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# **RED LIST OF VASCULAR PLANTS OF ANTIGUA & BARBUDA**

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# **RED LIST OF VASCULAR PLANTS OF ANTIGUA & BARBUDA**

**ISSUE 04**

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## EXECUTIVE SUMMARY

This deliverable was produced by the Environmental Awareness Group of Antigua and Barbuda as part of a subcontract under the USAID (US Agency for International Development) funded Caribbean Open Trade Support program. The project is supported by the Government of Antigua and Barbuda Environment Division and Ministry of Agriculture. The Government focal point for the IUCN SSC is under review and will be announced in due course. The purpose of the subcontract is to identify Antigua and Barbuda's plants of special interest and to stimulate public awareness and concern over the rich national flora.

The IUCN categories and criteria are the accepted method of producing Red Lists of threatened species internationally and also at a national and regional level.

The purpose of this Red List is:

- to be the first comprehensive Red List of the vascular plants of Antigua & Barbuda. The Red List includes: Pteridophyta (ferns and fern allies) and flowering plants (Monocotyledons and Dicotyledons).
- to be a basis for input to new environmental protection legislation in Antigua & Barbuda.
- to be one of the first terrestrial Regional Red Lists based on IUCN guidelines in the Caribbean.

This issue of the Red List is a second draft including changes based on recent surveys. A new section (Section 7) is included which addresses the distribution of endemic and native species. It will be updated and annotated during further surveys being carried out as part of the project to reflect the current conservation status of the plants. In due course it is hoped that this will facilitate future protected area legislation. Another new section (Section 8) makes recommendations for species that should be protected by law.

### Authors of the Document

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## 1. SELECTION OF TAXA FOR THE RED LIST

In order to ensure that the Red List is comprehensive, it was decided to base it on all native and naturalised taxa listed in the Checklist of Native and Naturalised Plants of Antigua and Barbuda (Reference 15).

Conservation efforts need to be directed mainly at *native* species and, in particular, at endemics to the region. All taxa which are 'native' and 'possibly/probably native' are therefore included as candidates for the Red List, while those introduced during and after Colonial times are excluded except for a few species of cultural and historical interest.

Species thought to have been introduced by the Amerindians are also included in the Red List for the following reasons:

- These plants have either stable distributions or are declining.
- They often have no known native range and could be ignored almost everywhere.
- Many are of considerable historical and cultural interest.

The list also includes a few taxa that can be considered to fall into the category of 'new native'. These include taxa that have recently colonised Antigua & Barbuda as a result of natural dispersal.

Hybrids have an essential role to play in plant evolutionary processes and a number are included in the list.

## 2. IUCN CATEGORIES AND CRITERIA

The IUCN has defined 11 *Categories* for describing the threat level to species of plants and animals (References 16, 17 and 18). Nine of the *Categories* are for global and regional assessments and an additional two *Categories* were developed specifically for regional assessments. These are listed in Table 1 and fully described in Appendix 1. Threatened species are divided into “Critically Endangered”, “Endangered” and “Vulnerable”. The justification for the *Category* of threatened species is described by a set of *Criteria*. These are summarized in Appendix 2 and 3. Some IUCN terms are not fully defined. IUCN terms requiring additional definition are listed in Appendix 4.

**Table 1 – IUCN Categories**

	<b>Category</b>	<b>Criteria</b>
Extinct	EX	-
Extinct in the Wild	EW	-
Regionally Extinct	RE	-
Critically Endangered	CR	See Table 2
Endangered	EN	See Table 2
Vulnerable	VU	See Table 2
Near Threatened	NT	A, B, C or D
Least Concern	LC	-
Data Deficient	DD	-
Not Applicable	NA	-
Not Evaluated	NE	-

## 3. DESCRIPTION OF THE RED LIST

### 3.1 Naming of Plants

The scientific names are those used in the Checklist of Native and Naturalized Plants of Antigua and Barbuda (Ref 15). These are based on Howard’s Flora of the Lesser Antilles (Refs 6 – 9). However, a number of the names have been revised since the Flora was written. Revised names can be found in the database based on the Checklist.

### 3.2 Classification System

With the exception of the ferns, the arrangement of families in this document is based on the APG II system as described in reference 5. This system is based on molecular data that have become available since around 1990, analyzed by cladistic methods. This has made possible a much closer approach to the phylogenetic goal of making classification reflect descent.

The arrangement of ferns is based on Howard’s Flora of the Lesser Antilles, reference 7. This will be reordered according to a modern classification system in due course.

### 3.3 Supporting Data

There are four columns that provide supporting data for threatened taxa. An entry in the Area of Occupancy (AOO) or the Extent of Occurrence (EOO) columns implies that there has been a decline greater than or equal to the threshold for the IUCN criteria listed. The 'Locations' or 'Individuals' columns provide additional numerical details. Reference 16 Annex 3 lists other data that would be required for submission to IUCN.

### 3.4 Endemics

A taxon is defined as *endemic* to Antigua & Barbuda if its entire native distribution is confined to Antigua & Barbuda. If a taxon's entire native distribution is confined to the Greater and/or Lesser Antilles, it is termed *Regionally endemic*.

### 3.5 International Responsibility

There is no reliable source for ascertaining whether Antigua & Barbuda holds a significant proportion (>25%) of the World population. The general distribution in Reference 6 to 9 are used to indicate those taxa for which Antigua & Barbuda is likely to hold a significant proportion of the total population.

### 3.6 Global and Regional Status

The IUCN status is given in this column, where known. A thorough check of synonyms is needed to ensure that all globally red listed taxa are listed here. In addition, a number of regional lists have been consulted. Taxa on these databases are listed as follows:

- W: UNEP World Conservation Monitoring Centre (WCMC) species database ([www.unep-wcmc.org/species/dbases/about.cfm](http://www.unep-wcmc.org/species/dbases/about.cfm))
- S: UN Environment Program Specially Protected Areas and Wildlife (SPAW) Protocol species database ([www.unep-wcmc.org/isdb/Taxonomy/](http://www.unep-wcmc.org/isdb/Taxonomy/))
- US: US Fish and Wildlife Service Endangered Species Database ([www.fws.gov/endangered](http://www.fws.gov/endangered))

## 4. THE RED LIST

The following list addresses only regional endemics as these are the primary focus of conservation. The full list addressing all native taxa and naturalized taxa is contained in the associated spreadsheet.

Taxon	Family	Common Name	Category	A Criteria	B Criteria	C Criteria	D Criteria	Percentage of Occurrence	Number of Occurrences	Localities	Individuals	General Distribution	Endemic to A&B	Global Status
<b>Pteridophyta</b>														
<i>Pityrogramma chrysophylla</i> (Sw.) Link	Polypodiaceae	Goldback fern	CR				D				<250	Puerto Rico		
<b>Monocots</b>														
<i>Anthurium grandifolium</i> (Jacq.) Kunth	Araceae		VU	A2c				>30%				Greater Antilles		
<i>Monstera adansonii</i> Schott	Araceae	Monstera	NT				D					Trinidad		
<i>Rajania cordata</i> L.	Dioscoreaceae		LC?									Greater Antilles		
<i>Smilax coriacea</i> Spreng.	Smilacaceae	Greenbriar	VU	A2c				>30%				Greater Antilles		US
<i>Smilax guianensis</i> Vitman	Smilacaceae		VU	A2c				>30%				Lesser Antilles		
<i>Habenaria dussii</i> Cogn.	Orchidaceae	Guadeloupe bog orchid	NT	A								Greater Antilles		
<i>Oncidium urophyllum</i> Lodd. Ex Lindl.	Orchidaceae	Yellow dancing lady	NT				D					Lesser Antilles		W
<i>Hymenocallis caribaea</i> (L. emend. Gawl.) Herb.	Amaryllidaceae	Spider lily	LC									Greater Antilles		
<i>Agave dussiana</i> Trel.	Agavaceae	Century plant	RE?									Lesser Antilles		
<i>Agave karatto</i> Miller	Agavaceae	Century plant	VU	A2c				>30%				Lesser Antilles		
<i>Furcraea tuberosa</i> (Mill.) Ait. F.	Agavaceae		EN			C2a					<2500	Lesser Antilles		
<i>Acrocomia aculeata</i> (Jacq.) Lodd. ex Mart.	Arecaceae/Palmae	Macaw palm	CR?			C2a					<250	Lesser Antilles		W
<i>Coccothrinax barbadensis</i> (Lodd. Ex Mart.) Becc.	Arecaceae/Palmae	Palmetto (Bda), Silver palm	EW									Antilles		W
<i>Roystonea oleracea</i> (Jacq.) Cook	Arecaceae/Palmae	Cabbage palm	VU			C2a					<10000	Lesser Antilles		
<i>Sabal causiarum</i> (Cook) Becc.	Arecaceae/Palmae	Bermuda palmetto	EW									Puerto Rico		
<i>Heliconia bihai</i> (L.) L.	Heliconiaceae	Wild plantain	RE?									Greater Antilles		
<i>Heliconia caribaea</i> Lam.	Heliconiaceae	Lobsterclaw	RE?									Greater Antilles		W
<i>Pitcairnia angustifolia</i> Aiton	Bromeliaceae		LC									Antilles		
<i>Vriesea guadelupensis</i> (Baker) Mez	Bromeliaceae		EN			C2a					<2500	Lesser Antilles		
<b>Graminoids</b>														
<i>Mariscus planifolius</i> (L. C. Richard) Urban	Cyperaceae		VU	A2c				>30%				Antilles		

<i>Aristida swartziana</i> Steud.	Poaceae/Graminae		DD				Greater Antilles	
<i>Chloris cubensis</i> Hitchc. & Ekman ex Hitchc.	Poaceae/Graminae		DD				Antilles	
<i>Chloris sagraeana</i> A. Rich	Poaceae/Graminae		DD				Antilles	
<i>Ichnanthus pallens</i> (Sw.) Munro	Poaceae/Graminae		DD				Antilles	
<i>Paspalum bakeri</i> Hack.	Poaceae/Graminae		CR	A2c		>80%	Antilles	L
<i>Paspalum laxum</i> Lam.	Poaceae/Graminae		EN	A2c		>50%	Antilles	
<i>Setaria utowanaea</i> (Scribn. Ex Millsp.) Pilger	Poaceae/Graminae		EN	A2c		>50%	Greater Antilles	
<i>Setaria setosa</i> (Sw.) Beauv.	Poaceae/Graminae		VU	A2c		>30%	Trinidad	
<b>Dicots</b>								
<i>Hedyosmum arborescens</i> Sw.	Chloranthaceae	Cigarbush	CR	A2c		>80%	Antilles	
<i>Peperomia myrtifolia</i> (Vahl) A. Dietr.	Piperaceae	Myrtle-leaf peperomia	EN	A2c		>50%	Antilles	W
<i>Piper dussii</i> C. DC.	Piperaceae		VU	A2c		>30%	Lesser Antilles	
<i>Aristolochia rugosa</i> Lam.	Aristolochiaceae		VU	A2c		>30%	Lesser Antilles	
<i>Hernandia sonora</i> L.	Hernandiaceae	Mago, Jack-in-the-box	CR		C2a	<250	Antilles	
<i>Beilschmiedia pendula</i> (Sw.) Hemsl.	Lauraceae	Slugwood, sweetwood	NT		B		Antilles	
<i>Cinnamomum elongatum</i> (Vahl ex Nees) Kosterm.	Lauraceae	Pitch-pine sweetwood	EN	A2c		>50%	Antilles	
<i>Licaria salicifolia</i> (Sw.) Kosterm.	Lauraceae	PR cinnamon	LC				Antilles	
<i>Nectandra membranacea</i> (Sw) Griseb.	Lauraceae	Sweetwood	LC				Antilles	W
<i>Ocotea leucoxydon</i> (Sw.) de Laness	Lauraceae	Loblolly sweetwood	EN	A2c		>50%	Antilles	W
<i>Ocotea patens</i> (Sw.) Nees	Lauraceae	Capberry	EN	A2c		>50%	Antilles	
<i>Cissus obovata</i> Vahl	Vitaceae		DD				Antilles	
<i>Eugenia cordata</i> (Sw.) DC. var. <i>sintensii</i>	Myrtaceae	Lathberry	DD				Antilles	
<i>Myrcia citrifolia</i> (Aublet) Urban var. <i>imrayana</i>	Myrtaceae	Red birch, guava berry	VU	A2c		>30%	Antilles	
<i>Pimenta racemosa</i> (Miller) J. Moore	Myrtaceae	Bay leaf, Christmas bush	VU		D2	<20	Antilles	
<i>Psidium longipes</i> (O. Berg) McVaugh var. <i>orbiculare</i>	Myrtaceae	Mangrove berry	VU		D2	<20	Antilles	US
<i>Henriettea triflora</i> (Vahl) Alain	Melastomataceae		EN	A2c		>50%	Antilles	
<i>Miconia striata</i> (Vahl) Cogn.	Melastomataceae		DD				Lesser Antilles	W
<i>Miconia trichotoma</i> (Desr.) DC.	Melastomataceae		DD				Lesser	

						Antilles	
<i>Mouriri domingensis</i> (Tussac) Spach	Melastomataceae		DD			Antilles	
<i>Tetrazygia angustifolia</i> (Sw.) DC.	Melastomataceae	Broom wood	LC			Antilles	
<i>Tetrazygia discolor</i> (L.) DC.	Melastomataceae	Ashes wood, hogwood	DD			Lesser Antilles	W
<i>Acacia muricata</i> (L.) Willd.	Leguminosae	Spineless wattle	EN	A2c	>50%	Antilles	
<i>Albizia berteriana</i> (DC.) M. Gomez	Leguminosae		EN	B1ab(v)+2ab(v)	<5	Antilles	VU B1+2c
<i>Desmanthus virgatus</i> (L.) Willd.	Leguminosae	Wild Tantan	LC			Antilles	
<i>Inga laurina</i> (Sw.) Willd.	Leguminosae	Spanish oak, sac bean	LC			Antilles	
<i>Mimosa ceratonia</i> L.	Leguminosae	Ambret	DD			Greater Antilles	
<i>Caesalpinia ciliata</i> (Bergiusx ex Wikstrom) Urban	Leguminosae	Warri bush, yellow nicker	VU	A2c	>30%	Antilles	
<i>Chamaecrista glandulosa</i> (L.) Greene var. <i>swartzii</i>	Leguminosae	Broom	LC			Antilles	
<i>Andira sapindoides</i> (DC.) Benth	Leguminosae	Angelin	DD			Lesser Antilles	W
<i>Galactia dubia</i> DC.	Leguminosae	Milkpea	DD			Lesser Antilles	W
<i>Galactia longifolia</i> (Jacq.) Benth	Leguminosae	Longleaf milkpea	DD			Lesser Antilles	
<i>Galactia rubra</i> (Jacq.) Urban	Leguminosae		DD			Lesser Antilles	W
<i>Pictetia aculeata</i> (Vahl) Urban	Leguminosae	Fustic	LC?			Antilles	
<i>Zornia microphylla</i> Desv.	Leguminosae		DD			Greater Antilles	
<i>Ziziphus reticulata</i> (Vahl) DC.	Rhamnaceae	Ironwood	VU	A2c	>30%	Antilles	
<i>Cecropia schreberiana</i> Miq.	Moraceae	Trumpet tree	RE			Greater Antilles	
<i>Pilea nummulariifolia</i> (Sw.) Wedd.	Urticaceae	Creeping Charlie	DD			Antilles	
<i>Pilea semidentata</i> (A.L.Juss. ex Poiret) Wedd.	Urticaceae	Cliff clearweed	DD			Antilles	
<i>Cayaponia americana</i> (Lam.) Cogn.	Cucurbitaceae	Wild pumpkin	VU	A2c	>30%	Antilles	
<i>Maytenus laevigata</i> (M. Vahl) Griseb.	Celastraceae	White cinnamon	DD			Antilles	
<i>Bernardia dichotema</i> (Willd.) Muell. Arg.	Euphorbiaceae		DD			Greater Antilles	
<i>Chamaesyce articulata</i> (Aublet) Britton	Euphorbiaceae	Milk shrub	DD			Greater Antilles	

<i>Chamaesyce balbisii</i> (Boiss.) Millsp.	Euphorbiaceae		DD				Lesser Antilles	
<i>Croton astroites</i> Dryander	Euphorbiaceae	Balsam	NT	A			Antilles	
<i>Croton betulinus</i> M. Vahl	Euphorbiaceae	Nanny bush	NT	A			Antilles	
<i>Drypetes serrata</i> (Maycock) Krug & Urban	Euphorbiaceae	Silverwood	DD				Lesser Antilles	
<i>Drypetes glauca</i> M. Vahl	Euphorbiaceae	Greenheart	DD				Antilles	
<i>Drypetes alba</i> Poit.	Euphorbiaceae		DD				Antilles	
<i>Sapium caribaeum</i> Urban	Euphorbiaceae	Milk tree	RE?				Lesser Antilles	W
<i>Phyllanthus mimosoides</i> Sw.	Euphorbiaceae		LC?				Antilles	
<i>Ouratea guildingii</i> (Planchon) Urban	Ochnaceae		VU	A2c		>30%	Antilles	
<i>Bunchosia glandulosa</i> (Jacq.) Kunth	Malpighiaceae	Cabrita, Elsie Bush	VU	A2c		>30%	Greater Antilles	
<i>Bunchosia polystachia</i> (Andrews) DC.	Malpighiaceae	Wild coffee	DD				Antilles	
<i>Byrsonima trinitensis</i> ADR. Juss.	Malpighiaceae	Tanning tree	EN	A2c		>50%	Lesser Antilles	
<i>Malpighia linearis</i> Jacq.	Malpighiaceae	Stinging Bush	VU	A2c		>30%	Antilles	
<i>Malpighia martinicensis</i> Jacq.	Malpighiaceae	Wild cherry	VU	A2c		>30%	Lesser Antilles	
<i>Stigmaphyllon diversifolium</i> (Kunth) ADR. Juss.	Malpighiaceae		LC				Greater Antilles	
<i>Stigmaphyllon emarginatum</i> (Cav.) ADR. Juss.	Malpighiaceae		LC				Antilles	
<i>Tetrapteryx inaequalis</i> Cav.	Malpighiaceae		DD				Greater Antilles	
<i>Calophyllum calaba</i> L.	Clusiaceae		LC				Antilles	
<i>Clusia major</i> L.	Clusiaceae	Mountain cherry, Wild man support	LC				Lesser Antilles	
<i>Clusia rosea</i> Jacq.	Clusiaceae	Pitch apple, autograph tree	VU	A2c		>30%	Antilles	W
<i>Marila racemosa</i> Sw.	Clusiaceae	Bull tongue	DD				Lesser Antilles	W
<i>Hybanthus linearifolius</i> (Vahl) Urban	Violaceae		DD				Antilles	
<i>Samyda dodecandra</i> Jacq.	Flacourtiaceae	Wild guava	LC				Antilles	
<i>Dacryodes excelsa</i> Vahl	Burseraceae	Gommier	RE?				Antilles	
<i>Comocladia dodonaea</i> (L.) Urban	Anacardiaceae	Pick Evil	LC				Antilles	
<i>Paullinia plumieri</i> Triana & Planchon	Sapindaceae		DD				Lesser Antilles	
<i>Swietenia mahagoni</i> (L.) Jacq.	Meliaceae	West Indian Mahogany	VU		C2a	<10000	Greater Antilles	EN A1cd

<i>Zanthoxylum punctatum</i> Vahl	Rutaceae	Ramgoat	VU	A2c	>30%	Greater Antilles	
<i>Hibiscus elatus</i> Sw.	Malvaceae	Blue Mahoe	LC			Greater Antilles	
<i>Ayenia insulaecola</i> Cristobal	Sterculiaceae		DD			Antilles	
<i>Sterculia caribaea</i>	Sterculiaceae	Wild Mahot	CR	B1ab(v)+2ab(v)	2	Antigua	
<i>Dendropemon caribaeum</i> Krug & Urban	Loranthaceae	Caribbean Mistletoe	DD			Antilles	
<i>Psittacanthus martinicensis</i> (Presl) Eichler	Loranthaceae	Man 'pon tree	?			Lesser Antilles	
<i>Coccoloba x boxii</i> Sandw.	Polygonaceae		CR	B1ab(v)+2ab(v)	1	Antigua	Yes
<i>Coccoloba krugii</i> Lindau	Polygonaceae	Whitewood, wild grape	DD			Greater Antilles	
<i>Coccoloba pubescens</i> L.	Polygonaceae	Ducana leaf	LC			Greater Antilles	
<i>Alternanthera crucis</i> (Moq.) Bold.	Amaranthaceae	Joyweed	LC			Antilles	
<i>Hylocereus trigonus</i> (Haw.) Saff.	Cactaceae	Night-blooming cactus	EN	A2c	>50%	Antilles	W
<i>Mammillaria nivosa</i> Link ex Pfeiffer	Cactaceae		EN	A2c	>50%	Antilles	W
<i>Melocactus intortus</i> (Miller) Urban	Cactaceae	Turk's cap cactus	EN	A2c	>50%	Antilles	S
<i>Opuntia cochenillifera</i> (L.) Miller	Cactaceae	Slippery cassie	LC			Greater Antilles	
<i>Opuntia currassavica</i> (L.) Miller	Cactaceae		EN	A2c	>50%	Lesser Antilles	W
<i>Opuntia repens</i> Bello	Cactaceae	Jumping prickly pear	EN	A2c	>50%	Antilles	
<i>Opuntia rubescens</i> Salm-Dyck ex DC.	Cactaceae	Tree opuntia	EN	A2c	>50%	Antilles	
<i>Opuntia triacantha</i> (Willd.) Sweet	Cactaceae	Jumping prickly pear	LC			Antilles	W
<i>Pilosocereus royeri</i> (L.) Byles & G. Rowley	Cactaceae	Dildo	LC			Antilles	W
<i>Rhipsalis baccifera</i> (J. S. Miller) Stearn	Cactaceae		CR	A2c	>80%	Antilles	US, W
<i>Pisonia discolor</i> Sprengel	Nyctaginaceae	Longleaf loblolly	DD			Antilles	
<i>Pisonia subcordata</i> Sw.	Nyctaginaceae	Loblolly	LC			Antilles	
<i>Marcgravia umbrellata</i> L.	Marcgraviaceae		RE?			Lesser Antilles	
<i>Chrysophyllum cainito</i> L.	Sapotaceae	Star apple	LC			Greater Antilles	
<i>Pouteria multiflora</i> (A. DC.)	Sapotaceae	Penny piece	DD			Greater	

Eyma							Antilles	
<i>Sideroxylon obovatum</i> Lam.	Sapotaceae	Boxwood	DD				Antilles	W
<i>Jacquinia berterii</i> Sprengel	Theophrastaceae		RE?				Antilles	W
<i>Ardisia obovata</i> Ham.	Myrsinaceae		VU	A2c		>30%	Antilles	
<i>Ternstroemia elliptica</i> Sw.	Theaceae		DD				Lesser Antilles	W
<i>Ternstroemia peduncularis</i> DC.	Theaceae		DD				Antilles	
<i>Antirhea acutata</i> (DC.) Urban	Rubiaceae	Mutton polly	EN	A2c		>50%	Antilles	
<i>Antirhea coriacea</i> (Vahl) Urban	Rubiaceae		EN	A2c		>50%	Greater Antilles	
<i>Catesbaea melanocarpa</i> Urban	Rubiaceae	Black berry	DD				Antilles	US
<i>Chimarrhis cymosa</i> Jacq.	Rubiaceae	Waterwood	DD				Antilles	
<i>Chione venosa</i> (Sw.) Urban	Rubiaceae	Mastic, Fat pork	DD				Antilles	
<i>Genipa americana</i> L.	Rubiaceae		RE?				Antilles	
<i>Guettarda crispiflora</i> Vahl	Rubiaceae		DD				Trinidad	
<i>Guettarda ovalifolia</i> Urban	Rubiaceae		DD				Unknown origin	
<i>Ixora ferrea</i> (Jacq.) Bentham	Rubiaceae		DD				Greater Antilles	
<i>Psychotria domingensis</i> Jacq.	Rubiaceae		LC				Greater Antilles	
<i>Rudgea citrifolia</i> (Sw.) K. Schum.	Rubiaceae		DD				Lesser Antilles	
<i>Spermacoce bahamensis</i> (Britton) Howard	Rubiaceae		DD				Antilles	
<i>Spermacoce berteriana</i> Howard	Rubiaceae		DD				Lesser Antilles	W
<i>Spermacoce dussii</i> (Standley) Howard	Rubiaceae		DD				Lesser Antilles	
<i>Metastelma parviflorum</i> (Sw.) R. Br. Ex J. A. Schultes	Apocynaceae		LC				Antilles	
<i>Plumeria rubra</i> L.	Apocynaceae	Frangipani	LC				Greater Antilles	
<i>Rhabdadenia biflora</i> (Jacq.) Muell.	Apocynaceae		LC				Antilles	
<i>Tabernaemontana citrifolia</i> L.	Apocynaceae	Milky Bush	CR	A2c		>80%	Antilles	VU D1+2
<i>Thevetia peruviana</i> (Persoon) Schumann	Apocynaceae	Lucky nut	DD				Greater Antilles	
<i>Argusia gnaphalodes</i> (L.) Heine	Boraginaceae	Sea lavender	DD				Antilles	US
<i>Cordia nesophila</i> I. M. Johnston	Boraginaceae	Black sage	DD				Lesser Antilles	W
<i>Cordia reticulata</i> M. Vahl	Boraginaceae		DD				Lesser Antilles	
<i>Cordia sebestena</i> L.	Boraginaceae	Geranium tree	DD				Greater	

						Antilles	
<i>Cordia sulcata</i> DC.	Boraginaceae	Manjack	LC			Greater Antilles	
<i>Heliotropium indicum</i> L.	Boraginaceae		DD			Antilles	
<i>Heliotropium microphyllum</i> Sw. ex Wilkstrom	Boraginaceae		DD			Antilles	W
<i>Rocheportia acanthophora</i> (DC.) Griseb.	Boraginaceae		DD			Antilles	
<i>Rocheportia spinosa</i> (Jacq.) Urban	Boraginaceae		DD			Antilles	
<i>Tournefortia filiflora</i> Griseb	Boraginaceae		DD			Antilles	
<i>Tournefortia hirsutissima</i> L.	Boraginaceae		DD			Antilles	US
<i>Tournefortia microphylla</i> Bertero ex Sprengel	Boraginaceae		LC			Antilles	
<i>Ipomoea repanda</i> Jacq.	Convolvulaceae		DD			Antilles	
<i>Jacquemontia cayensis</i> Britton	Convolvulaceae		DD			Antilles	
<i>Jacquemontia solanifolia</i> (L.) H. Hallier	Convolvulaceae		DD			Antilles	
<i>Brunfelsia americana</i> L.	Solanaceae	Lady of the night	EN?	A2c	>50%	Greater Antilles	
<i>Cestrum laurifolium</i> L'Herit.	Solanaceae	Candlewood	DD			Greater Antilles	
<i>Datura metel</i> L.	Solanaceae	David bush	DD			Antilles	
<i>Lycium americanum</i> Jacq.	Solanaceae		DD			Antilles	
<i>Solanum racemosum</i> Jacq.	Solanaceae	Dolly tomato	LC			Antilles	
<i>Stemodia durantifolia</i> (L.) Sw.	Scrophulariaceae		DD			Antilles	
<i>Stemodia verticillata</i> (Miller) Hassl.	Scrophulariaceae		DD			Antilles	
<i>Salvia occidentalis</i> Sw.	Labiatae/Lamiaceae		DD			Greater Antilles	
<i>Salvia serotina</i> L.	Labiatae/Lamiaceae		DD			Antilles	
<i>Justicia eustachiana</i> Jacq.	Acanthaceae		DD			Lesser Antilles	W
<i>Odontonema nitidum</i> (Jacq.) Kuntze	Acanthaceae		DD			Antilles	
<i>Oplonia microphylla</i> (Lam.) Stearn	Acanthaceae		DD			Antilles	
<i>Pachystachys spicata</i> (Ruiz & Pavon) Wassh.	Acanthaceae	Gas bush	LC			Antilles	
<i>Stenandrium tuberosum</i> (L.) Urban	Acanthaceae		DD			Antilles	
<i>Catalpa longissima</i> (Jacq.) Dum. Cours.	Bignoniaceae		RE?			Greater Antilles	
<i>Tabebuia heterophylla</i> (DC.) Britton	Bignoniaceae	White cedar	LC			Greater Antilles	
<i>Tabebuia lepidota</i> (HBK) Britton	Bignoniaceae	Cedar	LC			Greater	

						Antilles	
<i>Clerodendrum aculeatum</i> (L.) Schlecht	Verbenaceae	Privet	LC			Antilles	
<i>Petrea kohautiana</i> Presl.	Verbenaceae	Purple wreath	LC			Antilles	W
<i>Tamonea boxiana</i> (Moldenke) Howard	Verbenaceae	Coast broom	LC			Puerto Rico	
<i>Vitex divaricata</i> Sw.	Verbenaceae	White Fiddlewood	DD			Antilles	
<i>Ilex sideroxyloides</i> (Sw.) Griseb.	Aquifoliaceae		DD			Antilles	
<i>Acmella iodiscaeae</i> (A. H. Moore) Jansen	Asteraceae		DD			Greater Antilles	
<i>Ambrosia hispida</i> Pursh	Asteraceae		EN	A2c	>50%	Greater Antilles	
<i>Baccharis dioica</i> Vahl	Asteraceae		VU	A2c	>30%	Greater Antilles	US
<i>Eupatorium corymbosum</i> Aubl.	Asteraceae		DD			Antilles	
<i>Eupatorium dussii</i> Urban	Asteraceae		DD			Lesser Antilles	
<i>Eupatorium sinuatum</i> Lam.	Asteraceae		DD			Antilles	
<i>Gundlachia corymbosa</i> (Urban) Britton ex Bold.	Asteraceae	Yam bush	DD			Antilles	
<i>Pectis ericifolia</i> Keil	Asteraceae		CR	B1ab(v)+2ab(v)	1	Barbuda	Yes
<i>Pectis humifusa</i> Sw.	Asteraceae		DD			Greater Antilles	
<i>Pectis tenuicaulis</i> Urban	Asteraceae		DD			Puerto Rico	
<i>Pluchea odorata</i> (L.) Cass.	Asteraceae	Cattle tongue (herb)	LC			Antilles	
<i>Vernonia albicaulis</i> Pers.	Asteraceae		LC			Puerto Rico	
<i>Wedelia gracilis</i> L. C. Rich.	Asteraceae		LC			Greater Antilles	

## 5. SUMMARY OF FINDINGS

<b>IUCN Category</b>	<b>Total No of Taxa</b>	<b>Regional Endemics</b>
Extinct	0	0
Extinct in the Wild	2	2
Regionally Extinct	14	8
Critically Endangered	31	12
Endangered	77	22
Vulnerable	92	24
Near Threatened	38	7
Least Concern	238	41
Data Deficient	327	82
Not Applicable	372	
<b>Total</b>	<b>1191</b>	<b>198</b>

## 6. ASSOCIATED SPREADSHEETS

The associated spreadsheet has 4 tabs: West Indian Endemics as per the Red List in Section 4 above, Species of unknown origin and 2 further tabs:

### 6.1 Neotropical Native

This list consists of species believed to originate from the Neotropics and are assumed to be native. These are being evaluated although, as stated previously, the focus is primarily on West Indian endemics.

### 6.2 Non-Native

This list consists primarily of taxa rejected from the current analysis (Not Applicable, NA Category). Typically these species are recent introductions.

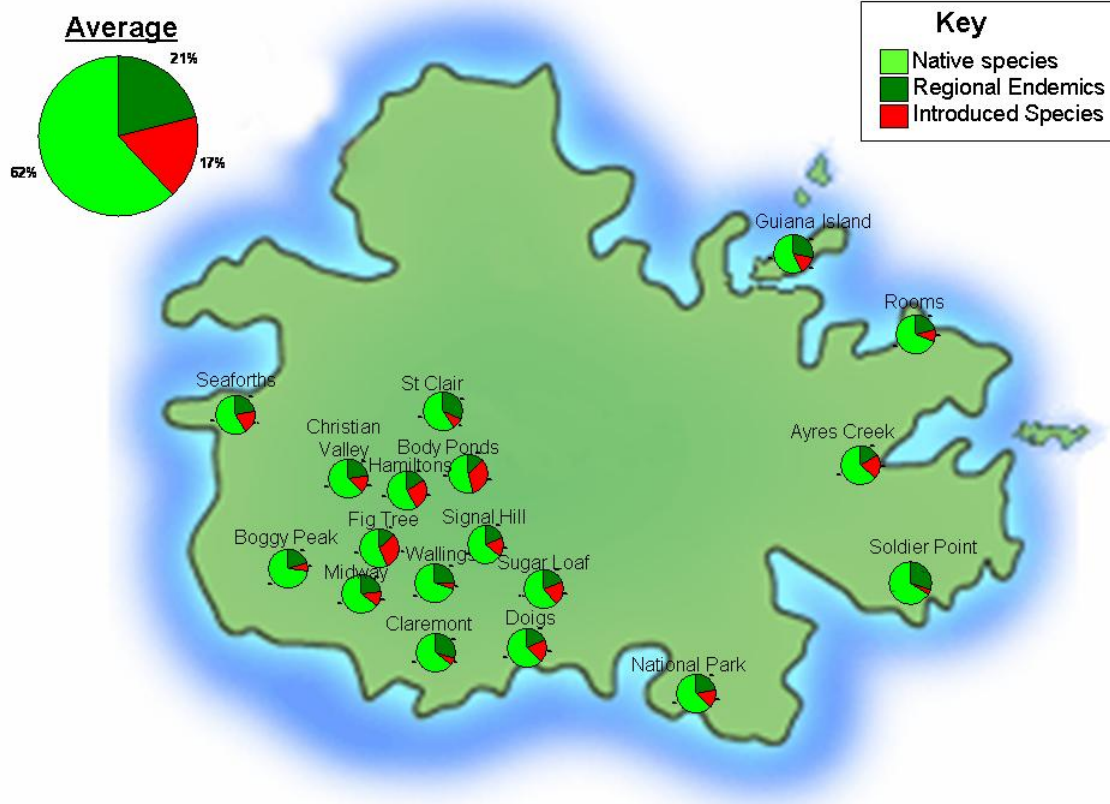
## 7. DISTRIBUTION OF ENDEMIC AND NATIVE SPECIES

At this point in the project, we have compiled considerable distributional information. However, it is not possible to present a full picture as yet. The following map illustrates the distribution of regional endemics, native species and introduced species in the most important areas surveyed so far.

The distribution is represented in percentage terms rather than absolute numbers. The number of observed species per survey is between 47 and 157. However, absolute numbers are not used in the map as, for instance, there are many coastal and mangrove areas where the number of species is small, but the percentage of endemics and natives is high.

As can be seen, the average is 21% regional endemics 62% other native species, and 17% introduced species. When the surveys are more advanced, it is planned to make

recommendations for protecting areas with high proportions of regional endemics and native species.



## 8. PLANTS REQUIRING LEGAL PROTECTION

The following is a proposed list of species that should be included in the schedule of protected species in forthcoming legislation.

<u>Species</u>	<u>Family</u>	<u>Common Name</u>	<u>Notes</u>
<b>Ferns</b>			
All native fern species	Pteridophyta	Ferns	This covers most ferns in the wild except for Brake Fern, <i>Pteris vittata</i>
<b>Orchids</b>			
All native orchid species	Orchidaceae	Orchids	This covers all orchids in the wild.
<b>Palm Trees</b>			
All native palm species.			This covers most palms in the wild but excludes <i>Cocos nucifer</i> (coconut) and <i>Phoenix dactylifera</i> (date palm)
<i>Acrocomia aculeata</i> (Jacq.) Lodd	Arecaceae	Macaw Palm	
<i>Coccothrinax barbadensis</i> Becc.	Arecaceae	Palmetto	

<i>Roystonea oleracea</i> O.F. Cook	Areaceae	Cabbage Palm	
<i>Thrinax morrisii</i> H. Wendl.	Areaceae	Pimetta	
<b>Bromeliads</b>			
All native Bromeliads	Bromeliaceae	Bromeliad, man-pon-tree	This covers all Bromeliads except for Pingwing, <i>Bromelia pinguin</i>
<b>Agaves</b>			
All native Agaves			This covers all Agaves in the wild.
<i>Agave karatto</i> Miller	Agavaceae	Dagger	
<i>Agave dussiana</i> Trel.	Agavaceae	Dagger	
<i>Furcraea tuberosa</i> (P. Mill.) Ait. F.	Agavaceae	Dagger	
<b>Mangroves</b>			
All mangrove species including:			
<i>Avicennia germinans</i> (L.) L.	Acanthaceae	Black Mangrove	
<i>Avicennia schaueriana</i>	Acanthaceae	Black Mangrove	
<i>Conocarpus erectus</i> L.	Combretaceae	Button Mangrove	
<i>Laguncularia racemosa</i> (L.) Gaertn. f.	Combretaceae	White Mangrove	
<i>Rhizophora mangle</i> L.	Rhizophoraceae	Red Mangrove	
<b>Cacti</b>			
All native cacti species including:			This covers most cacti in the wild except for the edible prickly pear, <i>Opuntia cochenilifera</i>
<i>Acanthocereus tetragonus</i> (L.) Humm	Cactaceae		
<i>Hylocereus Trigonus</i> (Haw) Saff	Cactaceae	Creeping cactus	
<i>Mammillaria nivosa</i> Link ex Pfeiff.	Cactaceae		
<i>Melocactus intortus</i> (Mill.) Urb.	Cactaceae	Turk's cap cactus	
<i>Opuntia currassavica</i> (L.) Miller	Cactaceae		
<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	Cactaceae		
<i>Opuntia rubescens</i> Salm-Dyck Ex DC	Cactaceae	Tree cactus	
<i>Opuntia triacantha</i> (Willd.) Sweet	Cactaceae		
<i>Pilosocereus royenii</i> (L.) By. & Row.	Cactaceae	Dul dul	
<i>Rhipsalis baccifera</i> (J. S. Miller) Stearn	Cactaceae		
<b>Mistletoes</b>			
Hemi-parasitic mistletoes including:			
<i>Dendropemon caribaeus</i> Krug & Urb.	Loranthaceae	Caribbean mistletoe	
<i>Psittacanthus martinicensis</i> (Presl) Eichler	Loranthaceae	Man 'pon tree	

**All very large trees**

All trees with a girth in excess of 180 cm

**All IUCN Red Listed Species including:**

<i>Guaiacum officinale</i> L.	Zygophyllaceae	Lignum Vitae
<i>Cedrela odorata</i> L.	Meliaceae	Red cedar
<i>Schoepfia arenaria</i> Britt.	Olacaceae	
<i>Tabernaemontana citrifolia</i> L.	Apocynaceae	Milky Bush
<i>Swietenia mahagoni</i> (L.) Jacq.	Meliaceae	W.I. mahogany

**Monocots**

<i>Anthurium grandifolium</i> (Jacq.) Kunth	Araceae	
<i>Smilax coriacea</i> Spreng.	Smilacaceae	Greenbriar
<i>Smilax guianensis</i> Vitman	Smilacaceae	
<i>Heliconia bihai</i> (L.) L.	Heliconiaceae	Wild plantain
<i>Heliconia caribaea</i> Lam.	Heliconiaceae	Lobsterclaw

**Dicots**

<i>Hedyosmum arborescens</i> Sw.	Chloranthaceae	Cigarbush
<i>Peperomia myrtifolia</i> (Vahl) A. Dietr.	Piperaceae	Myrtle-leaf peperomia
<i>Piper dussii</i> C. DC.	Piperaceae	
<i>Aristolochia rugosa</i> Lam.	Aristolochiaceae	
<i>Hernandia sonora</i> L.	Hernandiaceae	Mago, Jack-in-the-box
<i>Cinnamomum elongatum</i> (Vahl ex Nees) Kosterm.	Lauraceae	Pitch-pine sweetwood
<i>Ocotea leucoxylon</i> (Sw.) de Laness	Lauraceae	Loblolly sweetwood
<i>Ocotea patens</i> (Sw.) Nees	Lauraceae	Capberry
<i>Myrcia citrifolia</i> (Aublet) Urban var. <i>inrayana</i>	Myrtaceae	Red birch, guava berry
<i>Pimenta racemosa</i> (Miller) J. Moore	Myrtaceae	Bay leaf, Christmas bush
<i>Psidium longipes</i> (O. Berg) McVaugh var. <i>orbiculare</i>	Myrtaceae	Mangrove berry
<i>Henriettea triflora</i> (Vahl) Alain	Melastomataceae	
<i>Acacia muricata</i> (L.) Willd.	Leguminosae	Spineless wattle
<i>Albizia berteriana</i> (DC.) M. Gomez	Leguminosae	
<i>Caesalpinia ciliata</i> (Bergius ex Wikstrom) Urban	Leguminosae	Warri bush, yellow nicker
<i>Ziziphus reticulata</i> (Vahl) DC.	Rhamnaceae	Ironwood
<i>Cecropia schreberiana</i> Miq.	Moraceae	Trumpet tree
<i>Cayaponia americana</i> (Lam.) Cogn.	Cucurbitaceae	Wild pumpkin
<i>Croton astroites</i> Dryander	Euphorbiaceae	Balsam
<i>Croton betulinus</i> M. Vahl	Euphorbiaceae	Nanny bush

<i>Sapium caribaeum</i> Urban	Euphorbiaceae	Milk tree
<i>Ouratea guildingii</i> (Planchon) Urban	Ochnaceae	
<i>Bunchosia glandulosa</i> (Jacq.) Kunth	Malpighiaceae	Cabrita, Elsie Bush
<i>Byrsonima trinitensis</i> Adr. Juss.	Malpighiaceae	Tanning tree
<i>Malpighia linearis</i> Jacq.	Malpighiaceae	Stinging Bush
<i>Malpighia martinicensis</i> Jacq.	Malpighiaceae	Wild cherry
<i>Clusia rosea</i> Jacq.	Clusiaceae	Pitch apple, autograph tree
<i>Dacryodes excelsa</i> Vahl	Burseraceae	Gommier
<i>Zanthoxylum punctatum</i> Vahl	Rutaceae	Ramgoat
<i>Coccoloba x boxii</i> Sandw.	Polygonaceae	
<i>Marcgravia umbellata</i> L.	Marcgraviaceae	
<i>Jacquinia berterii</i> Sprengel	Theophrastaceae	
<i>Ardisia obovata</i> Ham.	Myrsinaceae	
<i>Antirhea acutata</i> (DC.) Urban	Rubiaceae	Mutton polly
<i>Antirhea coriacea</i> (Vahl) Urban	Rubiaceae	
<i>Genipa americana</i> L.	Rubiaceae	
<i>Catesbaea melanocarpa</i> Urban	Rubiaceae	Black Berry
<i>Tabernaemontana citrifolia</i> L.	Apocynaceae	Milky Bush
<i>Brunfelsia americana</i> L.	Solanaceae	Lady of the night
<i>Catalpa longissima</i> (Jacq.) Dum. Cours.	Bignoniaceae	
<i>Ambrosia hispida</i> Pursh	Asteraceae	
<i>Baccharis dioica</i> Vahl	Asteraceae	
<i>Pectis ericifolia</i> Keil	Asteraceae	

## 9. ACKNOWLEDGEMENTS

We wish to thank the Joint Nature Conservation Committee (JNCC) of the United Kingdom. The structure for this document, and in particular the tables, makes much use of the Vascular Plant Red Data List for Great Britain which was produced by a committee chaired by the JNCC (Reference 19).

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## APPENDIX 1 - THE IUCN CATEGORIES

The IUCN categories are as defined in reference 16: IUCN Red List Categories and Criteria and reference 17: Guidelines for Application of IUCN Red List Criteria at Regional Levels:

**EXTINCT (EX).** A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times, throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

**EXTINCT IN THE WILD (EW).** A taxon is Extinct in the Wild when it is known to survive only in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times, throughout its range have failed to record an individual.

**REGIONALLY EXTINCT (RE).** Category for a taxon when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last individual has died or disappeared in the wild from the region.

**CRITICALLY ENDANGERED (CR).** A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

**ENDANGERED (EN).** A taxon is Endangered when the best available evidence indicates that it meets any of the criteria for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

**VULNERABLE (VU).** A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

**NEAR THREATENED (NT).** A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

**LEAST CONCERN (LC).** A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

**DATA DEFICIENT (DD).** A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

**NOT APPLICABLE (NA).** A taxon may be NA because it is not a wild population or not within its natural range in the region, or because it is a vagrant to the region.

**NOT EVALUATED (NE).** A taxon is Not Evaluated when it has not been assessed against the criteria.

## APPENDIX 2 - THE IUCN CRITERIA

IUCN defines a range of “Criteria” for assessing the “Category” for a red-listed taxon. Reference 18 includes a summary which is reproduced below:

### Summary of the five criteria (A-E) used to evaluate if a taxon belongs in a threatened category (Critically Endangered, Endangered or Vulnerable).

Use any of the criteria A-E	Critically Endangered	Endangered	Vulnerable
<b>A. Population reduction</b>	Declines measured over the longer of 10 years or 3 generations		
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3 &amp; A4</b>	≥ 80%	≥ 50%	≥ 30%
<b>A1.</b> Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible <b>AND</b> understood <b>AND</b> have ceased, based on and specifying any of the following:			
<b>(a)</b> direct observation			
<b>(b)</b> an index of abundance appropriate to the taxon			
<b>(c)</b> a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality			
<b>(d)</b> actual or potential levels of exploitation			
<b>(e)</b> effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.			
<b>A2.</b> Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased <b>OR</b> may not be understood <b>OR</b> may not be reversible, based on (a) to (e) under A1.			
<b>A3.</b> Population reduction projected or suspected to be met in the future (up to a maximum of 100 years) based on (b) to (e) under A1.			
<b>A4.</b> An observed, estimated, inferred, projected or suspected population reduction (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased <b>OR</b> may not be understood <b>OR</b> may not be reversible, based on (a) to (e) under A1.			
<b>B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)</b>			
<b>B1.</b> Extent of occurrence (EOO) km <sup>2</sup>	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000
<b>B2.</b> Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
<b>AND at least 2 of the following:</b>			
<b>(a)</b> Severely fragmented, <b>OR</b> Number of locations	= 1	≤ 5	≤ 10
<b>(b)</b> Continuing decline in any of: <b>(i)</b> extent of occurrence; <b>(ii)</b> area of occupancy; <b>(iii)</b> area, extent and/or quality of habitat; <b>(iv)</b> number of locations or subpopulations; <b>(v)</b> number of mature individuals.			
<b>(c)</b> Extreme fluctuations in any of: <b>(i)</b> extent of occurrence; <b>(ii)</b> area of occupancy; <b>(iii)</b> number of locations or subpopulations; <b>(iv)</b> number of mature individuals.			
<b>C. Small population size and decline</b>			
Number of mature individuals	< 250	< 2,500	< 10,000
<b>AND either C1 or C2:</b>			
<b>C1.</b> An estimated continuing decline of at least: (up to a max. of 100 years in future)	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generations
<b>C2.</b> A continuing decline <b>AND</b> (a) and/or (b):			
<b>(a i)</b> Number of mature individuals in each	< 50	< 250	< 1,000

subpopulation:  
**or**  
**(a ii)** % individuals in one subpopulation = 90-100% 95-100% 100%

**(b)** Extreme fluctuations in the number of mature individuals.

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**D. Very small or restricted population**

**Either:**

Number of mature individuals	< 50	< 250	<b>D1.</b> < 1,000 <b>AND/OR</b>
	Restricted area of occupancy		<b>D2.</b> typically: AOO < 20 km <sup>2</sup> or number of locations ≤ 5

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**E. Quantitative Analysis**

Indicating the probability of extinction in the wild to be:     ≥ 50% in 10 years or 3 generations (100 years max.)     ≥ 20% in 20 years or 5 generations (100 years max.)     ≥ 10% in 100 years

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## **APPENDIX 3 - USE OF THE IUCN CATEGORIES AND CRITERIA**

### **Use of the Near Threatened (NT) Category**

IUCN do not provide quantitative thresholds for the category of Near Threatened, but they state that the taxon should be close to qualifying for the Vulnerable category, and that the criteria that were nearly met should be stated. Examples are given in Reference 18 Section 10.

### **Use of the Not Applicable (NA) Category**

As stated in Section 1, recently introduced taxa are not included in the Red List. These are listed as NA.

### **Use of the Not Evaluated (NE) Category**

A number of species have not yet been located in the surveys and these are listed as NE.

### **Use of the Data Deficient (DD) Category**

There are a considerable number of taxa for which information is currently either lacking or insufficient to undertake IUCN threat analysis. These are listed as DD.

### **Use of Criterion A**

Criterion A looks at the decline of a taxon over 10 years or 3 generations. For this initial report, Criterion A2c is used based on past population decline. However, as no previous detailed surveys have been done, we are considering whether Criterion A3c or A4c should be used, which projects future declines based on current rates of decline. For instance, deforestation rates through fires and grazing animals has been estimated at this early stage.

### **Use of Criterion B**

Criterion B is designed to identify threats associated with extremely restricted distribution when combined with other risk factors. Severe fragmentation and extreme fluctuations have not been used as risk factors in this initial document so the application of criterion B is simplified as in Table 2. Reference 19 includes a discussion of the issues - for instance the fact that some plants naturally exhibit extreme fluctuations in population due to climatic and other conditions.

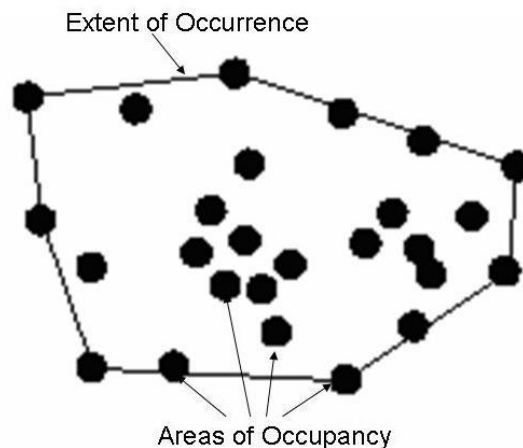
## APPENDIX 4 - DEFINITIONS

### Extent of occurrence

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy. This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat) (but see 'area of occupancy' below). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

### Area of occupancy

Area of occupancy is defined as the area within its 'extent of occurrence' (see above) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats.



### Location

The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. For this initial report a location is defined here as a contiguous vegetative area of less than 10sq. km. (or 2500 acres or 1000 ha).

### Generation

For the purpose of this initial report, a generation for a woody plant is assumed to be typically >10 years, for a herbaceous perennial >5 years, and for an annual >1 year.

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