research Unit
SW	South West
SWW	South West Watershed
TB	Terabyte
USDA	United States Department of Agriculture
UWI	University of the West Indies

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3. REPORT OVERVIEW

This Field Characterisation and Assessment Report forms part of the contractual obligations of Island Resources Foundation to “provide a short but detailed report outlining the progress of work at (10) months after the commencement of the contract” to assess and map Antigua's South West Watershed.

On August 09, 2010, Island Resources Foundation entered into a contract with the Government of Antigua and Barbuda “To comprehensively map the southwest region of Antigua, identifying key natural features; both terrestrial and marine at scales appropriate for management.”

The report is in two parts: part one deals with the terrestrial resources of the SWW region; part two covers the marine resources.

The report below provides a terrestrial ecological overview of the SWW region. It includes: a description of the area, methodology and approach, general observations of flora and fauna, and recommendations.

3. TERRESTRIAL MAP OUTPUTS FOR THE SW REGION OF ANTIGUA

The terrestrial maps produced for the SWW include:

1. SWW Distribution of Vegetation Types
2. SWW Soils
3. SWW Rainfall Distribution
4. SWW Watersheds
5. SWW Drainage System and Ponds
6. High Priority Areas for Conservation
7. Livestock Management Areas of Concern to Conservation of Biodiversity
8. Parks and protected areas (actual and proposed)
9. SWW Population Density and Distribution (2001 Census data)

JPEG formats of each of these, and the marine maps, are available in the Project Final Report. A complete set of the shapefiles and metadata compilation for each map is provided separately on a project DVD.

Where relevant, some of the terrestrial maps have been included in this report

4. DESCRIPTION OF AREA

4.1. LOCATION

The boundary area for the SW Watershed Demo Area extends from Proctor Point near Falmouth in the South, heads north and west to the vicinity of Coco's Restaurant at Valley Church Bay. The whole area includes places such as Cades Bay Marine Reserve (CBMR), Mount Obama (proposed to be above the 152meter (500 ft.) contour), and Wallings Forest Reserve.

The area is commonly referred to as the Shekerley Mountains, a chain of volcanic hills in the southwestern part of the island; from Sugar Loaf Mountain and Cherry Hill in the east, to Valley Church in the west. It includes terrestrial, coastal and marine environments

4.1.1. The SWW Region and Nearby Areas

The southwest region includes, but is not limited to the Wallings Forest and Fig Tree Drive, Cades Reef and the Cades Bay Marine Reserve and Mount Obama. Areas within this defined region cover the country's highest point Mount Obama at 402 Metres (formerly Boggy Peak), several urban centres: John Hughes, Sawcolts, Johnsons Point, Urlings and Old Road. There are also a number of commercial activities and interests, such as quarrying, farming, surface and groundwater extraction, marinas, hotels, recreational activities and protected areas.

The SWW Demonstration Area includes terrestrial, coastal and marine components.

There is no clear cut definition of the "southwest region" of Antigua. The area traditionally identified as the southwest is all the hilly area from Wallings to Darkwood. But herein lies the difficulty of defining the area. Wallings for example has several delineations, and may include a broad starting at Signal Hill ridge, encompass the upper areas of Doiggs, the upper levels of Claremont, upper and lower Fig Tree Drive, over to Sage Hill and around to southern John Hughes. However, the older delineation, prior to the 1980s, would have included the areas draining into Wallings Dam No. 1 and the general area around Walling Dam No. 2.

There are several key resources within the area, namely, parks and protected areas (PPAs), biodiversity and ecological, watersheds, economic/commercial activities, heritage and cultural resources and harvesting/extraction activities. Below is a brief summary of these features. Also discussed is the significance of the aspirations of the Ridge to Reef Demonstration Project (RTRDP) of the Small Island Resource Management Mechanism (SIRMM) to the creation of a defined area within the SWW.

4.2. CLIMATE AND WEATHER

As with most islands in Lesser Antilles, Antigua is strongly affected by the Northeast Trade winds, which means winds approach with great constancy from directions between east-northeast and southeast. The average wind direction varies throughout the year according to the following pattern:

- December to February: winds blow from east-northeast (known locally as “Christmas Winds”),
- March to May: winds blow from easterly directions,
- June to August: winds blow from east to east-southeast directions,
- September to November: winds blow mainly from the east to southeast.

Normally, except for the occasional hurricane, highest wind speeds are experienced from December to February and again in June and July. Average wind speeds for the months of June – July are around 9m/sec (20 mph), while for October average wind speeds drop to 6m/sec (13.5 mph).

During the winter months, October to April, the island is occasionally influenced by frontal systems moving in an eastward direction across the southern part of the United States. The trailing edge of these fronts sometimes affects the island, and results in winds blowing from between northwest and northeast for short periods—usually no more than up to two days. The area also lies within the hurricane belt. These intense storms occur between June and November, with September being the month when most tropical storms or hurricanes occur.

Temperature varies little throughout the year, with daytime figures that fall within the range 25°-29° C and usually drop 6° C at night. Temperatures average an annual 81° F (27.2° C), with the winter lows averaging 76° F (24.4° C), and the summer high reaching the mid to upper 80s. The temperature and climate are moderated by near constant on-shore breezes. Due to year-round high temperatures and nearly constant winds, the evapo-transpiration rate is generally high.

Heavy rainfall sometimes occurs during the passage of the easterly tropical waves, which are spurned off the West African coast from June to November of each year. Occasionally, these waves intensify into tropical depressions, tropical storms, or hurricanes.

4.3. GEOLOGY

The initial geological landscape of Antigua was created when volcanoes burst through the ocean floor some 40 million years ago. Eruptions continued sporadically for the next 10 million years to build at least 5 clusters of volcanic cones, craters, domes and lava flows in a triangle

between what are now Deep Bay, Shirley Heights and Johnson's Point. The following million years of weathering, landslides, mudflows, erosion and sedimentation have contributed to the landscape we now see.

The dominant bedrock type in the area is andesite, and it forms most of the domes and volcanic lava flows, and the pyroclastic rocks associated with volcanic flows and ash fall. Basalt lava flow and dykes are also found but to a lesser extent.

4.4. WATERSHEDS

There are 6 major watersheds (aggregated areas for management) found within the SWW region from Sugar Loaf to Darkwood. The SWW cuts across these six watersheds, some completely falling within the region and some others such as Potworks and Falmouth are located on the periphery. Sugar Loaf Mountain forms the pinnacle of the most extensive area of uninhabited tracts of land in Antigua. It also spreads across four of the area's six watersheds. The watershed maps indicate where these Watershed Numbers are located. The numbering scheme is from the Department of Agriculture.

Table 1.0. The Major Watersheds of the SWW Region.

Watershed Name	Watershed No.
Potworks	1
Body Ponds/Creekside	2
Christian Valley	4-11
Cades Bay	12-20
Claremont	21-26
Falmouth	27-46

4.5. PARKS AND PROTECTED AREAS AND RESERVES

There are several protected areas, proposed parks and protected areas (PPAs) and reserves located within the southwest region and nearby areas.

Table 2.0. PPAs and Reserves with the SWW, Antigua.

NAME	LOCATION	STATUS/DESIGNATION
The Nelson's Dockyard National Park	Southern side of Antigua. Includes Shirley Heights, Nelson's Dockyard, the communities of Falmouth, Cobbs Cross and English Harbour, and Doiggs/Rendezvous	Declared/Protected
The Wallings Forest Reserve	South of John Hughes and north of Old Road. Also includes Fig Tree and parts of Tramontania, over to Sage Hill.	Proposed
The Mount Obama National Park	Boggy Peak, Christian Valley, Cades Bay and parts of the western slopes of the range.	Proposed
The Ffryes Bay Park	North of Darkwood and south of Valley Church.	Proposed
Darkwood	Wetlands, beach and coastal area west of Orange Valley.	Proposed
The Cades Bay Marine Park	About 2.5 km offshore, southwest of Cades Bay.	Declared/Protected

4.6. ECONOMIC AND COMMERCIAL ACTIVITIES

There are several major economic and commercial activities and enterprises occurring within and adjacent to the region. If we include the area from Sugar Loaf in the east to Darkwood and Jolly Hill in the west and Southwest then Bendals to Swetes as the area of focus within the SWW region, these activities would include:

Table 3.0 Economic Enterprises in the SW Region of Antigua

Antigua Rainforest Canopy Tour – Wallings	Blue Heron Hotel – Johnsons Point
Claremont Farms at Claremont – Claremont	Orange Valley Agricultural Station – Orange Valley
Carlisle Bay Hotel – Old Road	Jolly Harbour Marina – Jolly Hill
Curtain Bluff Hotel – Old Road	Jolly Beach Resort – Jolly Beach
South Coast Horizons – Old Road/Cades Bay	Coco Beach Hotel – Valley Church
Cades Bay Pineapple Station – Cades Bay	Christian Valley Agricultural Station – Christian Valley
Urlings Fisheries Complex – Urlings	

Some of these activities/enterprises have been associated with conflicts and/or have caused vocal opposition in the past. These include:

- Antigua Rainforest Canopy Tour - Wallings
- Curtain Bluff and issues of beach access
- Carlisle Bay Hotel – Old Road
- Jolly Harbour Marina – Jolly Hill
- Jolly Beach Resort – Jolly Beach
- Development of Rendezvous Bay
- Development of the Darkwood area
- Proposed development of Orange Valley (previous proposals include building a golf course, condominiums and a tramway from Boggy Peak to Darkwood)
- Development and enhancement of Ffryes Bay/Beach
- Sand mining of Darkwood Beach and wetlands
- Development of Valley Church

Some of these continue to be a source tension and/or opposition and may present challenges for the Demo area and the community interests/support for management options and mechanisms.

In addition, there are proposed tourism development projects slated for Valley Church Beach and Cades Bay, areas of critical coastal mangroves and wetland habitats and a number of rare and endangered bird species, including the West Indian Whistling Duck (*D. arborea*) and the Little Heron (*E. garzetta*).

4.7. HERITAGE AND CULTURAL RESOURCES

There are several key heritage, historical and archaeological sites within the region. These include:

Table 4.0. Heritage sites of the SWW.

SITE	DESCRIPTION
Doiggs Archaeological Middens	Prehistoric
Wallings Dam No. 1	Historical/Heritage
Wallings Dam No. 2	Historical/Heritage
Body Pond Mill	Historical
Tom Moore's Spring	Natural Heritage
Fig Tree Drive	Natural Heritage
Mt. Obama (formerly Boggy Peak)	Natural Heritage
Slave "Dungeon" at Orange Valley	Historical

Source: Antigua-Barbuda Environmental Profile (1991)

5. METHODOLOGY AND APPROACH

The project methodologies below has been adapted and updated from the outline provided in the draft work schedule report of September 08, 2010 and from SWW Progress Report 1 of December 10, 2010.

5.1. MAPPING REVIEW

As part of the Literature Review task, a summary mapping review was undertaken by Dr. Brian Cooper and Kimberly Baldwin, and a comprehensive review of existing data sources was completed. These data, coupled with expert information, additional field survey activities, and information from consultations with key user groups, were used to determine the distribution of habitat/land cover of the existing biodiversity resources in Southwest Region of Antigua. A draft proposal for maps outputs and mapping efforts was presented December 19, 2010.

5.2. LITERATURE REVIEW

To carry out the Literature Review, the following approach was taken:

- Conducted a desk review to access existing information on the biodiversity, natural resources, recent activities and other issues within or impacting the subject area.
- Consulted with local researchers, guides and other key local and foreign experts about recent studies of resource issues that focus on the subject area.

- Prepared and submitted to the FD, in December 2010, a report on the preliminary findings of the literature review, including an annotated bibliography of primary documents.
- Completed a final literature review for end of project.

The review compilation was done by assembling a list of relevant documents and various forms of information. The research to assemble this list was done using the Foundation's reference collections, the personal collections of IRF staff and consultants, local and international archives, online research and archival resources and through the Foundations' many contacts and affiliated.

5.3. TERRESTRIAL BIODIVERSITY AND NATURAL RESOURCE ASSESSMENT

The terrestrial biodiversity and natural resources/environmental survey and assessments were carried out by Kevel Lindsay and Jean-Pierre Bacle. As part of this assessment, the terrestrial survey team visited Antigua from October 14 to 24, 2010, to undertake the terrestrial field survey and assessment. A summary report of the trip was provided to the Fisheries and Environment Divisions. The team members made several subsequent trips to Antigua under the auspices of other projects, and used the opportunity to undertake additional information gathering and surveys. Kevel Lindsay visited Antigua from June 23 to July 11 to undertake an assessment of the islands' ferns, and Jean-Pierre Bacle and Kevel Lindsay visited Antigua from August 02 to 12 2011 to undertake a terrestrial ecological survey of the Rendezvous Bay Watershed for a proposed tourism development there.

The following approach was utilised for field surveys and assessment:

- Vegetation communities were assessed using the *Vegetation Classification of Antigua-Barbuda-Redonda* as developed by IRF in 1997. The target sites were mapped using aerial photographs supplied by the Government of Antigua and Barbuda, and the information verified through extensive field investigations.
- Special attention was given to document rare, endangered and threatened species.
- Non-avian fauna were assessed through informal approaches, including opportunistic and incidental observations, and through discussions with local bird experts, and from previous reports and assessments, including the *Biodiversity Profile of Antigua, Barbuda and Redonda*, developed by IRF's Bruce Horwith and Kevel Lindsay in 1997. The survey included assessments of both resident and migratory species, their nesting, feeding and other habits.
- For mammalian species such as bats, the IRF research team carried out a number of nights of exploratory surveys of the targeted sites, and used its expert judgment during the fieldwork and research phases of the project to determine whether additional

survey work will be needed to clarify the status of bats. The team used net surveys to determine the species and locations. Additional information on roosting, breeding and food sites will be assessed from previous reports and from on-site observations. The Foundation made explicit efforts to involve local volunteers, including agency personnel in the bat surveys, not only as a training and awareness exercise, but also to increase the number of available hands and maximize coverage of target areas.

- For plant species, the team targeted a number of key areas and recorded the species present, noting regional endemics. GPS locations of critical species were taken where and when possible.

Given the large size of the Southwest Watershed (SWW), the team began by focusing on known information gaps in data and locations. Using Google Earth and other imagery, the team pinpointed at least six areas it deemed important to target for more in-depth surveys and assessments.

To select the areas of focus for surveys, the team used a number of criteria. These included:

1. The known presence of rare, endangered and/or regional endemic species;
2. Gaps in information about the biodiversity, ecology, and landscape of an area;
3. Previous reports indicating issues of significance and interest, for example, a natural freshwater spring or an unknown/unidentified species;
4. The presence of outstanding natural features such as cliffs;
5. An area not having been visited by biodiversity experts in the last 20 or more years;
6. Results from previous field visits and studies, which had indicated the need for further field investigations; and
7. If the areas of interests were located near and at the extreme ends of the boundaries of the study area.

The team also used a local guide to access difficult areas, including Rock Peak and the Johnsons Point/Darkwood.

A summary of the areas visited during the field survey was provided in the trip report of October 2010 (report provided in the SWW Progress Report 1).

5.4 SURVEY OF THE FLORA AND VEGETATION MAPPING

The mapping of plant communities, key resources and issues was led by Dr. Brian Cooper, with input from Jean-Pierre Bacle and Kevel Lindsay.

The vegetation communities were mapped using the vegetation classification of Antigua, Barbuda and Redonda. They were mapped at the “alliance” level. The mapping team also used the results of the recent Body Ponds vegetation communities map as a foundation for mapping the wider SWW. It provided a useful starting point for this project because that project’s team (Brian Cooper and Kevel Lindsay) had to surmount and overcome several levels of difficulties, and had worked through these in careful steps to produce the final product. The similarity between the natural communities, resources, issues and land-uses of the Body Ponds Watershed and the wider SWW allowed for a great deal of transferability of methods and approaches.

Much of the SWW is a complex of steep valleys, rolling hills, rocky outcrops and cliffs, streams, ghauts, ponds and reservoirs, secondary forests and woodlands, villages, farms and pastures and grasslands, open coastal habitats, hotels, beaches, mangrove wetlands, seagrass beds, coral habitats and sandy bottoms. The area is quite extensive, and it would have proved impossible to conduct a comprehensive and detailed survey, especially in the time-frame and the resources currently available. It will take years of careful surveys to document and map much of the issues and resources of the area. With this in mind, the team undertook targeted surveys of specific areas, with the assistance of volunteers from the EAG, Adriel Thibou of the Forestry Division and other interested individuals.

The area’s flora was assessed by traversing some of the main and secondary trails, as well as by hiking along ghauts and drains, by targeting outstanding areas and features such as grasslands, rocky outcrops, and areas thought to hold significant potential to yield interesting species. The survey team also targeted specific plant communities and focused on the unique features and characteristics and species makeup. Specimens were identified on site, and where and when necessary, photos and specimens were taken for further study and identification.

The team also used aerial imagery to determine past and current land-use, vegetation types and distribution, outstanding and special features, and the location of possible historical/archaeological sites.

Where possible, the team GPSed species of plants of special conservation concern, those that presented identification challenges, and those collected and pressed as specimens.

5.5. SURVEY OF TERRESTRIAL AND AQUATIC VERTEBRATES

The terrestrial macro vertebrate fauna of the SWW is limited to native bats, the introduced Black and Norway Rats (*Rattus rattus* and *R. norvegicus*), the House Mouse (*Mus musculus*), the introduced Indian Mongoose (*Herpestes javanicus*), birds and reptiles. In addition to these wild species, there are also a handful of donkeys, horses, free-roaming goats and wild pigs.

Reptiles were surveyed and assessed using a combination of incidental observations and encounters, targeted searches of habitats and specific sites/features and from previous reports and records, and from expert knowledge and familiarity with the area.

Amphibians were similarly assessed.

Bats were surveyed by undertaking night observations and mist-netting, and through incidental signs of bat activities. The team also relied on previous bat surveys, reports and other people's observations.

For birds, the survey team undertook roost surveys, the targeting of specific sites such as feeding areas, nesting activities, roosts, by incidental observations and from previous reports and records.

No specific surveys of aquatic vertebrates were carried out during this effort. However, from previous efforts and reports and from incidental observations, the team knows of at least six species of freshwater fish in the streams, ponds, and reservoirs of the area; most are introduced. One is the small *Gambusia* sp., locally called "savage" because of its voracious appetite, two are *Tilapia* spp., locally called "calli," another introduced small Poeciliid, perhaps a *Xiphophorus* sp., more commonly known as a Platy. These species are popular in the aquarium trade and in fact, several varieties are known from the wild in Antigua. The supposed *Xiphophorus* sp. is known from Wallings Reservoir, and a combination of the others—the *Gambusia* and the *Tilapia* species—from the entire watershed of this system.

The *Xiphophorus* may have been a recent introduction brought there by someone to the visitors' area. Further work needs to confirm the identity of this species.

The *Gambusia* at Wallings may in fact be *Gambusia holbrooki* or *G. affinis*, commonly referred to as "mosquito fish" because of their habit of consuming the larvae of insects. Both species are native to watersheds that drain into the Gulf of Mexico. It is also possible that both species are present.

The term "calli" is a generic term applied to one or several species of the Cichlidae, a family found primarily in Africa. In fact, it is possible that more than two species are present at Wallings.

Another unknown fish from the area is a species observed in the Fig Tree Drive stream. The taxonomy of this species is unknown, but Adriel Thibou has also observed species such as this one before.

At Christian Valley, at the waterfall, an unusual fish with sucking appendages, which it uses to attach to the rocks, has been observed by both Kevel Lindsay and Adriel Thibou (see photo 1.0). The exact species is unknown, but it is perhaps a member of the Gobiidae, many related species of which occur in local streams.

Figure 1.0 A sucker fish attached to the rocks, along stream at Christian Valley.



Further work is needed to understand the species types that are present throughout the SWW, including the possible impacts of introduced species on native fish and invertebrates, as well as the long term ecology of the area.

5.6. SURVEY OF TERRESTRIAL INVERTEBRATES

As with the aquatic vertebrates, no systematic survey of the freshwater invertebrates was carried out since this would be way beyond the scope of this project. However, the team noted the presence several *Macrobrachium* and *Atya* species of shrimp and prawns in the area's aquatic habitats, including at Fig Tree Drive stream, at Barbers and at Christian Valley. Photo 2.0 below shows a collection of several species at the Christian Valley Waterfall.

Figure 2.0. Showing *Macrobrachium* and possible *Atya* species of shrimp and prawn at Christian Valley.



5.7. SURVEY OF THREATENED, RARE AND ENDANGERED SPECIES AND HABITATS

Special and particular care was taken to locate and identify any critical species of plants, animals and habitats and determine the particular threats and issues relating to their conservation status.

5.8. MAPPING OF KEY RESOURCES AND CRITICAL ISSUES

The level of scale and precision for mapping was determined by defining how and for what purposes the information were to be used, as well as the available funding. Some management tasks required considerable precision, whereas others were more concerned with repeatability or reliability. Because of the resources available, it was necessary to limit mapping precision to just that which was needed to provide the kinds of information necessary for effective management options and tools for the area.

The following mapping procedures were used by IRF:

1. Draft boundaries for the Southwest Watershed (SWW) area, at a scale of approximately 1:25,000.
2. Map content and scale were based on best professional judgment of IRF *and* the availability of appropriately scaled baseline maps such as the 2010 aerial photos, the EIMAS, and the 2004 Land Folio aerial photos.
3. One generalised map of the overall SWW land and sea area, showing major features such as the project boundaries, drainage, shorelines, roads, built areas, and watershed boundaries, was produced at a scale of 1:10,000. Additional thematic map layers included vegetation communities, coastal and marine communities, topography, rainfall, outstanding physical features (where possible), GPS map of key/critical species of flora and fauna, protected areas boundaries (those officially declared and proposed) and fever grass.
4. Based on IRF field studies and at least two community presentations, boundaries for new or changed protected areas (or other forms of restricted land use) were proposed at a draft scale of approximately 1:25,000, for approval by the project coordinator and the SIRMM board.

The Foundation used the following mapping and other spatial resources to develop maps of the SWW:

5.8.1. Mapping Resources that were Available to the Project:

1. EIMAS data sets as provided by Barry Devine/CCA at EIMAS training workshop in October 2010 including:
 - A. 2004 Aerial Survey imagery mosaics 1-3 covering all of Antigua terrestrial and limited marine areas
 - B. IKONOS 2000 satellite imagery including some marine areas
 - C. PGDM and other shape files for:
 - 1) Land parcel polygons (no ownership info)
 - 2) Coastline (corrected to 2004 survey)
 - 3) Contours (25&100ft intervals)
 - 4) Drainage (needs editing)
 - 5) Ponds and Dams
 - 6) Watershed boundaries (amalgamated)
 - 7) Roads/tracks (unclassified)
 - 8) Weiss Multer Marine Map (.tiff Colour)
 - 9) Coral reefs
 - 10) Sand
 - 11) Seagrass
 - 12) Protected areas (not current)
2. Scanned/geo-referenced topo maps (DOS series at 1:50,000 and 1:25,000 (2-sheets) in black and white)
3. Original paper maps of 1:50,000 topo map in colour
4. Various scanned, geo-referenced, printed maps for Antigua, including:
 - A. Isohyets and polygons for rainfall zones
 - B. Soils map, land capability OAS and Hill Soil survey
5. Declared and Proposed Protected Areas (Marine and Terrestrial) current as of 2010-October - boundaries and area polygon (shapefiles)

The 2010 Land folio aerial photos added to these resources, but the coverage of the marine areas was very limited. The size of the files was also extremely large and could not be handled by most computers. The team used a mix of the above mapping resources along with the 2010 aerials to complete the map outputs.

5.9. MAPPING SITE BOUNDARY FOR SOUTH WEST WATERSHED

Island Resources Foundation determined the boundaries of the area to be mapped following field visits, surveys and assessments undertaken in August 2010 by Kim Baldwin, and in October 2010 by Jean-Pierre Bacle and Kevel Lindsay. This on-the-ground evaluation was further refined through discussions and consultations with relevant authorities and stakeholders, including the Fisheries Division, Environment Division, Forestry Division, and Surveys Department, and through a review of available historical documents, photos, images, maps, charts, reports and inventories, spatial data and anecdotal information. Some of this information is available at IRF's own resource library, some in the library of the EAG in St. John's, and other materials in the historical collection at the Museum of Antigua and Barbuda.

The first draft boundary designation was made available as a preliminary map, and included descriptive material on aspects of the designation and on the important features, natural resources, and habitats to be included.

The final mapping area for the SWW Mapping Project Demo Area was agreed upon after the draft proposals were made to the SIRMM Committee and certain adjustments were made following these discussions.

The terrestrial boundaries are largely determined by the component watersheds and include the following watershed groups (Watershed map of Antigua – EIMAS):

1. The eastern part of Group 4-11
2. All of Group 12-20
3. All of Group 21-26

The boundary of the SWW roughly goes from East to West and commences at the tip of Proctor Point, proceeds north westerly along the ridge to Cherry Hill, Sugar Loaf Mountain, Signal Hill, Wallings, Sage Hill and Mt. McNish. From there, the boundaries follow the proposed boundary of the Mount Obama National Park, generally westward to Willocks Hill and then to the sea at Cocos headland at the southern end of Lignumvitae Bay.

The corresponding marine boundary is determined by the limits of acceptable satellite imagery as the outer limit except where water depth limits visibility. In execution, this meant a boundary starting in the west at Cocos headland as mentioned above—following the limits of available satellite imagery south to the NW corner of the Cades Bar Marine Reserve (CBMR), then south west in steps as imagery allowed, to the southern boundary of the CBMR and thence east following the CBMR boundary and then the approximately 20 m (66 ft.) depth

contour to a point off Proctor Point, and thence to meet the terrestrial boundary at the tip of the said area.

The terrestrial area included amounts to 3,640 ha (8,995 acres), the marine area amounts to approximately 2,290 ha (5,659 acres), comprising a total area of approximately 5,930 ha (14,653 acres). The Mapping Area includes several important Protected Areas, proposed protected areas and important landmarks. These include, all of the Mount Obama National Park (not yet gazetted), parts of Nelson's Dockyard National Park, and Cades Reef Marine Reserve, part of the Wallings Forest Reserve (proposed) as well as most of the mountain summits above 305 m (1,000ft.) including the nation's highest point Mt Obama (formerly Boggy Peak) at 402 metres (1,319 ft.).

5.10. STAKEHOLDER ENGAGEMENT

The Stakeholder Engagement Plan was formulated by Lucia Mings. The Plan provided an overview of the steps that were undertaken to involve relevant stakeholders, along with their specific interests, and also outlined the methods of engagement that provided for the sharing of information, a process of community mapping, and a detailing of the key natural resource issues and concerns within the SWW.

5.10.1. The Stakeholder Engagement Plan

The stakeholder engagement Plan is summarised below. The Plan document was provided to the Fisheries and Environment Divisions in December 2010.

5.10.1.1. Overview

This Stakeholder Engagement Plan was developed as part of the Assessment and Mapping of the Southwest Region of Antigua for the Ridge to Reef Demonstration Project (RTRDP) of the Sustainable Island Resource Management Mechanism (SIRMM). The objective of the Plan was **"to provide the project with a clear roadmap that shows how researchers will capture the knowledge, experiences, and issues being faced by stakeholders within the South West region, and reflect these in the outcomes of the assessment and mapping activities."** This was accomplished through a series of steps, which included the identification of the stakeholders, along with their unique interests, engaging them in discussions and using the information garnered as a guide, both in the field surveys, and in the final reporting to the project.

The below Plan provided a summary of the justification for having a formal engagement process for the project, a list of key stakeholders and interests, and laid out the engagement mechanisms and approach to the involvement of groups, individuals and other interests in the mapping of the SWW resources and issues. It also provided a brief summary of stakeholder engagement activities according to the date that they occurred.

5.10.1.2. Stakeholder Engagement Methodology

This Stakeholder Engagement Plan was an important tool in the implementation of the Project. It provided the IRF Team with the mechanisms to access the knowledge of stakeholders so that the Foundation could have identified the area's significant ecological features, points of interest, sources of conflicts and problems and other issues (existing and potential), which the Team represented spatially on GIS maps (where possible). A key approach employed in the mapping of the area's resources and issues is community mapping. Ms Kim Baldwin, the project's marine expert, was at the forefront of the use of this approach, and worked with Dr. Cooper, the project's other GIS technician, to map the marine resources. This approach allowed deeper stakeholder participation in GIS mapping, and the identification of management and conservation issues, ensuring greater accuracy in the spatial details, and wider consensus in the final outcomes.

Ms. Mings worked along with the GIS experts to ensure that key information went from the stakeholders to the technicians and vice-versa.

Updates on stakeholder engagement and other project activities were provided through trip summary reports and meeting minutes. These were completed after each major trip and formal stakeholder and engagement meeting. These reports and minutes were made available to Fisheries and Environment Divisions.

5.10.1.3. The Plan:

- Identified the people and organisations who were regarded as stakeholders in the project; and
- Identified the strategies used for engaging with each type of stakeholder.

5.10.1.4. Stakeholder Engagement Mechanisms

Stakeholder engagements were undertaken through the following:

- Public meetings between the project's research staff, Fisher Division, Environment Division and members of the Project Coordinating Committee (PCC).
- One-on-one informal engagements between stakeholders and the Government and Stakeholder Liaison (Ms. Mings) and between stakeholders and the research team as researchers conduct field surveys, and with Ms. Mings during discussions on key project, such as follow-up telephone calls or in-person interviews.
- Continued discussions with the Fisheries Division, Surveys Department, the NEA, and the SIRMM board throughout the course of the project.

Where and whenever possible, Ms. Mings also worked along with the stakeholders and key interests to take advantage of opportunities to introduce concepts and practices of natural resource management, intervention, and co-management. She helped to identify existing and/or potential conflicts or problems affecting stakeholders and surrounding communities, particularly those that may impact the long-term management of the terrestrial and marine areas of the SWW.

The stakeholder consultation process brought together specific interest groups and individuals for a series of formal project meetings. These meetings were held during the visits of the IRF marine and terrestrial field survey teams to Antigua.

The meetings were publicly advertised through the various local media, with the prior approval of the SIRMM and the NEA. During meetings, names and contact details of those in attendance were solicited and collected.

The research team met and engaged various individuals during their field visits. These informal engagements were a natural and necessary part of the process.

5.10.1.5. Mapping Stakeholder Issues and Feedback

The information gathered from these formal and informal interactions with Stakeholders aided in the production of GIS maps for the region. Information was also collected through guided field visits and by using maps generated from the EIMAS to aide persons in pin pointing environmental and social features and issues. The information was then ground-truthed through field surveys and assessments.

Feedback from these interactions was used to make recommendations, in the final Project Report, for factoring stakeholder concerns into decision-making for site management and for improving communications and the process of information flow among stakeholders and the interaction between government agencies and the communities of the Southwest Watershed.

6.0. GENERAL OBSERVATIONS

The vegetation of the SWW consists of a mixture of evergreen and mixed deciduous-evergreen forests, and tucked away in the wetter valleys and sheltered slopes are pockets of lower montane forests. On drier more exposed slopes are woodlands dominated by *Acacia* and *Haematoxylon*, *Pisonia* and *Bourreria*. On more recently abandoned land, the vegetation is more open.

On some rocky slopes with thin soils, exposed conditions and which are recently abandoned or where feral and free-roaming goats persist, scrub woodland may dominate. In drier areas such as Johnsons Point and above Darkwood, a dry forest and dry woodland occur.

Along the coasts are open areas, pastures, coastal strand woodland, open herbaceous beach vegetation, salt marshes, salt flats and mangrove woodlands.

In some valleys such as Cades Bay and Orange Valley, crop, fruit tree and livestock farming go on, and around towns and villages, people tend their gardens and lawns, and here too are unmanaged waste places where weeds and other herbaceous and shrubby growth persist.

On slopes and summits north of and near Signal Hill, Sage Hill, McNish Mountain, "midway ridge," Rock Peak and scattered patches in between, the invasive introduced grass *C. citratus* or Lemon Grass dominates the landscapes, largely due to annual fires, and to recent attempts to develop the area.

Lower montane forest, akin to "rainforest," is not well formed in Antigua, and exists in only small patches, most less than half a hectare in size. But these areas are significant because they are the richest plant communities on the island. Though they are small, and secondary in nature, and their ongoing maturing will allow for their continued development into stable plant communities and for rare moist forest species, including orchids and ferns, to return. Lower montane forest patches are to be found on western slopes of Mount Obama, "Midway Ridge," Upper Christian Valley, and Dunnings/McNish area.

The flora and fauna of the SWW region is representative of the dispersed nature of the Shekerley Mountains, and of the relict vestiges of the once diverse and rich biodiversity of this island. Many of the plant species are found through the wetter parts of these hills.

The bird numbers and species fluctuate depending on the season, the amount of rains, the availability of food, and on available nesting habitat. North American and a few European migrants arrive in full force in late October and early November, some only stopping to gorge themselves on the fresh flush of insects, population explosion which often happens as a result of the rains of this time of the year. Many of the birds continue southward to the islands of the Windward, to Trinidad and to South America, Antigua a stepping stone on the way.

Some species of migrants may arrive as early as July and August. Species like the American Redstart (*Setophaga ruticilla*), the males and the juveniles often in the more drab and somber colors of the females, usually arrive earlier in the migration southward than other species, and stays longer in the spring.

Many of the species birds of the SWW are some of the country's rarest, most colorful, curious and regional endemic species. These include the Scaly-naped Pigeon (*P. squamosa*), the Brown Trembler (*C. rauficauda*), the Antillean Euphonia (*E. musica*), the Scaly-breasted Thrasher (*A. fusca*) and the Purple-throated Carib (*E. jugularis*).

Above the canopy of the hills one usually sees and hears Antigua's only endemic bird, the Broad-winged Hawk (*B. platypterus insulicola*). Its piercing scream and clicking whistles are distinctive. The species nests in the tall trees and rocky cliffs of region.

In the summer and fall months, the Caribbean Martins (*P. dominicensis*) arrive and soar above the hills after insects. The constant twittering calls of these aerial acrobats are often heard long before the birds are seen. They migrate south to northern South America during the early winter months.

At night, at the main reservoirs and ponds of the area, you may hear the ghostly call of the Black or Yellow-crowned Night Herons (*N. nycticorax* and *N. violacea*) as they fly back and forth in search of fish. Then the sudden alarm call of the Green Heron (*B. viriscens*), emitted as it is startled from its fishing endeavors, will send any person into flight.

A recent sighting at Wallings and Christian Valley was the rare Yellow-bellied Sapsucker woodpecker (*Sphyrapicus varius*). This was reported by Junior Prosper in July of 2011. These are rare North American migrants and their return to the recovering forests and woods of the area is a welcomed surprise.

In the past, a rare regional endemic, the Guadeloupe Woodpecker (*Melanerpes herminieri*), known only from the island of Guadeloupe, but perhaps once a resident of Antigua, has been known to visit Wallings, and perhaps other areas of Antigua. If the forests and woodlands are allowed to continue their return, then this species may once again visit these hills. Its return would be a gift to Antigua.

Aside from the birds, reptiles and a handful of amphibian are the most obvious vertebrates to be found in the region. There are between 14 and 16 species found here. One species is known to occur in the area but observed during the survey is a snake *T. monastus*— the Blind Worm or Coffin Borer as it is commonly known. This species is not often observed because it lives in leaf litter, in soil, below logs, and other decaying matter. Other species of snakes native to Antigua are now long gone as a result of predation from the introduced Indian Mongoose (*H. javanicus*).

The small terrestrial gecko *S. elegantulus*, an Antigua and Barbuda endemic species, is relatively rare throughout the area. These small geckos are among the smallest lizards in the world, and can achieve super abundance in the leaf litter, and in many islands such as on Guana Island in the British Virgin Islands, related species achieve some of the highest population densities of any vertebrate species in the world. However, in Antigua and at Wallings, this is not so. Though there could be various reasons for this, it is also just as plausible that this is caused in part by predation by the Indian Mongoose, combined with other natural

factors that limit the species' natural populations. See photo 3.0 below showing *S. elegantulus* at Barbers.



Figure 3.0 showing *S. elegantulus* at Barbers.

One or two native species of frogs occur in the area. The diminutive tree frog, *E. johnstonei*, occurs widely throughout the area. A close relative is recorded from Antigua, including the SWW, but its presence remains controversial. This species is *E. martinicensis*. One toad, the introduced Marine Toad (*B. marinus*) is present there, as well as a recent introduction, the Cuban Tree Frog (*Osteopilus septentrionalis*). This species has spread rapidly throughout Antigua and is now virtual present everywhere in the area.

Feral and free-roaming domestic animals are found in Wallings and other small pockets throughout the region. There are a few horses, donkeys, many goats, wild pigs, cats, and dogs. The horses, donkeys and sheep are found around Signal Hill while the wild pigs are found down at Doiggs and Barbers.

Feral cats are found throughout the area, and are likely a direct result of people discarding unwanted kittens into the "bush." The cats will often find food around garbage disposal sites, especially near and around human settlements.

7.0. OBSERVATIONS: THE VEGETATION AND PLANTS

7.1. FLORA

The SWW is quite a diverse area of natural and human ecological communities, much if not all of it secondary and post-secondary in nature. Plant species compositions were assessed during both fieldwork sessions and from previous reports and observations. A total of about 666 species of plants (about 50% of the country's total) belonging to 117 different families were recorded. **Appendix I** provides a list of the species recorded.

Out of the total number of species recorded, about 605 (about 90%) species are considered native. Of the remaining species, 58 (about 9%) are introduced (or exotics), and three are considered naturalised (usually through natural means). Table 5.0 below provides a summary of the species tallied.

This list is by no means near complete. Kevel Lindsay estimates that the area harbours between 700 and 1,000 species of wild plants. Much more work needs to be done to compile and understand the rich flora of the area, especially for grasses (Poaceae) and many of the aquatic species, including members of the Cyperaceae.

A recent arrival to Antigua is the Cattail (*Typha* cf. *domingensis*), a native to the region and likely brought to Antigua by migrating waterfowl from Guadeloupe or the Greater Antilles. Although many find it a pest and some may consider it invasive, it is for all intents and purposes a native and natural introduction and cannot be considered an exotic invasive species in the true sense. Photo 4.0 below shows Cattails in a freshwater Pond at Darkwood area.

Of the 666 plants, about 247 are considered rare and about 103 may be extinct or near extinction. The species is listed as possibly extinct if:

- it has not been observed in the wild for 25 years or more;
- the only known habitats has been destroyed; and
- the species has not been seen in the only area that the species was reported from in more than 10 years (and this is the only record for that species) and if the known population has been eliminated.

Rare in this instance is defined as a species with a population of less than 1,000 plants, or less than 100 known aggregates of the species (colonial species).

One species, *Bixa orellana*, or Roucou, a plant once heavily used by Amerindians in their foods, for body painting and as a dye, is now locally extinct in the wild. There needs to be a

systematic search undertaken for the more than 103 species (table 4.0) thought to be locally extinct or possibly so rare that they are near extinction. If any of these species are located, they need to each be GPSed, mapped, and an in situ conservation and management programme implement to ensure their long-term survival in the wild. If a species is confirmed locally extinct, then it may be possible to reintroduce it. This should only be done if the habitat for the species is secure and protected.

Table 4.0. Plant species historically recorded but not observed in the SWW in the last 20-100 years

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
AGAVACEAE	<i>Agave dussiana</i>	Howard, 1988-1989	Unknown	Unknown. Recorded for Antigua and Redonda; possibly exist on dry slopes of Old Road to Johnson's Point area. May be extinct locally.
AQUIFOLIACEAE	<i>Ilex sideroxyloides</i>			Unknown. Nothing else is known about the species on Antigua.
	<i>Ilex nitida</i>			Unknown. Nothing else is known about the species on Antigua.
ARACEAE	<i>Asplenium dentatum</i>	Howard, 1977	Unknown	Unknown. Nothing else is known about the species on Antigua.
	<i>Anthurium scandens</i>	Loveless, 1960	1960?	Unknown. Nothing else is known about the species on Antigua.
ARISTOLOCHIACEAE	<i>Aristolochia rugosa</i>	Howard, 1988-1989	Unknown	Unknown. Nothing else is known about the species on Antigua.
ASTERACEAE	<i>Neurolaena lobata</i>	Howard, 1988-1989	Unknown	Unknown. Nothing else is known about the species on Antigua.
BIGNONIACEAE	<i>Cydista aequinoctialis</i>	Howard, 1988-1989	Unknown	Unknown. Nothing else is known about the species on Antigua.
	<i>Amphitechna latifolia</i>	Beard, 1949	1949; Mackler & Hannah, 1988	Last reported in 1988 by Mackler & Hannah, but not seen since.
BIXACEAE	<i>Bixa orellana</i>		1970s to early 80s.	Last reported in Body Ponds, perhaps 1980s. Not seen since.
BORAGINACEAE	<i>Cordia</i>	IITF, 1994	1994	The IITF team listed <i>C. laevigata</i> for Dark Valley, but

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
	<i>laevigata</i>			the taxonomy of the Lesser Antillean species were often joggled between this and <i>C. reticulata</i> , a LA endemic with similar appearance. However, <i>C. laevigata</i> has red fruits while <i>C. reticulata</i> has white.
	<i>Tournefortia hirsutissima</i>		Unknown.	Nothing else is known about the species on Antigua.
	<i>Tournefortia filiflora</i>		Unknown.	Nothing else is known about the species on Antigua.
CACTACEAE	<i>Opuntia antillana</i>	Loveless, 19??; Harris, 1964	1964	The taxonomy of this species has had a checkered and confused history. However, it is now accepted as a WI endemic. Nothing else is known about the species on Antigua.
	<i>Opuntia tuna</i>	Britten, 1916	1914-1916	The taxonomy and distribution of this species in the Lesser Antilles has often been a matter of dispute, but it has been listed for the volcanic hills of Antigua by Britten.
CAESALPINACEAE	<i>Bauhinia aculeata</i>		Unknown.	Nothing else is known about the species on Antigua.
CAMPALUNACEAE	<i>Centropogon cornutus</i>		Unknown.	
CHLORANTHACEAE	<i>Hedyosmum arborescens</i>		Unknown.	Unknown. Nothing else is known about the species on Antigua.
CHRYSOBALANACEAE	<i>Hirtella triandra</i>		Unknown.	Nothing else is known about the species on Antigua.
CLUSIACEAE	<i>Mammea americana</i>	Loveless, 1960; Harris, 1964	1964	This species, well known for its highly prized fruit, is native to the NT, including some of the WI. However, if it is actually native to Antigua is in question, but it is suspected to be native to the northern LA and the GA. It was once found growing

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
				wild in Antigua, considered a dominant tree species (Loveless, 1960), but no wild specimens have been officially reported since the early 60s.
	<i>Marila racemosa</i>		Unknown.	Nothing else is known about the species on Antigua.
COMBRETACEAE	<i>Buchenavia tetraphylla</i>			Nothing else is known about the species on Antigua.
ERYTHROXYLACEAE	<i>Erythroxylum brevipes</i>	Beard, 1949	1949	Nothing else is known about the species on Antigua.
EUPHORBIACEAE	<i>Bernardia dichotema</i>			
	<i>Croton betulinus</i>	Harris, 1964; Howard, 1988-89	1964	
	<i>Drypetes alba</i>			
	<i>Drypetes glauca</i>			
	<i>Drypetes serrata</i>			
	<i>Richeria grandis</i>		Unknown.	
FABACEAE	<i>Canavalia campylocarpa</i>			
	<i>Erythrina berteriana</i>			
	<i>Lonchocarpus heptaphyllus</i>	Beard, 1949, Loveless, 1960, Harris, 1964	1964	The exact identity of this species on Antigua is in question. Historically, the taxonomy of <i>Lonchocarpus</i> has been shifting back and forth, and many questions remain about which species were observed across the islands, given this confused state. However, it is nonetheless one of three species listed for Antigua. Nothing else is known about the species on Antigua.
	<i>Machaerium</i>	IITF, 1994	Reported by the	

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
	<i>lunatum</i>		IITF team for Fig Tree in 1994. Nothing else is known about the species on Antigua.	
FLACOURTIACEAE	<i>Prockia crucis</i>			
	<i>Casearia guianensis</i>			
HELICONIACEAE	<i>Heliconia caribaea</i>			A <i>Heliconia</i> sp. was recently rediscovered in Christian Valley but no fertile parts were observed and as such a complete identification could not be made.
	<i>Heliconia bihai</i>			See above.
HERNANDIACEAE	<i>Hernandia Sonora</i>			
LAMIACEAE	<i>Cornutia pyramidata</i>			
LAURACEAE	<i>Ocotea leucoxylon</i>	Howard, 19??	1994	
	<i>Ocotea floribunda</i>	Howard, 19??	1994	
	<i>Ocotea cernua</i>	Howard, 19??	1994	
	<i>Nectandra membranacea</i>	Howard, 19??	1994	
	<i>Cinnamomum elongatum</i>	Howard, 19??	1994	
	<i>Beilschmiedia pendula</i>	Howard, 19??	Unknown	
LORANTHACEAE	<i>Dendropemon caribaeum</i>			
	<i>Dendropemon caribaeum</i>			
MALPIGHIACEAE	<i>Tetrapteryx inaequalis</i>			
MALVACEAE	<i>Pavonia paludicola</i>			
	<i>Paullinia plumieri</i>			

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
	<i>Malvaviscus arboreus</i>			
MAPLPIGHICAEAE	<i>Byrsonima trinitensis</i>			
	<i>Byrsonima crassifolia</i>			
MARCGRAVIACEAE	<i>Marcgravia umbellata</i>			
MELASTOMATACEAE	<i>Clidemia hirta</i>			
	<i>Henriettea triflora</i>			
	<i>Miconia mirabilis</i>	Howard, 19??	Not observed since the IITF team encountered it at Body Ponds in 1994.	
	<i>Miconia prasina</i>			
	<i>Miconia pyramidalis</i>	Harris, 1964	1964	Experts in the Melastomataceae have suggested that specimens in the LA attributed to this species all are or mostly like represent <i>M. laevigata</i> . However, additional work is required to determine if this species was or is indeed present on Antigua.
	<i>Miconia striata</i>			
	<i>Microgramma piloselloides</i>			
	<i>Tetrazygia discolor</i>			
MELIACEAE	<i>Trichilia hirta</i>	IITF, 1994	Listed by the IITF team for Fig Tree in 1994. Nothing else is known about the species on Antigua.	
MORACEAE	<i>Trophis racemosa</i>	IITF, 1994		

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
	<i>Maclura tinctoria</i>			
	<i>Ficus americana</i>	Howard, 19??		
MYRTACEAE	<i>Myrcia floribunda</i>			
	<i>Myrcia splendens</i>			
	<i>Myrcia platyclada</i>	IITF, 1994	Listed by the IITF team for Boggy Peak in 1994. Nothing else is known about the species on Antigua.	
	<i>Myrcia deflexa</i>			
NYCTANIGEACEAE	<i>Guapira cuspidata</i>	Beard, 1949	Last listed by J.S. Beard for Brecknocks Reservoir in 1949. Nothing else is known about the species on Antigua.	
ORCHIDACEAE	<i>Spiranthes torta</i>			
	<i>Habernaria monorrhiza</i>			
	<i>Eulophia alta</i>			
	<i>Epidendrum elongatum</i>	IITF, 1994	Reported by the IITF team for Fig Tree in 1994. Nothing else is known about the species on Antigua.	
	<i>Cyclopogon elatus</i>			
PIPERACEAE	<i>Piper aduncum</i>			
POACEAE	<i>Arthrostylidium venezuelae</i>	Britten, 1916	1914-1916?	This species is herein listed as tentative. <i>Arthrostylidium</i> spp., or Bamboo Grass, are known from the wetter and

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
				more mountainous Lesser Antillean islands. It may now be extinct on Antigua.
PTERIDACEAE	<i>Adiantum lucidum</i>			
RUBIACEAE	<i>Hillia parasitica</i>	Howard, 1988-1989	Unknown	Nothing else is known about the species on Antigua.
	<i>Genipa Americana</i>		Unknown	Nothing else is known about the species on Antigua.
	<i>Guettarda crispiflora</i>	IITF, 1994	1994	Listed by the IITF team for the Boggy Peak area. Nothing else is known about the species on Antigua.
	<i>Guettarda ovalifolia</i>	IITF, 1994	2010	A specimen located at Midway Ridge (above Christian Valley) in October 2010 may be this species.
	<i>Guzmania lingulata</i>	IITF, 1994	1994	Listed by the IITF team for the Wallings area. Nothing else is known about the species on Antigua.
	<i>Spermacoce eryngioides</i>			
	<i>Spermacoce laevis</i>			
	<i>Spermacoce ocymoides</i>			
	<i>Rudgea citrifolia</i>			
	<i>Chione venosa</i>			
SAPOTACEAE	<i>Pouteria multiflora</i>			
	<i>Manilkara bidentata</i>			
SIMAROUBACEAE	<i>Dacryodes excelsa</i>			
SMILACACEAE	<i>Smilax coriacea</i>			
SOLANACEAE	<i>Solanum rugosum</i>	IITF, 1994	1994	Listed by the IITF team for the Boggy Peak area. Nothing else is known about the species on Antigua.

FAMILY	SPECIES	LOCAL ID. AUTHORITY	YEAR LAST OBSERVED	NOTES
	<i>Cestrum diurnum</i>			
THELYPTERIDACEAE	<i>Thelypteris patens</i>			
	<i>Thelypteris hirsutula</i>			
URTACEAE	<i>Urera baccifera</i>			
	<i>Cecropia schreberiana</i>			
VERBENACEAE	<i>Citharexylum caudatum</i>			May have been observed at upper slopes Cades Bay area in 2010, but illicit activities in the forest prevents further study of the area.
	<i>Cornutia pyramidata</i>	IITF, 1994	1994	Listed by the IITF team for the Boggy Peak area. Nothing else is known about the species on Antigua.
VISCACEAE	<i>Phoradendron quadrangulare</i>			
ZINGIBERACEAE	<i>Renealmia occidentalis</i>			

List of Some of the New Plant Species Recorded for the SWW Area in Last 10 Years (New Antigua Records)

DICOTS

Maytenus cf. *guianensis*
Ficus cf. *insipida*
Ruellia brittoniana (introduced)
Ruellia cf. *nodiflora*
Hyperbaena cf. *laurifolia*
Centrosema sp.
Desmodium tortuosum
Stigmaphyllon sp.
Prescottia oligantha
Myrcia cf. *fallax*
Ormosia monosperma
Bunchosia glandulifera
Guettarda cf. *elliptica*
Exothea paniculata
Zanthoxylum cf. *caribaeum*
Paranopsis paniculata
Ipomoea indica

FERNS

Pteris longifolia
Adiantum pyramidale
Adiantum fragile
Trichomanes cf. *pumilum*
Trichomanes cf. *angustifrons*
Trichomanes cf. *lineolatum*
Trichomanes cf. *punctatum* var. *sphenoides*
Trichomanes cf. *punctatum* var. *punctatum*
Trichomanes cf. *pusillum*
Trichomanes cf. *ovale*
Thelypteris cf. *nephrodioides*
Thelypteris opulenta
Asplenium cf. *ocoense*
Adiantum cf. *variopinnatum*
Nephrolepis hirsutula
Vittaria cf. *gramminifolia*
Ophioglossum reticulatum
Phlebodium cf. *pseudoaureum*
Phlebodium cf. *decumanum*

Many new species records have been added to the list of plants for the area in the last 10 years; every new major field survey turns up new additions. This suggests that there is a need for more careful and long-term surveys to understand the species and the ecology of the area, and to ensure that the rare plants are identified and protected.



Figure 4.0. Cattails (*T. domingensis*) at Darkwood area.

Table 5.0. Physiognomic Plant Categories.

Category	Numbers	Percentage %
Herbs	229	34.4
Shrubs	145	21.8
Vines	92	13.8
Trees	200	30.0
Total	666	100

7.2. SWW TERRESTRIAL VEGETATION COMMUNITIES

There are about 26 vegetation community types found in the SWW Region. The descriptions and nomenclatures are adapted and simplified from the Lindsay and Horwith 1997 publication. A summary of these communities is provided table 6.0 below. More detailed descriptions of each are provided in **Appendix III**. **Appendix IV** provides a spatial representation of these communities.

Table 6.0. Vegetation Communities of the SWW region.

Label (Code)	Total Area (ha)	Vegetation Type (Association)
LM	57.88	Lower Montane Community
1a	143.26	<i>Ficus citrifolia</i> - <i>Ceiba pentandra</i> - <i>Roystonea oleracea</i> Community
1b	2.18	<i>Mangifera indica</i> - <i>Cocos nucifera</i> - <i>Bucida buceras</i> Community
1d	5.06	<i>Tillandsia usneoides</i> - <i>Morisonia americana</i> Sclerophyllous Community
2a	527.45	<i>Coccoloba pubescens</i> - <i>Eugenia</i> spp. Community
2c	655.19	<i>Pisonia subcordata</i> - <i>Bouyeria succulenta</i> Mixed Evergreen-deciduous Community
2d	16.1	<i>Cordia obliqua</i> Seasonally/Temporally Flooded Evergreen-deciduous Community
2e	84.7	<i>Tabebuia heterophylla</i> - <i>Pisonia Subcordata</i> Mixed Evergreen-Deciduous Community

Label (Code)	Total Area (ha)	Vegetation Type (Association)
2f	242.43	Acacia spp. Mixed Evergreen-Deciduous Community
3a	808.05	Acacia spp.-Caesalpinia coriaria-Haematoxylon campechianum-Leucaena leucocephala Community
3d	6.53	Melocactus intortus-Jacquinia arborea Succulent-Facultatively Dwarf-Shrubland Community
3f	3.48	Calliandra purpurea-Hylocereus trigonus Broad-leaved Evergreen Sclerophyllous Community
4a	121.4	Grassland with Broad-leaved Evergreen Trees
4b	41.55	Cymbopogon citratus Grassland with Broad-leaved Evergreen Tree
4c	1.69	Pasture: Acacia spp. Mixed Evergreen-Drought Deciduous Shrubland
5	42.93	Mangrove Community
6a	380.25	Farming (Includes crop, fruit and livestock)
6b	193.06	Gardens (Urban)
7a	14.86	Ponds/Dams/Reservoirs
8a	63.41	Sparsely Vegetated Rock & Cliffs Community
8b	16.98	Beach Vegetation Community
9a	0.42	Fill
9b	7.76	Coastal dune vegetation
9c	5.32	Eleocharis cellulosa Seasonally Flooded Community
10	42.96	Commercial/construction
11	15.04	Urban (High Density)
Wetland	134.52	Wetland – undifferentiated (associated with coastal mangroves and saltponds)
TOTALS	communities 3,634.46 ha	

8.0. OBSERVATIONS: THE FAUNA OF THE SWW REGION

Unlike plants and vegetation, the animals are not static—they are constantly on the move, trying to find food and shelter, escape prey and protect their offspring. Although some are restricted by their habitat needs and for other reasons, spatial representation of their situations is not always easy or possible. Many of the reports and observations of these species are more abstract and were often done without the use of GPS or careful recording. Where possible, the team has mapped rare species or special issues. Nevertheless, the areas of special conservation concern also coincide with the habitat needs of many of the rare species of native fauna.

8.1. BIRDS

Bird records from this area are some of the most detailed in Antigua. Nevertheless, these are by no means complete. Though this may be so, they do provide an invaluable resource and a window unto the vertebrate ecology of this region.

Bird surveys were done along trails, ghauts, bird flyways, forest edges, open patches in the forest, and wherever fruiting trees or foraging areas occurred. At least 109 species of terrestrial, wetlands and seabirds have been observed in the region.

It is important to note that the number of species seen during field operations reflects a short time frame in the day and within the season, and offers only a sample of the numbers of species that may occur there throughout the year. The list will undoubtedly expand considerably if surveys were done more frequently covering all seasons, and as part of a systematic study, which would monitor the area's bird population, especially the wetland, shore and seabirds, which are very under-represented in this list. The total so far represents about 33% of the total number of species for Antigua, Barbuda and Redonda.

Bird numbers and species fluctuate greatly, depending on the season, the amount of rain, the availability of food, and nesting habitat. North American migrants arrival on island during the fall usually coincide with the heaviest rains of the year when there is an explosion of insects, foliage, young plant shoots, fruits and flowers.

On the northward migration in the spring, when species fly up the Lesser Antillean chain from South America, birds arrive at the end of the dry season and when the short but sustaining spring rains usually begin.

As the forest, woodlands, scrublands and wetlands of the SWW mature, species numbers and types will increase, and many species of plants and animals increasingly rely on them for

survival.

8.2. MAMMALS

Bats are the only native mammals extant on Antigua today. Little is known about them. Previous to this survey, there were seven extant species of bats reported for the island. A new species record obtained during 2009 is the Forest Bat, a sub-species of which is endemic to Antigua and to Guadeloupe.

There are eight species reported for the SWW. These include:

1. The **Velvety Free-tailed Bat (*Molossus molossus*)**, a widespread and relatively common species throughout Antigua;
2. The **Brazilian Free-tailed Bat (*Tadarida brasiliensis*)**, less common than the former species, to which it is closely related, nevertheless, the species seems locally abundant in parts of the island;
3. The **Jamaican Fruit Bat (*Artibeus jamaicensis*)**, a very common and widespread species in Antigua and throughout the Antilles;
4. The **Cave Bat (*Brachyphylla cavernarum*)**, a rare, highly gregarious species that seems limited by the availability of hot humid caves;
5. The **Tree Bat (*Ardops nichollsi annectens*)**: this small Lesser Antillean member of the Phyllostomidae is the only member of its genus. *Ardops* roosts in trees, hence the name, and possibly small caves and overhangs. Large old trees and overhangs are critical to the survival of this species on Antigua. *A. nichollsi annectens* is found only in Guadeloupe and Antigua, and was first captured by Kevel Lindsay at Wallings in 2009. It is so far only known with certainty from Christian valley, Mount Obama and the Wallings/Rendezvous area. Roost site are believed to be large old trees, which are quite rare in the region's forest.
6. The **Fishing or Bulldog Bat (*Noctilio leporinus*)**. This species is the largest bat of the Americas with a wingspan that can go to over 61 cm (2 ft.). At Wallings, the Fishing Bat flies along paths as it makes its way to catch fish on the reservoir or to take a drink.
7. The **Flower Bat (*Monophyllus plethodon*)**: is known from Wallings and surrounding areas, and undoubtedly occurs at Christian Valley, Orange Valley and Cades Bay. It is a small nectar-feeding, pollen and fruit bat belonging to the Phyllostomidae family. It is quite rare and requires forest habitats, but will frequent fruit tree farms for nectar and pollen.
8. The **Funnel-eared Bat (*Natalus stramineus*)**. This small orange-brown insectivorous bat is often overlooked because of its size, habits and rarity. Though widely scattered

throughout Antigua, it is generally quite rare. So far, only one roost site is known from the area, and this was first discovered in upper Christian Valley in the early 1990s by Kevel Lindsay. Though others have visited the site in the intervening years, the exact location has been lost and no one has visited it in maybe 10 years.

Bats are critical to the forest ecosystem health and wellbeing. These mammals are the primary pollinators, seed and beneficial insect dispersers of a number of species, and without them the forest ecosystem would almost certainly perish. Species of plants for which bats are critical include the Silk Cotton (*C. pentandra*), Locust or Tinking Toe (*H. courbaril*), Wild Figs (*Ficus* spp.), *Piper* spp., the Calabash (*C. cujete*) and a number of tree crops.

Further work is needed to assess bat populations: how they are using the forest, their diets and the effects on the plant communities, roosting, and the importance of a healthy forest to the sustainability of the species.

Other species of mammals known to occur in the SWW include the introduced and invasive Black Rat (*Rattus rattus*), the Norway or Brown Rat (*R. norvegicus*), the House Mouse (*Mus musculus*), the Indian Mongoose (*Herpestes javanicus*), feral House Cats (*Felis catus*) a small band of donkeys and a few feral horses at the Signal Hill area, goats, and wild pigs. Wild pigs are most notable at down in Doiggs and Rendezvous Bay. There are also reports of feral dogs at Doiggs and Rendezvous, but they undoubtedly occur sporadically elsewhere.

8.3. REPTILES AND AMPHIBIANS

There are 21 terrestrial reptiles and amphibians recorded for Antigua. Of these, four are extinct, three of which are known only from fossils (*Clelia clelia* and *Boa constrictor*, both snakes, and *Leocephalus cuneus*, a lizard). The fourth species, the Lesser Antillean Iguana (*Iguana delicatissima*) was last seen in the mid-1980s, but is believed to now be extinct. All these species would have been members of the fauna of the SWW prior to the wholesale clearing of the area's forests and woodlands, and the introduction of the Mongoose.

Two species are human-assisted introductions, both amphibians (the Marine Toad *Bufo marinus* and the Cuban Tree Frog (*Osteopilus septentrionalis*), and one is a natural introduction, the Green (*Iguana iguana*) as a result of the passage of Hurricane Luis in September 1995, but may have died out soon after its arrival. However, there are occasional reports of iguanas in this area, though these remain unconfirmed.

The Cuban Tree Frog was likely introduced to Antigua via the horticultural plant trade or through building and construction material shipments from Florida. It was first recorded at Jumby Bay in the 1990s and has since spread to the mainland. It is now found just about everywhere on Antigua, and is a voracious predator of invertebrates, small mammals, birds, reptiles and amphibians. It also poses some health risks since it needs freshwater to breed,

and in the right conditions, it can overwhelm an area, including ponds and cisterns. Some residents have had to abandon their cisterns because of the sheer number of animals that living in them.

The Red-footed Tortoise (*Geochelone carbonaria*) once occurred in drier areas of the SWW but has been hunted and over-collected and now only persist as pets.

In addition to those mentioned above, the reptile species for the SWW include:

1. ***Anolis (bimaculatus) leachi*** – Antigua or Tree Anole, endemic to Antigua and Barbuda. This species is common throughout Antigua and at Wallings.
2. ***Anolis watsi*** – The Brown or Watts Anole, an Antiguan endemic. This species is rather common.
3. ***Sphaerodactylus elegantulus*** – The Dwarf Gecko, endemic to Antigua and Barbuda. Uncommon to relatively rare at Wallings.
4. ***Hemidactylus mabouia*** – House Gecko/Woodslave. Introduced. Common.
5. ***Thecadactylus rapicauda*** – The Forest or Tree Gecko. Population status unknown, but given its biology and ecological habits, it is believed to be locally common.
6. ***Gymnophthalmus underwoodi*** – Underwood’s Spectacled Tegu
7. ***Typhlops monastus*** – The Blind Snake. This species is believed to be locally common, though this conclusion is based on knowledge of the species’ habits throughout most of Antigua.
8. ***Gymnophthalmus underwoodi*** – Underwood’s Spectacled Tegu

And two amphibians: the tree frog (*Eleutherodactylus johnstonei*) and the introduced South American Toad (*Bufo marinus*). Both species are common.

The other species of tree frog recorded for Antigua remains problematic since some authors argue that it is not present here (Kaiser, 1992). *E. martinicensis* or the Martinique Tree Frog has been shown to be easily introduced to islands in the region, and it very closely resembles its relative *E. johnstonei*, so distinguishing them in the field is very difficult. The species could possibly be present but this is only speculative at this time.

All species of reptiles except *S. elegantulus* are relatively quite common and widely distributed throughout most of Antigua.

The House Gecko or Wood Slave is believed to be a West African immigrant, arriving in the region via slave ships within the last 400 years.

8.4. TERRESTRIAL INVERTEBRATES

No surveys of terrestrial invertebrate were carried out. The team was unable to do this due the relatively short timeframe for the project, the very severe demands that invertebrate surveys and species identifications require, and the limited financial resources available.

However, invertebrates of special conservation concern or of particular interest were noted where possible.

8.5. INVASIVE SPECIES

There are at least five species of invasive plants and animals that are of major concern throughout the SWW. The first species is the Lemon Grass (*C. citratus*), first introduced in 1902 to the banks of the Body Ponds as an erosion control measure. The species has since spread throughout the Shekerley Mountains and to a few small patches on the hills east of Liberta.

For the first 50 years or so, it is believed that the species did not move very far from its initial area of introduction. Just why its spread has accelerated may be due largely be due to two main factors. Charcoal burners often line their pits with bunches of fertile stems, which are harvested from infested areas on the lower plains, and carried to locations up in the hills. According to J.C. Cater in his 1944 report on Forestry in the Leeward Islands, “[A]ntigua has the unenviable reputation of being, of all the West Indian Islands, the most prone to suffer so-called “bush fires”.” In the early parts of the 1900s, it seems that bush fires became a major environmental problem on Antigua. Landless and poor residents used fires to clear land, but also wanted to promote fresh growth of fresh succulent shoots, and for many years, a tradition was handed down that fires brought rains, a myth that still persists amongst some of the residents today.

Fires greatly accelerate the spread of this species by killing off potential competing plants and by creating fresh ground for its seedlings. Today, the fires are set by farmers, livestock owners, wood cutters and other persons to help maintain access to the forests and the hills, to control the grass, and to provide fresh succulent and palatable shoots for livestock during severe dry periods. As fires are set to the Citronella grasslands, they also destroy and fragment forests and woodlands, and open up these areas to the invasion of the species. However, Citronella is not shade tolerant and soon dies out as forest and woodland crowd it out.

The spread of this species has also been assisted by periods of severe droughts when trees and shrubs die back and open up new areas to the invasion of the species. Citronella also spreads from one area to another through direct human transport; the plant is prized for its herbal and medical uses. It is also spread by livestock as they carry the seeds from place to place.

One of the most effective ways to control Citronella is to stop the fires, and prevent further road construction and fragmentation of the forest and landscape within and around the forest. The species is an aggressive invasive and roads and freshly turned earth provide access for the species to invade new areas. As the fires stop, pioneer shrubs and trees will colonize the grasslands and eventually shade out the grass.

The other invasive species include the Leaf of Life Plant (*Bryophyllum pinnatum*). This herbaceous plant can often form large colonies. While adult plants are easily removed, the species reproduces both by sexual and asexual means. It uses small plantlets on the leaves, and each leaf or stem may root and create new colonies. It should be removed when noted. It is not known when this species was introduced to Antigua.

The other three species are *Sansevieria*. They are often referred to as "Mother in Law's Tongue" plants and may indicate the location of an old settlement. They were often used to mark housing plots and property boundaries. Their fibres were also used to make rope and fabric. There are at least three species in the area, maybe more. They were likely introduced sometime early in the 19th Century as a source of natural fibre.

These species can form pure stands, and destroy the foundations of old buildings, exclude other species and disrupt native systems. They are difficult to remove since almost all parts of the plants may root—even small discarded bits. To entirely remove the plant, the deep roots, which can penetrate the earth up to more than 60 cm, they must be removed entirely from the ground and then completely burnt.

The animal invasive species of concern include the goats, the Cuban Tree Frog and the introduced Indian Mongoose. Goats are a major problem in many parts of Antigua and Barbuda. They cause considerable damage to the landscape and biodiversity. They strip trees and other plants of foliage, prevent regeneration, and as the vegetation dies back, the soil becomes exposed and erodes. This then has a cascading or domino effect on all aspects of the ecology and economy of the area's landscape.

In the drier areas of the SWW, the goats are semi-wild, but are owned by various, but unknown persons, who occasionally corral the animals and take animals as they need. These free-roaming animals have a tremendous influence and impact on the landscapes, and the damage they cause can be seen in the defoliation of trees, the lack of regeneration in the undergrowth, and erosion of the slopes. The goats may also be aiding the spread of the Lemon Grass by reducing the vegetation cover and by exposing bare earth, which is then easily colonised by the grass.

The Mongoose was introduced to Antigua in the 1800s at the behest of estate owners after they heard of the success that its introduction had had on controlling the rats that had been

causing considerable damage in the cane fields of Jamaica. Its introduction soon had a disastrous effect on the native animals. Within a few short years, the endemic Antigua Burrowing owl (*Athene cunicularia amaura*) became extinct, and so did the snake (*A. antiguae*) from the mainland. The snake is now found only on the offshore cays. The Mongoose undoubtedly caused the extinction of far more, but in those early years, relatively little was known and understood about the biodiversity of the island.

The Mongoose is very common throughout Antigua, though there are no estimates of population numbers. The species is often seen darting about in search of prey, and may be observed around homes, garbage bins, along the roads, and areas around ponds and reservoirs.

It is known to be an aggressive and voracious predator and eats just about any vertebrate or invertebrate. Ground nesting birds and reptiles are especially vulnerable to this species. This is the reason that the endemic Antigua Ground Lizard (*A. griswoldi*) is rare on the island and is now entirely absent from the SWW, though there are reports that it continues to persist at.

In the past, the government used to pay a bounty on the Mongoose and encouraged residents to kill any specimens captured. This practice has been long discontinued, but it was effective in localised areas in controlling the species' population numbers, thereby reducing its impact on the biodiversity.

8.6. SPECIES OF SPECIAL CONSERVATION CONCERN

There are several species of special conservation concern:

Below is provided a summary of the species of birds of special conservation concern for the SWW:

1. The **White-crowned Pigeon (*Patagioenas leucocephala*)**. Though widespread throughout Antigua, even occurring within St. Johns, this species is rare on most of the islands of the region. It is a regional migrant, though nesting on Antigua, including the SWW, and disperses widely through the region. Birds born on Antigua may eventually colonize other islands from which it has disappeared (due to over-hunting and loss of habitat).
2. The **Scaly-naped Pigeon (*Patagioenas squamosa*)**. This species is often mistaken by many Antiguan for its close relative *P. leucocephala*. It rarely occurs outside of the southern hills. *P. squamosa* is far the rarer of the two species, and is very shy, always wary of hunters. It breeds at Wallings.
3. The **Ruddy Quail Dove (*Geotrygon montana*)**. Though it is not a regional endemic, this species is one of Antigua's shiest and most retiring birds, rarely ever seen by anyone. The

species seems limited by the presence of the Mongoose and by increasing human presence in the forest.

4. The **Bridled Quail Dove (*Geotrygon mystacea*)**. This species closely resembles the above species, but has far more color in its plumage. The calls are somewhat similar though this West Indian endemic bird seems somewhat more common than the former. In habits and needs, these two species are very similar.
5. The **Purple-throated Carib (*Eulampis jugularis*)**. This is Antigua's largest and most colorful hummingbird, with a black back and an iridescent scarlet throat. Though it is sometimes found outside of the southern hills, it primarily inhabits this area.
6. The **Antillean Euphonia (*Euphonia musica*)**. The Euphonia is our only resident tanager. Quite colorful in its yellows, greens and blues, the species is extremely difficult to observe, but is often heard calling from the tree-tops as it searches for one of its favorite fruits, the mistletoe. However, it is usually quiet for most of the year.
7. The **Scaly-breasted Thrasher (*Allenia fusca*)**. The Scaly-breasted Thrasher and its close cousin, the Pearly-eyed Thrasher (*Margarops fuscatus*) are probably the most ubiquitous of our resident birds. They are mimids, relatives of the mockingbirds, and are intelligent, noisy, boisterous and inquisitive. They can often be heard as they tumble around in the undergrowth, fight amongst themselves, call from the tree-tops and come peering into your face as you squeal like a mouse. The Thrasher is a Lesser Antillean endemic that is restricted primarily to the southern hills.
8. The **Brown Trembler (*Cinclocerthia ruficauda*)**. The Trembler is one of those enigmatic birds that seemed to have disappeared from Antigua for a number of years but only to reappear. Known as a result of its habit of "trembling" hence the common name, this species is a very rare Lesser Antillean endemic, and is known from Wallings and Christian Valley. It is also a close relative of *A. fusca* and *M. fuscatus*, though it does not have the boisterous personalities of these other species.
9. The **Broad-winged Hawk (*Buteo platypterus insulicola*)**. This is Antigua's only endemic bird. It is a subspecies. It is not primarily confined to the southern hills, but is widely distributed throughout the island. However, the hawk is common at Wallings, and even nest in the area. It preys on pigeons and doves and needs large trees for roosting, nesting and from which to find prey.

For the mammals, the species of concern are:

- The **Cave Bat** (*Brachyphylla cavernarum*) – rare and very restricted.
- The **Forest or Tree Bat** (*Ardops nicholli*) – believed to be very rare and quite restricted.

Details on these two and other bat species are discussed above in the section on fauna.

For amphibians, the species that is of some concern is the **Antigua Dwarf Gecko** (*S. elegantulus*). The introduced mongoose may be having some impact on the population and measures should be taken to control the mongoose.

Though no formal surveys of the invertebrates were undertaken, of concern is the native *Macrobrachium* and *Atya* species of shrimp and prawns in the streams, ponds and pools throughout the area. An assessment needs to be carried out to determine the species and ecological status of these animals.

Many of the rare plants and potentially extinct species of plants are of major concern. The list is too enormous to fully detail here and frankly not enough is known about the exact status to explain their conditions and peculiar situations. A more detailed study of these species and the issues surrounding them is needed. However, a preliminary list of these species is provided in table 4.0.

For plants, the situation is a bit more complicated because many of the species of concern have not been seen for at least 10 to over 100 years and virtually nothing is known about the status of most of them. Some are considered to be extinct while others may just be naturally rare given the scarcity of required habitat and ecological framework, their biology and size. An example of how size, biology and habitat availability may affect a species' distribution and population is that of *Utricularia obtusa*, a diminutive carnivorous plant that requires boggy freshwater wetlands with clear unpolluted water, something that is quite rare to absent in most of Antigua today. A small colony was seen in the SWW, a first for perhaps over 30 years. Photo 5.0 below shows the plants at Darkwood/Ffryes observed June 2011 by Kevel Lindsay.

Table 4.0 (under section *Observations: the Vegetation and Plants*) above, provides a list of the plants that have not been observed in the area for 25 to over 100 years. There is an urgent need to relocate these plants and to establish effective conservation measures to ensure their survival, including habitat restoration and protection.

Other species of concern include all native ferns and their allies. All native species should be protected by law.

Other species that should be protected include all native orchids. Two additional orchid species were added to the Antigua list in 2011 illustrating that there is still considerable amount of work needed to fully understand the orchid flora of the island. Both species were found within the SWW. They include *Bletia* cf. *patula*, and *Polystachya* cf. *concreta*. Further study is also needed to confirm the taxonomic identities of these two new species.



Figure 5.0. *Utricularia obtusa*, a carnivorous aquatic species at Darkwood/Ffryes.

8.7. AREAS OF SPECIAL CONSERVATION CONCERN

The areas of concern include natural plant communities, natural areas and historical, aesthetic and aquatic resources. The areas are:

1. **Wallings Forest:** The original core of Wallings is not very large, being just over 100 acres (40 ha) and this has increased over the years to 200-300 acres (80-120 ha). The plant communities within the Wallings area are vulnerable to adverse impacts of development, erosion, flooding, uncontrolled farming, fires, invasives species, livestock and other factors and fragmentation.

2. The historic **Tom Moore's Spring**: Situated just at the foot of Wallings Reservoir No. 2 next to the road. Over the years, the spring has been impacted by sediment disposal and pile up, bulldozing, vehicular traffic, road construction, farming and many other factors. The spring needs to be rehabilitated and protected.
3. **Fig Tree Drive**: A natural icon in Antigua. Despite its significance to the economy of the country, the area is seriously at risk and on the decline and steps need to be made to protect and restore it. This area would include the Fig Tree stream as well.
4. There is an urgent need to assess the vulnerability of both **Wallings Reservoir No. 1** and **No. 2**, especially **the dam wall of No. 2**. Recent and past flooding, landslips and development of nearby areas are having their toll. These sites need to be protected, restored and stabilized.
5. **Lower Montane Forest areas**: These are small in size, the largest areas less than about 8 ha (20 acres). Found in upper sheltered valleys and slopes of Mount Obama, "Midway Ridge," Christian Valley and Upper Dunnings/McNish area. Much of these areas fall within private property and are vulnerable to development, including road cuts.
6. **Rendezvous Bay Watershed**: This is the largest undeveloped watershed remaining on Antigua. It falls within two protected areas: the proposed Wallings Forest Reserve Area and the Nelson's Dockyard National Park, as well as the SWW Demonstration Area boundary. It is an important part of the Wallings forest system and in fact it should all be considered a vital part of one large complex of connected ecosystems. It is now slated to be developed.
7. **Coastal and natural Wetlands**: Natural wetlands in Antigua and Barbuda are on the decline, and most have been compromised; some have completely disappeared. The coastal wetlands of the SWW are all threatened with development, by coastal erosion, encroachment, compromise, sea level rise, pollution, among other things. There is an urgent need for protection of the remaining wetlands.
8. **Farmlands (currently used and fallow)**: As with wetlands, farmlands and farming are on the decline, and in many instances, due to similar threats posed to wetlands, although housing, strip development along roads, changing land-use and other threats are the primary cause of this. Even if farm lands are allowed to lay fallow they remain useful because they can be recovered for this purpose. Farmlands need to be reserved even when not in use.

9.0. RECOMMENDATIONS

1. Undertake a complete and comprehensive wetlands assessment and review each wetland site, including freshwater ponds and reservoirs: to include a comprehensive list of the plants, algae, mosses, fungi, lichens, vertebrates and invertebrates, and develop a wetlands recovery and conservation plan;
2. Undertake a long-term bird monitoring plan: to include annual monitoring of migrants (summer, fall and spring). This could be done with the assistance of the Society for the Conservation and Study of Caribbean Birds (SCSCB) and the EAG;
3. With the help of the Antigua and Barbuda Plant Conservation Project (ABPCP), undertake a more complete assessment of critical plant species and habitats, including lower montane forest areas. As part of this effort, develop a forest recovery plan for the areas and species;
4. To effect plant and forest conservation at a more practical level, it is recommended that Forestry and the Environment Divisions explore a closer working relationship with the EAG's ABPCP. One possible approach is for Forestry to employ a trained "plant conservation officer" who will be seconded to work with the ABPCP, with that officer's work programme developed by Chris Pratt, Kevel Lindsay, Adriel Thibou and approved by the ED. It is recommended that under such a programme, that a native plant nursery be developed; a possible site for in situ rare plant conservation efforts could be the Body Ponds Nature Park, where plants could be housed and planted out in the wild, a nature setting to engage communities, provide training to people and groups and for live exhibits. One possible candidate trained in rare plant conservation is Ms. Carolyn Thomas.
5. Work with Plant Protection, international museums, the Food and Agricultural Organization (FAO), the Caribbean Agricultural, Research Development Institute (CARDI) and the University of the West Indies, to undertake a comprehensive survey and assessment of the area's invertebrate fauna;
6. Undertake a survey of the freshwater vertebrate and invertebrate fauna of streams in the SWW;
7. With the help of the U.S. Department of Agriculture (USDA), the FAO, CARDI and the University of the West Indies (UWI) Seismic Research Center (SRC), undertake efforts to update the soil classification system of Antigua and Barbuda, as well as the geology, and bring them in line with accepted international standards. Both systems are wholly out of date and need revision and mapping;

8. Recover Tom Moore's Spring at Wallings;
9. Assess the conditions and conservation needs of both Dam No. 1 and Dam No. 2 at Wallings;
10. Work with landowners, Antigua Public Utilities Authority (APUA) and the Public Works Department (PWD) to address conservation issues along Fig Tree Drive, including setting set back limits for farming along the main road, clearing and slope development. Fig Tree needs to be reforest;
11. Undertake a more comprehensive review of the heritage resources of the SWW, to include all archaeological and historical sites, and determine the first landing area of the British Settlers in Old Road, and mark this area; and
- 12.** Undertake an assessment of non-point and point sources of pollution in the SWW, map these and develop a pollution reduction plan, including reduced sediment runoff.

10.0. REFERENCES AND CITATIONS

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APPENDIX I: PLANT SPECIES OF THE SW REGION OF ANTIGUA

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Blechum pyramidatum</i>	Acanthaceae	Rock balsam	Herb	Common	Native	
<i>Justicia eustachiana</i>	Acanthaceae		Shrub	Rare	Native	
<i>Justicia secunda</i>	Acanthaceae		Shrub	Common	Native	
<i>Odontonema nitidum</i>	Acanthaceae		Shrub	Common	Native	
<i>Ruellia cf. nudiflora</i>	Acanthaceae	Violet Wild Petunia	Herb	Rare	Native?	Recently discovered at Christian Valley
<i>Ruellia tuberosa</i>	Acanthaceae		Herb	Common	Native	
<i>Ruellia tweediana</i>	Acanthaceae		Herb	Rare	Introduced	
<i>Siphonoglossa sessilis</i>	Acanthaceae	Cossie balsam	Shrub	Rare	Native	
<i>Thunbergia alata</i>	Acanthaceae		Vine	Common	Introduced	
<i>Thunbergia fragrans</i>	Acanthaceae	White susan	Vine	Rare	Native	
<i>Agave karrato</i>	Agavaceae	Century plant	Herb	Common	Native	
<i>Furcraea tuberosa</i>	Agavaceae	Century plant	Herb	Rare	Native	
<i>Sansevieria hyacinthoides</i>	Agavaceae	Iguana tail	Herb	Rare	Native	
<i>Yucca aloifolia</i>	Agavaceae	Yucca	Tree	Rare	Introduced	
<i>Sesuvium portulacastrum</i>	Aizoaceae		Herb	Common	Native	
<i>Iresine diffusa</i>	Amaranthaceae		Herb	Common	Native	
<i>Achyranthes aspera</i>	Amaranthaceae	Man better man	Herb	Common	Native	
<i>Hymenocallis caribaea</i>	Amaryllidaceae		Herb	Common	Native	
<i>Spondias cytherea</i>	Anacardiaceae		Tree	Rare	Introduced	
<i>Comocladia dodonaea</i>	Anacardiaceae	Pick Evil	Shrub	Common	Native	
<i>Mangifera indica</i>	Anacardiaceae	Mango	Tree	Common	Native	
<i>Spondias mombim</i>	Anacardiaceae	Hog plum	Tree	Rare	Native	
<i>Anemia adiantifolia</i>	Anemiaceae		Herb	Rare	Native	
<i>Anemia hirta</i>	Anemiaceae		Herb	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Annona montana</i>	Annonaceae	Wild soursop	Tree	Rare	Native	
<i>Annona muricata</i>	Annonaceae	Soursop	Tree	Rare	Native	
<i>Annona reticulata</i>	Annonaceae	Custard Apple	Tree	Rare	Introduced	
<i>Annona squamosa</i>	Annonaceae	Sugar apple	Shrub	Rare	Native	
<i>Funtumia elastica</i>	Apocynaceae		Tree	Ex?	Native	
<i>Catharanthus roseus</i>	Apocynaceae	Periwinkle	Herb	Common	Native	
<i>Plumeria alba</i>	Apocynaceae	Wild Frangipani	Tree	Common	Native	
<i>Rauvolfia viridis</i>	Apocynaceae	Bellyache bush	Shrub	Common	Native	
<i>Tabernaemontana citrifolia</i>	Apocynaceae	Milk Bush	Shrub	Rare	Native	
<i>Asclepias curiassavica</i>	Apocynaceae-Asclepiaceae	Scarlet milkweed	Herb	Common	Native	
<i>Asclepias curiassavica</i> (yellow form)	Apocynaceae-Asclepiaceae		Herb	Rare	Native	
<i>Calotropis procera</i>	Apocynaceae-Asclepiaceae	Monkey Apple	Shrub	Common	Native	
<i>Matelea maritima</i>	Apocynaceae-Asclepiaceae	Beach Milk Vine	Vine	Common	Native	
<i>Ilex nitida</i>	Aquifoliaceae		Tree	Ex?	Native	
<i>Ilex sideroxyloides</i>	Aquifoliaceae		Tree	Ex?	Native	
<i>Anthurium cf. caudatum</i>	Araceae		Herb	Rare	Native	
<i>Anthurium scandens</i>	Araceae		Vine	Ex?	Native	
<i>Caldium bicolor</i>	Araceae		Herb	Rare	Introduced	
<i>Colocasia esculenta</i>	Araceae		Herb	Rare	Introduced	
<i>Diffenbachia seguine</i>	Araceae		Herb	Common	Native	
<i>Monstera adansonii</i>	Araceae		Vine	Rare	Native	
<i>Philodendron giganteum</i>	Araceae	Elephant ears	Herb	Rare	Native	
<i>Philodendron hederaceum</i> var. <i>hederaceum</i>	Araceae		Vine	Common	Native	
<i>Pistia stratiotes</i>	Araceae	Water lettuce	Herb	Common	Native	
<i>Xanthosoma cf. undipes</i>	Araceae		Shrub	Rare	Native	
<i>Xanthosoma sagittifolium</i>	Araceae		Shrub	Rare	Introduced	
<i>Xanthosoma violaceum</i>	Araceae		Shrub	Rare	Introduced	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Coccothrinax barbadensis</i>	Arecaceae-Palmae	Palmetto	Tree	Rare	Native	
<i>Cocos nucifera</i>	Arecaceae-Palmae	Coconut	Tree	Rare	Native	
<i>Roystonea oleracea</i>	Arecaceae-Palmae	Royal Palm	Tree	Rare	Native	
<i>Aristolochia rugosa</i>	Aristolochiaceae		Vine	Ex?	Native	
<i>Aristolochia trilobata</i>	Aristolochiaceae	Six sixty six	Vine	Rare	Native	
<i>Aloe vera</i>	Asphodelaceae	Aloe	Herb	Rare	Introduced	
<i>Asplenium pumilum</i>	Aspleniaceae	Dwarf Spleenwort	Herb	Common	Native	
<i>Bidens reptans</i>	Asteraceae		Vine	Common	Native	
<i>Chromolaena dussii</i>	Asteraceae		Shrub	Ex?	Native	
<i>Cyanthillium cinereum</i>	Asteraceae		Herb	Rare	Native	
<i>Emilia fosbergii</i>	Asteraceae		Herb	Common	Native	
<i>Pluchea carolinensis</i>	Asteraceae		Shrub	Common	Native	
<i>Synedrella nodiflora</i>	Asteraceae		Herb	Common	Native	
<i>Wedelia fruticosa</i>	Asteraceae		Herb	Common	Native	
<i>Biden cynapiifolia</i>	Asteraceae		Herb	Rare	Native	
<i>Bidens reptans</i>	Asteraceae		Vine	Common	Native	
<i>Chromolaena sp.</i>	Asteraceae		Shrub	Common	Native	
<i>Cyanthillium cinereum</i>	Asteraceae		Herb	Common	Native	
<i>Eclipta prostrata</i>	Asteraceae	Congo Nelly	Herb	Common	Native	
<i>Emilia sonchifolia</i>	Asteraceae		Herb	Common	Native	
<i>Pectis humifusa</i>	Asteraceae		Shrub	Rare	Native	
<i>Pluchea carolinensis</i>	Asteraceae	Cattle tongue	Shrub	Common	Native	
<i>Pseudelephantopus spicatus</i>	Asteraceae		Herb	Rare	Native	
<i>Wedelia calycina</i>	Asteraceae	Piss a Bed	Shrub	Common	Native	
<i>Wedelia fruticosa</i>	Asteraceae		Shrub	Common	Native	
<i>Avicennia germinans</i>	Avicenniaceae	Black mangrove	Tree	Rare	Native	
<i>Amphitechna latifolia</i>	Bignoniaceae		Tree	Rare	Native	
<i>Crescentia cujete</i>	Bignoniaceae	Calabash	Tree	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Macfadyena unguis-cati</i>	Bignoniaceae	Cat's Claw	Vine	Common	Native	
<i>Tabebuia heterophylla</i>	Bignoniaceae	White Cedar	Tree	Rare	Native	
<i>Tabebuia pallida</i>	Bignoniaceae		Tree	Rare	Native	
<i>Bixa orellana</i>	Bixaceae		Tree	Extinct	Native	
<i>Blechnum occidentale</i>	Blechnaceae		Herb	Common	Native	
<i>Bourreria succulenta</i>	Boraginaceae	Chinkwood	Tree	Common	Native	
<i>Cordia alliodora</i>	Boraginaceae	Spruce	Tree	Common	Native	
<i>Cordia cf. reticulata</i>	Boraginaceae		Tree	Rare	Native	
<i>Cordia collococca</i>	Boraginaceae	Manjack	Tree	Rare	Native	
<i>Cordia curassavica</i>	Boraginaceae		Shrub	Common	Native	
<i>Cordia dentata</i>	Boraginaceae		Tree	Rare	Native	
<i>Cordia globosa</i>	Boraginaceae		Shrub	Common	Native	
<i>Cordia nesophila</i>	Boraginaceae	Black Sage	Shrub	Common	Native	
<i>Cordia obliqua</i>	Boraginaceae	Clammy cherry	Tree	Common	Native	
<i>Cordia sulcata</i>	Boraginaceae	Manjack	Tree	Common	Native	
<i>Cydista aequinoctalis</i>	Boraginaceae		Vine	Ex?	Native	
<i>Heliotropium angiospermum</i>	Boraginaceae	Eye Bright	Herb	Rare	Native	
<i>Heliotropium indicum</i>	Boraginaceae		Herb	Rare	Native	
<i>Rochefortia spinosa</i>	Boraginaceae		Shrub	Common	Native	
<i>Tournefortia bicolor</i>	Boraginaceae		Vine	Rare	Native	
<i>Tournefortia filiflora</i>	Boraginaceae		Vine	Ex?	Native	
<i>Tournefortia hirsutissima</i>	Boraginaceae		Vine	Ex?	Native	
<i>Tournefortia macrophylla</i>	Boraginaceae		Vine	Rare	Native	
<i>Tournefortia volubilis</i>	Boraginaceae		Vine	Common	Native	
<i>Aechmea lingulata</i>	Bromeliaceae	Wild Pineapple	Herb	Rare	Native	
<i>Anas cosmosus</i>	Bromeliaceae		Herb	Rare	Introduced	
<i>Bromelia karatas</i>	Bromeliaceae		Herb	Rare	Native	
<i>Catopsis floribunda</i>	Bromeliaceae	Strap plant	Herb	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Pitcairnia angustifolia</i>	Bromeliaceae		Herb	Common	Native	
<i>Tillandsia recurvata</i>	Bromeliaceae		Herb	Common	Native	
<i>Tillandsia usneoides</i>	Bromeliaceae	Old Man' s Beard	Herb	Common	Native	
<i>Tillandsia utriculata</i>	Bromeliaceae		Herb	Common	Native	
<i>Vriesia guadalupensis</i>	Bromeliaceae		Herb	Rare	Native	
<i>Dacryodes excelsa</i>	Burseraceae		Tree	Ex?	Native	
<i>Bursea simarouba</i>	Burseraceae	Turpentine	Tree	Common	Native	
<i>Hylocereus trigonus</i>	Cactaceae		Vine	Common	Native	
<i>Hylocereus undatus</i>	Cactaceae		Vine	Common	Native	
<i>Melocactus intortus</i>	Cactaceae	Turk's Cap Cactus	Shrub	Rare	Native	
<i>Opuntia cf. currassavica</i>	Cactaceae		Shrub	Rare	Native	
<i>Opuntia cf. stricta</i>	Cactaceae		Shrub	Rare	Native	
<i>Opuntia dillenii</i>	Cactaceae	Prickly pear	Shrub	Common	Native	
<i>Opuntia triacantha</i>	Cactaceae	Jumping prickly pear	Shrub	Common	Native	
<i>Pereskia aculeata</i>	Cactaceae		Vine	Common	Native	
<i>Pilosocereus royeri</i>	Cactaceae	Dildo	Tree	Common	Native	
<i>Rhipsalis baccifera</i>	Cactaceae		Herb	Rare	Native	
<i>Canella winteriana</i>	Canellaceae	Cinnamon	Tree	Rare	Native	
<i>Capparidastrium frundosum</i>	Capparaceae	Rat bean	Tree	Common	Native	
<i>Cleome viscosa</i>	Capparaceae	Asian spiderflower	Herb	Common	Native	
<i>Cynophalla flexuosa</i>	Capparaceae	Dogwood	Shrub	Common	Native	
<i>Cynophalla hastata</i>	Capparaceae	Broadleaf caper	Shrub	Common	Native	
<i>Morisonia americana</i>	Capparaceae	Rat Apple	Tree	Common	Native	
<i>Quadrella cynophallophora</i>	Capparaceae	Black willow	Tree	Common	Native	
<i>Quadrella indica</i>	Capparaceae	Willow	Tree	Common	Native	
<i>Carica papaya</i>	Caricaceae	Papaya, pawpaw	Tree	Rare	Native	
<i>Casuarina equisetifolia</i>	Casuarinaceae		Tree	Rare	Introduced	
<i>Crossopetalum rhachoma</i>	Celastraceae	Maidenberry	Shrub	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Gyminda latifolia</i>	Celastraceae		Shrub	Common	Native	
<i>Maytenus cf. guianensis</i>	Celastraceae		Tree	Rare	Native	
<i>Schaefferia frutescens</i>	Celastraceae		Tree	Common	Native	
<i>Hedyosmum arborescens</i>	Chloranthaceae		Tree	Ex?	Native	
<i>Hirtella triandra</i>	Chrysobalanaceae		Tree	Ex?	Native	
<i>Clusia major</i>	Clusiaceae		Tree	Common	Native	
<i>Marila racemosa</i>	Clusiaceae		Tree	Ex?	Native	
<i>Buchenavia tetraphylla</i>	Combretaceae		Tree	Ex?	Native	
<i>Bucida buceras</i>	Combretaceae	White wood	Tree	Common	Native	
<i>Conocarpus erectus</i>	Combretaceae	Button Mangrove	Shrub	Rare	Native	
<i>Laguncularia racemosa</i>	Combretaceae	White mangrove	Tree	Rare	Native	
<i>Terminalia catappa</i>	Combretaceae	Indian Almond	Tree	Common	Introduced	
<i>Callisia repens</i>	Commelinaceae	Inch vine	Herb	Common	Native	
<i>Commelina diffusa</i>	Commelinaceae		Herb	Common	Native	
<i>Commelina erecta</i>	Commelinaceae		Herb	Common	Native	
<i>Gibasis geniculata</i>	Commelinaceae		Herb	Rare	Native	
<i>Tradescantia zebrina</i>	Commelinaceae		Herb	Ex?	Native	
<i>Impomea obscura</i>	Convolvulaceae		Vine	Common	Native	
<i>Impomea repanda</i>	Convolvulaceae		Vine	Rare	Native	
<i>Impomea trilobata</i>	Convolvulaceae		Vine	Common	Native	
<i>Ipomoea indica</i>	Convolvulaceae		Vine	Rare	Native	
<i>Ipomoea nil</i>	Convolvulaceae		Vine	Common	Native	
<i>Ipomoea sp.</i>	Convolvulaceae		Vine	Rare	Native	
<i>Jacquemontia pentanthos</i>	Convolvulaceae		Vine	Common	Native	
<i>Merremia dissecta</i>	Convolvulaceae		Vine	Common	Native	
<i>Merremia umbellata</i>	Convolvulaceae		Vine	Common	Native	
<i>Paranopsis paniculata</i>	Convolvulaceae		Vine	Rare	Introduced	
<i>Strictocardia tiliifolia</i>	Convolvulaceae		Vine	Rare	Introduced	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Turbina corymbosa</i>	Convolvulaceae		Vine	Common	Native	
<i>Cuscuta americana</i>	Convolvulaceae	Yellow dod	Vine	Rare	Native	
<i>Ipomoea pes-caprae</i>	Convolvulaceae	Sea wisse	Herb	Common	Native	
<i>Ipomoea repanda</i>	Convolvulaceae		Vine	Rare	Native	
<i>Ipomoea sp.</i>	Convolvulaceae		Vine	Rare	Native	
<i>Ipomoea tiliacea</i>	Convolvulaceae		Vine	Common	Native	
<i>Merremia quinquefolia</i>	Convolvulaceae		Vine	Common	Native	
<i>Bryophyllum pinnatum</i>	Crassulaceae		Herb	Rare	Introduced	Invasive
<i>Cayaponia americana</i>	Cucurbitaceae	Wild Pumpkin	Vine	Rare	Native	
<i>Citrullus lanatus</i>	Cucurbitaceae	Wild melon	Vine	Rare	Introduced	
<i>Melothria pendula</i>	Cucurbitaceae		Vine	Rare	Native	
<i>Momordica charantia</i>	Cucurbitaceae		Vine	Common	Introduced	
<i>Momordica charantia</i>	Cucurbitaceae	Maiden's Blush	Vine	Common	Native	
<i>Fimbristylis sp.</i>	Cyperaceae		Herb	Common	Native	
<i>Abildgaardia ovata</i>	Cyperaceae		Herb	Common	Native	
<i>Cyperus esculentus</i>	Cyperaceae		Herb	Common	Native	
<i>Cyperus planifolius</i>	Cyperaceae		Herb	Common	Native	
<i>Selena lithosperma</i>	Cyperaceae		Herb	Common	Native	
<i>Rajania cordata</i>	Dioscoreaceae		Vine	Rare	Native	
<i>Dioscorea alata</i>	Dioscoreaceae		Vine	Common	Introduced	
<i>Dioscorea bulbifera</i>	Dioscoreaceae		Vine	Rare	Native	
<i>Dioscorea pilosiuscula</i>	Dioscoreaceae		Vine	Rare	Native	
<i>Dioscorea poygonoides</i>	Dioscoreaceae		Vine	Rare	Native	
<i>Dioscorea altissimum</i>	Dioscoreaceae		Vine	Ex?	Introduced	
<i>Sansevieria cylindrica</i>	Dracaenaceae		Herb	Rare	Introduced	Invasive
<i>Sansevieria hyacinthoides</i>	Dracaenaceae		Herb	Rare	Introduced	Invasive
<i>Sansevieria pearsonii</i>	Dracaenaceae		Herb	Rare	Introduced	Invasive
<i>Erythroxylum aerolatum</i>	Erythroxylaceae		Shrub	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Erythroxylum brevipes</i>	Erythroxylaceae		Tree	Rare/Ex?	Native	Its listing for Antigua may be in error.
<i>Erythroxylum havanense</i>	Erythroxylaceae		Shrub	Common	Native	
<i>Acalypha indica</i>	Euphorbiaceae		Herb	Rare	Introduced	
<i>Actinostemon caribaeus</i>	Euphorbiaceae		Shrub	Rare	Native	
<i>Argythamnia polygama</i>	Euphorbiaceae	silverwood	Shrub	Common	Native	
<i>Astraea lobatus</i>	Euphorbiaceae		Herb	Common	Native	
<i>Bernardia corensis</i>	Euphorbiaceae		Shrub	Common	Native	
<i>Chamaesyce articulata</i>	Euphorbiaceae	Milk Shrub	Shrub	Common	Native	
<i>Chamaesyce hyssopifolia</i>	Euphorbiaceae		Herb	Common	Native	
<i>Chamaesyce mesembrianthemifolia</i>	Euphorbiaceae	Dugand	Herb	Common	Native	
<i>Chamaesyce postrata</i>	Euphorbiaceae		Herb	Common	Native	
<i>Croton astroites</i>	Euphorbiaceae		Shrub	Common	Native	
<i>Croton betulinus</i>	Euphorbiaceae		Shrub	Ex?	Native	
<i>Croton flavens</i>	Euphorbiaceae		Shrub	Common	Native	
<i>Dalechampia scandens</i>	Euphorbiaceae	Bull Nettle	Vine	Common	Native	
<i>Drypetes alba</i>	Euphorbiaceae		Tree	Ex?	Native	
<i>Drypetes glauca</i>	Euphorbiaceae		Tree	Ex?	Native	Possibly could be a misidentification and represents one of the other two species.
<i>Drypetes serrata</i>	Euphorbiaceae		Tree	Ex?	Native	
<i>Gymnanthes lucida</i>	Euphorbiaceae		Tree	Common	Native	
<i>Hippomane mancinella</i>	Euphorbiaceae	Manchioneel	Tree	Common	Native	
<i>Hura crepitans</i>	Euphorbiaceae	Sandbox	Tree	Common	Native	
<i>Jatropha gossipifolia</i>	Euphorbiaceae	Bellyache bush	Shrub	Common	Native	Red and white
<i>Margaritaria nobilis</i>	Euphorbiaceae		Tree	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Pedilanthus tithymaloides</i>	Euphorbiaceae	Bleeding Heart	Shrub	Common	Native	
<i>Richaria grandis</i>	Euphorbiaceae		Tree	Ex?	Native	
<i>Sapium caribaeum</i>	Euphorbiaceae		Tree	Rare	Native	
<i>Tragia volubilis</i>	Euphorbiaceae	Woman Stinging Nettle	Vine	Common	Native	
<i>Phyllanthus amarus</i>	Euphorbiaceae-Phyllanthaceae	Seed under leaf	Herb	Common	Native	
<i>Phyllanthus epiphyllanthus</i>	Euphorbiaceae-Phyllanthaceae		Shrub	Common	Native	
<i>Homalium racemosum</i>	Flacourtiaceae		Tree	Ex?	Native	
<i>Prockia cruces</i>	Flacourtiaceae		Tree	Ex?	Native	
<i>Casearia decandra</i>	Flacourtiaceae		Tree	Common	Native	
<i>Casearia guianensis</i>	Flacourtiaceae		Tree	Rare	Native	
<i>Enicostema verticillatum</i>	Gentianaceae		Tree	Rare	Native	
<i>Scaevola plumieri</i>	Goodeniaceae	Scaevola	Shrub	Rare	Native	
<i>Heliconia bihai</i>	Heliconiaceae		Herb	Ex?	Native	
<i>Heliconia caribaea</i>	Heliconiaceae		Herb	Rare	Native	Recently rediscovered at Christian Valley.
<i>Hippocratea volubilis</i>	Hippocrataceae		Vine	Rare	Native	
<i>Pristimera caribaea</i>	Hippocrataceae		Vine	Rare	Native	
<i>Limbobium laevigatum</i>	Hydrocharitaceae		Herb	Rare	Native	
<i>Limnobium spongia</i>	Hydrocharitaceae		Herb	Rare	Native	
<i>Trichomanes angustifrons</i>	Hymenophyllaceae		Herb	Rare	Native	
<i>Trichomanes krausii</i>	Hymenophyllaceae		Herb	Common	Native	
<i>Trichomanes lineolatum</i>	Hymenophyllaceae		Herb	Rare	Native	
<i>Trichomanes cf. ovale</i>	Hymenophyllaceae		Herb	Rare	Native	
<i>Trichomanes punctatum</i> ssp. <i>punctatum</i>	Hymenophyllaceae		Herb	Rare	Native	
<i>Trichomanes punctatum</i> ssp. <i>sphenoides</i>	Hymenophyllaceae		Herb	Rare	Native	
<i>Trichomanes cf. pusillum</i>	Hymenophyllaceae		Herb	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Hyposis decumbens</i>	Hypoxidaceae		Herb	Rare	Native	
<i>Trimezia martinicensis</i>	Iridaceae	Yellow iris	Herb	Common	Native	
<i>Kramaria ixine</i>	Krameriaceae		Shrub	Common	Native	
<i>Vitex divaricate</i>	Lamiaceae		Tree	Rare	Native	
<i>Plectranthus amboinicus</i>	Lamiaceae	French thyme	Herb	Common	Introduced	
<i>Leonotis nepetifolia</i>	Lamiaceae-Labiatae	Lord Lavington	Herb	Common	Introduced	
<i>Ocimum campechianum</i>	Lamiaceae-Labiatae	Nunu Balsam	Herb	Rare	Native	
<i>Beilschmedia pendula</i>	Lauraceae		Tree	Ex?	Native	
<i>Cinnamoniium elongatum</i>	Lauraceae		Tree	Ex?	Native	
<i>Licaria parvifolia</i>	Lauraceae		Tree	Common	Native	
<i>Licaria salicifolia</i>	Lauraceae	Puerto Rico cinnamon	Tree	Common	Native	
<i>Nectandra membrenacea</i>	Lauraceae		Tree	Rare	Native	
<i>Nectandra patens</i>	Lauraceae		Tree	Ex?	Native	
<i>Ocotea cernua</i>	Lauraceae		Tree	Ex?	Native	
<i>Ocotea coriacea</i>	Lauraceae	Laurel lancewood	Tree	Rare	Native	
<i>Ocotea floribunda</i>	Lauraceae		Tree	Ex?	Native	
<i>Ocotea leucoxylon</i>	Lauraceae		Tree	Ex?	Native	
<i>Persea americana</i>	Lauraceae	Avocado	Tree	Rare	Introduced	
<i>Bauhinia aculeata</i>	Leguminosae-Caesalpinioideae		Shrub	Ex?	Native	
<i>Bauhinia multinervia</i>	Leguminosae-Caesalpinioideae		Tree	Rare	Native	
<i>Caesalpinia bondoc</i>	Leguminosae-Caesalpinioideae	Grey nicker	Shrub	Common	Native	
<i>Caesalpinia coriaria</i>	Leguminosae-Caesalpinioideae	Divi divi	Shrub	Rare	Native	7ft green striated bark like T indica, no thorns
<i>Caesalpinia major</i>	Leguminosae-Caesalpinioideae	Nicker	Shrub	Rare	Native	
<i>Chamaecrista glandulosa</i> var. <i>glandulosa</i>	Leguminosae-Caesalpinioideae	Broom	Shrub	Common	Native	
<i>Haematoxylon campechianum</i>	Leguminosae-Caesalpinioideae	Log wood	Tree	Common	Native	
<i>Hymenaea courbaril</i>	Leguminosae-Caesalpinioideae		Tree	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Peltophorum pterocarpum</i>	Leguminosae-Caesalpinioideae		Tree	Rare	Introduced	
<i>Senna bicapsularis</i>	Leguminosae-Caesalpinioideae	Money Bush	Shrub	Common	Native	
<i>Senna occidentalis</i>	Leguminosae-Caesalpinioideae	Stink Weed	Shrub	Common	Native	
<i>Tamarindus indica</i>	Leguminosae-Caesalpinioideae	Tambrind	Tree	Rare	Introduced	
<i>Abrus precatorius</i>	Leguminosae-Faboideae	Jumbie Bead	Vine	Common	Native	
<i>Aeschynomene americana</i>	Leguminosae-Faboideae	Shyleaf	Shrub	Common	Native	
<i>Albizia berteriana</i>	Leguminosae-Faboideae		Tree	Ex?	Native	
<i>Alysicarpus vaginalis</i>	Leguminosae-Faboideae		Herb	Common	Introduced	
<i>Andira cf. sapindoides</i>	Leguminosae-Faboideae	Angelin	Tree	Rare	Native	
<i>Andira inermis</i>	Leguminosae-Faboideae	W. I. walnut	Tree	Common	Native	
<i>Canavalia brasiliensis</i>	Leguminosae-Faboideae	Brazil Jackbean	Vine	Common	Native	
<i>Canavalia rosea</i>	Leguminosae-Faboideae	Bay Bean	Vine	Common	Native	
<i>Centrosema plumieri</i>	Leguminosae-Faboideae	Feefee	Vine	Rare	Native	
<i>Centrosema pubescens</i>	Leguminosae-Faboideae		Vine	Rare	Native	
<i>Centrosema sp.</i>	Leguminosae-Faboideae		Vine	Rare	Native	The taxonomic identity of this species remains unknown.
<i>Centrosema virginianum</i>	Leguminosae-Faboideae	Butterfly Pea	Vine	Common	Native	
<i>Clitorea ternatea</i>	Leguminosae-Faboideae		Vine	Common	Introduced	
<i>Coursetia caribaea</i>	Leguminosae-Faboideae		Herb	Rare	Native	
<i>Crotalaria retusa</i>	Leguminosae-Faboideae	Shack Shack	Herb	Common	Native	
<i>Desmanthus virgatus</i>	Leguminosae-Faboideae		Herb	Common	Native	
<i>Desmodium axillaris</i>	Leguminosae-Faboideae		Herb	Common	Native	
<i>Desmodium incarnum</i>	Leguminosae-Faboideae	Tick clover	Herb	Common	Native	
<i>Desmodium tortuosum</i>	Leguminosae-Faboideae		Herb	Common	Native	
<i>Desmodium triflorum</i>	Leguminosae-Faboideae		Herb	Common	Native	
<i>Erythrina beteroana</i>	Leguminosae-Faboideae		Tree	Rare	Native	Possibly extinct.

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Galactia dubia</i>	Leguminosae-Faboideae	Milk pea	Vine	Common	Native	
<i>Galactia longifolia</i>	Leguminosae-Faboideae		Vine	Rare	Native	
<i>Indigofera suffruticosa</i>	Leguminosae-Faboideae	Indigo	Shrub	Common	Introduced	
<i>Indigofera tinctoria</i>	Leguminosae-Faboideae	Indigo	Shrub	Common	Introduced	
<i>Lonchocarpus violacea</i> (violet form)	Leguminosae-Faboideae		Tree	Common	Native	
<i>Lonchocarpus violacea</i> (white form)	Leguminosae-Faboideae		Tree	Rare	Native	Only found in Antigua.
<i>Loncocarpus pentaphyllus</i>	Leguminosae-Faboideae		Tree	Ex?	Native	
<i>Machaerium lunatum</i>	Leguminosae-Faboideae		Tree	Ex?	Native	
<i>Macroptilium lathyroides</i>	Leguminosae-Faboideae	Bush bean	Herb	Common	Native	
<i>Ormosia monosperma</i>	Leguminosae-Faboideae		Tree	Rare	Native	Recently discovered.
<i>Piscidia carthagenensis</i>	Leguminosae-Faboideae	Dogwood	Tree	Common	Native	
<i>Prosopis juliflora</i>	Leguminosae-Faboideae		Tree	Common	Introduced	
<i>Rhynchosia minima</i>	Leguminosae-Faboideae		Vine	Common	Native	
<i>Rhynchosia reticulata</i>	Leguminosae-Faboideae		Vine	Common	Native	
<i>Sesbania bispinosa</i>	Leguminosae-Faboideae		Shrub	Common	Native	
<i>Sesbania sericea</i>	Leguminosae-Faboideae		Shrub	Common	Native	
<i>Stylosanthes hamata</i>	Leguminosae-Faboideae	Cheesy toes	Herb	Common	Native	
<i>Tephrosia cinera</i>	Leguminosae-Faboideae	Hoary pea	Herb	Common	Native	
<i>Teramnus labialis</i>	Leguminosae-Faboideae	Blue wiss	Vine	Common	Native	
<i>Vigna luteola</i>	Leguminosae-Faboideae		Herb	Common	Native	
<i>Acacia farnesiana</i>	Leguminosae-Mimisoideae	Sweet Acacia	Tree	Common	Native	
<i>Acacia macrantha</i>	Leguminosae-Mimisoideae	Alabamba	Tree	Common	Native	
<i>Acacia muricata</i>	Leguminosae-Mimisoideae	Spineless wattle	Tree	Common	Native	
<i>Acacia nilotica</i>	Leguminosae-Mimisoideae	Gum arabic tree	Tree	Common	Native	
<i>Acacia retusa</i>	Leguminosae-Mimisoideae	Catch and Keep	Shrub	Common	Native	
<i>Adenanthera pavonia</i>	Leguminosae-Mimisoideae		Tree	Common	Introduced	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Albizzia lebeck</i>	Leguminosae-Mimisoideae	Shushel	Tree	Rare	Native	Previous population was only known from the center of the island. A new population is now known from Rendezvous Bay.
<i>Calliandra purpurea</i>	Leguminosae-Mimisoideae	Pompom	Shrub	Rare	Native	
<i>Desmanthus virgatus</i>	Leguminosae-Mimisoideae	Wild tantan	Shrub	Common	Native	
<i>Inga laurina</i>	Leguminosae-Mimisoideae	Spanish oak	Tree	Common	Native	
<i>Leucaena leucocephala</i>	Leguminosae-Mimisoideae	Wild tamarind	Shrub	Common	Native	
<i>Mimosa ceratonia</i>	Leguminosae-Mimisoideae	Ambret	Vine	Common	Native	
<i>Mimosa pudica</i>	Leguminosae-Mimisoideae	Sensitive plant	Herb	Common	Native	
<i>Neptunia plena</i>	Leguminosae-Mimisoideae	Sensitive plant	Herb	Common	Native	
<i>Neptunia pubescens</i>	Leguminosae-Mimisoideae	Sensitive plant	Herb	Common	Native	
<i>Pithecellobium unguis-cati</i>	Leguminosae-Mimisoideae	Bread and Cheese	Shrub	Common	Native	
<i>Lemna perpusilla</i>	Lemnaceae		Herb	Rare	Native	
<i>Lemna trisulca</i>	Lemnaceae		Herb	Rare	Native	
<i>Lemna valdiviana</i>	Lemnaceae		Herb	Rare	Native	
<i>Utricularia obtusa</i>	Lentibulariaceae		Herb	Rare	Native	
<i>Hyptis pectinata</i>	Lamiaceae		Herb	Rare	Native	
<i>Hippobroma longiflora</i>	Lobeliaceae	Star of Bethlehem	Herb	Rare	Native	
<i>Spigelia anthelmia</i>	Loganiaceae		Herb	Common	Native	
<i>Nephrolepis biserrata</i>	Lomariopsidaceae		Herb	Common	Native	
<i>Nephrolepis brownii</i>	Lomariopsidaceae		Herb	Common	Introduced	
<i>Nephrolepis exaltata</i>	Lomariopsidaceae		Herb	Common	Native	
<i>Nephrolepis rivularis</i>	Lomariopsidaceae		Herb	Ex?	Native	
<i>Dendropemon caribaeus</i>	Loranthaceae		Herb	Rare	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Psittacanthus martinicensis</i>	Loranthaceae		Herb	Ex?	Native	
<i>Heteropterys purpurea</i>	Malpighiaceae		Vine	Common	Native	
<i>Malpighia linearis</i>	Malpighiaceae	Stinging bush	Shrub	Rare	Native	
<i>Stigmaphyllon diversifolium</i>	Malpighiaceae		Vine	Common	Native	
<i>Stigmaphyllon emarginatum</i>	Malpighiaceae		Vine	Common	Native	
<i>Stigmaphyllon</i> sp.	Malpighiaceae		Vine	Rare	Native	
<i>Bunchosa glandulifera</i>	Malpighiaceae		Tree	Rare	Native	Recently discovered
<i>Bunchosia glandulosa</i>	Malpighiaceae	Elsie Bush	Shrub	Rare	Native	
<i>Bunchosia glandulifera</i>	Malpighiaceae		Tree	Rare	Native	
<i>Bunchosia polystachia</i>	Malpighiaceae		Tree	Rare	Native	
<i>Byrsonima crassifolia</i>	Malpighiaceae		Tree	Ex?	Native	
<i>Byrsonima spicata</i>	Malpighiaceae	Shoemaker bark	Tree	Common	Native	
<i>Byrsonima trinitensis</i>	Malpighiaceae		Tree	Ex?	Native	
<i>Malpighia emarginata</i>	Malpighiaceae		Tree	Common	Native	
<i>Tetrapteryx inaequalis</i>	Malpighiaceae		Vine	Ex?	Native	
<i>Albutilon</i> sp.	Malvaceae		Shrub	Common	Native	
<i>Fioria vitifolia</i>	Malvaceae		Shrub	Common	Introduced	
<i>Herissantia crispa</i>	Malvaceae		Shrub	Rare	Native	
<i>Malachra alceifolia</i>	Malvaceae		Shrub	Common	Native	
<i>Malachra fasciata</i>	Malvaceae		Shrub	Common	Native	
<i>Malvastrum americanum</i>	Malvaceae		Shrub	Common	Native	
<i>Malvastrum coromandelianum</i>	Malvaceae		Shrub	Common	Native	
<i>Malvastrum</i> sp.	Malvaceae		Shrub	Common	Native	
<i>Pavonia spinifex</i>	Malvaceae		Shrub	Rare	Native	
<i>Sida acuta</i>	Malvaceae	Sweetbroom	Shrub	Common	Native	
<i>Sida ciliaris</i>	Malvaceae		Shrub	Common	Native	
<i>Sida glabra</i>	Malvaceae		Herb	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Sida jamaicensis</i>	Malvaceae		Shrub	Common	Native	
<i>Sida spinosa</i>	Malvaceae		Shrub	Common	Native	
<i>Sida urens</i>	Malvaceae		Shrub	Common	Native	
<i>Sidastrum multiflorum</i>	Malvaceae		Shrub	Rare	Native	
<i>Thespesia populnea</i>	Malvaceae	Seaside Mahoe	Tree	Common	Native	
<i>Wissadula periplocifolia</i>	Malvaceae		Shrub	Rare	Native	
<i>Ceiba pentandra</i>	Malvaceae/Bombacaceae	Silk cotton	Tree	Common	Native	
<i>Ochroma pyramidale</i>	Malvaceae/Bombacaceae		Tree	Rare	Native	
<i>Quararibea turbinata</i>	Malvaceae/Bombacaceae		Tree	Common	Native	
<i>Melochia nodiflora</i>	Malvaceae/Sterculiaceae		Shrub	Common	Native	
<i>Melochia pyramidata</i>	Malvaceae/Sterculiaceae		Herb	Rare	Native	
<i>Melochia tomentosa</i>	Malvaceae/Sterculiaceae	Sailor's broom	Shrub	Common	Native	
<i>Waltheria glabra</i>	Malvaceae/Sterculiaceae		Shrub	Rare	Native	
<i>Waltheria indica</i>	Malvaceae/Sterculiaceae	Velvet leaf	Shrub	Common	Native	
<i>Corchorus aestuans</i>	Malvaceae/Tiliaceae		Herb	Common	Native	
<i>Triumfetta grandiflora</i>	Malvaceae/Tiliaceae		Tree	Rare	Native	
<i>Triumfetta lappula</i>	Malvaceae/Tiliaceae		Shrub	Common	Native	
<i>Triumfetta rhomboidea</i>	Malvaceae/Tiliaceae		Shrub	Rare	Native	
<i>Triumfetta semitriloba</i>	Malvaceae/Tiliaceae		Shrub	Common	Native	
<i>Guazuma ulmifolia</i>	Malvaceae/Sterculiaceae	Gunstock	Tree	Common	Native	
<i>Marantha arundinacea</i>	Maranthaceae		Herb	Rare	Introduced	
<i>Marcgravia umbellata</i>	Marcgraviaceae		Vine	Ex?	Native	
<i>Clidemia hirta</i>	Melastomataceae		Shrub	Ex?	Native	
<i>Henriettea triflora</i>	Melastomataceae		Shrub	Ex?	Native	
<i>Miconia impetrolaris</i>	Melastomataceae		Shrub	Rare	Native	
<i>Miconia laevigata</i>	Melastomataceae		Shrub	Rare	Native	
<i>Miconia miribilis</i>	Melastomataceae		Shrub	Ex?	Native	
<i>Miconia prasina</i>	Melastomataceae		Shrub	Ex?	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Miconia striata</i>	Melastomataceae		Shrub	Rare	Native	
<i>Miconia trichotoma</i>	Melastomataceae		Shrub	Rare	Native	
<i>Mouriri domingensis</i>	Melastomataceae		Tree	Common	Native	
<i>Tetrazygia angustifolia</i>	Melastomataceae		Tree	Rare	Native	
<i>Tetrazygia discolor</i>	Melastomataceae		Tree	Ex?	Native	
<i>Cedrela odorata</i>	Meliaceae		Tree	Rare	Native	
<i>Guarea glabra</i>	Meliaceae		Tree	Common	Native	
<i>Guarea macrophylla</i>	Meliaceae		Tree	Rare	Native	
<i>Melia azadarach</i>	Meliaceae	Lilac Tree	Tree	Rare	Native	
<i>Swietenia mahogani</i>	Meliaceae	West Indian Mahogany	Tree	Common	Introduced	
<i>Trichilia hirta</i>	Meliaceae		Tree	Rare	Native	
<i>Cissampelos pareira</i>	Menispermaceae	Velvet leaf	Vine	Common	Native	
<i>Hyperbaena domingensis</i>	Menispermaceae		Vine	Rare	Native	
<i>Hyperbaena laurifolia</i>	Menispermaceae		Vine	Rare	Native	A recent discovery for Antigua. Needs confirmation.
<i>Ficus americana</i>	Moraceae		Tree	Ex?	Native	
<i>Ficus cf. insipida</i>	Moraceae		Tree	Rare	Native	Recently addition to Antigua plant list.
<i>Ficus citrifolia</i>	Moraceae		Tee	Common	Native	
<i>Ficus nymphaeifolia</i>	Moraceae		Tree	Common	Native	
<i>Ficus obtusifolia</i>	Moraceae		Tree	Rare	Native	
<i>Ficus trigonata</i>	Moraceae		Tree	Rare	Native	
<i>Maclura tinctoria</i>	Moraceae		Tree	Ex?	Native	
<i>Trophis racemosa</i>	Moraceae		Tree	Ex?	Native	
<i>Ardisia obovata</i>	Myrsinaceae		Tree	Rare	Native	
<i>Eugenia biflora</i>	Myrtaceae		Tree	Common	Native	
<i>Eugenia confusa</i>	Myrtaceae		Tree	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Eugenia ligustrina</i>	Myrtaceae	Black Cherry	Shrub	Common	Native	
<i>Eugenia monticola</i>	Myrtaceae		Tree	Common	Native	
<i>Eugenia oerstedeana</i>	Myrtaceae		Tree	Ex?	Native	
<i>Eugenia procera</i>	Myrtaceae		Tree	Common	Native	
<i>Eugenia psuedosidium</i>	Myrtaceae		Tree	Rare	Native	
<i>Eugenia sessiflora</i>	Myrtaceae		Shrub	Common	Native	
<i>Eugenia cordata</i> var. <i>sintensisii</i>	Myrtaceae		Tree	Common	Native	
<i>Myrcia citrifolia</i>	Myrtaceae		Tree	Common	Native	
<i>Myrcia deflexa</i>	Myrtaceae		Tree	Rare	Native	
<i>Myrcia platyclada</i>	Myrtaceae		Tree	Ex?	Native	
<i>Myrcia splendens</i>	Myrtaceae		Tree	Rare	Native	
<i>Myrcianthes fragrans</i>	Myrtaceae		Tree	Rare	Native	
<i>Myrciaria floribunda</i>	Myrtaceae		Tree	Rare	Native	
<i>Pimenta racemosa</i>	Myrtaceae	Bay Leaf	Tree	Common	Native	
<i>Psidium guajava</i>	Myrtaceae	Guava	Tree	Common	Native	
<i>Syzygium cumini</i>	Myrtaceae		Tree	Rare	Introduced	
<i>Boerhavia coccinea</i>	Nyctaginaceae		Herb	Common	Native	
<i>Boehavia erecta</i>	Nyctaginaceae	Erect spiderling	Herb	Common	Native	
<i>Guapira fragrans</i>	Nyctaginaceae	Black loblolly	Tree	Common	Native	
<i>Pisonia aculeata</i>	Nyctaginaceae	Cockspur	Shrub	Common	Native	
<i>Pisonia</i> sp.	Nyctaginaceae	Cockspur	Shrub	Common	Native	Similar to P. aculeata, but with larger fruits, more robust stems and stellate hairs covering all parts of plant.
<i>Pisonia subcordata</i>	Nyctaginaceae	Loblolly	Tree	Common	Native	
<i>Rudgea citrifolia</i>	Nymphaeaceae		Tree	Ex?	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Ouratea guildingii</i>	Ochnaceae		Shrub	Common	Native	
<i>Schoepfia arenaria</i>	Olacaceae		Tree	Rare	Native	Endemic to Antigua and Puerto Rico.
<i>Chionanthus compacta</i>	Oleaceae	Wild Olive	Tree	Common	Native	
<i>Jasminum fluminense</i>	Oleaceae	Jasmine Vine	Vine	Common	Native	
<i>Schoepfia schreberi</i>	Oleaceae		Shrub	Common	Native	
<i>Ludwigia octovalis</i>	Onagraceae		Herb	Common	Native	
<i>Ludwigia erecta</i>	Onagraceae		Herb	Rare	Native	
<i>Ophioglossum cf. harrisii</i>	Ophioglossaceae		Herb	Rare	Native	Recently discovered
<i>Ophioglossum reticulatum</i>	Ophioglossaceae		Herb	Rare	Native	Recently discovered
<i>Bletia cf. patula</i>	Orchidaceae		Herb	Rare	Native	Recently discovered
<i>Brassavola cucullata</i>	Orchidaceae		Herb	Rare	Native	
<i>Cranichis muscosa</i>	Orchidaceae		Herb	Rare	Native	
<i>Cyclopogon elatus</i>	Orchidaceae		Herb	Rare	Native	
<i>Epidendron ciliare</i>	Orchidaceae	Eyelash Orchid	Herb	Rare	Native	
<i>Epidendrum anceps</i>	Orchidaceae		Herb	Common	Native	
<i>Epidendrum elongatum</i>	Orchidaceae		Herb	Ex?	Native	
<i>Epidendrum anceps</i>	Orchidaceae		Herb	Rare	Native	
<i>Eulophia alta</i>	Orchidaceae		Herb	Ex?	Native	
<i>Habernaria alata</i>	Orchidaceae		Herb	Rare	Native	
<i>Harbenaria monorrhiza</i>	Orchidaceae		Herb	Ex?	Native	
<i>Liparis nervosa</i>	Orchidaceae		Herb	Rare	Native	
<i>Mesadenus cf. lucayanus</i>	Orchidaceae		Herb	Rare	Native	There are possibly two species in Antigua, and this may represent a separate form from

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
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<i>Mesadenus polyanthus</i>	Orchidaceae		Herb	Rare	Native	
<i>Oeceoclades maculata</i>	Orchidaceae		Herb	Common	Naturalized	
<i>Oeceoclades maculata</i>	Orchidaceae		Herb	Common	Naturalised	
<i>Pelexia adnata</i>	Orchidaceae		Herb	Ex?	Native	Reported for Antigua. Its status is uncertain.
<i>Polystachya cf. concreta</i>			Herb	Rare	Native	A recent addition to the orchids of Antigua.
<i>Prescottia oligantha</i>	Orchidaceae		Herb	Rare	Native	A recent addition to the orchids of Antigua.
<i>Sacoila lanceolatum</i>	Orchidaceae		Herb	Common	Native	
<i>Sacoila lanceolatum</i>	Orchidaceae		Herb	Rare	Native	
<i>Spiranthes torta</i>	Orchidaceae		Herb	Ex?	Native	
<i>Spiranthes torta</i>	Orchidaceae	Southern Ladies Tresses	Herb	Rare	Native	
<i>Talumnia urophylla</i>	Orchidaceae	Yellow dancing lady	Herb	Common	Native	
<i>Tetramicra caniculata</i>	Orchidaceae		Herb	Uncertain	Native	Because of previous confusion with <i>T. anceps</i> , this species is now listed as tentative for Antigua.
<i>Tetramicra elegans</i>	Orchidaceae	Wallflower Orchid	Herb	Common	Native	
<i>Tetramicra eulophiae</i>	Orchidaceae		Herb	Rare	Native	Reported for Antigua. Its status is uncertain.
<i>Oxalis barrelieri</i>	Oxalidaceae		Herb	Common	Native	
<i>Oxalis corniculata</i>	Oxalidaceae	Sour grass	Herb	Rare	Native	
<i>Passiflora foetida</i>	Passifloraceae		Vine	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Passiflora laurifolia</i>	Passifloraceae	Wild passion fruit	Vine	Common	Native	
<i>Passiflora rubra</i>	Passifloraceae		Vine	Common	Native	
<i>Passiflora suberosa</i>	Passifloraceae	Passion flower	Vine	Common	Native	
<i>Petiviera alliacea</i>	Phytolaccaceae	Garlic root	Shrub	Common	Native	
<i>Rivina humilis</i>	Phytolaccaceae	Blood Berry	Shrub	Common	Native	
<i>Trichostigma octandrum</i>	Phytolaccaceae	Hoop Vine	Shrub	Common	Native	
<i>Peperomia glabella</i>	Piperaceae		Herb	Common	Native	
<i>Peperomia humilis</i>	Piperaceae		Herb	Common	Native	
<i>Peperomia magnoliifolia</i>	Piperaceae		Herb	Rare	Native	
<i>Peperomia myrtifolia</i>	Piperaceae		Herb	Rare	Native	
<i>Peperomia nigropunctata</i>	Piperaceae		Herb	Rare	Native	
<i>Peperomia obtusifolia</i>	Piperaceae		Herb	Rare	Native	
<i>Peperomia rotundifolia</i>	Piperaceae		Vine	Common	Native	
<i>Piper aduncum</i>	Piperaceae		Shrub	Common	Native	
<i>Piper amalago</i>	Piperaceae		Shrub	Common	Native	
<i>Piper dilatatum</i>	Piperaceae		Shrub	Common	Native	
<i>Piper dussii</i>	Piperaceae		Shrub	Ex?	Native	
<i>Piper peltata</i>	Piperaceae		Shrub	Rare	Native	
<i>Piper reticulatum</i>	Piperaceae		Tree	Rare	Native	
<i>Plumbago scandens</i>	Plumbaginaceae	Old Woman's Bush	Shrub	Rare	Native	
<i>Axonopus compressus</i>	Poaceae-Graminae		Herb	Common	Native	
<i>Bambusa vulgaris</i>	Poaceae-Graminae	Bamboo	Tree	Rare	Introduced	
<i>Bothriochloa ischaemum</i>	Poaceae-Graminae		Herb	Common	Introduced	
<i>Bothriochloa pertusa</i>	Poaceae-Graminae		Herb	Common	Introduced	
<i>Buteloua americana</i>	Poaceae-Graminae		Herb	Common	Native	
<i>Cenchrus sp.</i>	Poaceae-Graminae	Beach Grass	Herb	Common	Native	
<i>Cenchrus sp.</i>	Poaceae-Graminae	Burr Grass	Herb	Rare	Native	
<i>Chloris barbata</i>	Poaceae-Graminae		Herb	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Cymbopogon citratus</i>	Poaceae-Graminae	Citronella, Fever grass	Herb	Common	Introduced	Invasive
<i>Dactyloctenium aegyptium</i>	Poaceae-Graminae		Herb	Common	Introduced	
<i>Dichanthium aristatum</i>	Poaceae-Graminae		Herb	Common	Introduced	
<i>Eleusine indica</i>	Poaceae-Graminae		Herb	Common	Introduced	
<i>Lasciacis divaricata</i>	Poaceae-Graminae		Herb	Common	Native	
<i>Lasciacis sorghoidea</i>	Poaceae-Graminae		Herb	Common	Native	
<i>Megathyrsus maximus</i>	Poaceae-Graminae	Guinea grass	Herb	Common	Introduced	
<i>Oplismenus hirtellus</i> subsp. <i>hirtellus</i>	Poaceae-Graminae		Herb	Rare	Native	
<i>Paspalum</i> sp.	Poaceae-Graminae		Herb	Common	Native	
<i>Paspalum virginatum</i>	Poaceae-Graminae		Herb	Rare	Native	
<i>Sporobolus</i> cf. <i>domingensis</i>	Poaceae-Graminae		Herb	Rare	Native	
<i>Sporobolus virginicus</i>	Poaceae-Graminae		Herb	Common	Native	
<i>Coccoloba pubescens</i> X ?	Polygonaceae		Tree	Rare	Native	Similar to <i>C. pubescens</i> but glabrous. Could be a separate sp.
<i>Coccoloba pubescens</i> X <i>uvifera</i>	Polygonaceae		Tree	Rare	Native	
<i>Coccoloba</i> sp.	Polygonaceae		Tree	Rare	Native	Fig Tree
<i>Coccoloba</i> sp.	Polygonaceae		Tree	Rare	Native	Barbers
<i>Coccoloba swartzii</i>	Polygonaceae	Swarts' pigeon plum	Tree	Common	Native	
<i>Coccoloba uvifera</i>	Polygonaceae	Sea grape	Tree	Common	Native	
<i>Coccoloba venosa</i>	Polygonaceae	Sugar grape	Tree	Common	Native	
<i>Campyloneurum brevifolium</i>	Polypodiaceae		Herb	Common	Native	
<i>Campyloneurum latum</i>	Polypodiaceae		Herb	Common	Native	Considered by some to be a syn. of <i>C. brevifolium</i>
<i>Campyloneurum phyllitidis</i>	Polypodiaceae		Herb	Common	Native	
<i>Campyloneurum repens</i>	Polypodiaceae		Herb	Rare	Native	
<i>Microgramma lycopodioides</i>	Polypodiaceae		Vine	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Microgramma piloselloides</i>	Polypodiaceae		Vine	Ex?	Native	
<i>Microgramma heterophylla</i>	Polypodiaceae	Clinging Snake Fern	Herb	Common	Native	
<i>Microgramma lycopodioides</i>	Polypodiaceae		Herb	Common	Native	
<i>Neurodium lanceolatum</i>	Polypodiaceae		Herb	Common	Native	
<i>Phlebodium aureum</i>	Polypodiaceae	Golden polypoly	Herb	Rare	Native	
<i>Phlebodium cf. decumanum</i>	Polypodiaceae		Herb	Rare	Native	Needs confirmation.
<i>Phlebodium pseudoaureum</i>	Polypodiaceae		Herb	Rare	Native	Recently discovered.
<i>Pleopeltis polypodioides</i>	Polypodiaceae	Resurrection Fern	Herb	Common	Native	
<i>Serpocaulon triseriale</i>	Polypodiaceae		Herb	Common	Native	
<i>Eichornia crassipes</i>	Pontederiaceae		Herb	Common	Introduced	Considered one of the world's worst invasives.
<i>Portulaca oleracea</i>	Portulacaceae	Ordinary purselane	Herb	Common	Native	
<i>Portulaca sp.</i>	Portulacaceae		Herb	Common	Native	
<i>Portulaca sp.</i>	Portulacaceae		Herb	Common	Native	
<i>Talinum fruticosum</i>	Portulacaceae	Herb Morning Glory	Herb	Common	Native	
<i>Talinum paniculatum</i>	Portulacaceae		Herb	Rare	Native	
<i>Ardisia obovata</i>	Primulaceae		Shrub	Rare	Native	
<i>Jacquinia arborea</i>	Primulaceae		Tree	Common	Native	
<i>Jacquinia armillaris</i>	Primulaceae	Torchwood	Shrub	Common	Native	
<i>Psilotum nudum</i>	Psilotaceae		Herb	Rare	Native	
<i>Acrostichum aureum</i>	Pteridaceae		Herb	Rare	Native	
<i>Adiantum fragile</i>	Pteridaceae		Herb	Rare	Native	
<i>Adiantum latifolium</i>	Pteridaceae		Herb	Common	Native	
<i>Adiantum pyramidale</i>	Pteridaceae		Herb	Rare	Native	
<i>Adiantum pyramidale</i> X <i>A. villosum</i>	Pteridaceae		Herb	Rare	Native	A new record. This represents a previously

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Adiantum tenerum</i>	Pteridaceae		Herb	Rare	Native	unreported hybrid form.
<i>Adiantum tetraphyllum</i>	Pteridaceae		Herb	Rare	Native	
<i>Adiantum villosum</i>	Pteridaceae		Herb	Common	Native	
<i>Cheilanthes microphylla</i>	Pteridaceae		Herb	Rare	Native	
<i>Pityrogramma calomelanos</i>	Pteridaceae		Herb	Common	Native	
<i>Ziziphus mauritiana</i>	Rhamnaceae		Tree	Common	Introduced	
<i>Gouania lupuloides</i>	Rhamnaceae	Tooth Brush tree	Vine	Common	Native	
<i>Krugiodendron ferreum</i>	Rhamnaceae	Iron wood	Tree	Rare	Native	
<i>Ziziphus mauritiana</i>	Rhamnaceae	Dumps	Tree	Rare	Native	
<i>Rhizophora mangle</i>	Rhizophoraceae		Tree	Common	Native	
<i>Catesbaea melanocarpa</i>	Rubiaceae	Balackberry	Shrub	Rare	Native	
<i>Chimarrhis cymosa</i>	Rubiaceae		Tree	Ex?	Native	
<i>Chiococca cf. parvifolia</i>	Rubiaceae		Vine	Common	Native	
<i>Chiococca alba</i>	Rubiaceae	Large snow Berry	Vine	Common	Native	
<i>Chione venosa</i>	Rubiaceae		Tree	Ex?	Native	
<i>Diodia sp.</i>	Rubiaceae		Herb	Common	Native	
<i>Exostema caribaeum</i>	Rubiaceae	Greenheart	Tree	Common	Native	
<i>Faramea occidentalis</i>	Rubiaceae		Tree	Common	Native	
<i>Genipa americana</i>	Rubiaceae		Tree	Rare	Introduced	
<i>Guettarda odorata</i>	Rubiaceae		Tree	Common	Native	
<i>Guettarda cf. elliptica</i>	Rubiaceae		Tree	Common	Native	Recent addition to Antigua plant list.
<i>Guettarda crispiflora</i>	Rubiaceae		Tree	Ex?	Native	
<i>Guettarda odorata</i>	Rubiaceae	Gunrod	Tree	Common	Native	
<i>Guettarda ovalifolia</i>	Rubiaceae		Tree	Rare	Native	
<i>Guettarda scabra</i>	Rubiaceae	Black chinks	Tree	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Hillia parasitica</i>	Rubiaceae		Vine	Ex?	Native	
<i>Ixora ferrea</i>	Rubiaceae		Tree	Ex?	Native	
<i>Margaritopsis microdon</i>	Rubiaceae		Shrub	Common	Native	
<i>Palicourea croceoides</i>	Rubiaceae		Shrub	Common	Native	
<i>Psychotria domingensis</i>	Rubiaceae		Shrub	Rare	Native	
<i>Psychotria nervosa</i>	Rubiaceae	Wild coffee	Shrub	Common	Native	
<i>Psychotria tenuifolia</i>	Rubiaceae		Shrub	Common	Native	
<i>Psychotria</i> sp.	Rubiaceae		Shrub	Rare	Native	
<i>Randia aculeata</i>	Rubiaceae	Inkberry	Shrub	Common	Native	
<i>Spermacoce confusa</i>	Rubiaceae		Herb	Common	Native	
<i>Spermacoce ocymifolia</i>	Rubiaceae		Herb	Common	Native	
<i>Spermacoce</i> sp.	Rubiaceae		Herb	Common	Native	
<i>Spermacoce tenuior</i>	Rubiaceae		Herb	Common	Native	
<i>Amyris elemifera</i>	Rutaceae	Torchwood	Shrub	Rare	Native	
<i>Citrus aurantifolia</i>	Rutaceae	Lime	Tree	Rare	Introduced	
<i>Citrus aurantium</i>	Rutaceae	Sour orange	Tree	Rare	Introduced	
<i>Citrus limon</i>	Rutaceae	Lemon	Tree	Rare	Introduced	
<i>Triphrasia trifolia</i>	Rutaceae	Myrtle Lime	Shrub	Rare	Introduced	
<i>Zanthoxylum</i> cf. <i>caribaeum</i>	Rutaceae	Prickly ash	Tree	Rare	Native	
<i>Zanthoxylum martinicense</i>	Rutaceae	Prickly ash	Tree	Common	Native	
<i>Zanthoxylum monophyllym</i>	Rutaceae	Yellow prickle	Tree	Common	Native	
<i>Zanthoxylum punctatum</i>	Rutaceae	Ramgoat	Tree	Common	Native	
<i>Zanthoxylum spinifex</i>	Rutaceae	Ramgoat	Shrub	Common	Native	
<i>Zanthoxylum flavum</i>	Rutaceae		Tree	Rare	Native	
<i>Meliosma</i> cf. <i>pardonii</i>	Sabiaceae		Tree	Rare	Native	Possibly <i>M. herbertii</i> ; needs more study.
<i>Samyda dodecandra</i>	Saliaceae	Wild guava	Shrub	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Exothea cf. paniculata</i>	Sapindaceae		Tree	Rare	Native	
<i>Melicoccus bijugatus</i>	Sapindaceae	Ginep	Tree	Common	Introduced	
<i>Sapindus saponaria</i>	Sapindaceae	Soapberry	Tree	Rare	Native	
<i>Chrysophyllum argenteum</i>	Sapotaceae	Wild star apple	Tree	Common	Native	
<i>Manilkara bidentata</i>	Sapotaceae		Tree	Ex?	Native	
<i>Pouteria multiflora</i>	Sapotaceae		Tree	Ex?	Native	
<i>Sideroxylon foetidissimum</i>	Sapotaceae	Mastic	Tree	Rare	Native	
<i>Sideroxylon obovatum</i>	Sapotaceae	Boxwood	Tree	Common	Native	
<i>Sideroxylon salicifolium</i>	Sapotaceae		Tree	Common	Native	
<i>Capraria biflora</i>	Scrophulariaceae	Wild tea	Shrub	Common	Native	
<i>Picramnia pentandra</i>	Simaroubaceae	Bitter bush	Shrub	Common	Native	
<i>Picrasma excelsa</i>	Simaroubaceae		Tree	Rare	Native	
<i>Simarouba amara</i>	Simaroubaceae		Tree	Rare	Native	
<i>Smilax cf. oblongata</i>	Smilacaceae		Vine	Rare	Native	Recently discovered. Identity needs confirmation.
<i>Smilax coriacea</i>	Smilacaceae		Vine	Ex?	Native	
<i>Smilax guianensis</i>	Smilacaceae		Vine	Common	Native	
<i>Acnistus arborescens</i>	Solanaceae		Tree	Rare	Native	
<i>Capsicum anuum</i>	Solanaceae	Pepper	Shrub	Rare	Native	
<i>Cestrum diurnum</i>	Solanaceae		Shrub	Ex?	Native	
<i>Cestrum laurifolium</i>	Solanaceae	Nightshade	Shrub	Common	Native	
<i>Physalis angulata</i>	Solanaceae		Herb	Common	Native	
<i>Physalis sp.</i>	Solanaceae		Herb	Rare	Native	
<i>Solanum americanum</i>	Solanaceae		Shrub	Common	Native	
<i>Solanum bahamense</i>	Solanaceae	Dolly Tomato	Shrub	Common	Native	
<i>Solanum torvum</i>	Solanaceae		Shrub	Common	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Scoparia dulcis</i>	Srophulariaceae	Sweetbroom	Herb	Common	Native	
<i>Suriana maritima</i>	Surianaceae		Shrub	Rare	Native	
<i>Tectaria heracleifolia</i>	Tectariaceae		Herb	Rare	Native	
<i>Tectaria incisa</i>	Tectariaceae		Herb	Rare	Native	
<i>Thelypteris cf. nephrodioides</i>	Thelypteridaceae		Herb	Rare	Native	Recently discovered. Identity needs confirmation.
<i>Thelypteris dentata</i>	Thelypteridaceae		Herb	Common	Introduced	
<i>Thelypteris hispidula</i> var. <i>hispidula</i>	Thelypteridaceae		Herb	Rare	Native	
<i>Thelypteris hispidula</i> var. <i>inconstans</i>	Thelypteridaceae		Herb	Rare	Native	Recently discovered. Identity needs confirmation.
<i>Thelypteris opulenta</i>	Thelypteridaceae		Herb	Rare	Introduced	Recently added to plants list of Antigua.
<i>Thelypteris patens</i> var. <i>patens</i>	Thelypteridaceae		Herb	Rare	Native	
<i>Thelypteris pennata</i>	Thelypteridaceae		Herb	Rare	Native	Recently discovered.
<i>Thelypteris poiteana</i>	Thelypteridaceae		Herb	Rare	Native	
<i>Thelypteris tetragona</i> var. <i>guadelupensis</i>	Thelypteridaceae		Herb	Ex?	Native	
<i>Thelypteris tetragona</i> var. <i>tetragona</i>	Thelypteridaceae		Herb	Common	Native	
<i>Daphnopsis americana</i>	Thymelaeaceae	Bitter mahoe	Tree	Common	Native	
<i>Trema micrantha</i>	Ulmaceae		Tree	Common	Native	
<i>Cecropia schreberiana</i> ssp. <i>Schreberiana</i>	Urticaceae		Tree	Ex?	Native	
<i>Pilea microphylla</i>	Urticaceae		Herb	Common	Native	
<i>Pilea semidentata</i>	Urticaceae		Herb	Common	Native	
<i>Urera baccifera</i>	Urticaceae		Herb	Ex?	Native	

SPECIES	FAMILY	COMMON NAME	FORM	STATUS	ORIGIN	NOTES
<i>Aegiphila martinicensis</i>	Verbenaceae		Shrub	Common	Native	
<i>Citharexylum cordatum</i>	Verbenaceae		Tree	Rare	Native	
<i>Citharexylum spinosum</i>	Verbenaceae	Fiddlewood	Tree	Common	Native	
<i>Cornutia pyramidata</i>	Verbenaceae		Shrub	Ex?	Introduced?	Possibly an introduction, but also possibly native.
<i>Duranta erecta</i>	Verbenaceae	Golden drowdrop	Shrub	Common	Native	
<i>Lantana (camara) strigocamara</i>	Verbenaceae		Shrub	Common	Native	
<i>Lantana involucrata</i>	Verbenaceae	Sage	Shrub	Common	Native	At entrance
<i>Lantana sp.</i>	Verbenaceae		Shrub	Rare	Native	
<i>Petrea volubilis</i>	Verbenaceae		Vine	Common	Native	
<i>Stachytarpheta cayenensis</i>	Verbenaceae		Shrub	Common	Native	
<i>Stachytarpheta jamaicensis</i>	Verbenaceae		Herb	Common	Native	
<i>Volkameria aculeata</i>	Verbenaceae	Privet	Shrub	Common	Native	
<i>Cissus verticillata</i>	Vitaceae	Snake Vine	Vine	Common	Native	
<i>Zingiber officinale</i>	Zingiberaceae		Herb	Rare	Naturalised	Recently discovered by Lindsay and Thibou.
<i>Renealmia occidentalis</i> var. <i>occidentalis</i>	Zingiberaceae		Herb	Ex?	Native	
<i>Kallstroemia pubescens</i>	Zygophyllaceae		Herb	Common	Native	

Notes: Species with cf. mean that the ID is not yet determined

APPENDIX II: BIRD LIST FOR THE SW REGION OF ANTIGUA

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
<i>Podilymbus podiceps</i>	Pied-billed Grebe	PODICIPEDIDAE	Americas, Lc, Res
<i>Sula sula</i>	Brown Booby	SULIDAE – BOOBIES & GANNETS	Worldwide, WI, UnC, Res
<i>Pelecanus erythrorhynchos</i>	American White Pelican	PELECANIDAE - PELICANS	North and Central America, AV
<i>Pelecanus occidentalis</i>	Brown Pelican		Tropical America, Lc
<i>Fregata magnificens</i>	Magnificent Frigatebird	FREGATIDAE - FRIGATEBIRDS	Tropical Atlantic & West Africa, Comm
<i>Ardea alba</i>	Great Egret	ARDEIDAE -HERONS	Americas & worldwide Lc
<i>Ardea herodias</i>	Great Blue Heron		Americas, UnC
<i>Bubulcus ibis</i>	Cattle Egret		Tropical America, Africa, Asia and Pacific, Decl
<i>Butorides virescens</i>	Green Heron		Americas, Lc
<i>Egretta caerulea</i>	Little Blue Heron		Americas, Lc
<i>Egretta garzetta</i>	Little Egret		Africa, Antigua, St. Lucia, Barbados, eastern US, very Rare
<i>Egretta thula</i>	Snowy Egret		Americas, Lc
<i>Egretta tricolor</i>	Tricolored Heron		Americas, UnC
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron		Worldwide, Rare
<i>Nycticorax violacea</i>	Yellow-crowned Night Heron		Americas, Lc
<i>Plegadis falcinellus</i>	Glossy Ibis	THRESKIORNITHIDAE – IBISES & SPOONBILLS	SA, Caribbean, Rare Vag
<i>Anas americana</i>	American Widgeon	ANATIDAE - DUCKS	NA, CA, SA, Europe, Caribbean, Rare, Mig
<i>Anas bahamensis</i>	White-cheeked		Americas, Lc

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
	Pintail		
Anas carolinensis	Green-winged Teal		Americas, Rare, Mig
Anas discors	Blue-winged Teal		Americas, Rare, Mig
Aythya affinis	Lesser Scaup		NA, Central America, Caribbean, Rare, Mig
<i>Aythya marila</i>	Greater Scaup		NA, Europe, Asia, Caribbean, Rare, Mig
Dendrocygna arborea	West Indian Whistling Duck		West Indies, UnC; reported by observes and likely on occasion.
Nomonyx dominicus	Masked Duck		Tropical America, Rare, Res
Oxyura jamaicensis	Ruddy Duck		Americas, Rare, Res
Pandion haliaetus	Osprey	PANDIONIDAE - OSPREYS	Worldwide, Rare
Buteo platypterus	Broad-winged Hawk	ACCIPITRIDAE - HAWKS	Endemic subspecies B. p. insulicola
Falco columbarius	Merlin	FALCONIDAE - FALCONS	America, Eurasia, Rare
Falco peregrinus	Peregrine Falcon		Worldwide, Rare, Mig
Falco sparverius	American Kestrel		Americas, Lc
Fulica americana	American Coot	RALLIDAE - COOTS & GALLINULES	North America, Rare, Res
Fulica caribaea	Caribbean Coot		Caribbean and Venezuela, UnC
Gallinula chloropus	Common Moorhen/Gallinule		Americas, Lc, Res
Rallus longirostris	Clapper Rail		NA, SA, Caribbean, Rare, Res
Charadrius melodus	Piping Plover	CHARADRIIDAE – PLOVER, DOTTERELS & LAPWINGS	Americas, Rare, Mig
Charadrius semipalmatus	Semi-palmated Plover		Americas, UnC, Mig
Charadrius wilsonia	Wilson's Plover		NA, Northern SA, Caribbean, UnC, Res

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
<i>Pluvialis squatarola</i>	Black-bellied Plover		Caribbean, NA, UnC, Res
<i>Haematopus palliatus</i>	American Oystercatcher	HAEMATOPODIDAE - OYSTERCATCHER	Americas, Rare, Res
<i>Himantopus mexicanus</i>	Black-necked Stilt	RECURVIROSTRIDAE – STILTS & AVOCETS	Americas, Lc, Res
<i>Arenaria interpres</i>	Ruddy Turnstone	SCOLOPACIDAE -SANDPIPERS	Worldwide, Rare, Res
<i>Calidris alba</i>	Sanderling		Arctic, SA, Caribbean, Rare, Mig
<i>Calidris ferruginea</i>	Curlew Sandpiper		Worldwide, Rare, Mig
<i>Calidris fuscicollis</i>	White-rumped Sandpiper		NA, SA, parts of Old World, Rare, Mig
<i>Calidris melanotos</i>	Pectoral Sandpiper		Worldwide, Rare, Mig
<i>Calidris minutilla</i>	Least Sandpiper		Americas, UnC
<i>Calidris pusilla</i>	Semipalmated Sandpiper		North America, SA, Caribbean, Res
<i>Gallinago gallinago</i>	Common Snipe		Northern Hemisphere, Rare, Mig
<i>Limnodromus griseus</i>	Short-billed Dowitcher		Americas, Rare, Mig
<i>Limnodromus scolopaceus</i>	Long-billed Dowitcher		NA, Siberia, CA, Caribbean, Rare, Mig
<i>Numenius phaeopus hudsonicus</i>	Whimbrel (American race)		NA, SA, WI, Rare, Mig
<i>Numenius phaeopus phaeopus</i>	Whimbrel (European race)		NA, Europe, Asia, WI, Rare, Mig
<i>Philomachus pugnax</i>	Ruff		Old World, Antigua, Rare, Vag

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
<i>Tringa flavipes</i>	Lesser Yellowlegs		Western Hemisphere, Lc, Mig
<i>Tringa melanoleuca</i>	Greater Yellowlegs		Western Hemisphere, Lc, Mig
<i>Tringa semipalmata</i>	Willet		Eastern NA, CA, SA, Caribbean, Rare, Res
<i>Tringa solitaria</i>	Solitary Sandpiper		Americas, UnC
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	LARIDAE – GULLS& TERNS	Eastern Canada, Europe, Asia, Rare, Vag
<i>Larus atricilla</i>	Laughing Gull		Americas, Lc
<i>Sternula antillarum</i>	Least Tern		NA, CA, SA, Caribbean, UnC, Res
<i>Thalasseus maximus</i>	Royal Tern		NA, Caribbean, UnC, Res
<i>Columbina passerina</i>	Common Ground Dove	COLUMBIDAE - PIGEONS & DOVES	NT, Comm
<i>Geotrygon montana</i>	Ruddy Quail Dove		NT, Rare
<i>Geotrygon mystacea</i>	Bridled Quail Dove		LA, Rare
<i>Patagioenas leucocephala</i>	White-crowned Pigeon		WI, Lc
<i>Patagioenas squamosa</i>	Scaly-naped Pigeon		WI, UnC
<i>Streptopelia decaocto</i>	Eurasian Collared Dove		Europe, Asia, NA, Caribbean, UnC, Res
<i>Zenaida asiatica</i>	White-winged Dove		US, Mexico, CA, Caribbean, UnC to Rare, Res
<i>Zenaida aurita</i>	Zenaida Dove		WI, Comm
<i>Coccyzus minor</i>	Mangrove Cuckoo	CUCULIDAE - CUCKOOS	WI, Comm
<i>Eulampis</i>	Green-throated	TROCHILIDAE - HUMMINGBIRDS	LA, Comm

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
holosericeus	Carib		
Eulampis jugularis	Purple-throated Carib		LA, Rare
Orthorhyncus cristatus	Antillean Crested Hummingbird		LA, Comm
Ceryle alcyon	Belted Kingfisher	ALCEDINIDAE - KINGFISHERS	Americas, UnC
Melanerpes herminieri	Guadeloupe Woodpecker	PICIDAE - WOODPECKERS	Guadeloupe, UnC Vagrant
Sphyrapicus varius	Yellow-bellied Sapsucker		North America, UnC Migrant
Elaenia martinica	Caribbean Elaenia	TYRANNIDAE - TYRANT FLYCATCHERS	WI, Comm
Tyrannus dominicensis	Gray Kingbird		WI, Comm
Hirundo rustica	Barn Swallow	HIRUNDINIDAE - SWALLOWS	Americas, Lc
Progne dominicensis	Caribbean Martin		WI, UnC
Riparia riparia	Bank Swallow		Americas, Rare; difficult to observe, but accompanies flocks of the above species in small number. The two are hard to tell apart, but it is very likely a visitor.
Allenia fusca	Scaly-breasted Thrasher	MIMIDAE - MIMIC THRUSHES	WI, UnC
Cinclocerthia ruficauda	Brown Trembler		LA, Rare
Margarops fuscatus	Pearly-eyed Thrasher		LA, UnC
Vireo altiloquus	Black-whiskered Vireo	VIRIONIDAE - VIREOS	WI, Comm
Vireo flavifrons	Yellow-throated		Americas, Rare

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
	Vireo		
Coereba flaveola	Bananaquit	EMBERIZIDAE - EMBERIZIDS	Americas, Comm
Dendroica caerulescens	Black-throated Blue Warbler		Americas, Rare
Dendroica castanea	Bay-breasted Warbler		Americas, Rare
Dendroica magnolia	Magnolia Warbler		Americas, Rare
Dendroica pensylvanica	Chestnut-sided Warbler		Americas, Rare
Dendroica petechia	Yellow Warbler		Americas, Rare
Dendroica striata	Blackpoll Warbler		Americas, Rare
Dendroica tigrina	Cape May Warbler		Americas, Rare
Dendroica virens	Black-throated Green Warbler		Americas, Rare
Helmitheros vermivorus	Worm-eating Warbler		Americas, Rare
Miniofilta varia	Black and White Warbler		Americas, Rare
Oporonis formosus	Kentucky Warbler		Americas, Rare
Parula americana	Northern Parula		Americas, Rare
Seiurus motacilla	Louisiana Waterthrush		Americas, Rare
Seiurus aurocapillus	Ovenbird		Americas, Rare
Seiurus noveboracensis	Northern Waterthrush		Americas, Rare
Setophaga	American Redstart		Americas, Rare

SPECIES	COMMON NAME	FAMILY	RANGE AND STATUS
ruticilla			
Wilsonia citrina	Hooded Warbler		Americas, Rare
Euphonia musica	Antillean Euphonia		LA, Rare
Icterus galbula	Baltimore Oriole		NA, Rare Migrant
Loxigilla noctis	Lesser Antillean Bullfinch		LA, Comm
Quiscalus lugubris	Carib Grackle		LA, UnC
Tiaris bicolor	Black-faced Grassquit		WI, Comm

APPENDIX III: VEGETATION COMMUNITIES OF THE SWW

1. Lower Montane Community

Similar to the community below, but this is found in wetter, more sheltered valleys and sometimes steeper slopes. Emergents include *S. foetidissimum*, *Ficus* spp., *C. pentandra*, *R. oleracea*, *S. caribaeum* and other rare forest giants. The mid-story trees may include rare species of Myrtaceae, members of the Piperaceae, *Ormosia monosperma*, rare vines, *Ficus* spp. and others. Ground cover may include rare ferns, many vines, orchids and *Heliconia* spp.

This community is not yet well understood and its presence has only recently come to light. Not listed in Lindsay and Horwith 1997.

2. *Ficus citrifolia*-*Ceiba pentandra*-*Roystonea oleracea* Community

Scattered canopy emergents of *Ficus citrifolia*, *Ceiba pentandra* and *Roystonea oleracea*; 20m plus canopy; mid-level understory from 2-5m is discernible; abundant lianas, often climbing to canopy; abundant epiphytes, bromeliads and a few ferns.

The canopy species include: *Sideroxylon foetidissimum*, *Clusia* sp., *Lonchocarpus violaceus*, *Cordia* spp., *Chionanthus compacta*, *Mangifera indica*, *Hymanea courbaril*, *Ficus citrifolia*, *Ocotea* and other members of the *Lauraceae*.

The mid-level understory species include: *Zanthoxylum martinicense*, *Guettarda scabra*, *Eugenia* spp., *Inga laurina*, *Tabernaemontana citrifolia*, *Picramnia pentandra*, *Daphnopsis americana*, *Chrysophyllum argenteum*, *Psychotria nivosa*, and several species in the *Melastomataceae*.

Lianas and climbing epiphytic species include: *Acacia retusa*, *Macfadyena unguis-cati*, *Pereskia aculeata*, *Philodendron giganteum* and *Hylocereus trigonus*.

3. *Mangifera indica*-*Cocos nucifera*-*Bucida buceras* Community

At Wallings, this community is found along steep wet ghauts, especially where there are springs providing water for most of the year, though this is not always the case. There are scattered canopy emergents of *C. pentandra*, *R. oleracea*, *C. nucifera*, *H. crepitans* and *B. buceras*. These emergents may reach 20-30 meters or sometimes more. Lianas are less common in the canopy of this alliance. In the mid to upper story, it is common to find relicts and escapes from past cultivation, including *Citrus* varieties and *S. jambos*. The understory is also usually sparse because of floods, and may consist mainly of seedlings of canopy species, ferns and other pioneers. This community often occurs as patches within seasonal forests like

the *Coccoloba pubescens*-*Eugenia* spp. Mixed Evergreen-Deciduous Alliance, described below.

This alliance is to be found at Christian Valley, western slopes of Mount Obama, Wallings area, Fig Tree Drive, the upper parts of the ghaut draining into Rendezvous, and steep ghauts on the north side of Signal Hill.

4. *Tillandsia usneoides*-*Morisonia americana* Sclerophyllous Community

This formation is a two-storied community with emergents of *Bursera simaruba* and *Pisonia subcordata* above a 15 m canopy. In places, the canopy is festooned with curtains of the abundant *Tillandsia usneoides*. Dense ground cover of *Hylocereus trigonus*, *Agave karatto*, *Aechmea lingulata* and *Celtis iguanaea* occur over frequent rocky outcrops.

Other canopy species include *Morisonia americana*, *Pisonia fragrans*, *Ficus citrofolia* and *Eugenia* spp.

Understory species include *Capparidastrium frondosum*, *C. indica*, *C. cynophallophora*, *Pilosocereus royenii* and *Eugenia* spp.

Ground cover species include *Pisonia aculeata*, *Hylocereus trigonus*, *Tragia volubilis*, *Aechmea lingulata*, *Tillandsia utriculata*, *Celtis iguanaea* and *Agave karatto*.

5. *Coccoloba pubescens*-*Eugenia* spp. Community

This community appears as drier "islands" within wetter forests, because of greater exposure to drying winds or location within rain shadows. May have emergents of *Ceiba pentandra*, *Hura crepitans* or *Spondias mombin*; canopy may reach heights of up to about 20 meters, but generally reaches less than this in wetter locations. In the past, much of the understory often was as a result of coppicing, as wattle and charcoal cutters harvested the poles.

It is found in Christian Valley, Wallings and nearby areas, Boggy Peak and areas above Fig Tree Drive.

6. *Pisonia subcordata*-*Bourreria succulenta* Mixed Evergreen-deciduous Community

This community is a two-storied forest with occasional emergents of *B. simaruba* and *T. heterophylla* above a 6-12 meter canopy. The trees are usually slender-stemmed, less than 15-20 cm, though emergents may be larger. The understory usually consists of dense, fairly impenetrable thickets, in part because of the extensive vines, including *Stigmaphyllon* and legume species, which is characteristic of this community. It occurs in dry areas and areas with shallow soils.

Found at Wallings and nearby areas, above Fig Tree Drive, at Doiggs, Claremont, Tremontania, Fishers and western slopes of Mount Obama.

7. *Cordia obliqua* Seasonally/Temporally Flooded Evergreen-deciduous Community

This swampy vegetation is associated with the flood plain of the upper slopes of Doiggs and grades into the mangroves. It is in fact a wetland. The vegetation is less dense and distinct canopy (around 15m) than the surrounding woodland. There is generally an undefined understory, trees often covered by vines of *Ipomoea* spp. and *Stigmaphyllon* spp.

The species include: *cordia obliqua*, *terminalia catappa*, *tabebuia heterophylla*, *coccoloba swartzii*, *sapindus saponaria*, *hippomane mancinella*, *thespesia populnea*, *acacia* spp., *haematoxylon campechianum*, the occasional *I. Racemosa*, *lantana involucreta*.

This wetland is in effect, intricately and intimately connected to the mangrove wetland and beach dune vegetation of Rendezvous Bay, and is quite unique. Some parts of this wetland may have varying levels of saline soils, which affects vegetation growth, depending on how much salt is in the soil and the levels of water; the closer to the mangroves, the greater the salinity of the soil.

During the wet season, temporary pools lasting days and even months, may appear, some just a few square meters and others tens of square meters.

8. *Tabebuia heterophylla*-*Pisonia subcordata* Mixed Evergreen-Deciduous Community

This is a two-storied forest community with occasional emergents of *Ficus citrifolia*, *Bursera simaruba* and *Tabebuia heterophylla* above a 10-15m canopy; there is usually a dense understory. This community is very similar to ***Pisonia subcordata*-*Bourreria succulenta* Mixed Evergreen-deciduous Community** but differs by the mixtures of species, including the presence of greater numbers of *T. heterophylla* and *Pisonia subcordata*. It may also show a greater development maturity than the latter formation.

Found on the slopes above the southern areas of Orange Valley.

. *Acacia* spp. Mixed Evergreen-Deciduous Community

This formation is similar to the below, but dominated by *Acacia* spp. It is fairly widespread throughout the SWW. It contains a mixture of trees and shrubs, the ratio of which depends in part on the type and timing of human disturbance. The tallest trees usually reach a height of about 5-10 meters. There is no defined canopy, though there may be an occasional emergent, usually of *T. heterophylla* and *P. subcordata*. The density of trees and shrubs is typically high, but varies considerably. The community is secondary in nature, which reflects

succession on unmanaged pasture land (previously sugar cultivation, livestock or crop farming).

In the SWW it is found around towns and villages, abandoned agricultural fields, at Orange Valley, Doiggs, Barters, Wallings, in patches on slopes above Fig Tree, especially on the western side, above John Hughes on Western slopes, north of Signal Hill on exposed dry slopes and in patches above Claremont Valley.

9. *Acacia* spp.-*Caesalpinia coriaria*-*Haematoxylon campechianum*-*Leucaena leucocephala* Community

This formation is similar to the above but it is dominated primarily by *Haematoxylon*, *Acacia* and *Leucaena* spp.

Distribution is also somewhat similar to the above.

10. *Melocactus intortus*-*Jacquinia arborea* Succulent-Facultatively Dwarf-Shrubland Community

A community of scattered cacti, short shrubs and trees. There is usually considerable bare ground and weathered "pavement" (often limestone), with a thin covering of soil that often is inadequate for normal root development. It is restricted to cliffs exposed to high winds and thin soils thus limiting the growth of trees and shrubs.

The species may include *Mammillaria nivosa*, *Melocactus intortus*, *Opuntia* spp., *Croton astroites*, *Phyllanthus epiphyllanthus*, *Jacquinia arborea*, *Lantana* spp., *Chamaecrista glandulosa* var. *swartzii*, *Castela erecta*, *Pithecellobium unguis-cati*, *Pilosocereus royenii*, *Agave karatto* and *Talinum fruticosum*.

Found on the slopes above lower Orange Valley near Darkwood.

11. *Calliandra purpurea*-*Hylocereus trigonus* Broad-leaved Evergreen Sclerophyllous Community

This community is a two-storied forest with emergents of *Pisonia subcordata*, *Guapira fragrans*, *Tabebuia heterophylla*, *Coccoloba swartzii*, *C. pubescens*, *Acacia muricata*, *Amyris elemifera*, *Gymnanthes lucida* and *Clusia major* above 12 m canopy. There is a dense understory and concentrations of epiphytic species, and a thick humus over rocks and thin soil layer.

The understory species include *Chamaecrista glandulosa* var. *swartzii*, *Guettarda scabra*, *Ardisia obovata*, *Gymnanthes lucida*, a number of *Eugenia* spp., *Calliandra purpurea* (at Barters), *Coccoloba pubescens*, *C. uvifera*, *Ouratea guildingii*, *Clusia major*, *Brunfelsia*

americana, *C. hastata*, *Comocladia dodonaea*, *Phyllanthus epiphyllanthus*, *Canella winterana* and, *Hylocereus trigonus*.

The bromeliad *Aechmea lingulata* forms dense ground cover as well as growing on trees, *Tillandsia utriculata*, species of ferns, which include *Microgramma* and *Pleopeltis* and three species of orchids — *Epidendrum ciliare*, *Tolumnia urophylla* and *Tetramicra elegans*.

12. Grassland with Broad-leaved Evergreen Trees

This grassland community has some forbs, with scattered shrubs and trees, providing a cover of generally 10-25%. None of these areas is natural, and are often in transition from grassland back to more woody communities. Many of these areas are maintained through grazing and fires.

In addition to whatever shrub and tree species are present, the dominant grass species is *Dichanthium aristatum*; other monocots include *Trimezia martinicensis*, and the following forbs: *Waltheria indica*, *Abutilon* spp., *Stylosanthes hamata*, *Chamaesyce hirta*, *Crotolaria retusa*, *Mimosa pudica*, *Desmodium* spp., *Stachytarpheta jamaicensis*, and others.

This community is found in patches throughout the SWW, ranging from a few meters to one or two acres in size, but is most abundant on the Tucks Point headland. This community is gradually disappearing as woodlands re-colonize these areas.

13. *Cymbopogon citratus* Grassland with Broad-leaved Evergreen Tree

This community is virtually monospecific stands of the introduced grass, *C. citratus*, locally called Fever Grass, Citronella or Lemon Grass. This community occurs in patches and swathes throughout the area, ranging from a few meters in size to hectares. It is maintained by fires that are deliberately set by wood cutters and livestock to gain access to the forest, to get rid of weeds and problem plants, and to promote the growth of young palatable shoots.

14. Pasture: *Acacia* spp. Mixed Evergreen-Drought Deciduous Shrubland

This community contains a mixture of trees and shrubs, with the ratio depending in part on the type and timing of human disturbance. Heights generally to 5 m, but can reach to 10 m; no defined canopy. The density of trees and shrubs is typically high, but varies considerably. It is secondary in nature and reflects the succession on unmanaged pasture land (much of the pasture land was preceded by sugarcane cultivation). Beard, 1949 described this as Deciduous Seasonal Forest associated with human interference; Loveless also emphasized the "interference by man and his animals" and variously labeled the communities as "grasslands", "waste bushlands" or "weeds of cultivated land".

The tree and shrub species may include *Acacia* spp., *Pithecellobium unguis-cati*, *Prosopis juliflora*, *Haematoxylon campechianum*, *Pilosocereus royenii*, *Pisonia aculeata*, *C. flexuosa*, *Leucaena leucocephala*, *Albizzia lebbek*, *Lantana camara*, *Psidium guajava* and *Pluchea carolinensis*.

Grass and forb species may include *Dichanthium aristatum*, *Trimezia martinicensis*, *Waltheria indica*, *Stylosanthes hamata*, *Chamaesyce hirta*, *Crotalaria* spp., *Mimosa pudica*, *Neptunia* spp., *Desmodium* spp., *Stachytarpetta jamaicensis*, and others.

15. Mangrove Community

All mangrove formations have been consolidated into this community definition. They all consist of salt-tolerant mangrove species (four species) found growing around coastal ponds and depressions. Some formations may consist of one species, two, three or a combination of all four. In some instances, the mangroves form a narrow woodland around the perimeter of the pond or along the coast, and in other instances, the species may form thick woodlands. Some mangrove systems dry out partially or completely during the dry season while others may maintain permanent standing water.

Plant species along the coast, around the ponds, channels and depression may consist of *Laguncularia racemosa*, *Conocarpus erectus*, *Avicennia germinans*, *Thespesia populnea*, *Hippomane mancinella*, *Dalbergia ecastaphyllum*, *Acacia* spp. and *Volkameria aculeata*. Other species associated with these mangrove systems may include *Acacia* spp., *Lantana camara*, *Hippomane mancinella*, *Cordia obliqua* and *Volkameria aculeata*.

Mangroves are found along the coast from Barters and Doiggs to Jolly Hill.

16. Farming (Includes crop, fruit and livestock)

This community is directly associated with human activities, including livestock and tree crop farming. The land is cleared and planted with a number of tree fruit crops, and may be mixed with vegetable and herb crop farming. Species include Citrus varieties and species, many Mango varieties, Pineapple, Banana varieties, Cacao, *Annona* spp., *Spondias* spp., and a variety of vegetable crops and root crops, as well as herbs for seasoning and medicinal purposes.

Found at Fig Tree, Tremontania and Claremont, Old Road, Urlings, Orange and Christian Valleys.

17. Gardens (Rural and Suburbs)

These are artificial constructs surrounding human habitations and along paths, and include cultivated plant communities often as adornments.

The plant species preference in these landscapes is for the use of non-native showy and colourful species and varieties/cultivars of plants-imported ornamentals from off-island, though a few native plants may be used; these usually few and far in between.

18. Ponds/Dams & Lagoons

There are several ponds, reservoirs and small pools found throughout the SWW. The vegetation consists of *Ludwigia* spp., *Pistia stratiotes*, *Utricularia obtusa*, *Typha* cf. *domingensis*, *Dioidea* and *Lemna* sp., members of the Cyperaceae and a few grasses. Also abundant are algae and slime molds.

19. Sparsely Vegetated Rock & Cliffs Community

This formation is characterised by having about 15-10% or less of its area covered by plants. It is found as bare high up on cliffs and exposed areas of little or no soils and along the coast. Species include grasses, orchids and bromeliads. These areas occur as scattered patches of outcrops at Sugar Loaf, Signal Hill, Christian Valley and Orange Valley and other locations.

20. Beach Vegetation Community (sparsely vegetated)

This community is characterised by sparsely vegetated sandy areas along the coasts. It is ephemeral, due in large part to the dynamic nature of beaches where storms and other natural factor are constantly causing the sands to shift. Species of plants are herbaceous and "viny", and include *Ipomoea pes-caprae*, *Canavalia rosea*, *Scaevola plumieri*, the grass *Spartina patens* and the glaucous low herb *Chamaesyce mesembrianthemifolia*.

This vegetation community is closely related with the following below, and gradually merges into it. However, dunes are not found throughout the SWW and only at Rendezvous. Beach Vegetation is more widely scattered and found along most sandy undeveloped coastlines in the area.

21. Dredge spoil & Landfill

The underlying substrates of this community consist of consolidated sediments derived from marine sources. It is largely an artificial community created from marine sediments dredged from the nearby coastal seabeds and dumped in shallow depressions along the coast. The vegetation consists of sparse herbaceous and shrubby growth to sparse woodland. Found on the west coast at Valley Church area.

22. Coastal dune vegetation

This is a very rare plant community, today found only at Rendezvous Bay where it occurs along the coast at Doiggs and Barbers. It is extremely vulnerable to development, roads, built structures and heavy human traffic. The trees often are stunted due to winds or to a

combination of wind, shallow soils, and limited freshwater. It forms a thin strip that run parallel to the coastline. The plants grow on the crest and to the back of the dunes bordering the mangrove wetland.

The plants are mostly low trees reaching 4-10m in height. There is no discernible canopy, and the undergrowth is a tangle of branches and scandent shrubs. Species include: *Hippomane mancinella*, *Conocarpus erectus*, *Cocos nucifera*, *Coccoloba uvifera*, *Guilandina bonduc*, *Thespesia populnea*, the scrambling shrub forming dense tickets, *Dalbergia ecastaphyllum*, *Acacia* spp., the giant introduced milkweed *Calotropis procera*, *Volkameria aculeata*, the vines *Stigmaphyllon emarginatum*, *Canavalia rosea* and the night-flowering *Ipomoea violacea*.

23. *Eleocharis cellulosa* Seasonally Flooded Community

This plant community consists of one or more grass or sedge species occurring, usually in tussocks, in standing water and/or saturated soil for much of the year. The plants typically grow to less than two 0.8 m in height. However, the dominant plant is *E. cellulosa*. The community is found around Salinas and mangrove areas on the west coast of the SWW.

24. Commercial/Construction/Disturbed Ground

This community is defined as commercial built areas found scattered throughout the SWW and may include hotels, power plants, marinas, supermarkets and other similar facilities, and lands affected by these activities, including areas considered disturbed as a resulted of commercial related activities

25. Urban (High Density)

Vegetation Map Legend

