# THE VEGETATION AND FLORA OF NAURU – 2007

## Current Status, Cultural Importance and Suggestions for Conservation, Restoration, Rehabilitation, Agroforestry and Food, Health and Economic Security

**Report prepared for the Ministry of Commerce, Industry and Resources and the Nauru Rehabilitation Corporation, Republic of Nauru**

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**Secretariat of the Pacific Community**
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## DEDICATION

We dedicate this report to the late Joseph Detsimea Audoa, former Minister of Health and Education and Minister of Justice in the Government of Nauru, who, because of his vision and commitment to the culture and environment of Nauru, initiated and provided the financial support for the 1980s study of the flora of Nauru, and to the people of the Republic of Nauru who have had their precious island and its vegetation and flora destroyed and degraded as a result of wars and exploitation beyond their control.

# FOREWORD

The rehabilitation of phosphate-mined areas is considered top priority under the Nauru National Sustainable Development Strategy (NSDS) 2005-2025. This is further recognized in the Secretariat of the Pacific Community (SPC) and the Government of Nauru Joint Country Strategy (JCS) 2008-2010, identifying the activity as requiring the assistance of SPC

In response to the above, the Land Resources Division (LRD) of SPC, through its Forests and Trees Group, commissioned a survey of the vegetation and flora of Nauru as part of its support to the Government of Nauru towards the rehabilitation of the phosphate-mined areas. The survey is an update of a similar one undertaken in 1980-81 by Thaman, Hassal and Manner (Thaman *et al*. 1994).

This publication documents the results of the survey, which among other things, include:

- A discussion of the current state of the flora and vegetation of Nauru highlighting the most important changes that have taken place over the past quarter of century since the last in-depth survey in the early 1980s;
- An updated account of culturally useful plants of, and weeds of potential danger to, Nauru;
- Changes that have occurred and actions that need to be taken to protect the remaining indigenous plants and vegetation and associated Nauruan knowledge ; and
- Identification of those species and areas of vegetation of cultural and ecological importance that are rare or threatened and in need of some form of conservation as part of the pre-planning for re-mining and continued human settlement on Nauru.

In addition to this publication, a companion document, *Plants of Nauru: Guide to the Indigenous and Introduced Plants of Particular Importance and Weeds of Pontential Threat to Nauru*" providing illustrations, background information and pictures of some 180 species or groups of species within the the existing flora of Nauru, has also been published (Thaman, Hassall and Takeda 2008).

It is hoped that both of these publications will be useful not only to the Government of Nauru in the planning and implementation of its rehabilitation programme of the island's mined areas, but also to scientists, researchers, students and the ordinary Nauruans who may wish to further study the Nauru vegetation and flora.

We wish to express our sincere appreciation to Dr. Randy Thaman and his colleagues, Dr. David Hassall and Shingo Takeda for their tremendous contribution in undertaking the survey and documenting the results in an excellent document that will form the basis for Nauruans to protect and conserve their native plant species and effectively use them in the rehabilitation of their mined areas.

Lastly, we would like to express our sincere thanks and gratitude to the Government of Nauru for giving SPC the opportunity to contribute to its efforts towards the rehabilitation of its mined areas, and also for the permission to publish the report for greater distribution.

**Aleki Sisifa**
Director, Land Resources Division
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# ACKNOWLEDGEMENTS

Over the past quarter century there have been countless people who have assisted in many ways in the study of Nauru's plants. Special thanks are given to our original local informants in relation to the cultural uses and Nauruan names of plants during the 1980s, all of whom are now deceased. They include the Reverend James Aingimea, Henry Michael Heine, Daphne Fotu, Jacob Gabwinare, Katarina Satto, Kenia Raidinen, Reynold Capelle, Eda Adam and Montiba Star. Others who have worked closely with us and supported us over much of this period include Leo Keke, Nelson Tamakin, Julie Olsson and Pene Agadio. Others who provided support and assistance include Joseph Cain, Anton Jimwereiy, Andrew Pitcher, Lagamot Harris, Bernard Dowiyigo, Lisle Newby, Felix Kun, Lawrence Stephen, Braro Detudamo, Obera Menke, Robert Kaierua, Dennis Ketner, Sio Fotu, Pine Harrison, John Brechtefeld, Rene Harris, Porthos Bop, Jacob Aroi, Delilah Capelle, Eddie Borak, John Healy, Gary Bailey, Leon Thompson, Benjamin Morgan, Tyrone Deiye, Alan Debao, Peter Jacob, Charleston Deiye, Dr. Ludwig and Ann Keke, Dr. Kiki Thoma, Dr. Edgar Rapisora, Alan Jordan, J. S. Aluwhalia, Khurshid Kasba, Philomena Dick, Pamela Scriven, Terry Amram, Edwin Tsitsi, Joseph Hiram, David Westover, Vollmer Api, Maggie Jacob, Rhonda Kinsela, Iosefa Elisala and Teaora Tabanou. Their support, friendship and hospitality over the past quarter century have made our work on Nauru extremely rewarding and enjoyable.

Thanks are also owing to the organizations that have supported our work over the years. They include The University of the South Pacific (USP), Secretariat of the Pacific Regional Environment Programme (SPREP), the Secretariat of the Pacific Community (SPC), the United Nations Development Programme (UNDP) and AusAID. Special thanks also go to the former Department of Island Development and Industry (IDI), the Nauru Phosphate Corporation (NPC), the Nauru Island Council and, during the most recent trip, the Ministry of Commerce and Industry and Resources (MCIR) and the Nauru Rehabilitation Corporation (NRC).

Our thanks also go to our co-authors on the *Flora of Nauru*, the late Emeritus Professor of Botany of the Smithsonian Institution National Museum of Natural History, whose knowledge of the Micronesian environment was unparalleled, and Dr. Harley Manner of the University of Guam, who played such an important role in the studies of the regeneration of vegetation of the mined areas of Topside. Thanks is also due to those people, who over the past 100 years, have collected and identified plants on Nauru; and to the late Saula Vodonaivalu of USP's South Pacific Regional Herbarium of The University of the South Pacific, Suva, Fiji who identified, preserved and curated the herbarium specimens collected by Thaman, Manner and Hassall. Without their efforts, this work would have been impossible. Similarly, we would like to thank The University of the South Pacific for the support it has provided throughout the duration of the study, both as the institution where the study was initiated and completed and as Nauru's own university of which it is one of twelve regional member countries.

We also wish to thank Cenon Padolina and Sairusi Bulai of the SPC Forests and Trees Programme and Aleki Sisifa Director of the SPC Land Resources Division who

commissioned the 2007 resurvey of Nauru's flora and vegetation; Warea Orapa, of the Land Resources Division of the SPC who carried out a survey of weedy and potentially seedy species on Nauru in January 2007 and provided us with his lists; and Vinci Clodumar of the NRC and Bryan Star of the Ministry of Commerce, Industry and Resources, who were our main contacts and provided support during 2007. We wish to also thank Creedance Fritz, Lillibet Utenas, the manager of the Meneng Hotel, and the Nauru Police force for their assistance and kindness.

To all of you we are very grateful. To others who helped in any way during our study, we also give thanks, and sincerely apologize for failing to mention you by name.

Finally, we wish to express our heartfelt thanks to the people of Nauru whose warmth and hospitality made our work on their beautiful but damaged island so enjoyable and worthwhile. We hope that this report does justice to you and will provide valuable information on the plants of Nauru, the understanding and appreciation of which, are critical as a foundation for sustainable living on your beautiful island.

To all of you, ***TUBWA KOR***,

Randy Thaman, Dave Hassall and Shingo Takeda
Suva, Fiji
December 2008

# EXECUTIVE SUMMARY

Despite the extremely limited and degraded status of the vegetation and flora of Nauru, plants will remain one of the most important foundations for sustainable living and the survival of the rich Nauruan culture on the island of Nauru. This is particularly true given the recent economic crisis, increasing climatic variability and the need for the island to become more self-reliant in food and other products and services that can be provided by plants. The 2007 survey and mapping of the vegetation and flora of the island further stress the threatened status and importance of the protection and restoration of the island's natural and cultural plants and vegetation as one of the most cost-effective and culturally and environmentally appropriate ways of promoting a sustainable future in Nauru.

To do so will require a combination of the conservation of what still exists in Nauru's inland, escarpment and coastal forest forests and vegetation; the protection and enrichment of existing food and other multipurpose gardens in houseyards and other inhabited or developed areas; and the rehabilitation and reforestation of the mined-out phosphate lands. To do so, however, requires that Nauruan get to "re-know" and regain an appreciation for the critical importance of plants to their fragile island existence.

This report attempts to provide some of the information required by Nauruans to rekindle and reclaim this knowledge. This includes: 1) an up-dated assessment on the current state of the vegetation and flora of Nauru; 2) maps and descriptions of the vegetation and plants, with particular emphasis on the mapping, location and description of those areas of vegetation and plants that are in most serious need of protection, rehabilitation and replanting; 3) a simple guide to some of the most important plants that need protection, control (in the case of weeds) and rehabilitation or replanting as part of the protection and restoration of the island; and, 4) DVDs of over 3000 photos of the plants and vegetation that can be used by government and non-government entities, schools and other parties.

The actual technical guidelines on how the island should be restored, the soils developed and the propagation and nursery production of priority plants is dealt with in very great detail in a number of previous studies on Nauru.

The main purpose of this report is to suggest some of the most important species and areas that can be protected, rehabilitated and replanted to provide a foundation for environmentally, economically, nutritionally and culturally sustainable future occupation of the island by Nauruans. It is stressed that the protection , rehabilitation and replanting of trees, must start now, and should happen at all levels, from the individual household garden level through district and national levels, the latter which must deal with the formal rehabilitation and revegetation of the mined-out phosphate land. In short, the resources are there in terms of the vegetation and plants that already exist on island.

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# 1 INTRODUCTION

From 14 to 21 September 2007 the authors carried out a survey of the flora and vegetation of Nauru. The work was carried out in consultation with Sairusi Bulai, the SPC Forests and Trees Advisor; Cenon Padolina the SPC Forests and Trees Regional Forest Genetic Resources Officer; Bryan Star, Secretary to the Ministry of Commerce, Industry and Resources (MCIR) of the Republic of Nauru; and Vinci Clodumar, Chief Executive Officer of the Nauru Rehabilitation Corporation. Cenon Padolina accompanied the team during the second half of the week. The main objectives of this consultancy were:

1. Carry out a survey of the flora and vegetation of Nauru and compare this with the survey of the flora and vegetation carried out in collaboration with Nauruan informants, over a quarter of a century ago (1980-1981) out by Thaman, Hassall, Manner and Fosberg;

2. Involve as many local community and members of Ministry of Commerce, Industry and Resources of the Republic of Nauru and the Chief Executive Officer of the Nauru Rehabilitation Corporation in the surveys as possible in an effort to enhance knowledge of the vegetation to build capacity in terms of the conservation and restoration of the vegetation and training in plant identification.

3. Identify those species and areas of vegetation of cultural and ecological importance that are rare or threatened and in need of some form of conservation (either *in situ* or *ex situ*) as part of the pre-planning for re-mining and continued human settlement on the island. This would include those plants that could be deliberately propagated for planting for ecological or conservation purposes or due to their cultural or economic importance as a basis for sustainable living and the preservation of the Nauruan culture;

4. Prepare a GIS (Geographical Information Systems) map of major vegetation types and land use zones and the location of threatened species and trees or plants of particular conservation or cultural importance to the people of Nauru.

5. Prepare a report on the changes that have occurred and actions that need to be taken to protect the remaining indigenous plants and associated Nauruan knowledge of the vegetation;

6. Prepare an identification guide with plant descriptions and associated digital photos of for use by government and non-government entities and students. This will include information on both indigenous and introduced plants of particular environmental and cultural importance, including threatened species and invasive species that could pose a problem to the people of Nauru.

7. Up-dated account of the culturally-useful plants of Nauru based on the findings during the 1980-81 and subsequent surveys, plus any additional knowledge obtained in 2007.

8. Liaise with entities responsible for rehabilitation and mining and make recommendations on how local indigenous and appropriate non-indigenous plants can be used to promote the post-re-mining restoration of the island for the benefit of future generations of Nauruan.

9. Help in designing a target coastal reforestation and houseyard forestry program as a basis for re-establishing seabird nesting and breeding habitats (particularly noddies) on the island as a basis for cultural preservation and insurance against climate change.

With these goals in mind, from 14-21 November 2007, the consultancy team of Thaman, Hassall and Takeda, accompanied by Cenon Padolina of SPC conducted a resurvey of vegetation and flora of Nauru to compare the current state for the flora and vegetation with what it was during the 1980-81 survey conducted by Thaman, Hassall and Manner (Thaman, Fosberg, Hassall and Manner 1994). Fieldwork was concurrently carried out to produce a detailed GIS map of the 2007 vegetation of Nauru and the locations of threatened and culturally important species. During this period over 4000 digital photos were taken to verify and document the existing flora, provided illustrative and educational support for this report and to link with the GIS of the Nauru vegetation. Additional data collected on invasive and potentially invasive species conducted by Warea Orapa of the SPC Land Resources Division has also been included and used in the analysis. The balance of this report and associated materials consists of:

1. A discussion of the current state of the flora and vegetation of Nauru highlighting the most important changes that have taken place over the past quarter century since the last in-depth survey in the early 1980s;

2. An up-dated account of the culturally-useful plants of Nauru;

3. Changes that have occurred and actions that need to be taken to protect the remaining indigenous plants and associated Nauruan knowledge of the vegetation;

4. Identification of those species and areas of vegetation of cultural and ecological importance that are rare or threatened and in need of some form of conservation (either *in situ* or *ex situ*) as part of the pre-planning for re-mining and continued human settlement on the island. This would include those plants that could be deliberately propagated for planting for ecological or conservation purposes or due to their cultural or economic importance as a basis for sustainable living and the preservation of the Nauruan culture.

5. A target coastal reforestation and houseyard forestry program as a basis for re-

establishing seabird nesting and breeding habitats (particularly noddies)on the island as a basis for cultural preservation and insurance against climate change.

6. An identification guide with plant descriptions and associated digital photos of for use by government and non-government entities and students. This was produced with the assistance of Emily Naidike of the SPC Media Unit and Teddy Fong a USP graduate student and researcher who helped in the formatting and production. It includes information on both indigenous and introduced plants of particular environmental and cultural importance, including threatened species and invasive species that could pose a problem to the people of Nauru.

7. The separate provision of a GIS (Geographical Information Systems) map and computerized version (on DVDs) of major vegetation types and land use zones and the locations of threatened species and trees or plants of particular conservation or cultural importance to the people of Nauru. The GIS also includes electronic linkages to over 2000 ground photos.

8. The provision on CDs of over 3000 annotated photos of the vegetation and flora of Nauru that can be used by government and non-government entities, schools and other interested parties.

9. Also provided (immediately below) is a selection of general photographs of the landscapes, ecosystems and developments on Nauru, plus a number of photos of the members of the 2007 Nauru survey team, to help the reader visualize the reality of the Nauruan environment and vegetation today.

## 2 CURRENT STATE OF THE FLORA AND VEGETATION

As stressed after the studies in the 1980s (Thaman 1992; Thaman *et al.* 1994) and 1990s, the indigenous flora and the vegetation of Nauru are among the most limited on earth. Because of Nauru's small size, limited habitat diversity, and its physical isolation from the Asian continent and other island sources of colonizing plants, just over 60 indigenous species of vascular plants (i.e. ferns, gymnosperms and flowering plants, and excluding non-vascular plants, such as mosses, lichens, etc.) have been recorded from the island (These are listed in Appendix 1. Vascular Flora of Nauru, 2007). Table 1 shows the comparative figures for the species of vascular plants reported present prior to the 1980s, in the 1980s and 1990s and during the most recent survey in 2007. Appendix II contains a breakdown by family of these figures.

Table 1. Enumeration of species of ferns, gymnosperms and monocotyledon and dicotyledon flowering plants reported present on Nauru prior to the 1980s, in the 1980s and 1990s, and during the recent surveys in 2007 by Orapa and Thaman, Hassall and

Takeda (See Appendix II for a detailed breakdown of this numbers by family).

| GROUP | Pre-1980 | | 1980-90s | | 2007 | | Subtotals | | Total Species |
|---|---|---|---|---|---|---|---|---|---|
| | Indg | Intro | Indg | Intro | Indg | Intro | Indg | Intro | |
| Ferns | 2 | - | 7 | 3 | 6 (1) | 2 (1) | 8 | 4 | 12 |
| Gymnosperms | - | - | - | 2 | - | 5 | - | 5 | 5 |
| Monocotyledons | 3 | 3 (1) | 6 | 136 | 7 (1) | 84 (27) | 7 | 164 | 171 |
| Dicotyledons | 28 (2) | 37 (7) | 43 | 281 | 40 (3) | 225 (49) | 48 | 337 | 385 |
| TOTAL | 33 (2) | 40 (8) | 56 | 422 | 53 (5) | 316 (77) | 63 | 510 | 573 |

Prior to the 2007 study, the only relatively comprehensive studies of the flora were by Fosberg (1980), in the more settled areas, and Thaman, Hassall and Manner in 1980 and 1981. Other studies have been opportunistic studies or studies focusing on weedy plants, e.g., Swarbrick (1987) and Orapa (2007).

## 2.1 Changes in the Flora

As can be seen from Table 1, the total of indigenous plants now reported present at one time or another in Nauru stands at 63, some of which are rare, ephemeral or species that are now extirpated (locally extinct on Nauru). There are no endemic plants (plants unique to Nauru). Moreover, long settlement, widespread destruction during World War II, monocultural expansion of coconut palms, and over 100 years of open-cast phosphate mining have led to serious vegetation degradation, disturbance, and displacement.

The total number of vascular plants reported as having been present or introduced to Nauru as of the 1980s was just under 500. It now stands at about 573. The number of reported introduced species has increased from 424 to 510, many of which are new and many, although reported in the past, are either no longer present on Nauru or are species that are periodically replanted or reintroduced. The introduced species consist mainly of ornamentals, weed species, food plants, and a number of other useful cultivated plants. Many of the ornamentals reported during the 1980s, even though not sighted and photographed in 2007, are possibly still present, although ornamentals seem to come and go with some that were seen in the 1980s were not seen in 2007 and some new species recorded in 2007 not seen in the 1980s. However, because of the economic downturn, the severely reduced frequency in flights to Nauru and the cessation of the national ornamental gardening competitions that were run in the early and mid-1990s, there are almost certainly some ornamentals that are not longer present.

Although greatly outnumbered by exotics, the indigenous species still constitute the most culturally-useful and ecologically-important species. Due to the unique adaptability of indigenous Pacific island plants to the harsh conditions of coastal and small-island environments, and their cultural and ecological utility, their protection and enhancement are crucial as a basis for sustainable development on Nauru.

As can be seen from the figures in Table 1 there has been a slight decrease from the 1980s to 2007 in the indigenous species from 43 to 40 and an even larger drop in the

numbers of introduced species, despite the fact there was a significant number of new species seen in 2007 that had not been reported present previously. The actual nature of these species and the discussion of the changes in composition over this period are discussed in more detail in section 2.2 below and in Appendices I. Vascular Flora of Nauru and Appendix II, an enumeration, by family, of plants that have been reported present on Nauru in 2007 and before.

## 2.2 Summary of Current State of Flora

Of the 63 indigenous species that have been reported present in Nauru's flora, eight are widespread tropical ferns or pteridophytes, and among the flowering plants, there are seven monocotyledons and 48 dicotyledons (Table 2.1).

The 8 indigenous ferns include the scented fern, **dageang** or **dageang ini Makin** (*Microsorium grossum*), *Nephrolepis biserrata* and/or *Nephrolepis hirsutula*, all of which are common, and *Pteris tripartita* and *Pteris vittata*, both of which are occasional. They are all collectively referred to as **dageang.** The small terrestrial fern, the reed fern, **ibiribir** (*Psilotum nudum*), is rare an only found in some unmined remnants, and the bird's nest fern (*Asplenium nidum*) is probably extinct on the island and the very small adder's tongue fern (*Ophioglossum petiolatum*) is probably either very rare or absent and only seen in moist sandy disturbed places or in the shady pits between pinnacles in recently mined areas.

There are no culturally important or abundant gymnosperms, although cycads (*Cycas circinalis*) and araucaria pines (*Araucaria* spp.) are seen planted around some residences.

Indigenous monocotyledons are restricted to pandanus, **epo** (**epuh**) (*Pandanus tectorius*) and the coconut palm, **ini** (*Cocos nucifera*), cultivars of both which are undoubtedly aboriginal and more recent introductions, and a small range of sedges and grasses (Cyperaceae and Poaceae), some of which might be aboriginal or recent introductions. These include the sedges, *Fimbristylis cymosa*, referred to by the general name **ibugibugi**, and marsh cypress, **reyenbangabangā** (*Mariscus javanicus*). The grass *Stenotaphrum micranthrum* (**ibugibugi**) is considered to be rare and endangered and found only in pockets on the escarpment or in relatively undisturbed sites near the base of pinnacles at a distance from the coast.

The indigenous dicotyledons consist almost exclusively of salt-tolerant, widely-dispersed, pantropical coastal species. Of the 48 herbaceous and woody dicotyledons, half (23) are endangered, rare or possibly locally extinct (See section 4.2. below). Species such as *Boerhavia repens*, *Laportia ruderalis*, *Triumfetta procumbens*, *Abutilon asiaticum*, *Cordia subcordata*, *Euphorbia chamissonis*, *Sida fallax*, *Suriana maritima*, *Aidia racemosa*, *Barringtonia asiatica*, *Cerbera manghas*, *Hernandia nymphaeifolia*, *Neisosperma oppositifolium*, *Rhizophora stylosa*, *Thespesia populnea* and *Vitex trifolia* are represented by only a few remaining individuals, often in houseyard gardens, or by localized relict communities, or are already extinct or short-lived ephemeral species. Prior

to widespread disturbance, other species such as *Caesalpinia bonduc*, *Erythrina variegata*, *Ochrosia elliptica* and *Pisonia grandis*, would have been more widespread and Nauru would have undoubtedly had more species than it has at present. Indigenous species reported present by in 1888, but never reported since included *Achyranthes cansecens*, *Fagraea berteroana* and *Tarenna sambucina*.

Exotic (introduced) species, which constitute 89% (510 out of a total of 573 reported species) of the flora of Nauru, dominate ruderal, houseyard and urban vegetation, and include a wide range of ornamentals, weedy species, food plants and a number of other useful species.

Ornamentals, which are normally confined to houseyard and village gardens, comprise an estimated 65% (372 of the 573) exotic species. On Nauru, introductions by travelers from Australia, Fiji and other areas with highly developed ornamental gardening traditions; the absence of quarantine restrictions; and the almost total breakdown in the subsistence economy in the 1980s and 1990, the strong focus on ornamental gardening competitions in the early and mid-1990s seem to be the main reasons for the disproportionate importance of ornamental plants. Some of these ornamentals, of course, have other uses such as living fencing or for the preparation of medicines or garlands.

The proportions of the exotic flora composed of weedy species is about 17% (97 of 573 species), an indication of both the poverty of the indigenous flora and the highly disturbed nature of the vegetation.

Although food plants represent 15% of the exotic flora, due to the harsh environment, limited land area and limited focus on food production in Nauru, many of these species are restricted in numbers or utility and are often represented by experimental attempts to diversify food production or by individual, often immature specimens of a given species.

Food plants of particular importance on Nauru include numerous edible pandanus and coconut cultivars, some of which are undoubtedly aboriginal introductions, and breadfruit and bananas. Recent introductions of more localized importance, or of particular importance to contract worker communities on Nauru include: the vegetables, hibiscus spinach (*Hibiscus manihot*), Chinese cabbage cultivars (*Brassica* spp.), long beans (*Vigna sesquipedalis*), amaranth spinach (*Amaranthus* spp.) and pumpkin (*Cucurbita pepo*); the staple root crops, taro (*Colocasia esculenta*), tannia (*Xanthosoma sagittifolium*), sweet potato (*Ipomoea batatas*) and cassava (*Manihot esculenta*); a range of banana and plantain cultivars (*Musa* cultivars); and the tree crops, lime (*Citrus aurantifolia*), guava (*Psidium guajava*), mango (*Mangifera indica*), soursop (*Annona muricata*), sweetsop and the horseradish or drumstick tree (*Moringa oleifera*), all of which seem to do well in Nauru's harsh environment. Important emergency or pig foods include Polynesian arrowroot (*Tacca leontopetaloides*) and purslane (*Portulaca oleracea*), both of which are found occasionally as naturalized plants in the coastal vegetation or in ruderal sites.

Of particular interest are the Polynesian plum (*Spondias dulcis*) and the related species, the hog plum (*S. mombin*). *S. dulcis*, which was reported present in 1935 by Burges,

known as **dagimādere**, was considered to be the ancestral tree of Igigu, who became Nauru's "woman in the moon" after climbing up **dagimādere**.

Food plants that have been successfully introduced since the 1980s by the Pacific Regional Agricultural Project (PRAP) in the early 1990s include chaya (*Cnidosculus chayamansa*) and Brazil spinach (*Alternanthera sissoo*).

Other useful exotic species include kapok (*Ceiba pentandra*), cotton (*Gossypium barbadense*), tobacco (*Nicotiana tabacum*), and bamboo (*Bambusa vulgaris*), which were all reportedly more abundant in the past. As suggested above, some larger weedy exotics, such as *Adenanthera pavonina*, *Annona* spp., *Casuarina equisetifolia*, *Lantana camara*, *Leucaena leucocephala*, *Mangifera indica*, *Muntingia calabura* and *Psidium guajava* have become naturalized and competitive with the indigenous species in some disturbed and relatively undisturbed sites. Of particular concern has been the rapid spread of water hyacinth (*Eichhornia crassipes*) over much of Buada Lagoon, an important area for traditional aquacultural production of milkfish, **ibija** (*Chanos chanos*). Other recently introduced weedy species that seem to be spreading away from settlements and disturbed sites sisal hemp (*Agave sisalana*) and bowstring hemp (*Sanseviera trifasciata*), both of which are seen spreading into the mined out lands inland from the main settlement on Command Ridge.

The porcupine flower (*Barleria prionitis*) and firecracker plant (*Russelia equistiformis*) are also seen as spreading and sparingly naturalized. Of particular concern are the trailing daisy or wedelia (*Sphagneticola trilobata*), which is currently invasive around Buada Lagoon and has the potential to become one of Nauru's worst invasive species. A number of new weeds first seen in 2007 include *Ruellia prostrata*, now one of the most abundant weeds spreading into *Leucaena leucocephala* thickets and other open, relatively shady sites on the escarpment; mile-a-minute (*Mikania macrantha*), which was seen spreading at Buada .

A couple of older ornamentals or weeds that have Nauruan names, but seem to be rare or now absent in clued milkweed, **dupaimdupaim** (*Asclepias currasavica*), goatweed, **bwiyat tsige** (*Ageratum conyzoides*), and cobbler's peg, **kauen oe** (*Bidens alba*).

## 2.3 Changes in the Vegetation and Mapping

As of the 1980s and 1990s the main primary or relatively natural vegetation types were classified as

1. coastal strand vegetation
2. mangroves and coastal marsh vegetation
3. inland forest
4. limestone escarpment or pinnacle vegetation.

In most cases these have all been reduced in size or degraded.

The secondary (highly modified) vegetation types included:

1. coconut lands under various degrees of maintenance
2. urban and food gardens
3. ruderal vegetation along roadsides and in open lots and other disturbed areas on Bottomside, and
4. a mosaic of various stages of natural regeneration in the mined areas on Topside.

Although it is true that the majority of Nauru is covered with vegetation of some kind, only about 364 ha or about 16.5% of the island's vegetation was dominated by primary or relatively undisturbed vegetation types in the early 1980s. It should be noted that although indigenous Topside *Calophyllum* (**iyo**) forest accounted for about 37 ha of this, most of this has been mined over the past quarter century. The most extensive areas of indigenous vegetation are now found on some of the steeper areas of the escarpment surrounding the island, although increasingly extensive areas of the escarpment have been invaded by introduced species, most notably *Adenanthera pavonina*. Other indigenous, primary vegetation, such as small areas of mangroves and coastal vegetation, occupy only very small areas, or are represented by individual plants, and are in urgent need of conservation.

Out of Nauru's total area of 2,159 ha in the early 1990s, 1,366 ha (63%) of the vegetation cover comprised regeneration after mining. At the time this was divided into the 211 ha that were mined more than 50 years ago, and the 1155 ha mined over the past 50 years. The latter areas were those mined by mechanical means, and which are now regarded as prospective areas for "secondary" mining (re-mining) of residual phosphate deposits. The 1994 vegetation map by Hassall shows these areas. Appendix III contains the descriptions of vegetation types used for the 1994 Vegetation Map by Hassall that were adapted and updated during the surveys and production of the Vegetation Map of Nauru 2007.

During the re-mapping of the vegetation in 2007, although the mapping units or vegetation categories follow those of the 1994 vegetation map, new categories have been added and refined to reflect changes in vegetation cover over the past 13 years, improved knowledge of the vegetation, and more detailed ground-truthing using high quality large-scale aerial photos carried out during the 2007 survey (See the following 1994 Vegetation Map by Hassall; the Vegetation Map of Nauru 2007, or the larger scale map provided with this report, and the computerized GIS of the Vegetation of Nauru, which includes locations of all threatened and important species, links to ground photos and allows for the enlargement of sections of different portions of the island. See also the following examples of maps of the locations of some rare or endangered plants, and some enlarged maps of selected parts of the island). It is stressed that these are provided as examples and the actual GIS presentation provided on the provided must be used to enlarge selected portions of the map, view locations of individual species and to view the linked digital photos.

The new mapping units used in the map key are shown in Table 2. According to the “minimum mapping unit rule”, the mapping units listed below include only those

vegetation types, the aerial extent of which is large enough to be visible on a pdf map at a scale small enough to cover the entire island of Nauru.

Table 2. Mapping units or vegetation categories used in the compilation of the Vegetation Map of Nauru 2007.

| | |
|---|---|
| Disturbed Areas | 1a Ruderal |
| | 1b Regeneration <15years |
| | 1c Regeneration <50years |
| | 1d Regeneration >=50years |
| | 1e *Leucaena leucocephala* |
| Horticulture / Agriculture | 2a Houseyard and Institutional Gardens |
| | 2b Food Gardens |
| Wetland Vegetation | 3a *Eichhornia crassipes – Ipomoea aquatica – Ipomoea pes-caprae* |
| | 3b *Bruguiera gymnorrhiza – Rhizophora stylosa* |
| | 3c *Thespesia populnea – Bruguiera gymnorrhiza* |
| Very Tall Closed Forest | 4a *Adenanthera pavonina – Mangifera indica – Calophyllum inophyllum* |
| Tall Closed Forest | 5a *Calophyllum inophyllum – Phymatosorus grossus* |
| | 5a+5b Complex |
| | 5b *Ficus prolixa – Terminalia catappa – Hibiscus tiliaceus* |
| | 5c *Adenanthera pavonina – Ficus prolixa – Hibiscus tiliaceus* |
| | 5d *Adenanthera pavonina* |
| Tall Open Forest / Woodland | 6a *Cocos nucifera* |
| Mid-high Closed Forest | 7a *Hibiscus tiliaceus* |
| Closed Shrubland | 8a *Scaevola taccada – Ipomoea pes-caprae* |
| | 8b *Clerodendrum inerme* |
| | 8c *Colubrina asiatica* |
| Others | Lagoon / Pond |
| | Sandy beach / Rocky shore |
| | Runway |
| | Paved road |

The following section is a discussion of each of these mapping units (For more complete descriptions of the analogous mapping units used in 1994, see Appendix III).

## DISTURBED AREAS

### 1a Ruderal

Vegetation composed mostly of fast-growing herbs, grasses and some small subshrubs or shrubs, found around the airstrip, large open fields or lots and in the open flat grounds of topside where artificial structures are located, which are currently used for transport and where mining is in operation.

Apart from the area around the airstrip, most areas on the coastal plain (bottomside) that can be classified as ruderal, such as roadsides, paths, open lots, playing fields and other currently disturbed sites, are mapped as parts of the larger mapping unit of Houseyard and Institutional Gardens according to the minimum mapping unit rule.

### 1b Regeneration <15years

Vegetation on areas of topside that have been either mined or cleared and left to regenerate for less than 15 years.

Most of the areas mapped as Regeneration <15years on the 2007 map are parts of the area mapped as Regeneration <50 years on the 1994 map. On the 2007 map, the areas of Regeneration <10years are separated from the areas of Regeneration <50years by examining a given area at two different points of time. An overlaid shapefile of 1m-contour line that was created 15 years ago shows that it was undisturbed at the time, whereas the 2005 satellite image shows that it has now been mined.

### 1c Regeneration <50years

Vegetation on areas of topside that have been mined and left to regenerate for less than 50 years.

### 1d Regeneration >=50years

Vegetation on areas of topside that have been mined and left to regenerate for 50 years or more.

### 1e *Leucaena leucocephala*

Vegetation composed of large relatively contiguous monospecific populations of *Leucaena leucocephala* observed on the both Topside and on the coastal plain.

The 2007 map overlaid over the 1994 map reveals that well-established populations of *Leucaena* are now located in areas that were mapped as Soil on the 1994 map. Analysis of the high-resolution satellite image (captured in May 2005) shows that the species appears to have been dispersing along the road system, which has served as a dispersal corridor. This may need to be taken into consideration for any future development and rehabilitation plans for Topside.

## HORTICULTURE / AGRICULTURE

### 2a Houseyard and Institutional Gardens

A vegetation type that includes landscaping, ornamental gardening, small-scale food gardening and other vegetation around residences, government buildings and other non-

government buildings.

Areas mapped as Houseyard and Institutional Gardens also contains areas of roadsides, paths, open lots, playing fields and other currently disturbed sites, the vegetation of which can be classified as ruderal. As mentioned earlier, these areas are mapped as parts of the larger mapping unit of Houseyard and Institutional Gardens according to the minimum mapping unit rule.

### 2b Food Gardens

Short-term food and vegetable gardens established on the more gently sloping coastal escarpment, in the fertile soils around Buada Lagoon and in a number of sites near the Topside Workshops and Refugee centers.

Some of these gardens, such as those immediately behind the Topside Workshops are too small in area to be included in the 2007 map according to the minimum mapping unit rule.

## WETLAND VEGETATION

### 3a *Eichhornia crassipes – Ipomoea aquatica – Ipomoea pes-caprae*

An extensive population of *Eichhornia crassipes* that is found over extensive areas around the margins and extending toward the center of Buada Lagoon. There are some areas along the western margins of the lagoon where introduced species, *Ipomoea aquatica* and/or indigenous species, *Ipomoea pes-caprae* is also common.

### 3b *Bruguiera gymnorrhiza – Rhizophora stylosa*

Vegetation found in association with the back-beach-basin system of lagoons and ponds, mainly found in the northeast of the island, the upper canopies of which are dominated by *Bruguiera gymnorrhiza*, with a small population of *Rhizophora stylosa* in one area. There are remnants of this vegetation type in a small low-lying area just north of Buada Lagoon, in Meneng and other areas, although other areas that would have originally been under this vegetation cover have undoubtedly been reclaimed for human settlement or converted to milkfish ponds or other uses.

### 3c *Thespesia populnea – Bruguiera gymnorrhiza*

Vegetation found in association with the back-beach basin system of lagoons and ponds, only found in the northeast of the main ponds of Anabar Lagoons, the upper canopies of which are dominated by *Thespesia populnea* and *Bruguiera gymnorrhiza.*

## VERY TALL CLOSED FOREST

### 4a *Adenanthera pavonina – Calophyllum inophyllum – Mangifera indica*

Vegetation observed in the relatively rich, deeper and moister soils behind the settled areas around Buada Lagoon, the upper canopies of which are dominated by *Adenanthera pavonina* along with *Mangifera indica* in the north and by *Calophyllum inophyllum* in the south.

## TALL CLOSED FOREST

**5a *Calophyllum inophyllum – Phymatosorus grossus***

Remnant Topside vegetation, the upper canopies of which are dominated by *Calophyllum inophyllum* and the understorey dominated by *Phymatosorus grossus* and occasionally *Nephrolepis hirsutula*. The most extensive areas of this are found in the area around Command Ridge.

**5a+5b Complex**

Remnant Topside vegetation, often found on scattered remnant unmined limestone pinnacles, the upper canopies of which are dominated by mixed populations of *Calophyllum inophyllum* and *Ficus prolixa*, with subdominant species including *Terminalia catappa, Guettarda speciosa* and *Ochrosia elliptica*.

**5b *Ficus prolixa – Terminalia catappa – Hibiscus tiliaceus***

Vegetation found on the escarpments surrounding the island and on remnant vegetation of topside, the upper canopies of which are dominated by *Ficus prolixa* along with *Terminalia catappa* and *Hibiscus tiliaceus.*

**5c *Adenanthera pavonina – Ficus prolixa – Hibiscus tiliaceus***

Vegetation observed on escarpments inland from the runway, the upper canopies of which are dominated by *Adenanthera pavonina* and *Ficus prolixa* along with *Hibiscus tiliaceus.*

**5d *Adenanthera pavonina***

Almost mono-specific stands of *Adenanthera pavonina* found on inland, western edge of the escarpment in Anibare District and in some areas to the north of Buada Lagoon.

## TALL OPEN FOREST/ WOODLAND

**6a *Cocos nucifera***

*Cocos nucifera* woodlands or remnant coconut plantations found in a number of undeveloped locations on the coastal plain where there is limited human settlement, often on more well-drained land near lagoons and ponds.

## MID-HIGH CLOSED FOREST

### 7a *Hibiscus tiliaceus*

Vegetation dominated by almost mono-specific stands of *Hibiscus tiliaceus,* found mostly on the lower slopes of escarpment inland from the coastal strip in Anibare and Meneng Districts and in a number of other sites.

This vegetation type is limited only to the populations that were observed and photographed in the course of field survey which could have helped exercising visual interpretation of a satellite image for separating the dense *Hibiscus* populations from other more mixed populations. There are also dense almost monospecific stands of *Hibiscus* on the inland margins of the *Bruguiera* wetland vegetation, most of which were too small to be mapped separately due to the minimum mapping unit rule.

## CLOSED SHRUBLAND

### 8a *Scaevola taccada – Ipomoea pes-caprae*

Vegetation found along the inner margins of beaches and on undeveloped land on the coastal strip throughout the island, which is dominated by either *Scaevola taccada* or *Ipomoea pes-caprae*, or the both, along with other herbs, grasses and subshrubs.

Some of the areas mapped areas as *Scaevola taccada – Ipomoea pes-caprae* include some areas of herbaceous strand dominated by *Ipomoea pes-caprae* with only limited or no *Scaevola taccada*. This is the reason for including the name of the herbaceous species *Ipomoea –pes-caprae* in the vegetation type name to indicate its variable, but very important, level of dominance. This is despite the fact that large portions of this vegetation class are dominated almost entirely by monospecific stands of *Scaevola taccada*, the most abundant shrub on the island.

### 8b *Clerodendrum inerme*

Extensive populations of *Clerodendrum inerme* smothering *Scaevola taccada* or festooning limestone pinnacles and outcrops that are observed around Anabar and Ijuw Lagoons and on inland coastal limestone outcrops on the coastal strip.

In areas where *Clerodendrum inerme* is the dominant species bordering mangroves, these are mapped as part of the *Bruguiera gymnorrhiza – Rhizophora stylosa* association according to the minimum mapping unit rule.

### 8c *Colubrina asiatica*

Limited areas of vegetation dominated by *Colubrina asiatica*, mainly in disturbed areas along the crest and back slope of the escarpment.

The detailed mapping this vegetation type is limited only to the populations that were observed and photographed in the course of field survey which could have helped exercising visual interpretation of a satellite image for separating the populations of this species from others

Table 3 shows the estimated areas in 2007 of these mapping units.

Table 3. Estimated areas of the vegetation categories (mapping units) on the Nauru Vegetation Map 2007.

| Structural types | Categories | | Area (h) |
|---|---|---|---|
| Disturbed Areas | Ruderal | 2.6 | 54.8 |
| | Regeneration <=15years | 6.8 | 146.0 |
| | Regeneration <50years | 44.6 | 952.3 |
| | Regeneration >=50years | 6.8 | 146.1 |
| | *Leucaena leucocephala* | 0.6 | 11.8 |
| Horticulture/Agriculture | Houseyard and Institutional Gardens | 13.3 | 283.5 |
| | Food Gardens | >0.1 | 0.7 |
| Wetland Vegetation | *Eichhornia crassipes – Ipomoea aquatica – Ipomoea pes-caprae* | >0.1 | 3.2 |
| | *Bruguiera gymnorrhiza – Rhizophora stylosa* | >0.1 | 1.9 |
| | *Thespesia populnea – Bruguiera gymnorrhiza* | >0.1 | 0.3 |
| Very Tall Closed Forest | *Adenanthera pavonina - Mangifera indica - Calophyllum inophyllum* | 4.5 | 95.1 |
| Tall Closed Forest | *Calophyllum inophyllum – Microsorium grossum* | 0.9 | 18.7 |
| | Complex | 1.3 | 27.2 |
| | *Ficus prolixa – Terminalia catappa – Hibiscus tiliaceus* | 14.6 | 310.9 |
| | *Adenanthera pavonina – Ficus prolixa – Hibiscus tiliaceus* | 1.5 | 32.5 |
| | *Adenanthera pavonina* | 0.4 | 9.3 |
| | *Calophyllum inophyllum* | >0.1 | 0.6 |
| Tall Open Forest/Woodland | *Cocos nucifera* | 0.2 | 5.1 |
| | *Casuarina equisetifolia* | >0.1 | 1.2 |
| Mid-high Closed Forest | *Hibiscus tiliaceus* | 0.3 | 6.9 |
| Closed Shrubland | *Scaevola taccada – Ipomoea pes-caprae* | 1.1 | 22.8 |
| | *Clerodendrum inerme* | >0.1 | 0.9 |
| | *Colubrina asiatica* | 0.1 | 2.1 |
| Others | *Ficus benghalensis – Ficus prolixa* | >0.1 | 1.4 |
| | | | 2135 ha |

As can be seen from Table 3 the total area mapped of 2135 ha is slightly less than the total of 2159 ha mapped area in the 1990s by Hassall, and the total area classified as mined and regenerating is for some reason less. The totals do, however, reflect the current state of the vegetation, and the mapping exercise along with the vegetation and floristic surveys highlighted those changes that have occurred over the past quarter century.

# MAP OF NAURU


**Source:** http//www.travel-island.com/maps/nauru.jpg

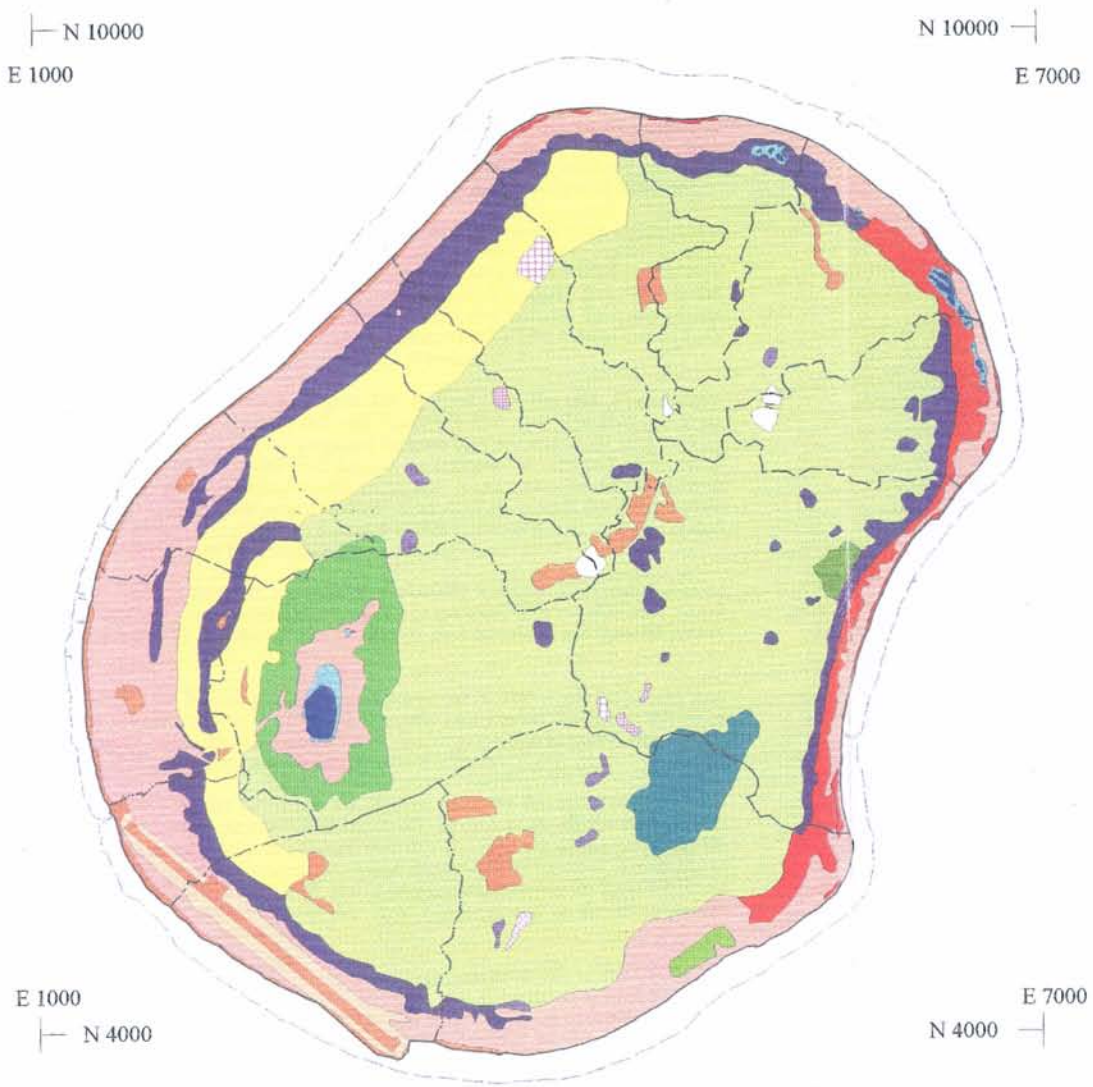



Fig. 4.3 **Vegetation Map**

Vegetation

**Disturbed Areas**
- 1a Bare ground
- 1b Ruderal
- 1c Cultural
- 1d Regeneration <50 years
- 1e Regeneration >=50 years

**Freshwater and Littoral Vegetation**
- 2a Buada Lagoon
- 2b Ijuw and Anabarm Lagoons

**Very Tall Closed Forest**
**Tall Closed Forest**
- 3a *Calophyllum inophyllum-Mangifera indica*
- 4a *Calophyllum inophyllum-Polypodium scolopendria*
- 4a+4b Complex
- 4a/4b Complex
- 4a/5a Complex
- 4b *Ficus prolixa-Terminalia catappa-Hibiscus tiliaceus*
- 4b/4a Complex

**Tall Open Forest**
**Mid-high Closed Forest**
**Tall Closed Shrubland**
- 4c *Adenanthera pavonina*
- 5b *Cocos nucifera-Premna obtusifolia*
- 6a *Hibiscus tiliaceus-Vigna marina*
- 7a *Scaveola sericea-Ipomoea pes-caprae*

- Lagoon
- Pond
- Soil

N

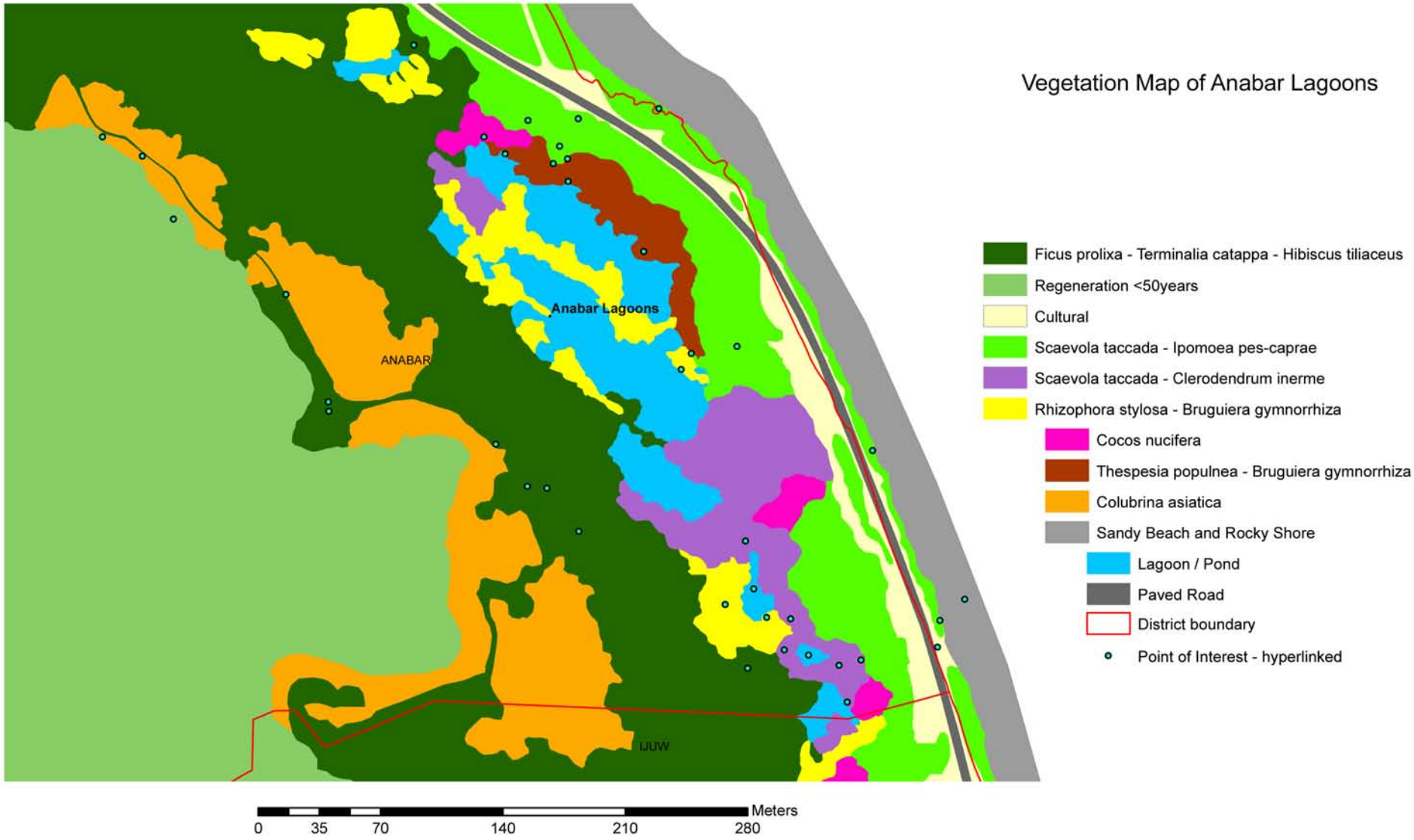
0 0.5 1

# Vegetation Map of Nauru 2007

(Prepared by S. Takeda, 2008)


| | | |
|---|---|---|
| Disturbed Areas | 1a | Bare ground / Road / Mining site |
| | 1b | Ruderal |
| | 1c | Cultural |
| | 1d | Regeneration <15years |
| | 1e | Regeneration <50years |
| | 1f | Regeneration >=50years |
| | 1g | Leucaena leucocephala |
| Freshwater and Littoral Vegetation | 2a | Eichhornia crassipes - Ipomoea aquatica - Ipomoea pes-caprae |
| | 2b | Bruguiera gymnorrhiza - Rhizophora stylosa |
| Very Tall Closed Forest | 3a | Adenanthera pavonina - Mangifera indica - Calophyllum inophyllum |
| Tall Closed Forest | 4a | Calophyllum inophyllum - Phymatosorus grossus |
| | 4a+4b | Complex |
| | 4b | Ficus prolixa - Terminalia catappa - Hibiscus tiliaceus |
| | 4c | Adenanthera pavonina - Ficus prolixa - Hibiscus tiliaceus |
| | 4d | Adenanthera pavonina |
| Tall Open Forest | 5a | Cocos nucifera |
| Mid-high Closed Forest | 6a | Hibiscus tiliaceus - Vigna marina |
| Closed Shrubland | 7a | Scaevola taccada - Ipomoea pes-caprae |
| | 7b | Scaevola taccada - Clerodendrum inerme |
| Others | | Lagoon / Pond |
| | | Sandy Beach and Rocky Shore |
| | | Runway |
| | | Paved Road |

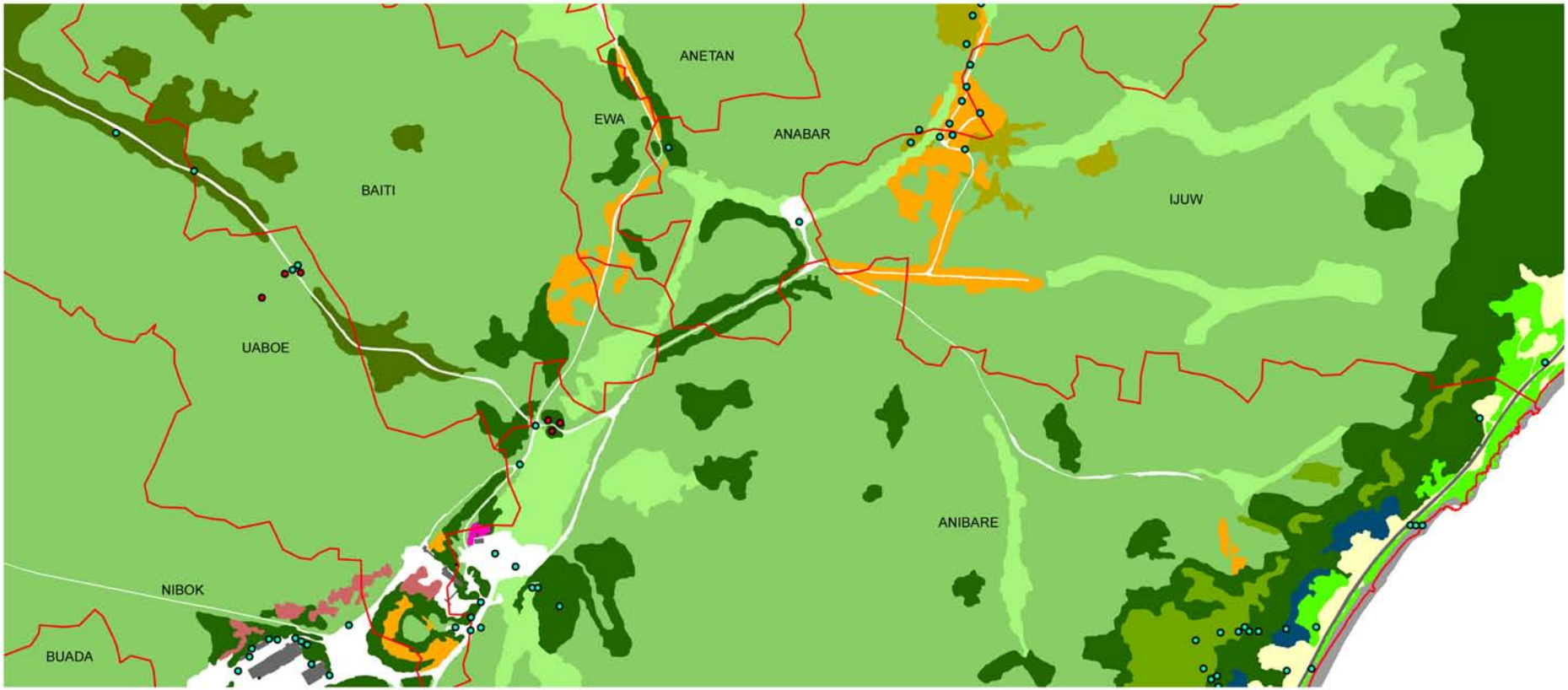
Distribution of endangered species


Vegetation Map of Anabar Lagoons
Anabar Lagoons
ANABAR
IJUW
Ficus prolixa - Terminalia catappa - Hibiscus tiliaceus
Regeneration <50years
Cultural
Scaevola taccada - Ipomoea pes-caprae
Scaevola taccada - Clerodendrum inerme
Rhizophora stylosa - Bruguiera gymnorrhiza
Cocos nucifera
Thespesia populnea - Bruguiera gymnorrhiza
Colubrina asiatica
Sandy Beach and Rocky Shore
Lagoon / Pond
Paved Road
District boundary
Point of Interest - hyperlinked
Meters
0
35
70
140
210
280


## Vegetation Map of Old Golf Course, Location and NPC settlement

- Ficus prolixa - Terminalia catappa - Hibiscus tiliaceus
- Ficus benghalensis
- Cultural
- Location structures
- Paved Road
- Bare ground / Road
- District Boundary
- Point of Interest - hyperlinked
- Point of Interest

# Distribution of Leucaena leucocephala on topside



## PHOTOS OF NAURU (Thaman, September 2007, unless otherwise stated)

**Figures 1 – 3.** 1) Aerial view of Nauru looking south; 2) view of the southwest portion of the island, showing the airstrip and main settlement; 3) southern half of Nauru viewed from the northwest (Thaman, 10 October 2004).

**Figures 4 – 6.** 4) view of phosphate loading cantilevers in Aiwo District in the southwest of the island; 5) view looking across the island from the west; 6) northern half of Nauru viewed from the northwest (Thaman, 10 October 2004).

**Figures 7 – 12.** Clockwise from upper left: 7) Nauruan family making brooms from the midribs of coconut leaflets; 8) Hassall, Takeda and Thaman, SPC Nauru survey team 2007; 9) Cenon Padolina, SPC Advisor, 2007 Nauru survey; 10) Hassall, Thaman and Takeda in Topside Vegetation (photo: C. Padolina); 11) Julie Olsson with threatened native plant, **enga** (*Aidia racemosa*) on the Anibare escarpment; 12) Nauruan gardener at Location Settlement 2007.


**Figures 13 – 18.** Clockwise from upper left: 13) looking north along the east coast toward Anibare Bay just north of Meneng Hotel; 14) **erekogo**, beach morning-glory (*Ipomoea pes-caprae*) and herbaceous coastal vegetation on east coast north of Meneng Hotel; 15) limestone pinnacles on intertidal flat, North Anibare Bay; 16) looking north along the west coast toward the phosphate loading cantilevers in Aiwo district; 17) looking south from the Anibare boat Harbour toward the Meneng Hotel; 15) beach heliotrope, **irin** (*Tournefortia argentea*) and fringing reef flat, Anibare Bay.

**Figures 19 – 25.** Clockwise from upper left: 19) view from escarpment cliffs looking southeast along Anibare Bay; 20) **eteta**, tropical almond (*Terminalia catappa*) stand on upper escarpment above Anibare Bay; 21) stand of red-bead trees, **bin** (*Adenanthera pavonina*) on unmined area inland from Anibare escarpment; 22) large limestone pinnacle in *Adenanthera pavonina* forest in unmined backslope of escarpment inland from Anibare Bay; 23) large strangler fig or banyan, **eyayo** (*Ficus prolixa*), limestone escarpment inland from Anibare Bay; 24) **yangis** *(Pisonia grandis*) trees (the most important rookery trees for noddy birds) on the crest of the limestone escarpment above Anibare Bay; 25) stand of white-barked **yangis** (*Pisonia grandis*) trees along the crest of the escarpment cliffs inland from Anibare Bay .







**Figures 26 – 31.** Clockwise from upper left: 26) **dadongo** (*Rhizophora stylosa*) mangrove swamp, Anabar District; 27) **eamwiye** (*Clerodendrum inerme*) thicket bordering mangrove swamp Anabar District; 28) *Clerodenrum inerme* covering limestone surrounding Anabar Ponds, with a mangrove, **etam** (*Bruguiera gymnorrhiza*)(left foreground); 29) water hyacinth (*Eichhornia crassipes*) and swamp spinach, **Lorenzo** *(Ipomoea aquatica*), Buada Lagoon; 30) water hyacinth infestation, Buada Lagoon; 31) **itirya** (*Thespesia populnea*) trees bordering Anabar Ponds.






**Figures 32 – 37.** Clockwise from upper left: 32) **irin**, beach heliotrope (*Tournefortia argentea*), Ijuw District; 33) **epö**, pandanus (*Pandanus tectorius*) stand, houseyard garden, Anabare District; 34) view looking north across coconut plantings and forest around Buada Lagoon; 35) remnant **iyo** (*Calophyllum inophyllum*) forest in Aiwo District; 36) saltbush, **emet** (*Scaevola taccada*) scrub in regenerating mined area; 37) **irin** (*Tournefortia argentea*)(left), **bin** or Panama cherry (*Muntingia calabura*)(center-right) and **emet** (*Scaevola taccada* (right foreground) on Topside, Ewa District.

**Figures 38 – 43.** Clockwise from upper left: 38) Nauruan reed warbler or Nauru canary, **itsirir** (*Acrocephalus rehsei*), an endemic threatened bird; 39) pet frigate birds, **itsi** (*Fregata minor*) on roosts; 40) sweet potato garden, Buada Lagoon; 41) **eongo** (*Cordia subcordata*), a threatened cultural tree; 42) vegetable garden with Chinese cabbage (*Brassica chinensis*) at Buada Lagoon; 43) **dorot**, hibiscus (*Hibiscus rosa-sinensis*) hedge in churchyard garden, Aiwo.






**Figures 44 – 49.** Clockwise from upper left: 44) Nauruan residence with houseyard garden, Meneng District; 45) Churchyard with escarpment in background, Nibok District; 46) NPC Staff quarters, Location Settlement; 47) abandoned contract worker quarters, Location Settlement; 48) houseyard garden, Location Settlement; 49) contract worker quarters, Location Settlement (photos: R. Thaman).






**Figures 50 – 55.** Clockwise from upper left: 50) Nauru Phosphate Corporation main office, Location; 51) former NPC House (abandoned), NPC settlement, Command Ridge; 52) Nauru International Airport with escarpment in background; 53) seaside view of the Meneng Hotel; 54) Nauru Parliament Building and government building complex with airstrip in foreground; 55) Anibare Boat Harbour, Anibare Bay with escarpment in background.


**Figures 56 – 61.** Clockwise from upper left: 56) active phosphate mining, September 2007; 57) limestone pit-and-pinnacle topography in freshly mined area; 58) weathered pit and pinnacle terrain in area mined within the past ten years; 59) ) old mined areas with regenerating vegetation and unmined **iyo** (*Calophyllum inophyllum* groves (the original Topside vegetation of the island) in the distance; 60) trial rehabilitation site near the Topside Oval in an effort to prepare the area for development; 61) slowly regenerating vegetation on pinnacles with pinnacles with banyan trees, **eyayo** (*Ficus prolixa*) in the distance.






**Figures 62 – 67.** Clockwise from upper left: 62) phosphate train and naturalized casuarina trees (*Casuarina equisetifolia*) near Topside workshops; 63) truck delivering phosphate to stockpile, Topside; 64) Japanese World War II anti-aircraft guns, Military Ridge area, Topside; 65) abandoned clubhouse and golf course, Aiwo District; 66) bin (*Leucaena leucocephala*) scrub vegetation, northeast of Topside Workshops, 67) phosphate loading cantilevers, Aiwo District.


## 3 CULTURALLY IMPORTANT PLANTS OF NAURU

As stressed above, although highly disturbed, outnumbered and, in some ways, "enriched" by introduced exotics, the vegetation and flora of Nauru still constitute a critical ecological and cultural resource to the people of Nauru. This is particularly true for the indigenous species, virtually all of which had wide cultural utility within the traditional subsistence economy. With current economic downturns and the need for increased food, health and subsistence security, the value of the goods and services provided by plants to takes on greater importance. This importance can be measured in terms of: 1) the ecological functions or services they provide and 2) their uses or more strictly cultural value.

The most important ecological functions of Nauru's plant resources include the provision of shade to humans and animals, animal and plant habitats, protection from wind, erosion, flood and saltwater incursion, land stabilization, protection from the desiccating effects of salt spray, soil improvement and mulching. All of these functions are seen as critical to the sustainable habitation of Nauru. Shade, for example, will be of increasing importance given the predicted increases in cancer-causing ultraviolet light due to the breakdown in the Earth's protective ozone layer. Similarly, if forests and trees are not protected, noddy bird hunting may become a thing of the past, and coastal erosion may render some coastal sites uninhabitable.

In terms of more strictly cultural utility, analyses in the 1980s showed that there were 174 purposes or use categories for 40 indigenous species, an average of over four uses per species (Thaman *et al*. 1993). There were 434 uses for 354 exotic species, an average of 1.2 uses per species (Table 4). This gives a combined total of 608 use/purpose categories for 394 species (1.5 uses per species). Twenty (20) indigenous and 80 exotic species had no reported uses. Some of these were, of course, rare or extirpated species that had not been present on or known to the people for a long time. The relative importance of the indigenous flora would undoubtedly be much more pronounced if: 1) a more systematic in-depth survey of the cultural utility of each indigenous species had been conducted in the past; 2) Nauru had not experienced such widespread devastation of its population, traditional economy, traditional education system and its indigenous flora (and associated ethnobotanical knowledge) over the past 100 years; and 3) planted ornamentals, by far the most widespread use of exotic species, were excluded from the analysis of indigenous species (Thaman *et al*. 1994).

Table 4. Frequency of use for specified purposes of plant species present in Nauru (Note: Introduced includes both aboriginal introductions such as coconut and recent post-European-contact introductions).

| Purpose/Use | Indigenous x/60 | Introduced x/434 | Total x/494 |
|---|---|---|---|
| Cultivated Ornamentals | 9 | 257 | 266 |
| Food Plants | 2 | 64 | 66 |
| Body Ornamentation | 16 | 23 | 39 |

| | | | |
|---|---|---|---|
| Medicinal/Health | 18 | 13 | 31 |
| Staple Foods | 1 | 13 | 14 |
| General Construction | 12 | 2 | 14 |
| Scenting Oil/Perfumery | 6 | 7 | 13 |
| Firewood/Fuel | 7 | 4 | 11 |
| Emergency/Famine Foods | 3 | 6 | 9 |
| Tools/Utensils | 8 | 1 | 9 |
| Boat/Canoe Building | 8 | - | 8 |
| Handicrafts | 7 | 1 | 8 |
| Games/Toys | 6 | 1 | 7 |
| Food Parcelisation | 5 | 2 | 7 |
| Living Fences/Hedges | 1 | 6 | 7 |
| Cordage/Fibre 3 | 3 | 6 | |
| Hair Conditioner | 6 | - | 6 |
| Woodcarving | 5 | - | 5 |
| Adhesive/Glue/Caulking | 1 | 4 | 5 |
| Earth Oven Cover | 5 | - | 5 |
| Magic/Sorcery | 4 | - | 4 |
| Drinks/Beverage | - | 4 | 4 |
| Fishing Equipment | 3 | 2 | 5 |
| Clothing | 3 | 1 | 4 |
| Animal Feed | 2 | 2 | 4 |
| Plaited Ware | 3 | 1 | 4 |
| Legends/Mythology | 2 | 1 | 3 |
| Furniture | 3 | - | 3 |
| Animal Cages/Roosts | 1 | 2 | 3 |
| Fish Poisons | 2 | - | 2 |
| Fire by Friction | 1 | 1 | 2 |
| Strainers/Filters | 1 | 1 | 2 |
| Thatching/Roofing | 1 | 1 | 2 |
| Dyes/Pigments | 2 | - | 2 |
| Nets/Traps | 2 | - | 2 |
| Fans | 1 | 1 | 2 |
| Chewing Gum/Masticants | - | 2 | 2 |
| Oils/Lubricants | 1 | 1 | 2 |
| Corks/Stoppers | 1 | 1 | 2 |
| Other Uses* | 12 | 6 | 18 |
| TOTAL | 174 | 434 | 608 |
| NO USES | 20 | 80 | 100 |

* Other uses include aphrodisiacs, appetite stimulants, brushes, toilet paper, illumination, soap/shampoo, containers, deodorants/air fresheners, fishnet floats, green manure, groundcover, meat tenderizer, insect repellents/fumigants, love potions, wild animal food, fishing bait, cigarette wrappers and tobacco.

Moreover, if distinct uses within use/purpose categories (e.g., tools with distinct functions, different types of fishing equipment, foods or ornamentation for different occasions or purposes, medicines for different ailments, or plants used for specific parts

of boats or houses) are counted, the economic and cultural utility of plants becomes even more pronounced. The coconut palm, **ini** (*Cocos nucifera*), for example, has 33 reported uses in Nauru, almost undoubtedly a gross underestimate, in light of at least 128 reported uses (many of which are almost ubiquitous) for the coconut palm throughout the Pacific Islands (Thaman 1992ab). Next in order of importance, are 19 species, all with 5 or more reported uses. These include, in order of importance, **ekwane** (*Hibiscus tiliaceus*), **epo** (*Pandanus tectorius*), **emet** (*Scaevola taccada*), **deneno** (*Morinda citrifolia*), **yut** (*Guettarda speciosa*), **iyo** (*Calophyllum inophyllum*), **bongo** (*Cordia subcordata*), **etetah** (*Terminalia catappa*), **deme** (*Artocarpus altilis*), **itirya** (*Thespesia populnea*), **irin** (*Tournefortia argentea*), **idibinerr** (*Premna serratifolia*), **ikiow** (*Triumfetta procumbens*), **dagaidu** (*Vitex trifolia*), **eorara** (*Ochrosia elliptica*), **denuwanini** (*Cassytha filiformis*), **dabanana** (*Musa* cultivars), **ebarabaratu** (*Bambusa vulgaris*) and **dababaia** (*Carica papaya*). Of these 20 species, *Artocarpus altilis*, *Musa* ABB Group, *Bambusa vulgaris* and *Carica papaya*, are aboriginal or recent introductions.

Another 13 species, 7 of which are indigenous, **eteweau** (*Dodonaea viscosa*), **etsiu** or **yetiu** (*Hernandia nymphaeifolia*), **demeria** (*Plumeria rubra*), **kuwawa** (*Psidium guajava*), **yoreh** (*Erythrina variegata*), **etum** or **etam** (*Bruguiera gymnorrhiza*), **kwenababai** (*Barringtonia asiatica*), **erekogo** (*Vigna marina*), **eyamwiye** (*Clerodendrum inerme*), **tiare** (*Gardenia taitensis*), **rimone** (*Jasminum sambac*), **dagiebu** (*Crinum asiaticum*) and **darot** (*Hibiscus rosa-sinensis*), have at least 3 uses each. Although, there is some usage overlap between categories, such as supplementary and emergency foods, medicinal, magical, ceremonial and body ornamentation plants, or plants used for handicrafts, woodcarving, cordage and clothing. Conversely, the categories could be further broken down to yield an even greater list of uses. Moreover, the list does not include the more strictly ecological functions of coastal plants, such as shade, protection from wind, sand and salt spray, erosion and flood control, coastal reclamation, animal and plant habitats, and soil improvement, all of importance, particularly on an ecologically devastated post-mining Nauru.

## 4 SIGNIFICANT CHANGES OF THE FLORA AND VEGETATION

The most significant changes in the vegetation and flora of Nauru since the 1980s and 1990s are related to:

1. The almost total clearance of the remaining Topside *Calophyllum* forest and woodland between the early 1980s and 2007;

2. The threatened status or loss of some important indigenous and culturally important species;

3. The expansion and increased dominance of some non-native invasive species;

4. The presence of new weedy species and the disappearance or declining abundance of some long-established species;

5. The decline in food gardening among non-Nauruans and increase in Nauruan and Chinese food gardening;

6. The presence of new, or changes in, ornamental species and changing emphasis on ornamental cultivation in houseyard gardens; and

7. The passing away of most of the older generation who had knowledge of Nauru's plants and their cultural importance.

## 4.1 Almost Total Clearance of Remaining Topside *Calophyllum* Forest

The almost total clearance of the areas of *Calophyllum inophyllym* (**ijo** or **iyo**) forest that remained in the early 1980s is the most dramatic change that has taken place in the vegetation of Nauru. As a result the overall abundance of *Calophyllum* has declined from being abundant to very abundant. The abundance of associated species such as *Ficus prolixa* (**eyayo**), *Terminalia catappa* (**etetah)**, *Guettarda speciosa* (**yut**), and *Ochrosia elliptica (***eorara**) has also declined on Topside, although these species still exist in various levels of abundance in remaining remnant areas of Topside and escarpment vegetation.

## 4.2 Threatened Status or Loss of Important Indigenous and Culturally Important Species

Table 5 lists the indigenous fern, herbaceous, shrub and tree species that have been recorded present in Nauru over the past century and before and an assessment of the conservation status of these species along with some background comments.

Table 5. Indigenous vascular plant species (ferns, herbs, shrubs and trees) reported present in Nauru prior to 1980 and their abundance status in the 1980s and in 2007 and comments on their conservation status and occurrence (Under Abundance: V = very abundance, A = abundant, C = common, O = occasional, U = uncommon, R = rare, E = possibly extirpated (locally extinct), ? = unsure as to the actual identity and/or abundance status, + = reported present in pre-1980s surveys with no information on abundance, - not reported present during a given time period; * indicates new species not previously reported before 2007.

| Scientific name | Nauruan name | Abundance | | | Conservation Status and Comments |
|---|---|---|---|---|---|
| | | Pre-1980s | 1980s | 2007 | |
| **FERNS** | | | | | |
| *Asplenium nidus* | ? | + | R* | -E? | **Extinct**. Found only as an ornamental in the 1980s. Not seen in 2007 |
| *Nephrolepis biserrata* | Dageang | - | C | O? | Probably occasional, but previously mistaken for the more common *N. hirsutula*. |
| *Nephrolepis hirsutula* | Dageang | - | C? | A | Abundant in open and |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | closed forest remnants and old regrowth areas. |
| *Ophioglossum petiolatum* | ? | | R | - | **Rare and Threatened**, possibly extirpated or ephemeral. |
| *Microsorium grossum* | dageang, dageang ini Makin | + | V | A | Original understory vegetation in *Calophyllum* forest on Topside |
| *Psilotum nudum* | Ibiribir | + | O | R | **Rare and Threatened.** Found in some remnant forest stands |
| *Pteris tripartita* | Dageang | | U | O | Occasional near bases of limestone pinnacles and the lower escarpment; occasional in pits between mined pinnacles |
| **Pteris vittata* | Dageang | - | - | O | Occasional in mined areas and in disturbed sites near base of escarpment |
| **HERBS, GRASSES AND SEDGES** | | | | | |
| *Achyranthes canescens* | ? | + | - | - | **Extirpated.** Reported in 1888 and 1935, but not since |
| **Boerhavia repens* | ? | - | U | U | Found in ruderal sites on coastal plain |
| *Laportea ruderalis* | ? | | | R | **Rare and threatened**. Seen only on limestone cliff in Anibare in 2007. |
| *Mariscus javanicus* | Reyenbangabangā | - | A | C | More common in the 1980s than now. |
| *Digitaria setigera* | Ibugibugi | + | O | O | Possibly indigenous, but more probably and early introduction. |
| *Lepturus repens* | ibugibugi | - | C | C | Common indigenous grass in coastal vegetation and in disturbed sites |
| *Stenotaphrum micranthrum* | Ibugibugi | | R | U | **Threatened.** Uncommon grass on escarpment and base of pinnacles on inner coastal plain |
| *Canavalia cathartica* | erokogo, irekogo | + | U | O | **Vulnerable.** Climbing vine in coastal thickets and on the escarpment |
| *Canavalia rosea* | erekogo | - | R | - | **Rare or ephemeral.** Seen only as a single drift seedling in the 1980s |
| *Capparis quiniflora* | Ekaretsit | - | U | O | **Vulnerable.** Thorny vine in undisturbed limestone escarpment |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | vegetation |
| *Cassytha filiformis* | Denuwanini | - | A | A | Common leafless parasite |
| *Derris trifoliata* | ? | - | R | R ? | **Rare**, possibly extinct |
| *Ipomoea littoralis* | ? | - | R | R ? | **Rare,** Possibly present |
| *Ipomoea macrantha* | erekogo, irekogo | - | O | O | Coastal and escarpment vine |
| *Ipomoea pes-caprae* | erekogo, irekogo | + | A | A | Abundant coastal vine also found in disturbed sites |
| *Vigna marina* | erekogo, irekogo | + | C | C | Creeping and climbing coastal vine |
| **SHRUBS** | | | | | |
| *Abutilon asiaticum* | Enenkaura | + | U | O | **Threatened.** Shrub in disturbed inner coastal and escarpment vegetation |
| *Caesalpinia bonduc* | Dogiennae | - | U | O | Increasingly invasive thorny shrubby vine |
| *Capparis cordifolia* | Ekabobwiya | + | O | C | **Vulnerable.** Shrub on limestone coastal cliffs and escarpment limestone |
| *Clerodendrum inerme* | Eamwiye | + | C | C | On coastal limestone and bordering mangroves |
| *Colubrina asiatica* | Ewongup | + | C | C | In thickets from the base to the top of escarpment |
| *Dodonaea viscosa* | eteweo, eteweau | + | C | C | Shrub in regenerating mined areas |
| *Chamaesyce atoto* | Emai | + | R | E? | **Rare.** Probably and ephemeral littoral beach plant |
| *Phyllanthus societatis* | Ewemangemang | | O | O | **Vulnerable.** Small subshrub in open indigenous forest, on escarpment and disturbed coastal sites |
| *Scaevola taccada* | Emet, emed | + | V | V | Shrub on coast, topside and in regenerating mined areas |
| *Sida fallax* | ekaura, idibinkaura | + | U | E ? | **Extirpated.** Small subshrub in disturbed open sites on Bottomside and Topside. Not seen in 2007 |
| *Triumfetta procumbens* | Ikiau, igiaow | + | U | R ? | **Rare** or **Extirpated** in houseyard garden in 1990s |
| *Suriana maritima* | ? | - | R | E ? | Extirpate. Seen once as a drift seedling on beach |
| **TREES** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Aidia racemosa* | Enga | + | R | R | **Rare**, **highly Threatened**. tree in escarpment forest; fruit eaten |
| *Barringtonia asiatica* | Kwenababai | + | O | O | **Vulnerable.** Rare in escarpment and coastal areas and uncommon in houseyard gardens |
| *Bruguiera gymnorrhiza* | Etum, etam | + | O | O | **Vulnerable.** Dominant in back-beach basin ponds |
| *Calophyllum inophyllum* | Iyo | + | V | C | **Vulnerable.** Dominant in original Topside forest |
| *Cerbera manghas* | Dereiyongo | - | U | O | **Vulnerable.** Tree in settled areas |
| *Cordia subcordata* | eongo, eoongo | - | O | R | **Rare and Seriously Endangered**. Seen only in four sites; in need of replanting. |
| *Erythrina variegata* | yoreh, yora | - | U | O | **Vulnerable.** Seen in settled areas |
| *Fagraea berteroana* | | + | - | - | **Extirpated.** Not seen or reported since 1910 |
| *Ficus prolixa* | eyayo, eaeo | + | V | A | Dominant on limestone pinnacles on Topside and escarpment. |
| *Guettarda speciosa* | Iut | + | C | O | Component of escarpment and Topside forest ; occasional in older regenerating vegetation. |
| *Hernandia nymphaeifolia* | etiu, yetiu | - | U | U | **Threatened**. Seen in only three sites near base of escarpment and once near coast. |
| *Hibiscus tiliaceus* | Ekwane | + | A | A | Abundant tree near base of escarpment |
| *Morinda citrifolia* | deneno | + | C | C | Common understory tree in disturbed sites, occasional in mined out lands, and in houseyard gardens |
| *Ochrosia elliptica* | eorara, oerara | + | C | O | **Threatened.** Understorey tree in Topside and escarpment forest |
| *Pandanus tectorius* | epo, epuh | + | C | O | **Threatened.** Uncommon in coastal vegetation, common to occasional in houseyard gardens and rare in planted groves. Many traditional named cultivars are now lost or |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | rare. |
| *Pisonia grandis* | yangiys, yangits | - | U | O | **Vulnerable.** One main grove on the crest of the escarpment above the north end of Anibare Bay, uncommon in houseyard gardens. One of the main rookery and nesting trees for noddy birds |
| *Premna serratifolia* | Idibener | + | C | C | Tree in disturbed open sites and thickets |
| *Rhizophora stylosa* | Dadongo | - | R | R | **Rare and Threatened.** Found in only one population near ponds in Ijuw District in the 1990s |
| *Tarenna sambucina* | ? | + | - | - | **Extirpated.** Reported in 1935, but not seen since |
| *Terminalia catappa* | Eteto, etetah | - | C | C | Tree in escarpment and Topside forest, sometimes in mined-out lands ; occasional in houseyard gardens |
| *Terminalia samoensis* | Deukin | - | U | O | **Vulnerable.** Possibly an original coastal tree of Nauru, but possibly an introduction. Planted in houseyard gardens as an important medicinal plant. |
| *Thespesia populnea* | itira, itirya | + | O | O | **Vulnerable.** Rare along the coast ; occasional in houseyard gardens and on the golf course |
| *Tournefortia argentea* | Irin | - | C | O | **Threatened.** Tree in degraded coastal littoral vegetation; some planted on Topside in Ewa District |
| *Vitex trifolia* | Dogaidu | + | O | O | **Vulnerable.** Tree near base of escarpment and inner coastal vegetation. |

As can be seen from Table 5, 33 out of 60 species of indigenous Nauruan plants are regarded as extirpated (locally extinct on Nauru), rare, threatened or vulnerable. If nothing is done many of these species will ultimately be lost or will be in such low numbers to be of little future value to Nauruans.

Many of these species have been used in traditional ways in the past and are still used when presently available. The current status and locations of some of the remaining populations and some of these uses are summarized in Table 6. More detailed descriptions are found in Appendix I and the actual locations can be displayed and printed out in map form from the GIS Vegetation Map o f Nauru 2007.

Table 6. Current status, locations of some of the remaining populations and notes on cultural utility of some endangered indigenous Nauruan plants.

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**Abutilon asiaticum* - Known from only five or six populations, this shrub has potential use as a decorative garden plant and making garlands, and may be saved through propagation in this way.

**Aidia racemosa* - An extremely rare species of small tree with edible fruit known from only two localities on Nauru, possibly now from only one, on e the escarpment above Anibare Bay. A population size, now very small indicates this species is close to extinction, and requires urgent conservation measures. Fruits reportedly eaten by children

**Barringtonia asiatica* - At first site this species appears not to be too endangered, but once a count is made of existing trees, it becomes apparent that the population size has diminished to not more than thirty observed trees in the wild, most of which are in house yard gardens. A further search may reveal more individuals, but saplings appear to be rare, and this species needs care to ensure its regeneration and survival. At least it is widespread on Nauru, being recorded from eight Districts. It is an important candidate for coastal replanting.

* *Bruguiera gymnorrhiza* - This mangrove species is extremely important throughout the Pacific as a source of timber and fuel, and as a habitat for birds and animals The seedlings (or pre-germinated fruits) were used traditionally to make a cake or bread (**etam**) in Nauru for special occasions. The habitat is restricted to a few permanent land-locked ponds and soaks in Buada, Meneng, Ijuw, Anetan and Anabar. These areas are used to raise milkfish in the past and now contain large populations of *Tilapia,* a fish that could serve as an important protein source. The presence of the *etam* tree assists by its production of leaf litter and ability to act as a water purifying agent. The species therefore needs to be carefully conserved and further clearing restricted in the vicinity of the ponds.

* *Cerbera manghas* - This small, attractive compact tree is only found in houseyard gardens, where it is a suitable substitute for the frangipani, with large sprays of fragrant white flowers. The species can be propagated by either seed or cutting, and is a promising coastal ornamental. It is currently recorded from seven localities in five Districts. It is also candidate for coastal replanting.

* *Cordia subcordata* - Recorded from seven localities in Aiwa, Buada and Nibok in the 1980s and 90s, is now found in only three or four locations, in all cases as single trees. This medium-sized tree is a promising as a shade tree for street and garden. The orange blooms are very attractive, and the species has been used for traditional medicine and woodcarving. The timber is possibly the most highly prized in the Pacific for the contrasting chocolate and blond colours of the heartwood and sapwood. There is a critical need to replant this culturally-important and relatively easy to propagate tree.

* *Erythrina variegata* - This tree is less restricted now than it was in the 1990s, but is still threatened, and needs to be protected to survive in Nauru. It can be easily propagated from cuttings.

* *Hernandia nymphaeifolia* - The *etiu* tree has been recorded in only four localities on Nauru, where it grows naturally in the forests near the base of the escarpment. It is an extremely useful and highly ornamental shade tree for coastal situations. The timber was formerly prized for canoe hulls. It is a tree that can be planted in sandy sites on the coast and in coastal houseyard gardens where it can provide coastal protection.

* *Ochrosia elliptica* - This small, attractive tree with bright red fruit can also be planted as a shade tree in coastal situations. It is currently restricted to five to seven localities in five Districts. It is also found as an understorey species in relict forest on topside and on the more gradually sloping parts of the escarpment.

* *Pisonia grandis* - The *yangits* or *yangish* (the Nauruan word seems to mean 'place where noddy birds nest' ) is severely restricted in the wild to four to five sites at present, three of which are on the escarpment, and two in relictual areas on topside. This tree occurs as an emergent in the forest dominated by *Calophyllum inophyllum* and *Ficus prolixa*, and is known throughout the Pacific to be a favorite nesting site for noddy birds (as the name would imply!). An examination of each locality indicates that the species is not regenerating naturally through seedlings. This situation is observed elsewhere where reproduction occurs through the rooting of fallen branches. In the Nauruan situation however, the presence of large numbers of *Adenanthera pavonina* seedlings in the understorey suggests that this species may possibly interfere with the competitive ability of the *Pisonia* to regenerate, and this needs further clarification. Propagation is readily achieved through cuttings, and elsewhere in the Pacific is used as a living fence for pig pens. The tree is also occasionally planted in houseyard gardens.

* *Rhizophora stylosa* - This mangrove species was a new record for Nauru in the 1990s, and has been observed at two localities on the edge of the ponds at Ijuw and Anabar. As such, its distribution is extremely restricted by availability of the right habitat, which makes it all the more important to conserve these mangrove areas.

**Sida fallax* - Previously thought to be extinct on Nauru, was seen in only one site near the Topside Workshops in 1996 and in only two roadside locations in the 1980s. It was not seen in 2007 despite visits to areas where it previously existed. This species was traditionally used for wrestlers' garlands, and is grown commercially in Hawaii for the

making of leis. There is need to locate any remaining populations and protect them or, alternately, reintroduce it, with appropriate quarantine and phytosanitary safeguards, from Kiribati where it is still common and a very important cultural plant.

* *Tournefortia argentea* - A very important component of the strand flora throughout the Pacific, this medium-sized tree species has become rare through the clearing of vegetation from the coastline of Nauru and through coastal erosion and salt spray. The *irin* is one of the few tree species that can grow right at the outpost zone of the high tide mark, and its canopy will cast shade on the beach itself. At the same time, its roots help to protect the fore-dune against the apparently accelerating coastal erosion. Unfortunately, wandering pigs enjoy eating the seedlings that do germinate, and unless this species is propagated and cultivated, its future on Nauru will not be assured. As a traditionally important pig feed, it could well be propagated for this purpose. It should be seen as of highest priority for propagation and coastal replanting and for planting in houseyard gardens and in Topside rehabilitation.

* *Thespesia populnea* - The *itirya* tree has been recorded from over 12 localities, but was apparently more widespread in the past. It too is a useful species to plant in coastal situations, and will help to protect against erosion. Traditionally prized for carving timber and medicine, this is an attractive tree to cultivate for shade in the gardens of Nauru. It is currently most common in the vicinity of the golf course.

* *Vitex trifolia* - The *dorado* is only occasional. In the 1990s, it was only recorded from two sites. In 2007 it was seen in a number of sites. It has horticultural potential as a hedge or screen plant, and will need to be propagated vegetatively as a matter of urgency to ensure its survival in the near future. It has well known insecticidal properties and selected *Vitex* varieties are planted and pruned elsewhere in Micronesia as mosquito-repellant hedges.

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The balance of species classified as rare or endangered are ferns, grasses, herbs or sedges that are not the focus of this report. Their distributions have, in most cases, been mapped and plans need to be made for their urgent conservation. In addition, as suggested below in the agroforestry section, varieties of *Cocos* and *Pandanus* should also be studied for their rehabilitation and propagation, even though the species themselves are not regarded as rare or endangered. If this is not carried out, valuable genetic diversity of these culturally and nutritionally valuable plants will be lost.

### 4.3 Expansion and Increased Dominance of Non-native Invasive Species

The expansion and increased dominance of some non-native invasive species, such as *Adenanthera pavonina* and *Leucaena leucocephala* (both **bin**) have been quite dramatic since the 1980s. Although both species were present and well-known in the past, they have both spread and become more dominant in a number of areas. *Adenanthera* now forms almost monospecific stands in the area to the south of Buada Lagoon and in some

remaining unmined areas just on the landward edge of the escarpment in the northern part of Anibare District. These areas can be seen on the 2007 GIS Vegetation Map of Nauru 2007.

*Leucaena* has spread in many areas of Topside, especially along roads and cleared, unmined areas, such as the area to the northwest of the Topside Workshops.

Casuarina, **tanenbaum** or Christmas tree (*Casuarina equisetifolia*) and Panama cherry, **bin** (*Muntingia calabura*) are also adventive and actively spreading on some of the regenerating mined sites, particularly around the Topside Workshops, in the case of casuarina. The former is a nitrogen fixing plant that provides good firewood and the latter has a fruit that is eaten by small children and birds.

In these cases, particularly with *Adenanthera* and *Leucaena*, the spread of these species has undoubtedly inhibited the dispersal and regrowth of, and taken over habitats that could have been colonized by, indigenous trees and other species that are important culturally, ecologically and as habitats for local birds and smaller plants.

Other introduced species that have become adventive or naturalized, such as guava, **kuawa** (*Psidium guajava*), *Lantana camara* (**magiroa**) and soursop (*Annona muricata*) and sweet sop (*A. squamosa*), and that have become dominant in some areas, have not significantly spread over the past quarter century. In the case of guava, it is an important snack food and medicinal plant and a good source of firewood.

### 4.4 Presence of New Weedy Species

There are a number of other introduced species that are now invasive or adventive (escaped into the wild) or that have the potential for invasiveness. Appendix IV is a listing of these species based on studies over the past 25 years and a recent study by Orapa of the SPC Land Resources Division in early 2007. The most worrisome species include:

1. Water hyacinth (*Eichhornia crassipes)*, which that has now taken over most of the landward areas of Buada Lagoon and is the target of an SPC biological control initiative.

2. Trailing daisy or Wedelia (*Sphagneticola trilobata*, formerly *Wedelia trilobata*), which is spreading in some disturbed coastal sites near the Anibare boat harbour and around the margins of Buada Lagoon. Wedelia has become extremely invasive in Fiji, Samoa, Niue, Kiribati, Tuvalu and the Marshall Islands and has the ability to successfully outcompete local indigenous plants in coastal sandy areas, roadside and wetlands.

3. Mile-a-minute (*Mikania macrantha*) was seen for the first time in one very healthy population around Buada Lagoon in 2007 and also has potential to be

a very serious weed.

4. *Eustachys petrea* is a very aggressive grass that has taken over and outcompeted other introduced grasses and herbs, and seedling of woody plants on South Tarawa. It was seen present and spreading for the first time in 2007 in the area of the rehabilitation trials just north of the Topside Running Track in 2007. This also has the proven potential to spread rapidly in dry tough environments.

5. Mission grass (*Pennisetum polystachyon*) was seen in a couple of locations on Topside and also has the ability to spread and establish itself.

6. Ivy gourd or knob vine (*Coccinia grandis*), a minor food plant, commonly grown by Indians and other Asians, was seen restricted to growing on trellis fencing bordering a vegetable garden at Buada in 2007. It has shown itself to be a very serious weed of gardens, disturbed sites and inner coastal forests in Fiji where it grows into a woody liana with knobs forming along the climbing trunks.

7. One of the mint weed species (*Hyptis rhomboidea*) was also seen as a mature individual in the open area just inland and above the calcination plant, an area where a number of other new weedy species were found. This has escaped and become a serious invasive weed in Samoa.

Although some of these invasive plants can be useful as sources of organic matter, timber, fuelwood and to protect areas from erosion, their impact of their spread has to be weighed carefully against the impacts that they have on important indigenous plants and the cost and effort that their control might require.

## 4.5 Decline in Food Gardening Among non-Nauruans and Increase in Nauruan Food Gardening

During the 1980s, at the height of the boom in phosphate mining, there was extensive cultivation of small household food gardens at the Location contract workers settlement and near the Topside Workshops by I Kiribati, Tuvaluan, Chinese, Solomon Islander and Filipino gardeners. Most of these gardens are gone and most of the quarters are now abandoned. Also during this time there were a number of expatriate Indian, Filipinos and Fijians living in government quarters in Meneng, Command Ridge and other higher quality residences who planted vegetables, staple food crops, tree crops and species.

Due to the recent economic downturn in Nauru and the departure of most of the contract laborers, there has been a visible increase in food gardening by Nauruans who are now planting an increasing range of food crops, in addition to the range of important fruit trees, such as coconut, pandanus, breadfruit, bananas and mangoes that they planted in the past. Of interest is the visible increase in the incidence of bananas and plantains

(**dabanana**) now found in Nauruan gardens. The increase in Nauruan gardening over this time may also be related to the number of Nauruans who have intermarried with others, such as Tuvaluans, I Kiribati and Fijians, who have strong gardening traditions. There are also a limited number of Nauruans who now occupy the abandoned Location contract workers quarters and are planting food crops.

The emphasis on local food cropping has also been strongly supported since the 1990s by Republic of China (Taiwanese) aid programs to test and encourage the planting of local vegetables and other food crops for local consumption and sale. These have been reinforced by considerable immigration of Chinese over the past decade or so who have also become involved in intensive vegetable cultivation, often in partnership with Nauruans. The first attempt at a major commercial vegetable garden was started on the sloping escarpment in Meneng just south of the Meneng Hotel in the 1990s. This garden was reportedly taken over from the Taiwanese Government by independent Chinese farmers, but abandoned in early 2007 when the gardens were shifted to the more suitable soils bordering Buada Lagoon. This was reportedly as the result of the prolonged drought from 2006 to 2007 that made short-term, water-dependent vegetable gardening very difficult. There are currently a number of fairly extensive vegetable gardens on the margins of Buada Lagoon. The Taiwanese experimental garden and nursery, from which seedling and plants are distributed to gardeners is now also located in northeast Buada.

There was also a Food and Agricultural Organization of the United Nations (FAO) vegetable gardening project which had sites in Buada, on the gradually sloping escarpment in Nibok and a number of other locations. Most of these gardens are were not operational, semi-abandoned or, at least, or had not been replanted in September 2007. Only the nursery, with a limited number of plants, existed in 2007.

## 4.6 New Ornamental Species and Changing on Ornamental Cultivation

As suggested above, many of the ornamentals reported during the 1980s, were not sighted and photographed in 2007, although some may still be present. There were also new species recorded in 2007 that were not seen in the 1980s. Many of these were probably introduced during the height of popularity of houseyard flower yearly flower gardening competitions in the late-1980s and mid-1990s during which mature plants were often flown in from Brisbane, Fiji, Guam and other locations to enrich gardens prior to the competition. Following Nauruan cultural traditions, after the competition, people could take any plant they wanted from the winners' gardens. This seemed to be the main reason for the introduction and spread of such ornamentals, such as yellow elder (*Turnera ulmifolia*, which is now widespread. However, although some of these plants and some very good gardens still exist and seem to be doing well, because of the economic downturn, the severely reduced frequency in flights to Nauru and the cessation of the national ornamental gardening competitions that were run in the early and mid-1990s, there are almost certainly some ornamentals that are not longer present, and a general decline in the number of well-maintained ornamental gardens.

## 4.7 Passing Away of the older Generation

Although technically not a physical loss or change in the vegetation and flora, the passing away of most of the older generation of Nauruans who had in-depth knowledge of Nauru's plants and their cultural importance is probably one of the most serious problems related to the conservation and continued use of Nauru's plants and animals. Without the knowledge and appreciation of the ecological and cultural importance of plants and animals, the prospects for their conservation, survival and sustainable use are limited. The situation in Nauru is particularly serious in this regard, as almost all of the people with any real knowledge of the uses, beliefs, cultivation systems, names and history of the vegetation and plants of Nauru have passed away. For example, the Reverend James Aingimea, Henry Michael Heine, Daphne Fotu, Jacob Gabwinare, Katarina Satto, Kenia Raidinen, Reynold Capelle, Eda Adam and Montiba Star, the main informants for the studies in the 1980s, have all passed away. Others who have worked closely with us and supported us over much of this period have also passed away. There is, thus, a parallel need to make sure that any knowledge related to plants is recorded so that interested member of the current and future generations will have it as a basis for protecting this critical foundation for sustainable life on Nauru.

# 5 CONSERVATION, REPLANTING AND REHABILITATION

Due to increasing threats from climate change and variability, sea-level rise, loss of biodiversity and the current economic and health situation in Nauru there is a critical need for a three–pronged program to ensure sustainability of the ecological services and economic and cultural benefits provided by the natural and cultural vegetation and flora of Nauru. This three-pronged approach has the following components:

1. Coastal and inland forest protection and conservation
2. Coastal planting and household agroforestry, and
3. Rehabilitation, replanting and resettlement of the mined out phosphate lands on Topside.

## 5.1 Coastal and Inland Forest Protection and Conservation

The protection of existing stands of coastal, escarpment and inland forest and threatened individual plant populations is seen as the highest priority, both as a source of mother stock for propagation, and because so little remains that there is a danger of losing one hundred percent of the original Topside forest as re-mining and rehabilitation proceeds. The focus of protection would include not only "natural" vegetation and indigenous plants, but also the cultural vegetation and plants found in and around settlements, which often include some of the most important food and multi-purpose plants. Both natural and cultural vegetation are mapped on the Vegetation Map of Nauru 2007. As stressed above, the costs, time and risks associated with artificial regeneration and replanting are far greater than the protection of what remains!!!

**5.1.1 Priority Sites:** Priority sites for forest protection and management should be those showing the least level of disturbance, the highest species richness, the greatest numbers of rare or endangered species, and the most value as wildlife habitat. Particular emphasis should be placed on those sites and species (e.g., *Pisonia grandis*, **yangits**) that are important as noddy bird rookeries, because of the special cultural importance of noddys and noddy hunting in Nauru. Special consideration should also be given to those areas containing culturally important and useful plants, such as coconut and *Pandanus* groves, remaining coastal strand and escarpment forest, and mangroves. It is also important that local communities (resource users and owners) and their representatives are involved in the planning, implementation, monitoring and modification of the protection, planting and maintenance of these areas. If they are not involved in the beginning, such initiatives, many of which can be done at the community or household level, will probably not work.

Based on these criteria the priority sites identified for protection status as conservation or sustainable-use areas, and which should be considered for formal designation as conservation areas, include:

1. The entire Anibare Bay area from the Meneng-Anibare District boundary to the Anibare-Ijuw District boundary, and including the Meneng Hotel and extending up the escarpment to the edge of current mining activity (this would not preclude normal activities of current residents, but would protect escarpment and coastal vegetation).

2. The East and West Coast Escarpment Forests (this would include the Anibare escarpment, which, as stressed above, has special significance) are proposed because they are important aesthetically as green buffers to topside, as important bird habitats, as refuges for rare and endangered species of plants, and for potential recreational purposes.

3. The Ijuw-Anabar-Anetan mangrove and wetland area because of its unique ecological importance, stands of mangroves and scenic beauty.

4. Buada Lagoon (a unique landlocked freshwater or slightly brackish central lagoon) and suitable portions of the remaining forest in the Buada basin. As stressed by Hassall (1994) the Buada lagoon forest and soils surrounding the lagoon have the greatest potential for agroforestry and food production.

5. Selected un-mined rocky outcrops as wildlife habitats and examples of pre-mining ecosystems. This would include the remaining forest areas behind Buada Lagoon). There remain very few such areas, but consideration should be given to their protection

6. Command Ridge and the railway zone of Topside as a possible focus for historical and environmental-based ecotourism, once mining has ceased. This area contains the deepest mining, about 20 meters deep, and the "Grand Canyon" of

Nauru, and the most advanced natural regeneration in mined sites. Because it was hand-mined at a very early stage of mining, there is probably less residual phosphate and less reason for re-mining.

7. Selected noddy bird nesting sites (rookeries) and tree groves along the crest of the escarpment.

8. The coastal littoral zone in which all mature coastal trees and forest remnants within 50 m of the mean high tide line should be protected (this would include the implementation of an active program of coastal reforestation and enrichment planting with endangered or culturally-useful salt-tolerant trees, which is discussed below). The locations of most of the remaining threatened trees that should be protected are shown in the Nauru Vegetation Map 2007 GIS. These areas and their trees should be protected immediately and, where possible, enriched with the planting of appropriate indigenous and introduced species.

9. All trees in houseyard gardens on the coastal strip (Bottomside), on the escarpment (e.g., Meneng Terrace and Command Ridge Settlements) and at Buada should be protected and enriched as part of the agroforestry strategy in already settled areas. There exists a tremendous existing resource of coconuts, pandanus, breadfruit, bananas and plantain, papaya, limes and other fruit and multipurpose trees in houseyard and institutional gardens and along roadsides that should be protected as the value of their current annual production could constitute a large percentage of the real “non-cash” income in years to come.

10. In addition, when restored and replanted, any rehabilitated areas of topside *Calophyllum* or other restored forest or agroforest could supplements existing remnant areas of *Calophyllum, Pisonia* or other remaining natural forest that were not mined for one reason or another to produce a significant network of sites for noddy bird breeding and general nature conservation.

**5.1.2 Actions to Support Protection:** This report has identified those species that are rare, threatened or vulnerable and in need of protection and the locations of most individuals or populations have been mapped and linked to the Nauru Vegetation Map 2007. There is, thus, a need to takes these lists and locations and to implement a system so that they can be legally protected and rehabilitated. It is recommended that:

1. A "Register of Rare and Endangered Species" be prepared and gazetted for protection by law;

2. The owners of land on which rare and endangered species are found be notified of their presence and encouraged to take measures to protect and rehabilitate them; and,

5. A strategy be produced to propagate rare and endangered species and provide specimens to interested Nauruans for cultivation in their gardens or

on their lands or coastlines.

The register should be kept at Ministry of Commerce, Industry, with additional copies lodged with MCIR, the Lands Commission, Nauru Island Council, NPC, NRC, with local NGOs, women's and church groups, the USP Centre and other appropriate locations. The register could also list certain individual trees or tree species or animals as "National Treasures" which can serve an educational purpose.

## 5.2 Coastal Planting and Household Agroforestry

Studies by Thaman (1990), Clarke and Thaman (1993) and Thaman and Whistler (1994) have shown that the protection and planting of trees and tree-like plants have been central to the maintenance of diverse forestry and agroforestry systems throughout the Pacific, even on the smallest low-lying atolls. This will have to be increasingly true for Nauru in times of economic stringency. It is stressed that ecosystem, economic and cultural balance can be best maintained through the establishment of a highly diverse plant community. This is in contrast to the monocultural (single species) and export-oriented modern Western agricultural and forestry systems.

Because most of the coastal strip and plain is settled it is suggested that the planting of littoral coastal species be considered as an integral component of agroforestry on the coastal plain. In other words, people who live on the coast could be made responsible for the protection and replanting of coastal trees as well as the planting of other useful trees and associated plants in their houseyard areas and other surrounding land areas (e.g., adjacent areas of the escarpment or Buada Lagoon depression, for people who live in those areas). This plan could be based on, but should expand on NACRDFS "Forestry" plan (Hassall 1994) and suggestions for such a plan in the Nauru National Environmental Management Strategy (NEMS)(Thaman and Hassall 1996). Support for the development of such a program has already been initiated by MCIR with the support of the SPC Forests and Trees Programme. Many of the tree and non-tree components have also been promoted by Taiwanese programs over the past decade or more.

**5.2.1 Coastal Planting:** Because of the critical role that coastal trees play in coastal protection and replanting of selected trees should commence immediately as part of a comprehensive agroforestry program. A pilot program has been successfully carried out in Tonga using almost exclusively indigenous salt-tolerant coastal tree species (Thaman *et al*. 1995a), and Nauru could work with the SPC Forests and Trees program to implement such a program. Indigenous species that should be considered from such a program are listed in Table 7.

Such a program should include the following components:

1. A program to, as suggested above, immediately protect all coastal and littoral trees and plant selected species (e.g., **irin, ini, epo, itirya, yetsiu, emed, iyo, kwenababai**, and **erekogo**).

2. Selection of appropriate species for propagation and outplanting (Potential species for coastal reforestation are listed in Tables 7).

3. Selection of a nursery/plant propagation site where plants can be propagated, transplanted to, and prepared for outplanting to coastal sites (the nursery could be combined with the nurseries suggested for rehabilitation on Topside, to achieve economies of scale).

4. Identification of relatively undisturbed coastal and inland sites that can serve as sources of planting materials (e.g., seeds, self-sown seedlings, cuttings, etc.) that can be propagated or matured in the nursery in preparation for transplanting to priority coastal sites.

5. Conduct of an in-country training program for the propagation, transplanting, and nursery and field maintenance and protection of coastal species (This could also include a visit to Tonga to work with Tokomololo Forestry Division Nursery staff that have been responsible for the coastal reforestation project there or with the Forestry Department in Guam which has considerable experience in propagation of indigenous coastal trees.).

6. Conduct of a public awareness campaign on the importance of the protection and replanting of coastal forests and trees as protection against coastal erosion, loss of property and other negative effects of sea-level rise. The campaign should also stress the cultural and economic importance of indigenous cultural species and why they should be protected and replanted as part of the cultural heritage of Nauru.

Table 7. Indigenous tree and shrub species that could receive priority as target species for coastal and inland conservation and rehabilitation programs on Nauru (Notes: In terms of where given species are currently found and/or where they should be planted or protected, C = coastal littoral or coastal plain sites, I = Inland or escarpment forest sites, M = mangrove sites, D= disturbed, degraded ruderal or regenerating mined sites, and R = residential, houseyard garden or settled areas. * signifies a species that is probably and introduced species that was not indigenous on Nauru).

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**HIGH PRIORITY** (scarce or endangered)

**dadongo** (*Rhizophora stylosa*)(M)
**ekaura, idibin kaura** (*Sida fallax*)(D)(possibly extinct)
**ekaura, inen kaura** (*Abutilon asiaticum*)(D,I)
**ekwanimwi** (*Aidia racemosa*)(I)
**eoongo** (*Cordia subcordata*)(C,I,R)
**etam** (*Bruguiera gymnorrhiza*)(M)
**irin** (*Tournefortia argentea*)(C,I,R)

**itirya** (*Thespesia populnea*)(C,M,R)
**kwenababai** (*Barringtonia asiatica*)(C,I,R)
**yangis, yangits** (*Pisonia grandis*)(I,R)
**yetiu** (*Hernandia nymphaeifolia*)(C,I)
**yoreh** (*Erythrina variegata*)(C,R)
**?** (*Neisosperma oppositifolium*)(I)
**dereiyongo** (*Cerbera manghas*)(R)
*__te ukin__ (K) (*Terminalia samoensis*)(R)

**PRIORITY (Important, but not endangered)**

*__Christmas tree, tanenbaum__ (*Casuarina equisetifolia*)(D,R)
**dagaidu** (*Vitex trifolia*)(L,R)
**deneno** (*Morinda citrifolia*)(C,D,I,R)
**ekwane** (*Hibiscus tiliaceus*)(C,I,M,R)
**emet** (*Scaevola taccada*)(C,D,I,R)
**eorara** (*Ochrosia elliptica*)(I)
**epo, epuh** (*Pandanus tectorius*)(C,I,R)
**etetah** (*Terminalia catappa*)(C,I,R)
**eteweau** (*Dodonaea viscosa*)(D)
**idibinerr** (*Premna serratifolia*)(C,D,I,R)
**ini** (*Cocos nucifera*)(C,R)
**iut, yut** (*Guettarda speciosa*)(C,D,I,R)
**iyo** (*Calophyllum inophyllum*)(C,I,R)

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**5.2.2 Agroforestry Development:** Given the present economic and food security situation in Nauru, the main emphasis of agroforestry activities should be the strengthening of local production systems. This is in light of the increasing costs and/or unavailability of imported foods, beverages, medicines, body ornamentation, construction materials and other consumer goods. Maximization of the production of local foodstuffs would help Nauru's balance of payments and cash flow problems and protect local people (particularly poorer people) from rapid inflation in the costs of imported goods. It would also help to produce local foods that could lead to an improvement in nutrition-related health in Nauru.

Although the main emphasis should be on household food and health security, increased production in semi-subsistence or small-scale commercial gardening, such as that being carried out around Buada Lagoon, can all contribute to reduced dependence on imported food for both local consumers as well as for hotels, restaurants and other entities.

The strengthening of local production should focus on plants and products that have been environmentally proven and culturally important in the harsh Nauru environment. Table 7 (above) and Tables 8 and 9 (below) list some of the most appropriate indigenous trees, shrubs and tree-like plants and food and multipurpose plants that should serve as a pool for coastal replanting and houseyard agroforestry. It should also be noted that some of these plants, although normally found in natural vegetation formations, are currently found in houseyard or settlement gardens, sometimes as roadside trees, or, in some cases, are now only found in settlements. They should, thus, be considered as desirable components, not only for coastal protection and replanting and rehabilitation, but also for houseyard and

residential agroforestry activities. Table 9 is an attempt to assess the current abundance or importance of a range of proven food trees and other food crops that could form the core of a food security program in the main target locations for agroforestry development. These target locations include:

1. **Buada Lagoon and surrounding areas.** These are the best and most well-protected soils on the island. There are many plants that grow better here than in other target sites. The area is currently to focus of most semi-commercial and commercial food gardening in Nauru.

2. **Bottomside**. This includes the areas around settlements and on other areas of the coastal plain extending from the base of the escarpment to the coast. It is possible to grow a wide range of trees and other plants here because of the existence of the freshwater lens, although it is harder to grown some plants here than in the richer, more protected soils around Buada.

3. **Escarpment slope**. This includes the more gradually sloping areas on the escarpment between Bottomside and Topside. Water availability is more restricted here but there is considerable potential for tree and non-tree cropping. This was the previous location of Taiwanese experimental garden before it moved to Buada and the areas where many of the best current houseyard agroforestry exits, such as on Meneng Terrace and some of the gardens in the Command Ridge area, where there are many food trees and other food plants.

4. **The planned rehabilitated lands and residential agroforestry plots on the mined out and restored areas of Topside.** This area, which is focused mainly on the Ewa Basin, has the most limited agricultural potential although there are a range of species that have been recommended for planting here. Agroforestry in this area is discussed separately below. The technical aspects of planting in this area are detailed by Hassall (1994).

Table 8. Fruit, nut and multipurpose tree or shrub species or plants that could be protected and planted to maintain or strengthen household agroforestry in Nauru (* = non-indigenous;) Note: Some of the primarily indigenous species listed in Table 5 should also be considered for planting in houseyard gardens and agroforestry development.

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**FRUIT AND NUT TREES**

*bananas and plantains, **te banana** (*Musa* banana and plantain cultivars)
*bilimbi (*Averrhoa bilimbi*)
*bluggoe plantain, **dabanana** (*Musa* ABB Group "Bluggoe" plantain)
*breadfruit, **deme** (*Artocarpus altilis* and *A. mariannensis*)
*calamondin lime/orangequat (*Citrus mitis*)
*carambola (*Averrhoa carambola*)
coconut, **ini** (*Cocos nucifera*)
*common fig **te biku** (K)(*Ficus carica*)
*guava, **kuawa** (*Psidium guajava*)

*hibiscus spinach, **bele** (Fijian)(*Abelmoschus manihot*)
*horseradish tree (*Moringa oleifera*)
*ladyfinger banana, **dabanana** (*Musa* AAB Group "Pisang Raja" banana)
*lemon (*Citrus limon/hystrix*?)
lettuce tree, **yangis (***Pisonia grandis*)
*lime, **te raim** (*Citrus aurantifolia*)
*mango, **damanko** (*Mangifera indica*)
*native fig, **debero** (*Ficus tinctoria*)
*papaya, pawpaw, **dababaia** (*Carica papaya*)
pandanus, **epo, epuh!** (*Pandanus tectorius*)
*Polynesian vi-apple, **dagimadere, "Eigigu's tree"** (*Spondias dulcis*)
*sapodilla (*Manilkara achras*)
*spinach tree, chaya (*Cnidosculus chayamansa*)
*sugarcane **tugage** (*Saccharum officinarum*)
*tropical almond, **etetah** (*Terminalia catappa*)
*Volkameriana lime (*Citrus volkameriana*)

**GENERAL PURPOSE/USEFUL TREES/ORNAMENTALS**

**ekaura, idibin kaura** (*Sida fallax*)(I)
**ekaura, inen kaura** (*Abutilon asiaticum*)
*bamboo, **ebarabartu** (*Bambusa vulgaris*)
*casuarina, **Christmas tree, tanenbaum** (*Casuarina equisetifolia*)
*common hibiscus, **darot** (*Hibiscus rosa-sinensis*)
*cycad (*Cycas circinalis*)
*frangipani, **demeria** (*Plumeria obtusa*)
*frangipani, **demeria, arabaneit** (*Plumeria rubra*)
*ixora, **te katuru**, **te kaitiru** (K) (*Ixora casei*)
*jasmine, **rimone** (*Jasminum sambac*)
*kapok, **duwoduwo** (*Ceiba pentandra*)
*mother-of-cocoa (*Gliricidia sepium*)
*Pacific fan palm (*Pritchardia pacifica*)
*poinciana, **bin, "red tree"** (*Delonix regia*)
*sea island cotton, **duwoduwo** (*Gossypium barbadense*)
*Tahitian gardenia, **te tiare (K)** (*Gardenia taitensis*)
*yellow bells (*Tecoma stans*)

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As suggested above Table 9 attempts to assess the appropriateness of a range of food plants (all of which currently grow well in Nauru) for agroforestry development in different zones on Nauru. It also makes a “ballpark” estimate of the target numbers of individual plants of different species that a given household should try to plant. These numbers would, of course, vary from zone to zone and from household to household depending on the location and amount and type of land available. Suffice it to say that, if most households were able to plant somewhere in the neighborhood of the suggested numbers, the value of the produce would be worth more than many of their current cash incomes and would contribute significantly to food, nutritional and health security, not to mention self-sufficiency in a wide range of culturally useful products. Even in some of the smaller gardens in the former Location contract laborer quarter, there are people

growing a significant number of useful food plants.

Table 9. Food species that could form the basis household or houseyard garden development for a national food, nutrition, health and self-reliance program to address the current serious nutritional, health and economic crisis (Notes: The rankings – to +++ indicate the current success or importance of a given plant in the different locations (Buada, Bottomside, on the more gradually sloping areas of the escarpment and the potential for planting as a component of Topside rehabilitation residential agroforestry.

| **Plant** | **Scientific Name** | **2007 Abun** | **Buada** | **Bottomside** | **Escarpment Slope** | **Topside** | **Target No.** |
|---|---|---|---|---|---|---|---|
| **TREE CROPS** | | | | | | | |
| Coconuts | *Cocos nucifera* | A | +++ | +++ | +++ | ++ | 6 |
| Pandanus | *Pandanus tectorius* | C | +++ | +++ | +++ | +++ | 6 |
| Breadfruit | *Artocarpus altilis* | C | ++ | +++ | + | + | 2 |
| Marianas Breadfruit | *Artocarpus mariannensis* | C | ++ | +++ | + | + | 1 |
| Papaya | *Carica papaya* | C | +++ | +++ | ++ | ++ | 6 |
| Lady finger banana | *Musa* AB Group | C | +++ | +++ | ++ | + | 3 |
| Plantain | *Musa* ABB Group | O | ++ | +++ | ++ | + | 2 |
| Mango | *Mangifera indica* | C | +++ | + | + | - | 1* |
| Limes | *Artocarpus aurantifolia* | O | +++ | ++ | ++ | - | 2 |
| Lemon | *Citrus limon* | U | + | - | - | | |
| Orange | *Citrus sinensis* | U | + | - | - | - | |
| Calamondin orange | *Citrus mitis* | U | + | + | ++ | | 1 |
| Guava | *Psidium guajava* | O | + | + | ++ | + | 2 |
| Soursop | *Annona muricata* | O | + | + | + | + | 2 |
| Sweet sop | *Annona squamosa* | O | + | - | + | + | 1 |
| Horseradish tree | *Moringa oleifera* | O | - | ++ | - | - | 1 |
| Belimbing | *Averrhoa belimbi* | U | - | - | + | - | 1 |
| **STAPLE CROPS** | | | | | | | |
| Cassava | *Manihot esculenta* | O | + | + | ++ | + | 50 |
| Sweet potato | *Ipomoea batatas* | O | ++ | + | ++ | - | 50 |
| Taro | *Colocasia esculenta* | U | ++ | - | + | + | 20 |
| Tannia, American taro | *Xanthosoma sagittifolium* | U | + | + | + | - | 10 |
| Yam | *Dioscorea* spp | R | - | - | + | - | |
| **LONG-TERM NON-STAPLE** | | | | | | | |
| Sugarcane | *Saccharum officinarum* | O | + | + | + | - | 2 |
| Eggplant | *Solanum melongena* | U | ++ | + | + | - | 4 |
| Pumpkin | *Cucurbita pepo* | U | + | + | + | - | 1 |
| Water spinach | *Ipomoea aquatica* | C | +++ | - | - | - | 30* |
| Chaya | *Cnidosculus chayamansa* | C | ++ | ++ | + | + | 6 |
| Brazil spinach | *Alternanthera sissoo* | O | + | ++ | + | - | 12 |
| Hibiscus spinach | *Abelmoschus manihot* | U | + | + | ++ | - | 10 |
| **SHORT-TERM** | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Chinese cabbage | *Brassica chinensis* | C | +++ | + | ++ | - | 100 |
| Long beans | *Vigna sesquipedalis* | O | ++ | + | ++ | - | 20 |
| **SPICES/TEAS** | | | | | | | |
| Annual chillies | *Capsicum annum* vars | O | + | + | + | - | 2 |
| Perennial chillies | *Capsicum frutescens* | O | + | + | + | - | 2 |
| Curry leaf | *Murraya koenigii* | U | - | + | - | - | 1 |
| Lemon grass | *Cymbopogon citratus* | U | - | + | - | - | 3 |
| Spring onion | *Allium fistulosum* | U | + | - | - | - | 50 |
| Chinese chives | *Allium tuberosum* | U | + | - | - | - | 20 |
| | | | | | | | |

There are obviously other plants that could be planted than those listed in Table 9, as well as a selection of the plants suggested in Tables 7 and 8 that would further enhance the economic, cultural and ecological benefits of the planting.

Associated with the selection and planting of these plants, are a number of priority protection and planting activities, at the household level, that would strengthen the agroforestry development process. These could include:

1. The re-establishment and rehabilitation of coconut plantations, Nauru's main staple food and the source of toddy, fuel, fibre, mats and other plaited ware and a wide range of other useful products. There are a number of remnant coconut plantations that could be protected and rehabilitated that could contribute greatly to sustainability in Nauru, given the critical importance of coconut as a source of staple food, beverages, sources of nutrient-rich toddy and as the “tree of life” that provides fuel, construction materials, handicrafts and countless other useful products and services.

2. The planting of a range pandanus cultivars that produce edible fruits, fibre, medicines and construction materials, even in times of severe drought.

3. The planting of a range or proven food trees such as breadfruit, bananas, pawpaw, mango, soursop, guava and horseradish tree (*Moringa oleifera*).

4. The planting of proven vegetables such a swamp spinach or **Lorenzo** (*Ipomoea aquatica*), hibiscus spinach or **bele** (*Abelmoschus manihot*), Chinese cabbages (*Brassica* spp.), spring onions, cassava and sweet potato, all which grow well in some areas of Nauru. Two new plants that are not very well-established and found in numerous Nauruan food gardens are chaya (*Cnidosculus chayamansa*) and Brazilian spinach (*Alternanthera sissoo*), both of which were introduced as part of the Pacific Regional Agricultural Project in the 1990s and are now growing successfully on Nauru.

5. The encouragement of small-scale home production of pigs and chickens based on the use of domestic and agricultural waste and foraging as food sources (this will require better training or control of dog populations that

currently devastate chicken populations). Experience elsewhere on small islands in the Pacific have shown that large-scale pig and poultry production, which depends on expensive inputs that are subject to inflation, has rarely been successful, and that traditional small-livestock husbandry systems are far more appropriate.

6. The encouragement of the production or use of a range of other appropriate traditional or new locally produced products, including proven traditional medicines, leis and garlands, shell necklaces, local handicrafts, firewood, etc.

Although some of these activities are already being promoted, there is a need to designate an individual (e.g., an Agricultural Officer or officers), possibly in collaboration with the Taiwanese AID program, who would be responsible for the systematic promotion of the above programs by individual households and landowners. Alternatively, local community groups or NGOs could take the lead on this and solicit funding.

Other associated priority activities of an Agroforestry Development Program could include:

1. The active discouragement of tree removal and the encouragement of protection of trees when clearing new house sites or garden areas, protecting tree seedlings when weeding (i.e., selective weeding), and the protection and replanting of salt-tolerant coastal littoral species (See Tables 6 and 7 above).

2. Protection and planting of appropriate nitrogen-fixing plants, with particular emphasis placed on the intensified planting of indigenous legumes, such as **erekogo** (*Vigna marina* and *Canavalia cathartica*), and **Christmas tree/ tanenbaum** or casuarina (*Casuarina equisetifolia*), plants with which the people of Nauru are very familiar. Also a possibility is the silverbush (*Sophora tomentosa*) that was seen as drift seedlings in the beach vegetation for the first time in 2007 and which has been introduced to Tarawa from Onotoa, one of the outer atolls in Kiribati, for planting for nitrogen fixation and soil improvement.

3. The designation of the coastal or Bottomside portion of Nauru as an "Organic Farming Zone" where diversified mixed cropping is encouraged and where the use of agrochemicals is prohibited or minimized, due to the high costs, unavailability and ecological and health problems created by pesticides and the use of inorganic fertilizers on low-lying islands. If feasible, the Buada area could also be designated and organic zone.

5. Improvement or establishment of pig pens and pig fences, using traditional fencing materials and living, preferably edible, fencing (e.g., the use of **yangis** or other plants which have edible leaves).

6. Planting and improvement of living hedges/fencing around homes, buildings, and bordering roads) to protect them from salt spray.

7. Planting of appropriate roadside trees, such as poinciana, casuarina and indigenous trees (e.g., *Cordia subcordata* and *Thespesia populnea*) to provide shade and by-products.

8. Conduct workshops, at the national and district levels, to develop appropriate strategies for the location, development and maintenance of a system of village-based or household nurseries to propagate, care for, and distribute the trees seedling and plants required for tree-planting and agroforestry programs.

10. Conduct workshops on the post-transplanting care of plants which have been distributed or sold from the nurseries. The workshops will also focus on agroforestry, organic farming, the dangers of chemical farming in low-lying islands, and other environmental and health issues.

11. Award of yearly prizes by MCIR, NIC, NRC or other appropriate bodies for the best community-based nurseries, coastal protection and revegetation efforts, and overall tree agroforestry and revegetation effort. Prizes could also be given to the schools that establish the best nurseries or plant the most trees. Prizes could also be awarded to individual families/landowners in each village for the best houseyard garden and associated agroforestry system, and the most trees replanted on their family land.

It should be noted that many of the same support activities could be used to promote the Residential Agroforestry component for the rehabilitation of Topside (discussed below), although the role of protecting what exists and the range of trees that can grow in this more sever environment will be more limited.

## 5.3 Topside Rehabilitation and Agroforestry Development

The most challenging task will be the rehabilitation and agroforestry development of the mined out areas on Topside. In contrast to the focus on protection, enrichment and restoration activities under the programs discussed above, this will require rehabilitation of the land and then all new planting. The main focus of the current projected rehabilitation effort is the Ewa Depression, an area in the north-central portion of the island that, after Buada Lagoon, has the best groundwater resources and some remaining topsoil and vegetation. It is estimated that some 300 ha of this area will be reserved for restoration agroforestry development, 124 ha for housing and 13 ha as a cemetery. All of these areas will require restoration and the planting of appropriate trees and associated plants. The more technical aspects of rehabilitation (e.g., pinnacle removal and replacement, regarding and leveling, topsoiling, nursery design and establishment, sourcing and propagation of plant material, provision of water and the numbers and configuration of plants), are covered in great detail in *Forestry: Nauru Australia Cooperation Rehabilitation and Development Feasibility Study Document 5* (Hassall, 1994) and other reports related to the post-mining rehabilitation of Topside. This section will

focus specifically on those trees that should be planted and propagated as part of the rehabilitation process.

As a general guideline, rehabilitation agroforestry and landscaping activities should attempt to maximize the multi-purpose value of trees and forests to the people of Nauru, with special attention being paid to the protection and re-establishment of noddy bird habitats and the cultural value of particular plant species or vegetation types. Agroforestry and landscaping activities should be coordinated with plans for re-mining and pinnacle removal, and that the residual mining process should, ideally, not be carried out until the reforestation nursery propagation program is complete and ready to be implemented. Again, the exact process to be followed in described in Hassall (1994).

**5.3.1 Restoration Agroforestry Development:** Because the natural physical conditions of soil and water availability on Topside are so limiting to plant growth, a successful program of reforestation must focus on utilizing the indigenous plants of Nauru that have proven their ability to adapt to these conditions over geological time. Nothing would prove more disastrous than to import large numbers of seedlings that are adapted to other regimes of soil and water. The seedlings of most foreign plants would be doomed to failure.

The species chosen for highest priority to propagate and use in the Topside reforestation program are listed in Tables 10 and 11. Of the tree species, *Calophyllum inophyllum*, should make up approximately 75-90% of the numbers, as it does in the pre-mined Topside forests. The other species in the list, which are found on some of the remaining Topside forest remnants, some of which include previously un-mined pinnacle outcrops, will be used to provide some diversity at selected locations in the forest, particularly for habitat value. Although the resident noddy birds are regarded as being somewhat opportunistic species, they are thought to have had a preference for *Pisonia grandis* and *Terminalia catappa* as nesting sites in the past. *Ficus prolixa* (**eyayo**), the native banyan or strangler fig, is not included in this list because it is quite common on the island and more suited for the more rugged sites where pinnacles have not been removed, rather than on land that has been leveled and rehabilitated. They are probably also an important seabird habitat species, but it is believed that there are sufficient numbers of them on the island.

Two species that have been introduced to Nauru, which have been planted elsewhere in the Pacific for use as quick-growing windbreaks and their ability to fix nitrogen in the soil, are casuarina (*Casuarina equisetifolia*) and the tall shrub, leucaena (*Leucaena leucocephala*), both of which appear to be able to colonize the pinnacle areas close to their original sites of introduction. *Leucaena* has also colonized extensive areas of unmined areas on Topside and would be a possible candidate for improving the soils and providing shade in agroforestry and rehabilitation sites while large trees become established. It is also a very good source of fuelwood for cooking, small bakeries and other purposes, a consideration that take on increasing importance in a fuel-poor Nauru..

Table 10. Main tree species proposed for reforestation and rehabilitation planting on

Topside (* indicates an introduced, non-indigenous species)

| **Species** | **Nauruan** | **Uses** |
|---|---|---|
| *Calophyllum inophyllum* | iyo, ijo | main planting |
| *Terminalia catappa* | eteta, etetah | main planting |
| *Guettarda speciosa* | yut, iut | Occasional planting |
| *Pisonia grandis* | yangits, yangis | occasional planting |
| *Ochrosia elliptica* | eorara | Occasional planting |
| *Morinda citrifolia* | deneno | Occasional, understory |
| *Premna serratifolia* | idibener | Occasional edge planting |
| **Casuarina equisetifolia* | tanenbaum | Use on marginal areas |
| *Muntingia calabura* | bin | Use on marginal areas |

The casuarina in particular has grown very quickly in the Cadmium slime dump, possibly because of the localized concentration of run-off and water holding capacity of that material. In any case, these two species may be used on the balance of land areas with reduced soil profile in order to assist the building of biomass and the soil-forming process. Another benefit of casuarina maybe its use by noddy birds as a nesting tree, similar to the situation on Lady Elliott Island on the Great Barrier Reef where the Casuarinas were planted after guano mining was completed.

Another plant that has shown some spontaneous regeneration on the mined out areas near the Topside Workshops is Panama cherry (*Muntingia calabura*). This tree has a fruit that is eaten by children and could be promoted on marginal areas and is probably a food of local birds.

Table 11. List of shrub species proposed for Topside reforestation planting

| Species | Nauruan | Uses |
|---|---|---|
| *Scaevola taccada* | emet | main species |
| *Colubrina asiatica* | ewongnup | Occasional species |
| *Dodonaea viscosa* | eteweau | Occasional |
| *Abutilon asiaticum* | ekaura | On margins |
| *Leucaena leucocephala* | bin | To prepare site |

It will be important to gather information about flowering and fruiting times for those species of interest for propagation purposes, and also to carry out trials to test whether vegetation propagation is successful. The possible methods for propagation of some species regarded as likely to be used in reforestation are listed in Table 12, below, together with information on flowering times, where known. The information is still incomplete, and it is recommended that research be undertaken immediately to complete the table.

Table 12. Flowering Times and Suggested Propagation Method for Indigenous Nauruan Plants

| **Species** | **Flowering Times** JFMAMJJASOND | **Propagation Method** |
|---|---|---|
| Aidia racemosa | xxx | seed/ cutting |
| Barringtonia asiatica | | seed |
| Calophyllum inophyllum | | seed |
| Cerbera manghas | xx | seed/ cutting |
| Cordia subcordata | | seed/ cutting |
| Mariscus javanicus | xx | seed |
| Guettarda speciosa | | seed/ cutting |
| Hernandia nymphaeifolia | | seed |
| Hibiscus tiliaceus | | seed/ cutting |
| Lepturus repens | xx | seed |
| Morinda citrifolia | | seed/ cutting |
| Ochrosia elliptica | xx | seed |
| Pandanus tectorius | xx | cutting |
| Pisonia grandis | | cutting |
| Scaevola taccada | xxx | seed/ cutting |
| Terminalia catappa | | seed/ cutting |
| Thespesia populnea | | seed/ cutting |
| Tournefortia argentea | | cutting |
| Vitex trifolia | | seed/ cutting |

Smaller life forms could to be planted in the lower layers of the forest to assist with the stabilization of the newly placed soil, to produce an increase in biomass on the sites, and to re-establish a more complete ecosystem. The latter includes animal life and soil organisms, needed to re-initiate the soil-building process. The leaf litter produced in these layers will assist moisture retention in the uppermost soil layer, and the canopy cover will provide a barrier to the spread of weed species that might otherwise compete for nutrients and water with the native trees.

Species chosen for this layer include both native species that have proved their ability in natural re-vegetation situations, and exotic species that have particular attributes with respect to speed of germination and early growth, and ability to bind and improve soil through nitrogen-fixing or green manure effects. The exotic species need to have been proven in similar situations elsewhere, and not show any tendency to become a weed pest.

Hassall (1994) has suggested a number of low-growing groundcover species that could also be added to the mix and which would help to improve the soil, control invasion by exotics and enrich the overall planting.

**5.3.2 Residential Agroforestry:** A major requirement of the restoration for residential purposes is that the land has the ability to grow trees, to support an agroforestry system, and as such should be rehabilitated to the same standard as the Reforestation lands, in terms of soil profile. The trees will include many of the same trees suggested for agroforestry development in Buada and on the coastal plain and more gently sloping parts of the escarpment that are listed in Tables 7 to 9. As can be seen from Table 9 some of the species considered to have high potential in the former areas may not be suitable for planting on Topside.

Table 13 below is a preliminary list of useful ornamentals that could be planted in addition to those listed in Table 6. For a more complete selection of possible species consult the revised Flora of Nauru included in Appendix I for a full list and description of ornamental plants currently being grown in Nauru. The species in Table 13 have been chosen initially because of their use in planting privacy screens or hedges, a use that will always be required in urban areas or new housing developments. It is suggested that this list be expanded along the lines of relating plant species to the uses that can be made of them, rather than just an alphabetical list.

Table 13. List of Ornamental Species Useful for Screening for planting in Topside rehabilitation residential agroforestry.

| **Genus** | **species/variety** | **Landscape use** |
|---|---|---|
| Acalypha | wilkesiana vars. | hedge, screen |
| Bougainvillea | varieties | security hedge |
| Calliandra | haematocephala | flowering hedge |
| Codiaeum | variegatum | feature shrub |
| Gardenia | varieties | feature shrub, fragrant |
| Hibiscus | rosa-sinensis | many varieties |
| Ixora | species and varieties | Low flowering hedge |
| Malviscus | drummondii | similar to hibiscus |
| Nerium | oleander | pruned to shape |
| Polyscias | Species | screen hedge |

| | | |
|---|---|---|
| Tabernaemontana | divaricata | Flowering hedge |
| Vitex | ovata | screen hedge |

A Concept Planting Plan for the above trial plot of 3.95 hectares is contained and illustrated in Hassall's *Forestry* (component)*: Nauru Australia Cooperation Rehabilitation and Development Feasibility Study Document 5*, 1994). In this report it is stressed that, once earthworks are completed, newly spread topsoil must be seeded with a soil-stabilizing mixture of grasses and a legume. Six zones were identified for receiving different planting treatments for different purposes. These were:

**Zone A Screen Planting:** This zone is to be planted with quick-growing shrub and tree species around the boundaries of the development to provide shelter from wind and protection from invasion by weed species. The objective is to obtain a complete foliage projective cover within one year. As the planting in the zones inside this area mature, and adjacent developments are planted, the shrub species can be harvested for green waste and recycled to produce compost, leaving the trees to continue growing and developing a closed canopy.

**Zone B Indigenous Planting:** The planting in this zone will comprise the indigenous tree species listed above, for the purpose of rehabilitation of natural vegetation on topside. Trees will initially be planted at a higher density than will eventually be needed, to minimize the time to obtain a closed canopy, and provide material for recycling. Unwanted material can be harvested after a few years' growth, when the specimens with the straightest trunks can be selected for continued growth, and possible final end-use as saw-logs.

**Zone C Agroforestry:** This zone will mainly be planted with food trees and other useful plants that are listed in Tables 5 to 7. They should be planted early enough so that they are close to or ready for harvesting by the time houses are built on the sites. This program will provide an opportunity to introduce some better performing cultivars and test these under Nauruan climatic conditions and the conditions of the new soil regime. The emphasis should be, as stressed above, on those plants that have been time-tested on Nauru.

**Zone D Display Gardens:** As demonstration houses are built according to the recommendations of the Housing Component Report (AusAID 1994), it is recommended that they are landscaped for final use. This will include places in the garden for fruit and vegetables as well as ornamentals, and address the functional requirements of vehicle and pedestrian access, service areas for pets, storage and clothes drying, water storage, and views and privacy issues.

**Zone E Biomass:** The areas of each lot that are needed for housing construction will be planted with quick-growing shrubs to generate biomass that can be harvested and recycled as green waste when the time comes to build the house. The planting of these areas will

also minimize the invasion of weeds by not providing any open areas.

**Zone F Streetscape:** Street tree planting is recommended for all new housing areas to assist with developing a shady habitat and a landscape character for each street. The footpaths can be seeded with a grass mix (mainly *Cynodon dactylon* ) to eventually form a lawn.

Hassall (1994) provides a plan along these lines for a typical 1000$m^2$. In this plan, a 3-bedroom house has been sited, set back 5 metres from the front boundary and 1.5 metres from the southern side boundary. In this way sufficient space is available for a small ornamental garden in the front of the property, leaving the maximum possible for the multi-use agroforestry type garden at the rear.

The main living areas of the house are exposed to the summer breezes, and the bedrooms on the southern side can be easily made private by the planting of vine fruits and vegetables as a screen on the southern boundary. Coconuts are planted along the common side boundaries where there may not be enough room for large trees, and both neighbours can enjoy the use of their fruits. The suggested planting of shade trees along the street verge will both add to the aesthetic appeal of the street and the privacy at the front of the house.

Although the gardens at the front are mainly ornamental, there is no reason why some food or useful plants cannot be mixed in where possible. In this case, the space between the two wings of the house has been used to grow some bananas and papayas, which can benefit from the roof water from the verandah. Citrus trees too can be of ornamental value, pruned to a regular shape.

A crushed gravel driveway, or possibly concrete, leads along the northern side of the house where there may be room for a carport, in this case for two cars at 6 metres by 6 metres. This structure can also be used for outside gatherings of the family in wet weather or for shade.

An area of 450 square metres, or 45% of the total lot area, is available at the rear of the house. The water tanks collecting roof water would normally be situated here, in a slightly raised position if possible to allow for gravity feed to the garden when needed. An open space at the rear of the carport would serve as both a play area, a turnaround for vehicles, and a drying area for clothes.

Trees would be planted along the rear boundary which merges with the escarpment forest or the un-rehabilitated area. Initially at least, indigenous species would be planted here, along with some fruit trees such as mango and breadfruit, and these can also extend along the southern boundary, where they will not cast shade on the vegetable garden. Space is allowed for a chicken coop and run. If pigs (which are important culturally and nutritionally in Nauru) are to be reared, it is recommended that provisions be made for a walled (with crushed/broken down pinnacles) communal pig rearing area, downwind and at a distance from the settlement. This could be along the lines of the very effective

communal pig-rearing area established and effectively maintained by the people of Atafu Atoll in Tokelau. Both pig and poultry rearing can sometimes be beneficial to the plants from the production of manure. A composting area is also included here, to produce organic additives for the garden. A stressed by Hassall (1994), this is only presented a useful general guideline and the nature of any plan for the protection, enrichment or development of an entirely new agroforestry system at the household or residential level will depend on the size and location of the allotment, the plants (both natural and planted) that already exist, and the individual needs and values of the gardener or developer concerned.

## 6 CONCLUSION

Despite the extremely limited and degraded status of the vegetation and flora of Nauru, plants will remain one of the most important foundations for sustainable living and the survival of the rich Nauruan culture on the island of Nauru. This is particularly true given the recent economic crisis, increasing climatic variability and the need for the island to become more self-reliant in food and other products and services that can be provided by plants. The 2007 survey and mapping of the vegetation and flora of the island further stress the threatened status and importance of the protection and restoration of the island's natural and cultural plants and vegetation as one of the most cost-effective and effective ways of promoting a sustainable future in Nauru.

To do so will require a combination of the conservation of what still exists in Nauru's inland, escarpment and coastal forest forests and vegetation; the protection and enrichment of existing food and other multipurpose gardens in houseyards and other inhabited or developed areas; and the rehabilitation and reforestation of the mined-out phosphate lands. To do so, however, requires that Nauruan get to "re-know" and regain an appreciation for the critical importance of plants to their fragile island existence.

This report attempts to provide some of the information required by Nauruans to rekindle and reclaim this knowledge. This includes: 1) an up-dated assessment on the current state of the vegetation and flora of Nauru; 2) maps and descriptions of the vegetation and plants, with particular emphasis on the mapping, location and description of those areas of vegetation and plants that are in most serious need of protection, rehabilitation and replanting; 3) a simple guide to some of the most important plants that need protection, control (in the case of weeds) and rehabilitation or replanting as part of the protection and restoration of the island; and, 4) DVDs of over 3000 photos of the plants and vegetation that can be used by government and non-government entities, schools and other parties.

The actual technical guidelines on how the island should be restored, the soils developed and the propagation and nursery production of priority plants is dealt with in very great detail in a number of previous studies on Nauru.

The main purpose of this report is to suggest some of the most important species and areas that can be protected, rehabilitated and replanted to provide a foundation for

environmentally, economically, nutritionally and culturally sustainable future occupation of the island by Nauruans. It is stressed that the protection , rehabilitation and replanting of trees, must start now, and should happen at all levels, from the individual household garden level through district and national levels, the latter which must deal with the formal rehabilitation and revegetation of the mined-out phosphate land. In short, the resources are there in terms of the vegetation and plants that already exist on island.

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# APPENDIX I
# VASCULAR FLORA OF NAURU, 2007

Appendix I is a compilation of the Vascular Flora of Nauru, 2007. It consists of a listing of, and relevant information on, the vascular plant species that have been reported to have been present at some time on Nauru. It begins with Pteridophyta (ferns and fern allies), followed by Gymnosperms and then Angiosperms. Within Angiosperms, Monocotyledons precede Dicotyledons. Under these headings individual families are listed in alphabetical order (e.g. Acanthaceae, Amaranthaceae, Anacardiaceae . . .), with individual species being listed in alphabetical order by genus within each family (e.g. *Asystasia gangetica, Barleria cristata, Barleria prionitis, Blechum brownei* . . .).

## KEY

Under each species/entry the types of information and order of presentation are as follows: 1) Latin or scientific name; 2) common names (s); 3) synonyms for the Latin or scientific names; 4) local vernacular Nauruan names; 5) antiquity status of the species, i.e., whether it is indigenous to Nauru, an aboriginal introduction or a recent introduction to Nauru; 5) geographical origin of the species; 6) abundance or frequency of occurrence; 7) brief descriptions of some species; 8) habitat or distribution in Nauru; 9) uses or cultural utility;10) an indication of the persons who have recorded or collected a given species, including numbers corresponding to herbarium specimens; and, 11) numbers of digital photos of the species and its vegetation associations taken by Thaman, Hassall or Takeda in September 2007 (e.g., DPNAU2007RT0237, DPNAU2007DH0344 or DPNAU2007ST1023 refer to the numbers of the "Digital Photos of NAURU taken in November 2007 by R. R. Thaman (RT), David C. Hassal (DH) and Shingo Takeda (ST). . This information, its organization and the symbols used under each category are explained below.

## Latin/Scientific Names

1. The first name listed in **bold print** is what the authors consider to be the currently most widely accepted published Latin binomial for a given species (usually the earliest published name or basionym). All names follow the *International Code of Botanical Nomenclature.*

2. The Latin names provided in italics after the common and the vernacular names include Latin binomial synonyms (syns.) or older names no longer in use for the species, and, in some cases, incorrect names commonly applied to the species, which are indicated by *sensu auct. non.*

3. The name (s) or the abbreviation of the name (s) of the authority or authorities (persons responsible for describing and publishing a given species name) are provided after each species name, e.g., (L.) Anders.

**Family**

1. Family names (e.g., **POLYPODIACEAE**, **ACANTHACEAE** or **RUBIACEAE**) are centered in bold capitals immediately before the first species entry in each family.

2. Where a family is known by two different names or a species placed in either of two families, both are listed (e.g., **FABACEAE OR LEGUMINOSAE**, **POACEAE OR GRAMINAE** or **CLUSIACEAE OR GUTTIFERAE**)

**Common Names**

1. English or common names for a species, and other widely-used names, e.g., coconut, are listed to the far right of the Latin name.

**Vernacular Names**

1. The vernacular Nauruan names are found on the line after the common English names or after the synonyms.

2. The letter (B) after a Nauruan name indicates names listed by Burges (1933). All other names were collected by Thaman, Manner and Hassall as part of the 1980-81 or during the 2007 study.

3. The question mark (?) designates unverified or doubtful names.

4. In terms of pronunciation, the Nauruan phonetics are difficult to match with the accepted sounds and orthography of the Latin alphabet. The closet approximations of the correct Nauruan pronunciation of a given name are provided instead of resorting to the use of strange combinations of letters or special phonetic symbols. Some times two or more variations are provided for a single species because there are ongoing discussions between different Nauruan linguists and Church bodies as to the best way to render the Nauruan names in the Latin alphabet.

**Antiquity Status**

Antiquity status indicates whether a given species is presumed to be indigenous to Nauru; an aboriginal introduction by Nauruans or other indigenous Pacific Islanders before European contact; or a post-European-contact introduction. In some cases it is suggested that a species may have been successfully introduced prior to European contact, but either not successfully established or brought to extinction before botanical collections or observations of the flora were made. In the case of recent introductions, some species are categorized as to whether they are assumed to be pre- or post-World War II introductions. This is based on information received from informants and/or whether a species was reported present before World War II by Burges in 1933. The ? indicates that the true status of a species is in doubt (e.g., whether it is really indigenous or an aboriginal introduction).

## Geographical Origin

Geographical origin refers to what seems to be the original natural distribution of a given species before humans began to acts as dispersal agents for plants. In many cases it is difficult to be sure what the original pre-human or pre-European-contact range of a given species was because species introduced either deliberately or accidentally by the Pacific Island colonizers of the islands have often become naturalized and integral components of what now seems to be indigenous vegetation.

With respect to terminology, Malesia (sometimes spelled Malaysia) is a biogeographical term referring to an area encompassing insular southeast Asia, the Indonesia, Philippines and the island of New Guinea; Indomalaysia refers to an area encompassing the Indian Ocean and Malesia; Indo-pacific refers to an area extending from the Indian Ocean to the Pacific Islands; Paleotropics refers to the Old World tropics including tropical Africa, Asia and the tropical Pacific Islands; pantropical indicates that a species is found throughout the Old and New World tropics; and cosmopolitan indicates that a species is found almost worldwide. In some cases (usually in the cases of easily dispersed weedy pioneer species) information is provided on both the assumed original distribution and whether a species is now more widespread (e.g., pantropical).

## Abundance or Frequency Occurrence

The estimates of abundance or frequency occurrence or whether a given species is now endangered or extinct are based on in-the field observations by Thaman, Manner and Hassall from 1979 through 1996 and the most recent visit in September 2007. In-the field data included in-depth analysis of all vegetation associations, transects at ten locations around the coastal plain, transects across the entire island and extensive sampling using 100 $m^2$ quadrats in areas where open-cast phosphate mining had occurred in the 1980s and the detailed mapping of the vegetation and the locations of rare threatened or vulnerable species.

## Uses and Cultural Utility

Ethnobotanical information (including vernacular names) on uses or cultural utility of the individual plant species was obtained through in-depth interviews with elderly person known for their knowledge of the traditional uses of Nauru's plants; other respondents, whenever possible; and from information in available documents and publications. Main informants included Joseph D. Audoa, James Aingimea, Henry Michael Heine, Daphne Fotu, Jacob Gabwinare, Katarina Satto, Kenia Raidinen, Reynold Capelle, Eda Adam and Montiba Star.

## Collectors and Herbarium Specimens

The numbers listed at the end of the information on each species indicate which collectors or observers collected or recorded that species as being present on Nauru; the numbers in parentheses identify the numbers of the herbarium vouchers or specimens collected by each collector (s), e.g., 2, 3(58802), 4(168N), 5(92), 6, 7(27812).

The following numbers placed after the entry for each species refer to the following collectors or commentators of the Nauru flora and the time periods when they collected:

**1** - Persons such as Finch prior to 1900, or early government reports of introductions about which there is very little information;

**2** - Alan Burges of Sydney University who collected in 1933, most of whose specimens are lodged at Kew Botanical Gardens, London;

**3** - F.R. Fosberg of the National Museum of Natural History of the Smithsonian Institution, Washington D.C. in early 1980, whose specimens are lodged with the Smithsonian Institution;

**4** - Brian Scully of the University of California at Riverside who also collected in 1980, most of whose specimens are also lodged with the Smithsonian Institution;

**5** and **6** - R. R. Thaman, H.I. Manner and D.C Hassall of The University of the South Pacific, Suva, Fiji who collected over two 2-week periods in both November 1980 and July 1981, respectively, and whose specimens are lodged with the South Pacific Regional Herbarium (SPRH) at The University of the South Pacific, Suva;

**7** - Thaman and Manner (then with the University of Guam) who collected again in July-August 1987, whose specimens are also lodged at the South Pacific Regional Herbarium (SPRH); and,

**8** - John Swarbrick, of the University of Queensland, Gatton College who collected weedy species on Nauru in June 1988, and whose specimens are lodged in Queensland with duplicates at the South Pacific Regional Herbarium (SPRH).

**9** - species seen present and/or collected by Thaman and Hassall between 1988 and 1996 during brief visits to Nauru.

**10 –** Observations and inventory of weedy or potentially weedy species by Warea Orapa of the Secretariat of the Pacific Community Land Resources Division in January 2007.

**11** - Species seen or digitally photographed by R.R. Thaman, D.C. Hassall and S. Takeda in Nauru from 14 to 21 September 2007 on South Pacific Forests and Trees Program of the Land Resources Division of the Secretariat of the Pacific Community (SPC).

When possible, F.R. Fosberg of the Smithsonian Institution examined and verified the identifications of all herbarium specimens collected in the 1980s. These include some specimens collected in the early 1980s by Dr. Lynn Raulerson of the University of Guam. Identifications of plants subsequent to 1990 were made by the authors.

# VASCULAR PLANTS OF NAURU

## PTERIDOPHYTA (Ferns and Fern Allies)

### ADIANTACEAE (Maidenhair Fern Family)

**Adiantum** sp. maiden-hair fern

Recent introduction. Occasional. Small ornamental fern grown as a pot plant. 5, 6.

### ASPLENIACEAE (Spleenwork Family)

**Asplenium nidus** L. bird's-nest fern

Indigenous. Paleotropical. Rare, probably now extirpated (locally extinct). Terrestrial and epiphytic fern growing on trees and, probably, on the ground as a terrestrial fern in the past. Reported by Burgess as an epiphyte on *Calophyllum inophyllum* in 1935, but seen only as an ornamental in the early 1980s. Not seen in 2007. Leaves cooked as a one of the only locally available vegetables in Tuvalu, Tokelau and Niue. Could be reintroduced to Nauru as a food resource and an attractive ornamental plant. 2, 5, 6, 7 (27813).

### NEPHROLEPIDACEAE (Sword Fern Family)

**Nephrolepis biserrata** (Sw.) Schott sword fern

Syns. *Aspidium biserratum* (Sw.); *Nephrodium biserratum* (Sw.) Gaud.; *N. splendens* (Willd.) Gaud.; *Aspidium splendens* Willd.

Nauruan Name: **dageang, dakeang**

Indigenous. Pantropical. Occasional. Terrestrial fern. Found in colonies and dense populations in unmined areas and in pits between pinnacles in mined areas; one of first plants to colonize mined areas. Probably often misidentified in the 1980s and confused with the more common *N. hirsutula*. Occasional as an ornamental variety (see *N. biserrata* var. *furcans* below). Leaves used occasionally in garlands. 3(58600), 4(136N), 5(44), 6, 7, 11 (DPNAURT0796).

**Nephrolepis biserrata** (Sw.) Schott var. **furcans** Hor fishtail fern

Recent introduction. East Asia, Africa, Brazil, Florida. Uncommon. Ornamental potted plant. 11 (DPNAURT2007, RT2008, RT3142).

**Nephrolepis exaltata** (L.) Schott Boston fern

Syn. *Polypodium exaltatum* L.

Recent introduction. Pantropical. Occasional. Fern with graceful spreading fronds. Ornamental pot plant. 3, 5(86), 6(181).

**Nephrolepis hirsutula** (Forst. f.) Presl sword fern, fishtail fern

Syns. *Polypodium hirsutulum* Forst. f.; *Nephrodium gibbosum* (Willd.) Gaud.; *Aspidium gibbosum* Willd.

Nauruan Name: **dageang, dakeang**

Indigenous. Indo-Pacific. Abundant. Terrestrial fern with a creeping rhizome Abundant fern in open and shady sites in unmined remnant areas and *Calophyllum* and *Adenanthera* groves. Also common in pits

between pinnacles in regenerating mined areas. Most populations were probably misidentified as *Nephrolepis biserrata* by previous collectors, including Thaman, Hassall and Manner, but now positively identified as *N. hirsutula*. Could be a recent introduction rather than indigenous because it was not reported in the earliest surveys. Leaves used in garlands and for decoration. 8 (9586), 9, 11 (DPNAURT0082, RT0084, RT0312, RT0370, RT0371, RT0372, RT0373, RT0379, RT0380, RT0407, RT0719, RT0739, RT0747, RT0748, RT0749, RT0760, RT0776, RT1214, RT1215, RT2081b, RT2298, RT2363, RT2391, RT2392, RT2448, RT2458, RT2459, RT3046, RT3053, RT3072a, RT3102, RT3103).
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## **OPHIOGLOSSACEAE** (Adder's Tongue Fern Family)

**Ophioglossum petiolatum** Hook. adder's tongue fern

Indigenous. Pantropical. Occasional. Very small erect terrestrial fern. Found as scattered individuals in sandy open and partly shaded areas, primarily in older strip-mined areas on floors of pits between pinnacles. Seen again in dried mud puddle in the Nauru Phosphate Company compound in 1996. Not seen in 2007. No reported use. 5(151), 6, 9.

## **POLYPODIACEAE**

**Microsorum grossum** (Langsd. & Fisch.) S.B. Andrews scented fern, lawai fern
Syns. *Phymatosorus grossus* (Langsd. & Fisch.) Brownlie; *Polypodium grossum* Langsd. & Fisch.
Misapplied names: Phymatosorus scolopendria (Burm.f.) Pichi-Serm.; *Polypodium scolopendria* Burm.f.; *Phymatodes scolopendria* (Burm.) Ching; *Microsorium scolopendria* (Burm.) Copel.; *Polypodium phymotodes* L.
Nauruan Name: **dageang, dakeang; dageang ini Makin** (from I Kiribati te keang ni Makin)

Indigenous. Paleotropical. Very abundant in the 1980s, but now only abundant. Terrestrial and epiphytic fern found in colonies and dense populations in *Calophyllum* woodland and forest in unmined areas, in pits between pinnacles in mined areas, and on escarpment and cliffs below the plateau, and occasionally on the coastal strip near the Anabar Ponds and in houseyard gardens. Fragrant fronds used for making garlands, leis, and other ornamentation and boiled in coconut oil to scent it. 3(58594), 4(121N), 5(43), 6, 7(27811), 8(9578A), 9, 11 (DPNAU2007RT0134, RT0607, RT1180, RT1287a, RT1292, RT1293, RT1294, RT1584, RT1591, RT1624, RT1625, RT1685, RT2365, RT2366, RT2485, RT3061, RT3072b, RT3087, RT3090, RT3098b).

**Pyrrosia lanceolata** (L.) Farw. felt fern
Syn. *Pyrrosia adnascens* (Sw.) Ching

Indigenous. Tropical Asia to Polynesia. Rare. Growing on tree. Possibly a misidentification of a young *Microsorium grossum*. 6(173).

## **PSILOTACEAE** (Psilotum Family)

**Psilotum nudum** (L.) Beauv. psilotum, reed fern
Nauruan Name: **ibiribir**

Indigenous. Tropics and subtropics. Occasional. Found as scattered individuals and small clusters in shady areas under unmined vegetation on the central plateau and uncommon under trees and shrubs on escarpment in the 1980s. Seen in understorey of *Calophyllum* forest remnant to the northwest of the Topside Workshops in 2007. No reported use. 2(53.5), 3(58764, 58596), 5(102), 6, 7(22314), 11 (DPNAU2007DH0352, DH0353).

## PTERIDACEAE (Sword Brake Family)

**Pteris ensiformis** Burm.f. sword brake

Recent introduction. Tropical and subtropical Asia to Polynesia. Rare. Ornamental pot plant. 6(172).

**Pteris tripartita** Swartz sword brake
Syn. *Pteris marginata* Bory
Nauruan Name: **dageang, dakeang**

Indigenous. Paleotropical. Occasional. Large terrestrial fern found as individuals or isolated clusters at base of limestone cliffs of escarpment and in waste places near cliff base; uncommon as a planted ornamental. Fronds used as decorations and in body ornamentation. 4(135N), 5(55), 6, 7(27815), 11 (DPNAU2007RT0276, RT0731, RT0732, RT0733, RT1055, RT1056, RT1057, RT1058, RT1059, RT1175, RT1798, RT1873, RT3174, RT3175).

**Pteris vittata** L Chinese bracken, Chinese sword brake
Nauruan Name: **dageang, dakeang**

Indigenous or possibly introduced? Old World tropics and subtropics and from Africa and Spain through to Western and Central Australia, Victoria, NSW, Queensland and New Guinea to the Marianas, Palau, Yap and Pohnpei in Micronesia. Occasional. Found in disturbed areas, on margin of excavated fishponds and pools on the inward margins of the coastal flat, in mined areas near roads, along paths through mined areas, and other relatively shady disturbed sites in mined areas inland. Not reported present during previous surveys, but seen present on Banaba in 2005. Fronds used as a substitute for banana leaves in body ornamentation for dancing by men and boys on Banaba. 11 (DPNAU2007RTRT0405, RT0406, RT1341, RT1342, RT1343, RT1344, RT1345, RT1346, RT1577, RT1586, RT1697, RT1843 RT2960).

## SYNOPTERIDACEAE (Cliff Brake Fern Family)

**Pellaea rotundifolia** (Forst. f.) Hook. button fern

Recent introduction. New Zealand. Rare. Planted ornamental potted plant. Found in one houseyard garden in Meneng District. 11 (DPNAU2007RT2004, RT2016).

## GYMNOSPERMAE (Gymnosperms)

## ARAUCARIACEAE (Araucaria Family)

**Araucaria columnaris** (Forst.) Hook. Cook's pine, columnar pine
Syn. *Araucaria cooki* R. Br.
Nauruan Name: **pain** ("pine")

Recent introduction. Uncommon. Planted ornamental tree in houseyard gardens. Indentification tentative. 11 (DPNAU2007RT1102, RT1103, RT1104, RT1122).

**Araucaria heterophylla** (Salisb.) Franco Norfolk Island pine
Syn. *Araucaria excelsa* (Lamb.) R. Br.
Nauruan Name: **pain** ("pine")

Recent introduction. Norfolk Island. Rare. Stately symmetrical evergreen tree with horizontal or drooping branches. Planted immature ornamental trees in home gardens near airport in the early 1980s. One small tree about 2.5 m high seen in houseyard garden in Ewa District. A number of beautiful mature trees seen

in houseyard gardens in 2007, some of which are probably the related, but narrower, Cook's pine (*A. columnaris*) from New Caledonia.5, 6, 7, 9, 11 (DPNAU2007RT0471, RT0472, RT2773, RT2783).

**CUPRESSACEAE** (Cypress Family)

**Thuja orientalis** L. Chinese arborvitae, Chinese thuja, biota, eastern arborvitae

Recent introduction. China. Uncommon. Ornamental trees in houseyard gardens on lower Meneng Terrace and in Nibok in 2007. 11 (DPNAU2007RT1912, RT1913, RT3138c, RT3139, RT3141).

**CYCADACEAE (Cycad Family)**

**Cycas circinalis** L. cycad, sago palm
Syns. *C. rumphii* Miq.; *C. seemannii* (A. Br.) Schuster; *C. undulata* Desf.

Recent introduction. India to the Pacific Islands. Occasional. Planted ornamental. No reported use in Nauru; seed kernels processed into flour as a famine or ceremonial food in areas of Melanesia, Polynesia and Micronesia. 3, 5(46), 6, 7, 11 (DPNAU2007RT0035, RT0929, RT0930).
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**Cycas revoluta** Thumb. Japanese cycad

Recent introduction. Japan and southern China. Rare. Planted ornamental at the Meneg Hotel. 11 (DPNAU2007RT0057, RT0058).

**ANGIOSPERMAE (Angiosperms or Flowering Plants)**

**MONOCOTYLEDONAE**

**AGAVACEAE** (Agave Family)

**Agave americana** L. century plant, malina

Recent introduction. Mexico. Rare. Planted thorny ornamental with yellowish-white stripes seen in the 1980s. 5(68), 6.

**Agave sisalana** L. century plant, sisal, sisal hemp
Syn. *Agave rigida* Mill.

Recent introduction. Mexico. Common. Occasional in houseyard gardens and established as an adventive in dense populations along edges of old strip-mined areas and in open sites along the path to Command Ridge. Grown for export in some tropical areas for the fibre from its leaves which is made into rope and other products. 3(58739), 5, 6(215), 7, 9, 11. (DPNAU2007RT0024, RT0814, RT3054, RT3055, RT3056, RT3057, RT3058, RT3059, RT3060)

**Aloe vera** (L.) Burm. f. aloe vera
Syn. *Aloe barbadensis* Mill.

Recent introduction. Southwest Arabia and North Africa. Occasional. Potted plant and planted medicinal plant in houseyard gardens. 11 (DPNAU2007RT0148, RT1699, RT2005, RT2223).

**Cordyline fruticosa** (L.) A Chev. cordyline, ti-plant
Syns. *Cordyline terminalis* (L.) Kunth; *Taetsia fruticosa* (L.) Merr.; *Draecena terminalis* L.

Recent introduction. Tropical Asia. Occasional. Planted ornamental and pot plant. Very important ceremonial and magico-religious plant, a traditionally important supplementary food plant and famine food, and important decorative plant, with numerous other cultural uses in Melanesia and Polynesia, where numerous named cultivars and hybrids exist. Apparently a recent introduction into Nauru with no reported non-ornamental local uses. 3(58676), 5, 6(186), 7, 11 (DPNAU2007RT0069, RT0174, RT0938, RT1007a, RT1435, RT1875).

**Dracaena angustifolia** Roxb. narrow-leafed dracaena
Syn. *Pleomele angustifolia* (Roxb.) N.E. Br.

Recent introduction. India to Australia and Melanesia. Occasional. Planted ornamental and potted plant in household gardens. 7, 11(DPNAU2007RT0033, RT0038, RT0240, RT1743, RT2953).

**Dracaena deremensis** Engler dracaena
Syn. *Pleomele deremensis* (Engler) N.E. Br.

Recent introduction. Tropical Africa. Occasional. Planted ornamental. 6, 7, 11 (DPNAU2007RT00192).

**Dracaena fragrans** (L.) Ker-Gawl. dracaena, dragon flower, pleomele
Syns. *Alectris fragrans* L.; *Pleomele fragrans* (L.) Salisb.

Recent introduction. Tropical Africa. Rare. Planted ornamental and pot plant. 5, 6, 7(112) , 11 (DPNAU2007RT0173, RT0922a, RT0925, RT1992).

**Dracaena marginata** Lam. Madagascar dragon tree, rainbow tree
Syn. *Pleomele marginata* (Lam.) N. E. Br.

Recent introduction . Madagascar. Occasional. Planted ornamental in household gardens and commercial areas, both in outside planter boxes and as indoor potted plants. Both the larger, dark green variety and the colorful variegated form or "rainbow tree" (*D. marginata* "Tricolor") exist. 11(DPNAU2007RT0033, RT0263, RT2165).

**Sansevieria trifasciata** Prain bowstring hemp, mother-in-law's tongue

Recent introduction. Tropical West Africa. Occasional. Planted ornamental and pot plant. In 2007 had become adventive along the upper road from Command Ridge toward the calcination plant 3(58637), 5, 6, 7, 10, 11 (DPNAU2002RT0374, RT2262).

**Yucca gloriosa** L. yucca, Spanish bayonet

Recent introduction. Tropical America and S.E. United States. Rare in the 1980s and only one individual seen in 2007 in Boe District. Panted ornamental. 3(58683), 5, 6, 7, 11.

## **ALLIACEAE** (Onion Family)*

**Allium ascalonicum** L. shallot

Pre-World War II introduction. Palestine. Occasional in 1980s; not seen in 2007. Cultivated in Chinese food gardens in beds and containers at Location and Topside workshops. Pungent bulbs and tender leaves eaten raw or cooked as a spice or vegetable. 5, 6, 7.

**Allium cepa** L. bulb onion, common onion

Recent introduction. Central Asia. Rare. Single immature plant in Chinese food garden at Location in

1981. 6.

**Allium fistulosum** L. green onion, spring onion, Welsh onion, Japanese bunching onion

Pre-World War II introduction. East Asia. Occasional cultivated food plant in Chinese gardens at Location in the 1980s and in Chinese food and experimental gardens. Pungent tender leaves and stems eaten raw or cooked as a spice or vegetable. 5, 6, 11 (DPNAU2007RT2537, RT2538).

**Allium porrum** L. leek

Recent introduction. Eurasia. Rare. Single plant growing in food garden at Location in 1981. 6.

**Allium sativum** L. garlic

Pre-World War II introduction. South Asia. Occasional in Chinese food gardens at Location in the 1980s. Grown from bulbs, mainly for its pungent edible green leaves which are used as a spice or green vegetable in Chinese cooking. 5, 6.

**Allium schoenoprasum** L. chives

Recent introduction. Northern hemisphere. Rare. Pot herb cultivated in container at Cliff Lodge in the 1980s. Tender green leaves used as a spice by European residents. 5, 6.

**Allium tuberosum** Rottler ex. Sprengle Chinese chives

Pre-World War II introduction. East Asia. Common herb cultivated in the 1980s in Chinese food gardens at Location and Topside workshops for its edible green leaves. Uncommon and seen at the Taiwanese garden project at Buada. 5, 6, 7, 11 (DPNAU2007RT2675).

## AMARYLLIDACEAE (Amaryllis Lily Family)

**Agapanthus praecox** Willd. African lily, lily of the Nile, agapanthus
Syn. *Agapanthus orientalis* F.M. Leighton; sometimes misidentified as *A. africanus* (L.) Hoffmannsegg
Recent introduction. South Africa. Rare. Planted ornamental. 6.

**Crinum asiaticum** L. spider lily, crinum lily, grand crinum
Syns. *Crinum pedunculatum* R. Br.; *C. procerum* Bak.
Nauruan Name: **dagiebu, dagibu**

Recent introduction. Tropical Asia. Occasional. Planted ornamental. Flowers and leaves used in garlands and roots crushed for the treatment of filariasis. 3, 5(122), 6(216), 7, 10, 11 (DPNAU2007RT0051, RT0145, RT1776, RT2896, RT2897).

**Crinum augustum** Roxb. crinum lily, Queen Emma lily
Nauruan Name: dagiebu, dagibu

Pre-world War II Introduction? Mauritius and Seychelles. Occasional. Planted ornamental. Leaves and flowers used in garlands. 5, 6, 7(22319), 11 (DPNAU2007RT0969, RT0970).

**Crinum macrantherum** Engl.
Syn. *Crinum rumphii* Merr.
Nauruan Name: **dagiebu, dagibu**

Pre-World War II introduction. Listed as C. macrantherum on Burgesses' (1935) list. Rare? Planted

ornamental. 2.

**Crinum moorei** Hook. f. veld lily

Recent introduction. South Africa. Rare. Planted ornamental. 5(63).

**Crinum xanthophyllum** Hannibal yellow crinum lily
Nauruan Name: dagiebu, dagibu; Kiribati Name: te kiebu

Recent introduction. Melanesia. Occasional. Planted ornamental lily with yellow to yellow-green leaves. Often mistaken for *C. asiaticum*, which is larger and has green, rather than yellow, mature leaves. Flowers and leaves used in leis and ornamentation. 9, 11 (DPNAU2007RT0027, RT0064, RT0141, RT0220, RT0221, RT0222b, RT0593, RT1725, RT1769, RT1770, RT1775, RT3138a).

**Hippaestrum puniceum** (Lam.) Urban Barbados lily, amaryllis
Syn. *Hippeastrum equestre* (Ait.) Herb.; *Amaryllis equestris* Ait.

Recent introduction. Tropical America. Uncommon. Planted ornamental lily at church in Meneng District in 2007. 3(58718), 6, 7, 11 (DPNAU2007RT1433, RT1434)

**Hymenocallis pedalis** (Jacq.) Herbert spider lily
Syns. Often misidentified as *Hymenocallis littoralis* (Jacq.) Salisb. ; *Pancratium littorale* Jacq.
Nauruan Name: **lili**
Recent introduction. Northern South America. Occasional. Planted ornamental. 3(58782), 5(129), 6, 7, 11(DPNAU2007RT0032, RT0038, RT0047).

**Narcissus** sp. daffodil, narcissus

Recent introduction. Europe. Rare. Ornamental pot plant. 6.

**Proiphys amboinensis** (L.) Herbert Amazon lily, Brisbane lily, Cardwell lily
Syns. *Eurycles amboinensis* (L.) Lind.; *E. sylvestris* Salisb.

Recent introduction. Malaysia and northern Australia. Rare. Planted ornamental and potted plant in household gardens. Previously misidentified as the plantain lily or funkia, *Hosta plantaginea* (Lam.) Asch., which is native to China and Japan. 5(62), 6.

**Sprekelia formosissima** (L.) Herb. Jacobean lily, Aztec lily

Recent introduction. C. America. Rare. Ornamental pot plant. 6.

**Zephyranthes candida** (Lindl.) Herb. white zephyr flower, white star of Bethlehem, westwind flower, storm lily

Recent introduction. Argentina and Uruguay. Rare. Planted ornamental. 6.

**Zephyranthes rosea** Lindl. pink lady, pink star of Bethlehem, pink zephyr flower
Syn. *Atamosco rosea* (Lindl.) Green

Recent introduction. Guatemala and W. Indies. Occasional. Planted ornamental, often coming up spontaneously. 3(58692), 5, 6, 7, 11 (DPNAU2007RT0273, RT1970, RT2205, RT2898, RT2899).

## ARACEAE (Arum or Taro Family)

**Aglaonema commutatum** Schott aglaonema

Recent introduction. Indonesia to Pacific Is. Uncommon. Ornamental plant and pot plant. 5, 6(274), 7, 11 (DPNAU2007RT1667, RT1668, RT1720, RT188111, RT2012, RT2954).

**Aglaonema costatum** N.E. Br. aglaonema

Recent introduction. Southeast Asia. Rare. Ornamental pot plant. 6(273), 7.

**Aglaonema marantifolium** Bl. aglaonema

Recent introduction. Southeast Asia. Occasional. Ornamental pot plant. 5, 6(271), 7.

**Aglaonema** cv. pseudobracteata Chinese evergreen, aglaonema

Recent introduction. Southeast Asia? Occasional. Ornamental pot plant cultivar. 5, 6(272).

**Alocasia cucullata** (Lour.) G. Don Chinese taro
Syn. *Arum cucullatum* Lour.

Recent introduction. India. Uncommon. Ornamental pot plant. 5, 6, 11. (DPNAU2007RT2776).

**Alocasia lowii** Hook f.

Recent introduction. Malaysia. Rare. Ornamental pot plant. 6.

**Alocasia macrorrhiza** (L.) Schott giant taro, elephant ears
Syns. *Arum macrorrhizon* L.; *Alocasia indica* (Roxb.) Spach; *Colocasia gigantea* Hook. f.; *Colocasia macrorrhiza* (L.) Schott

Recent introduction. Tropical Asia. Occasional. Possibly an aboriginal introduction into Nauru, which was either never adopted as a food plant or was not used at the time of European contact. No reported Nauruan name. Planted ornamental in 2007 and a rare Tuvaluan food plant at Location and in food gardens near Topside Workshops, where a large specimen had been planted and mulched in a plaited pandanus-leaf basket set in the ground in the early 1980s. Important staple food plant in Samoa and Tonga and an important supplementary staple food plant in Fiji, eastern Polynesia and on some atolls in Tuvalu and the Tuamotu and Caroline Islands. Swollen tuberous stem cooked as a staple vegetable. Wild or naturalized, ornamental (often variegated), and edible varieties or cultivars exist in many countries, some of which are used only as a famine or emergency food. 5, 6, 7, 11 (DPNAU2007RT0445, RT0401, RT1566, RT2512).

**Alocasia** cf. **regina** N.E. Br. Royal giant taro

Recent introduction. Borneo. Planted ornamental Location Settlement behind golf course. 11 (DPNAU2007RT2957a RT2959).

**Alocasia sanderiana** Bull. alocasia, kris plant

Recent introduction. Philippines. Occasional. Ornamental pot plant. 5, 6, 7.

**Alocasia** cv. Amazonica

Recent introduction. Rare. Potplant. Hybrid cross with A. sanderiana. 6(185).

**Anthurium andraeanum** Lind. anthurium

Recent introduction. Tropical America. Rare. Ornamental pot plant. 6.

**Caladium bicolor** (Ait.) Vent artist's pallet, caladium
Syn. *Arum bicolor* Ait.

Recent introduction. Brazil. Occasional. Planted ornamental and pot plant. 3(58717, 58793), 5, 6, 7, 11 (DPNAU2007RT0496, RT1425, RT1721, RT1872, RT2014, RT2782, RT3145).

**Colocasia esculenta** L. taro, dasheen
Syns. *Colocasia antiquorum* Schott; *Caladium esculentum* Vent.
Nauruan Name: **detaro**

Pre-World War I introduction. Tropical Asia. Occasional. Possibly an aboriginal introduction into Nauru that was either never adopted as a food plant or was not used at the time of European contact. Food plant in Tuvaluan, I-Kiribati, and Chinese gardens at Location and Topside workshops; occasionally planted and mulched in plaited pandanus-leaf baskets in the 1980s. Now occasional in houseyard gardens and planted at the Taiwanese food garden project in Buada in 2007. Very important, often dominant staple in other Pacific countries, although recently becoming less important in western Melanesia because of widespread infestations of taro leaf blight (*Phytophthora colocasiae*) and Alomae and Bobone viruses. Corms cooked as a staple food and the tender green leaves, and sometime the petioles, as a spinach or green vegetable. 5, 6, 7(27825), 11 (DPNAU2007RT1084a, RT2218, RT2657, RT2703).

**Cyrtosperma chamissonis** (Schott) Merr. giant swamp taro
Syns. *Arisacontis chamissonis* Schott; *Cyrtosperma edule* Schott; *C. merkusii* (Hask.) Schott
Nauruan Name: **dababai**

Pre-World War I introduction from other areas of Micronesia; possibly originally an unsuccessful aboriginal introduction. New Guinea and western Pacific Islands. Uncommon. Immature food plant at Location; small patch in poorly-drained area surrounding Buada Lagoon and six plants cultivated in moist area in mulched plaited pandanus-leaf baskets in Topside Workshop food gardens in 1987. Not seen in 2007. Very important staple root crop and ceremonial food in Tuvalu and Kiribati and other low-lying atoll countries of Micronesia, but evidently not traditionally important in Nauru. Corms cooked as a staple vegetable. 5, 6, 7(27826).

**Dieffenbachia leonii** Hort. dumb cane

Recent introduction. Colombia. Rare. Probably a horticultural hybrid between *D. maculata* and *D. seguine*. Ornamental pot plant. 6.

**Dieffenbachia maculata** (Lodd.) Bunt. dumb cane
Syn. *Dieffenbachia picta* Schott

Recent introduction. Brazil. Common. Ornamental pot plant; occasionally planted in gardens. Sap causes dermatitis when applied externally and causes mouth paralysis and severe pain when taken in mouth. 3(58677, 58774), 5, 6, 7, 10 (DPNAU2007RT0016, RT1871).

**Dieffenbachia seguine** (Jacq.) Schott dumb cane

Recent introduction. Northern South America and Caribbean. Occasional. Ornamental pot plant. Exhibits same properties as described for *D. maculata*. 3(58677), 6, 7.

**Epipremnum pinnatum** (L.) Engler taro vine, pothos, pothos aureus
Syns. *Epipremnum aureum* (Lind. ex Andre) Bunt. ; *Rhaphidophora aurea* (Lind. ex Andre) Birds.; *Scindapsus aureus* (Lind. ex Andre) Engl.; *Pothos aureus* Lind. ex Andre; *Epipremnum pinnatum* cv. *aureum*

Recent introduction. Solomon Islands. Occasional. High climbing vine. Planted ornamental, which in a couple of cases was seen as sparingly naturalized on trees in the inner coastal plain. 3(58724), 5, 6, 7, 11

(DPNAU2007RT0183, RT0190, RT0978, RT0979, RT1361, RT1729, RT3156, RT3157).

**Monstera deliciosa** Liebm. monstera, fruit salad plant, taro vine, ceriman

Pre-World War II introduction. Central America and Mexico. Rare. Pot plant and planted ornamental. 3(58727), 5, 6, 7, 11 (DPNAU2007RT2780).

**Philodendron hastatum** C. Koch & Sellow philodendron
Syn. *Philodenron domesticum*

Recent introduction. Brazil. Rare. Ornamental pot plant. 6, 7, 11 (DPNAU2007RT1981, RT1982b).

**Philodendron radiatum** Schott philodenron

Recent introduction. Tropical America. Rare. Planted ornamental in houseyard garden in Meneng. 11 (DPNAU2007RT1986).

**Philodendron scandens** C. Koch & Sellow ssp. oxicardium (Schott) Bunt. philodendron
Syn. *P. oxycardium* Schott

Recent introduction. Tropical America. Rare. Ornamental pot plant. 6(238), 7.

**Philodendron** sp. philodendron

Recent introduction. Tropical America. Rare. Ornamental pot plant. 5 (238), 7.

**Scindapsus pictus** Hassk. var. **argyraeus** (Engl. in DC.) Engl. silver vine

Recent introduction. Indomalaya. Rare. Ornamental pot plant. 6(225).

**Spathiphyllum** cv. Clevelandii spathiphyllum, white sails

Recent introduction. Rare. Ornamental hybrid pot plant. 6, 7.

**Syngonium podophyllum** Schott arrowhead vine, syngonium
Syn. *Syngonium angustatum* Schott *sensu auct.*

Recent introduction. Mexico. Occasional to common. Pot plant and planted ornamental. 3(58722), 5, 6, 7, 10, 11 (DPNAU2007RT0157, RT0187, RT0968, RT1732b, RT1733, RT187411, RT1980, RT2013, RT2956).

**Xanthosoma lindenii** (Andre) Engl.

Recent introduction. Colombia. Rare. Ornamental pot plant. 6.

**Xanthosoma sagittifolium** (L.) Schott tannia, yautia, cocoyam, American taro
Syn. *Arum sagittifolium* L.
Nauruan Name: **detaro**

Pre-World War II introduction. West Indies. Occasional. Food plant in home gardens at Location and near Nauruan home at Buada; occasionally planted and mulched in pandanus-leaf baskets at Topside workshops in the 1980s; found primarily in Tuvaluan gardens. Occasional in 2007. Important staple food crop throughout Melanesia and Polynesia. Possibly introduced into Nauru in the late 19th or early 20th century, but never becoming as important as in other areas of the Pacific. Side tubers or cormels cooked as a staple and tender young leaves cooked as a green vegetable or spinach. 5, 6, 711 (DPNAU2007RT1083, RT1272, RT1423, RT1917, RT2210 RT2215, RT2704, RT2955).

## ARECACEAE/PALMAE (Palm Family)

**Caryota urens** L. fishtail palm, wine palm, toddy palm

Recent introduction. Tropical Asia. Rare. Planted ornamental. 6, 11 (DPNAU2007RT1995, RT1996).

**Chrysalidocarpus lutescens** H. Wendl. golden cane palm, golden-fruited palm

Recent introduction. Madagascar. Rare in the early 1980s, occasional in 2007. Planted ornamental. 5, 6, 11 (DPNAU2007RT0143, RT1978).

**Cocos nucifera** L. coconut palm
Nauruan Name: **ini**

Aboriginal introduction. South Asia and Indian Ocean Islands. Abundant. Planted extensively on coastal strip, around Buada Lagoon, near roads in strip-mined areas; occasional on plateau and escarpment; common along strand; common in Nauruan home gardens and occasionally planted around contract workers quarters at Location and Topside workshops. Cultivars include *inur*, *ito*, *ita*, *inamaro* and *ini*. Formerly important for copra production for export; trunks used in house construction and for animal pens; midrib of frond used for flooring and walls of houses; young fronds used for weaving baskets, food containers and parcels, mats, housing thatch, fans, hats, dividers for communal fish farming in Buada Lagoon, and other plaited ware and for making skirts (*ridi*); old and young fronds used for roofing; coir and dry leaves important as tinder in making fire by friction and carrying fire; midrib of leaflets or pinnules used in brooms and in weaving; soft endosperm (meat) and water (milk) of young, green nuts (*ini*) consumed; meat of mature nuts (*eanikiwi*) grated and eaten in a variety of ways and squeezed and boiled, usually with flowers or leaves, to make perfumed coconut oil; coconut endosperm (meat) has been an important staple throughout the small-island Pacific and in coastal areas of larger islands, with some people receiving up to 70% of their dietary calories from this source; it was also undoubtedly the main staple plant food of Nauruans in the past and a major food for chickens and pigs; coir or husk of both green and mature nuts used to make strong fibre and cordage (sennit) for strainers, affixing tool handles, boat and house lashings, fishnets and lines, belts, canoe caulking, corks or stoppers, slings; dried fronds, husks, and shells used as fuel for cooking; shells used for making charcoal, one of the main uses being to fuel hand irons in the past; shells used to make drinking cups in the past; sap from flower spathe tapped to make toddy (*karawai*) and then often boiled down to make a molasses-like syrup (*kamaimai*); toddy often allowed to ferment to become alcoholic sour toddy; loose burlap-like tissue (*inini*) at the base of the fronds used to strain coconut milk; dust or pollen collected on lower ends of fronds used as a blood coagulant and disinfectant; coconut oil used to treat tinea; inside of very small immature nuts used in post-natal medicine; very young leaves, without the midrib, chewed and used as a medicine for fever and infantile beriberi. 2, 3, 5, 6, 7, 11 (DPNAU2007RT0171, RT0196, RT0199, RT0321, RT0423a, RT0454 RT0489 RT0490, RT0579a, RT0580a, RT0587b, RT0599b, RT0602b, RT0611, RT0615, RT0620b, RT0621b, RT0628a, RT0633, RT0639a, RT0827, RT0988a, RT1015, RT1063a, RT1304, RT1368, RT1444b, RT1445b, RT1446b, RT1469, RT1482, RT1493, RT1730, RT1786, RT1787, RT1804, RT1814c, RT1922, RT2121, RT2269, RT2270, RT2351, RT2442, RT2445, RT2801a, RT2887a, RT2986, RT3024, RT3027, RT3067b, RT3068).

**Elaeis guineensis** Jacq. oil palm

Recent introduction. West Africa. Rare. Palm planted in houseyard garden across from service station in Aiwo. 11 (DPNAU2007RT0313, RT0314, RT0315, RT2158, RT2159).

**Livistona chinensis** (Jacq.) R. Br. Chinese fan palm, fountain palm
Syn. *Latania chinensis* Jacq.

Recent introduction. China, Ryukyu and Bonin Islands. Rare. Ornamental pot plant and planted

ornamental. 6, 7.

**Phoenix sylvestris** Roxb. Silver date palm, sugar date palm

Recent introduction. Southern Pakistan and most of India. Rare. Erect single-stemmed mature palm with feather-like pinnate fronds with spikes on lower frond above the base of the petiole. Planted ornamental on Command Ridge. Identified by D. Hodel from digital photos. Could possibly be a *Phoenix* hybrid or the date palm (*P. dactylifera* L.). 5, 6(61), 11 (DPNAU2007RT2177, RT2178, RT2179).

**Pritchardia pacifica** Seem. & Wendl. Pacific fan palm, Fiji fan palm
Syn. *Eupritchardia pacifica* (Seem. & Wendl.) O. Ktze.
Nauruan Name: **dabam** ("palm")

Recent introduction. Fiji, Tonga, and Samoa. Occasional. Planted ornamental at the Meneng Hotel, in houseyard gardens and a number of other sites. Small edible fruit consumed in Fiji, Tonga and elsewhere in the Pacific but reportedly only eaten by some children in Nauru. 3, 5, 6, 7, 11 (DPNAU2007RT0048, RT0048, RT0318, RT0319, RT1669, RT1670, RT1953, RT02643).

**Pritchardia thurstonii** F. Von Muell. & Drude fan palm

Recent introduction. Apparently endemic to the Lau Islands in eastern Fiji. Rare. Adult trees seen in one houseyard garden in Nibok District in 2007. 11 (DPNAU2007RT3113, RT3114a, RT3115, RT3116)

**Ptychosperma macarthuri** (Wendl.) Nicholson MacArthur palm, hurricane palm

Recent introduction. Cape York Peninsula, Australia to New Guinea. Rare. Planted ornamental. . 11 (DPNAU2007RT3114b).

**Rhapis excelsa** (Thunb.) Henry ex Rehder lady palm, bamboo palm
Recent introduction. Southern China. Uncommon. Planted ornamental in houseyard gardens. 11 (DPNAU2007RT0835, RT2026).
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**Roystonea elata** (Bartr.) Harper royal palm
Syns. *Palma elata* Bartr.; *Roystonea regia* (HBK.) O.F. Cook; *Oreodoxa regia* HBK.
Nauruan Name: **dabam**

Recent introduction. Cuba and Florida. Not seen in 2007. Rare. Planted ornamental. Could possibly have been *R. oleracea* (Jacq.) O.F. Cook. 5(137), 6, 7.

**Sabal minor** (Jacq.) pers. dwarf palmetto, bush palmetto

Recent introduction. Southern United States. Rare. Small palm with an almost invisible trunk and a cluster of erect fan-shaped leaves cut into many narrow forked segments. Single palm seen in a houseyard garden in Nibok District in 2007. 10 (DPNAU2007RT2516, RT2517, RT2518, RT2519, RT2520, RT2521).

**Sabal palmetto** (Walt.) Lodd. sabal palm, cabbage palm, palmetto palm

Recent introduction. Southeastern United Status, Cuba and the Bahamas. Rare. One single mature palm seen planted in the courtyard of the Church next to the Community Centre in Aiwo in 2007 (DPNAU2007RT0191

**Veitchia merrilli** (Becc. ) H.E. Moore Manila palm, Christmas palm

Recent introduction. Philippines. Uncommon. A number of trees planted in houseyard gardens. Could possibly be *V. joannis* H. Wendland, which is a larger palm with longer fruit. 11 (DPNAU2007RT0191, RT1366, RT1366, RT2609, RT3149, RT3150).

## BROMELIACEAE (Pineapple Family)

**Ananas comosus** (L.) Merrill pineapple
Syns. *Bromelia comosa* L.; *B. ananas* L.; *Ananas sativus* Schult. f.; *A. ananas* (L.) Karst.

Pre-World War I post-European contact introduction. Brazil. Uncommon. Food plant in home gardens at Location and Topside Workshops and occasionally in expatriate home gardens. Seen in planter box outside refugee camp at old State House on upper Meneng Terrace, in houseyard garden at Buada and at the Taiwanese garden project at Buada in 2007. Fruit edible. 3, 5, 6, 11 (DPNAU2007RT1084b, RT1089, RT0402, RT1918, RT2546, RT2652, RT2709).

**Nidularium innocenti** Lem.

Recent introduction. Brazil. Rare. Ornamental pot plant. 6.

**Tillandsia usneoides** L. Spanish moss, Florida moss, long moss

Recent introduction. Tropical America. Rare. Planted ornamental. 6.

**Vriesia** sp. vriesia

Recent introduction. Tropical America. Rare. Perennial herb with stiff smooth-edged variegated leaves arranged in a rosette. Ornamental pot plant. 6.

## CANNACEAE (Canna Family)

**Canna indica** L. Indian shot, canna

Recent introduction. West Indies. Rare. Planted ornamental see in a Meneng houseyard garden. Most ornamental specimens are showy hybrids or selections. 6(189), 7, 11 (DPNAU2007RT0222a, RT2020).

## COMMELINACEAE (Dayflower or Spiderwort Family)

**Callisia fragrans** (Lindl.) Woodson fragrant inch plant, basketplant
Syn. *Spironema fragans* Lindl.; *Rectanthera fragrans* (Lindl.) Degener

Recent introduction. Tropical America. Uncommon potplant and ornamental in houseyard gardens. 11 (DPNAU2007RT1892, RT1945).

**Dichorisandra thyrisiflora** Mikan blue ginger

Recent introduction. Brazil. Rare. Planted ornamental. 6.

**Tradescantia spathacea** Swartz tradescantia, oyster plant, Moses-in-a-boat, dwarf oyster
Syns. *Rhoeo spathacea* (Sw.) Stearn; *Rhoeo discolor* (L'Her.) Hance.

Recent introduction. Mexico and West Indies. Occasional. Pot plant and planted ornamental; planted along borders in ornamental gardens. 3(58703), 5, 6, 7, 10, 11 (DPNAU2007RT0033, RT0295, RT1884).

**Tradescantia pallida** (Roxe) D. Hunt purple tradescantia, purple heart
Syn. *Setcreasia purpurea* B. K. Boom

Recent introduction. Mexico. Uncommon. Ornamental pot plant. Seen in flower garden at Meneng Hotel in 2007. 3(56779), 6, 7, 10, 11 (DPNAU2007RT0112, RT2035, RT2036).

**Tradescantia fluminensis** Vell. wandering Jew

Recent introduction. South America. Rare. Ornamental pot plant. 6.

**Tradescantia zebrina** Bosse wandering jew, silver inch plant
Syn. *Zebrina pendula* Schnizl.

Recent introduction. Mexico. Uncommon. Ornamental pot plant. 3(56780), 5, 6, 7.

## CYPERACEAE (Sedge Family)

**Cyperus involucratus** Rottb. umbrella sedge, umbrella plant
Syn. *Cyperus alternifolius* L.

Recent introduction. Madagascar. Rare in the 1980s but occasional as a planted ornamental in houseyard gardens in 2007. 5, 6, 7, 10, 11 (DPNAU2007RT0239, RT1136, RT1742, RT1761, RT2018).

**Cyperus compressus** L. sedge

Recent introduction? Pantropical and warm subtropics. Occasional. Weed growing in rather dense populations in low ground near Buada Lagoon and swampy area near bottom of escarpment, near buildings in Location contract workers settlement, and in some roadside sites. 3(58644), 6, 11 (DPNAU2007RT0448, RT2948, RT2949, RT2950).

**Cyperus iria** L. sedge

Recent introduction. Rare weed in the early 1980s. 5(90a).

**Cyperus rotundus** L. nut sedge, nut grass
Nauruan Name: **ibugibugi, ibiugbiugi**

Pre-World War II introduction? Cosmopolitan. Common. Weed in gardens, especially vegetable gardens; growing in extensive stands in lawns and along roadsides; occasional in swamps in Meneng. One of the most serious seeds of vegetable gardens in the Pacific, with small ball-like root nodules and spreading stolons that are difficult to pull out of the soil. Root nodules used to scent coconut oil in Tonga, Fiji and other parts of the Pacific. 3(58686), 4(149N), 5(89), 6, 7, 8, 11 (DPNAU2007RT0309, RT0337, RT0555 RT0912 RT1509, RT2687).

**Eleocharis ochrostachys** Steud. sedge
Syn. *Eleocharis laxiflora* (Thw.) H. Pfeiff.

Recent introduction. Asia. Rare. Erect perennial sedge. Planted ornamental. 6(210).

**Fimbristylis cymosa** R. Br. sedge, beach sedge
Syns. *Fimbristylis spathacea* Roth; *F. pyncnocephala* Hillebr.; *F. glomerata* (Retz.) Nees ex K. Schum. non (Schrad.) Nees; *F. atollensis* St. John; *F. wightiana* Nees
Nauruan Name: **ibugibugi, ibiugbiugi**

Indigenous. Pantropical. Abundant. Perennial tufted sedge growing in clusters or tufts in open and semi-open places, waste place and ruderal sites on the coastal strip and in mined areas on the plateau. Common on rocky, sandy portions of the Anibare Bay boat harbour. No reported use on Nauru. 2, 3(58613, 58670), 4, 5, 6(210), 7, 11(DPNAU2007RT0044, RT0056, RT0419, RT1539, RT1540, RT1541, RT1593, RT1594,

RT2110, RT2360, RT3077, RT3094).

**Kyllinga nemoralis** (Forst.) Dandy ex Hutchinson and Dalziel white-flowered kyllinga
Syn. *Cyperus kyllingia* Endl.

Recent introduction. Paleotropical. Uncommon. Found growing in a weedy site near the kitchen in one of the best houseyard ornamental gardens in Meneng District and in one houseyard garden in Boe in 2007. 11 (DPNAU2007RT2022, RT2023, RT2025a, RT3029).

**Mariscus javanicus** (Houtt.) Merr.; sedge, marsh cypress
Syns. **Cyperus javanicus** Houtt; *C. canescens* Vahl; *C. pennatus* Lam.; *C. stuppeus* Forst. f.; *M. albescens* Gaud.; *M. pennatus* (Lam.) Domin; *M. stuppeus* (Forst. f.) Merr.
Nauruan Name: **reyenbangabangā**

Indigenous? Paleotropics into the Pacific Islands. Abundant in the 1980s, common in 2007. Found growing wild in isolated clusters and tufts and in colonies or dense populations in moist habitats on the coastal strip, ruderal sites, surrounding Buada Lagoon, on the inner border of the coastal strand, bordering the mangrove ponds in the northeast of the island, and occasionally in mined areas on Topside. Stems used as stringers for garlands and for stringing fish; swollen bottoms eaten occasionally in the past. The name reyenbangabangā means literally the surrounding border, referring to the way in which *C. javanicus* surrounds parts of Buada Lagoon. 3(53634), 4(160N), 5(90), 6(218), 7(27824), 8(9576), 10, 11 (DPNAU2007RT0133, RT0167, RT0463, RT1296, RT1350, RT1359, RT1590, RT2616, RT2621, RT2879).
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## DIOSCOREACEAE (Yam Family)

**Dioscorea alata** L. yam, greater yam, winged yam

Recent introduction. Southeast Asia. Rare. Food plant in home gardens at Location and Denigomodu. Not seen in 2007. Important staple food crop in many parts of Melanesia, Polynesia and Pohnpei (Ponape), Yap and other high islands in Micronesia, where numerous named cultivars are recognized, but insignificant in Nauru. Tuber cooked as a staple vegetable. 5, 6.

**Dioscorea esculenta** (Lour.) Burkill lesser yam, sweet yam, Goa yam

Recent introduction. Southeast Asia. Rare. Food plant in home gardens at Location and Meneng. Not seen in 2007. Important staple in parts of Papua New Guinea and Solomon Islands and a supplementary staple crop in many areas of Melanesia, Polynesia and Micronesia. Tuber cooked as a staple vegetable. 5, 6.

**Dioscorea nummularia** Lam. thorny yam

Recent introduction. Southeast Asia. Food plant in open houseyard garden along the road leading up to Command Ridge. Apparently planted by Fijian residents and presumably introduced from Fiji where it is a common wild and planted staple food crop. 11 (DPNAU2007RT2500, RT2501, RT2502, RT2503, RT2504, RT2505)

## HELICONIACEAE (Heliconia Family)

**Heliconia collinsiana** R.F. Griggs hanging heliconia, fish-pole heliconia
Syn. *Heliconia pendula* Wawra

Recent introduction. Guatemala. Rare. Planted ornamental. 5, 6.

**Heliconia humilis** (Aubl.) Jacq. heliconia, lobster claw
Syn. *Musa humilis* Aubl.

Recent introduction. Tropical South America. Rare. Planted ornamental. 5, 6(236).

**Heliconia psittacorum** L. heliconia

Recent introduction. Tropical South America. Occasional. Planted ornamental. 5, 6, 7, 11 (DPNAU2007RT2228, RT2229, RT2254).

**Heliconia** sp. heliconia

Recent introduction. Tropical America. Rare. Erect herb. Planted ornamental. 5 (174).

## IRIDACEAE (Iris Family)

**Gladiolus** sp. gladiolus

Recent introduction. South Africa. Rare. Planted ornamental. 5, 6, 7.

**Iris** sp. iris

Recent introduction. Origin? Rare. Planted ornamental. 5, 6(100).

**Tigrida pavonina** (L.f.) Ker-Gawl. tiger flower

Recent introduction. Mexico and Guatemala. Rare. Planted ornamental. 6.

## LILIACEAE (Including Agavaceae and Amaryllidaceae)(Lily Family)

**Asparagus densiflorus** (Kunth) Jessup asparagus fern, Sprenger asparagus
Syns. *Asparagus aethiopicus* L.; *A. sprengeri* Reg.

Recent introduction. South Africa. Uncommon. Ornamental pot plant more common in the 1980s. 3(58711), 5, 6(167, 180) , 11. (DPNAU2007RT3144).
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**Asparagus setaceus** (Kunth) Jessup asparagus fern
Syns. *Asparagopsis setacea* Kunth; *Asparagus plumosus* Baker

Recent introduction. South Africa. Rare. Ornamental pot plant. 6(169), 7.

**Chlorophytum comosum** (Thunb.) Jacq. spider plant, ribbon plant, bracket plant
Syns. *Chlorophytum capense* (L.) Voss; *C. elatum* R. Br.

Recent introduction. Africa. Uncommon. Ornamental pot plant. 3(58690), 6, 11(DPNAU2007RT1421, 11. (DPNAU2007RT2253, RT2777, RT3143).

**Gloriosa superba** L. gloriosa lily, glory lily

Recent introduction. Tropical Africa. Uncommon. Planted ornamental and pot plant. 5, 6(177), 10.

**Littonia modesta** Hook climbing lily

Recent introduction. South Africa. Rare. Planted ornamental. 6.

**Sandersonia aurantiaca** Hook. f. golden lily of the valley, Chinese lanterns

Recent introduction. Natal. Rare. Ornamental pot plant. 6.

## MARANTACEAE (Arrowroot Family)

**Calathea ornata** (Lem.) Koern. calathea
Syn. *Maranta ornata* Lem.

Recent introduction. Northern South America. Occasional. Ornamental pot plant. 3(58688), 5, 6, 7, 11 (DPNAU2007RT2010).

**Calathea wiotiana** Makoy calathea, rattlesnake plant
Syns. *C. insignis* Bull; *C. lanceolata* Boom

Recent introduction. Brazil. Rare. Ornamental pot plant. 6, 11 (DPNAU2007RT1988, RT1989).

**Calathea zebrina** (Sims) Lindl. calathea
Syn. *Maranta zebrina* Sims

Recent introduction. Brazil. Rare. Ornamental pot plant. 6.

**Ctenanthe lubbersiana** (Morr.) Eichl. ctenanthe, bamburanta

Recent introduction. Brazil. Rare. Ornamental pot plant. 6.

**Ctenanthe oppenheimiana** (Morr.) K. Schum. ctenanthe, never-never plant

Recent introduction. Brazil. Rare. Ornamental pot plant. 6.

**Maranta arundinacea** L. arrowroot

Recent introduction. Northern South America and possibly Central America. Rare. Single mature plant seen in planter box in the parking lot across the street from Kapeli's Store. Could possibly be a form of *Maranta leuconeura*, 11 (DPNAU2007RT0815).

**Maranta leuconeura** Morr. maranta, prayer plant, rabbit tracks

Recent introduction. Brazil. Rare. Ornamental pot plant. 6, 7.

## MUSACEAE (Banana Family)*

*The nomenclature for the genus *Musa* is confused, with most of the common seedless cultivars or clones being triploid crosses of the fertile species *Musa acuminata* Colla and *M. balbisiana* Colla. The Latin binomials *M. nana* Loureiro, *M. sapientum* L., and *M. paradisiaca* L. are commonly used as follows: *M. nana* for the dwarf Cavendish, and *M. sapientum* for the taller bananas, which are generally eaten ripe, but which are also cooked throughout the Pacific as starchy staples, and *M. paradisiaca* for the starchier bananas or plantains, which are usually eaten cooked as a staple starch, but occasionally eaten ripe as fruit. The nomenclature most widely used by agronomists is that developed by Simmonds, which classifies all cultivars or clones on the basis of their assumed genetic background, eg. *Musa* ABB Group would be a triploid cross of one *M. acuminata* group and two *M. balbisiana* groups. Both nomenclature systems are presented here to more precisely identify the clones that are currently present in Nauru.

**Musa (AAA Group)** Simmonds banana, Robusta, poyo, Mons Marie

Syns. *M. sapientum* L.; *M. paradisiaca* L. var. *sapientum* (L.) Kuntze; *M. paradisiaca* L. ssp. *sapientum* (L.) Kuntze; *M. acuminata* Colla cvs

Nauruan Name: **dabanana**

Pre-World War II introduction. Southeast Asia. Occasional. Food plant in Tuvaluan and I-Kiribati food gardens at Location and Topside workshops; occasional in Nauruan and expatriate home gardens. Important food and export crop in many areas of the Pacific, especially in Tonga and Western Samoa, where bananas are a major export crop, and in Tuvalu, where bananas are a major staple food. Not a traditional food plant, and of only limited importance on Nauru. 2, 3, 5, 6, 7.

**Musa (AB Group)** Simmonds lady's finger banana, pisang rajah (Indonesia)

Syns. *Musa x paradisiaca* L. var. hort. Pisang raja (*M. acuminata* Colla x *M. balbisiana* Colla)

Nauruan Name: **dabanana**

Pre-World War II introduction. South India. Occasional. Banana with tightly-packed, light-yellow, short, slightly rounded, plump, very thin-skinned, seedless tangy sweet fruits. Food plant in Tuvaluan and I-Kiribati gardens at Location and Topside workshops in the 1980s and in Nauruan houseyard gardens in 2007. Eaten ripe as a fruit throughout much of the Pacific and a very important staple in Samoa, where it is cooked green. A nutrient-rich crop with great potential fro increased planting. 3, 5, 6, 7, 11 (DPNAU2007RT1331b, RT1332, RT2543, RT2969, RT3023, RT3109, RT3110).

**Musa (ABB Group)** Simmonds cooking banana, plantain, bluggoe

Syns. *Musa x paradisiaca* L. var. hort. Bluggoe (*M. acuminata* Colla x *M. balbisiana* Colla )

Nauruan Name: **dabanana**

Pre-World War II introduction? Southeast Asia and Pacific. Common. Plantain or banana with light-green, waxy, thick-skinned, angular fruit, with a tapering blunt-tip. Food plant in well mulched areas and planting boxes at Location and near Topside workshops in Tuvaluan and I-Kiribati gardens in the 1980s and in some Nauruan gardens in 2007. Important traditional supplementary staple in many areas of the Pacific, where it seems to be an aboriginally introduced cultivar and known as **bata** or **pata** in Fiji and Western Polynesia respectively. The most common banana cultivar in Kiribati, from where it may have been introduced into Nauru. Leaves and pseudostem used medicinally to wrap sick persons to lower fevers; leaves used to parcel food and to cover earthen oven; green fruit cooked as a staple food and ripe fruit eaten raw. Evidently not a successful aboriginal introduction to Nauru, where Musa cultivars do not seem to have been a traditional food crop. 5, 6, 7, 11 (DPNAU2007RT0182 RT0302, RT0303, RT0976, RT0977, RT2585).

## ORCHIDACEAE (Orchid Family)

**Cattleya** sp. cattleya orchid

Recent introduction. Tropical America. Rare. Bulbous or slender-stemmed orchid with thick, slightly-folded leaves and large showy flowers. Ornamental pot plant. 6.

**Dendrobium undulatum** R. Br. dendrobium orchid

Recent introduction. Australia. Rare. Orchid with short thick leaves and many showy flowers borne along a flowering stem. Ornamental pot plant. 6.

**Dendrobium** sp. dendrobium orchid

Recent introduction. Rare. Orchid with short thick leaves and many showy flowers borne along a flowering stem. Planted ornamental at H.M. De Robert's home. 6, 11 (DPNAU2007RT2781).

**Spathoglottis plicata** Bl. Malayan ground orchid

Recent introduction. Indomalaysia. Rare. Planted ornamental. 5, 6.

**Vanda teres** Lindl. vanda orchid

Recent introduction. Burma. Rare. Planted ornamental. 6.

**Vanda** sp. vanda orchid

Recent introduction. Southeast Asia. Rare. Evergreen orchid with showy flowers. Planted ornamental. 6.

## PANDANACEAE (Pandanus Family)*

*The nomenclature for the genus *Pandanus* is, like *Musa*, confused, with some taxonomists classifying many of the common cultivars and wild clones or species, both edible and non-edible, as forms or varieties of *P. tectorius*. Other taxonomists consider them distinct species, often listing numerous species or varieties for a given area. For example, *P. odoratissimus* L. f. has long been thought to be synonymous with *P. tectorius*, but is not considered, by many authorities, to occur east of Malaysia. Similarly, *P. odoratissimus* L.f. var. *pyriformis* Mart. has been used as a synonym for a wild and doubtful variety of *P. tectorius*, whereas Stone (1970) considers *P. fragrans* Gaud. to be the common wild species on Guam, and does not consider *P. tectorius* to be present. Thus, because the fruit of many of the named cultivars or varieties found on Nauru were not collected and identified, the identifications here must be considered provisional, with most named cultivars being grouped under *P. tectorius*. Other widespread forms, such as *P. dubius* Spreng., a widespread edible species; and *P. spurius* Miq. cv. PUTAT (syns. *P. tectorius* Warb. var. *laevis* Warb.; *P. odoratissimus* l.f. var. *laevis* (Warb.) Mart., which are widely cultivated for their leaves for use in plated ware, are also possibly present, but not listed here. *P. dubius*, if present, however, is a very different plant, not likely to be confused with *P. tectorius*. It has no edible fleshy tissue, but a large globose fruit, 30 to 40 cm in diameter, composed of many drupes, 8 to 18 cm long, each containing a single seed with edible white endosperm.

**Pandanus tectorius** Warb. pandanus, screw pine

Syn. *Pandanus pyriformis* Gaud.

Nauruan Name: **epö, epuh, biter, biterr** (wild, uncultivated trees)

Indigenous and probably an aboriginal introduction in the case of some cultivars. Pacific Islands. Common in 1980s but less common in 2007. Commonly planted on the coastal strip in home gardens and in open areas and in stands on the unmined portions of the plateau (Topside); women were formerly responsible for the care and cultivation of pandanus, although men helped in the initial clearing of land. An important staple to the Nauruans and to the I-Kiribati and Tuvaluans on their home islands. One relict stand seen near the gun emplacement on Command Ridge in 2007. Very important fresh fruit and staple in Nauru and other atoll and Micronesian countries. Named cultivars which still exist on Nauru include *enaben* (*enabun*), *erabaite* (*erabwaite*), *eragadibyaw*, *eragomogom* (*eragumugum*), *inaparabei* (*inaporabei*), *inimenoiya*, *irireiab*, and *iriribe*; other named cultivars, which are reportedly now extinct due to mining, bombing during World War II, and failure to replant, include *eraburabur* (*eraburbur*), *eramwimwi*, *erarapaiwa* (*erarapeiwa*, *erarapwiewa*), *erkibwir*
, *erokwoi*, *eronubwe*, *erwuro*, *inibiterin*, and *itoidi* (*etoidi*). Some of these cultivars may be *P. dubius* (see above). Ripe fruit of all cultivars eaten in Nauru as a vitamin-A-rich snack food and also cooked or fermented and put on pandanus mats or leaves in the sun to dry to make a rich man's food known as *edongo*, which is also a traditional food for the sick; leaves, which are commonly soaked in fresh water or boiled, are plaited into mats (*itubare*), baskets, and other plaited ware, and make the best traditional thatching and roofing; main trunk and stilt roots used in house construction; wood and dried fruit sometimes burned as fuel; thin outside bark of the stilt roots scraped and mixed with coconut juice to cure constipation and poor appetite; I-Kiribati use leaves as cigarette wrappers. In the past, during the yearly pandanus harvest (*ineded*), which usually occurred around August or September, people used to leave their homes on the coast to stay in temporary bush huts on the pandanus lands in the interior. 2, 3(58760), 5(64), 6, 7(27814?) , 11 (DPNAU2007RT0137, RT0291, RT0456b, RT0458b, RT0519, RT0545, RT0569a, RT0662, RT0663, RT0664, RT0665, RT0778, RT0779, RT0780, RT0802, RT0966, RT1140a, RT1273, RT1305, RT1462b, RT1474d, RT1682, RT1683, RT1684, RT1686, RT1687, RT1688, RT1689, RT2735b, RT2762b, RT2765b, RT2800, RT2828, RT2861c, RT2984, RT3047, RT3048, RT3049, RT3107, RT3108, RT3212, RT3213).

**Pandanus sanderi** Hort. ex Masters variegated pandanus

Recent introduction. Indomalaysia to the Pacific Islands. Uncommon. Perennial shrub with long pointed variegated green leaves with yellow-white margins. Planted ornamental; seen at Meneng Hotel in 2007. 6, 11 (DPNAU2007RT0062, RT0264).

## POACEAE OR GRAMINAE (Grass Family)

**Andropogon** sp.

Recent Introduction. Rare. Small perennial grass. Localized on strip-mined land. 3(58736).

**Arundo donax** L. giant reed

Recent introduction. Old World. Occasional. Planted ornamental and spontaneous in some areas, such as in open areas near the end of the road on the top of Meneng Terrace. 3(58742), 4(171N), 5(95), 6, 7(22318), 10, 11 (DPNAU2007RT0464, RT0465, RT0857, RT0858, RT2266, RT2910, RT2914).

**Axonopus compressus** (Sw.) Beauv. carpet grass

Recent introduction. Tropical America. Rare. Grass along driveway in houseyard garden in Buada. , 11 (DPNAU2007RT1003).

**Bambusa vulgaris** Schrad. ex Wendl. common bamboo, feathery bamboo

Syns. *Arundo bambos* L.; *Bambos arundinacea* Retz.; *Bambusa arundinaria* Willd. ex Merr. (Sphalm.); *B. arundinacea* (Retz.) Willd.

Nauruan Name: **ebarabaratu, embarabaraba** (B)

Pre-World War II post-European contact introduction. Tropical Asia. Uncommon. Planted on coastal strip in the 1980s and at Buada in 2007, but more common in the past. The large stand in northeast Buada was reportedly introduced from Samoa. Woody stems used in the construction of perches for pet frigate birds, for fishing rods, net handles for noddy-bird nets and reef and flying-fish nets; splinters used in the past to mend fishing nets; parts used medicinally. 2, 5, 6(217), 7, 11 (DPNAU2007RT1025, RT1064, RT1065, RT2717, RT2718, RT2719).

**Bothriochloa bladhii** (Retz.) S.T. Blake blue grass, Australian beardgrass

Syns. *Dichanthium bladhii* (Retz.) Clayton; *Andropogon bladhii* Retz.; *Dichanthium intermedium* (R. Br.) De Wit & Harl.; *Andropogon intermedius* R. Br.; *Bothriochloa intermedia* (R. Br.) Camus

Recent introduction. Tropical Africa through India to China and Australia. Common. Grass in open lots, roadsides and ruderal sites. Possibly the grass referred to as Fosberg as *Andropogon* or *Dicanthium* sp. in the 1980s with no species identification provided. Now common. 10, 11 (DPNAU2007RT0077, RT0080, RT0081 RT0229, RT0300 RT0506, RT0785, RT0803, RT1112, RT1528, RT1642, RT1763, RT1805, RT1833, RT1898, RT1925 RT2044).

**Brachiaria cf paspaloides** (Presl) C.E. Humm. Thurston grass (Fiji)

Recent introduction. Paleotropics ? Rare. Single population seen on road to Buada above the calcination plant in 2007. Widespread as an escape in Fiji. 11 (DPNAU2007RT2052, RT2053).

**Brachiaria subquadripara** (Trin.) Hitchc.

Syn. **Panicum subquadriparum** Trin.

Recent introduction. Tropical Asia, now pantropical. Rare in 1980s now occasional. Rare around Buada Lagoon in the 1980s but now occasional in wasteplaces, along roadsides and other ruderal sites in houseyard gardens on bottom side and on the more gradually sloping portions of the escarpment. 5(83), 6(155) , 11 (DPNAU2007RT0986, RT1303, RT1564, RT1899, RT1902b, RT2336, RT3028).

**Cenchrus brownii** R. & S. Brown's burgrass, Brown's sandbur

Syn. *Cenchrus viridis* Spreng.

Nauruan Name: **eakung, iyakong**

Recent introduction. Tropical America. Occasional. Weed in open places and ruderal habitats on the coastal strip. 5(35), 6, 7.

**Cenchrus ciliaris** L. bufflegrass

Syn. *Pennesetum cenchroides* (L.) Rich.; *P. ciliare* (L.) Link.

Recent introduction. Uncommon. Seen in disturbed site off road to Buada above the calcination plant in 2007. Could be species referred to a *C. brownii* in previous surveys. 11 (DPNAU2007RT2047, RT2048).

**Cenchrus echinatus** L. burgrass, sand bur

Nauruan Name: **eakung, iyakong**

Pre-World War I introduction. Tropical America. Common. Weed with sharp spiny burs that stick to clothing. Occurs clusters or tufts along roadsides, in gardens and ruderal habitats on the coastal strip and occasionally in coastal herbaceous strand vegetation on sand.
. 2, 3(58607), 4(146N), 5(34), 6, 7, 8, 10, 11 (DPNAU2007RT0553, RT1903, RT2271, RT2823, RT2824, RT2936).

**Chloris inflata** Link finger grass

Syn. *Chloris barbata* sensu auct. non (L.) Sw.

Nauruan Name: **ibugibugi**

Recent introduction. Tropical America. Occasional. Weed occurring locally in isolated clusters or tufts in open places along roadsides,, wasteplaces and ruderal places on the coastal strip and disturbed sites on Topside. 3(58519), 4(151N), 5(40), 6, 7, 8(9549), 10?, 11 (DPNAU2007RT0007, RT0537, RT1643, RT2422).

**Chrysopogon aciculatus** (Retz.) Trin. needle grass, seed grass, golden beard grass

Syns. *Andropogon aciculatus* Retz.; *Rhaphis aciculatus* (Retz.) Desv.

Recent introduction. Southeast Asia and Pacific Is. Occasional. Weed occurring locally on bare soil, roadsides, waste places, and occasionally in lawns. 3(58625, 58709), 5(82), 6, 7, 11 (DPNAU2007RT0036).

**Cymbopogon citratus** (DC. ex Nees) Staph lemongrass

Syn. *Andropogon citratus* DC. ex Nees

Recent introduction. East Indies. Uncommon. Planted in a number of houseyard gardens and in a row near bananas in Anetan District in 2007. Leaves boiled in water to make lemon grass tea and stems, leaves and roots used as a spice in Thai cooking. Should be planted more widely as a source of inexpensive tea and spice. 11 (DPNAU2007RT0792, RT0793, RT1419, RT1952, RT2774a, RT2972).

**Cynodon dactylon** (L.) Pers. Bermuda grass

Syns. *Panicum dactylon* L.; *Capriola dactylon* (L.) O. Ktze.

Nauruan Name: **ibugibugi**

Recent introduction. Old World. Occasional. Common in open places forming mat or sod and in lawns and in some areas just inland from the beach. 3(58625), 5, 6(270), 7, 11 (DPNAU2007RT2043, RT2763).

**Dactyloctenium aegyptium** (L.) Beauv. four-finger grass, beach wire grass, crowfoot grass

Recent introduction. Paleotropics. Occasional. Weed in clusters or tufts in open and ruderal habitats on the coastal strip. 3(58603, 58606), 4, 5, 6(209), 7, 8(9550), 10, 11 (DPNAU2007RT0059, RT0060, RT0280, RT0455, RT2114, RT2127).

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**Dactyloctenium cteniodes** (Steud.) Besser?

Recent introduction. Africa. Annual grass. Occasional locally in disturbed places. 4(153N).

**Dichanthium** sp. blue grass

Recent introduction. Occasional. Perennial grass with bluish stems (stolons). Occurs locally in open weedy places, roadsides and ruderal sites. Could be *Dichanthium annulatum*. 3(58518), 5(85) , 11 (DPNAU2007RT0122, RT1563?, RT2763).

**Digitaria bicornis** (Lam.) R. & S. crab grass, large crab grass
Syns. *Panicum bicorne* Lam.

Recent introduction. Tropical Asia? Perennial creeping grass. Weed in open and ruderal sites on the coastal strip. 4(152N).

**Digitaria ciliaris** (Retz.) Koel. crab grass, large crab grass
Syns. *Panicum ciliare* Retz.; *Digitaria adscendens* (HBK) Henr.; *Syntherisma ciliaris* (Retz.) Schrader

Recent introduction. Tropical Asia. Occasional. Weed in gardens, pathsides and ruderal sites. 3(59604), 10, 11 (DPNAU2007RT1506, RT1507, RT1508, RT1509, RT2047, RT2048, RT2566, RT2567, RT3020, RT3021).

**Digitaria radicosa** (Presl) Miq. crab grass
Syns. *Panicum radicosa* Presl.; *Digitaria borbonica* Desv.; *D. timorensis* (Kunth) Balansa

Recent introduction. Old World tropics. Uncommon? Roadside weed. 3(58608), 11 (DPNAU2007RT1788, RT2727).

**Digitaria setigera** Rot crab grass, slender crab grass
Syns. *Panicum pruriens* Fisch. ex Trin.; *Digitaria pruriens* (Fisher ex Trin.) Buse (in Burgess' list 1935); *D. microbachne* (J. S. Presl) Henr.
Nauruan Name: **ibugibugi**

Indigenous. Southeast Asia to Polynesia. Occasional. Weed occurring in clusters or tufts in open and ruderal habitats on the coastal strip. 2, 3, 5(83), 6(156), 7, 8(9551?) , 10, 11 (DPNAU2007RT0911, RT2714).

**Digitaria violascens** Link. smooth crab grass, violet crab grass
Syns. *Digitaria argyrostachya* (Steud.) Fern.

Recent introduction. Tropical Asia. Rare. Weed occurring locally near Buada Lagoon. 3(58786).

**Echinochloa colonum** (L.) Link. jungle rice
Syns. *Panicum colonum* L.; *Oplismenus colonum* (L.) HBK.

Recent introduction. India. Occasional. Weed of gardens, roadsides and ruderal sites. Seen in Buada in 2007. 4(150N), 5 (155) , 11 (DPNAU2007RT0985).

**Eleusine indica** (L.) Gaertn. wiregrass, goosegrass
Nauruan Name: **ibugibugi**

Pre-World War II introduction. India; long naturalized in Old and New Worlds. Abundant. Growing in rather dense concentrations or colonies in gardens, roadsides, waste places and ruderal sites. 2, 3(58660), 4(147N, 154N), 5(65), 6, 7, 8(9544), 10, 11 (DPNAU2007RT0298, RT1360, RT1880, RT2113, RT2552).

**Eragrostis pectinacea** (Michx.) Nees Carolina lovegrass, pectinate lovegrass
Syn. *Eragrostis caroliniana* (Spreng.) Scribn.

Recent introduction. Eastern United States. Uncommon. Weed occurring in open lots, along roadsides, in other ruderal places. Indentification is tentative 11 (DPNAU2007RT1096, RT2115, RT2116, RT2134).

**Eragrostis tenella** (L.) Beauv. ex Roem. & Schult. lovegrass, Japanese lovegrass
Syn. *Eragrostis amabilis* (L.) Wight & Arn. ex Hook. & Arn.
Nauruan Name: **ibugibugi**

Recent introduction? Old World. Common. Weed occurring in scattered clusters around buildings, along paths and roadsides, and other ruderal places. 2(28.5), 3(58626), 4(148N), 5(66), 6, 7, 8(9539), 10, 11 (DPNAU2007RT0066, RT1868b).

**Eustachys petrea** (Sw.) Desv.
Syn. *Chloris petrea* Sw.

Recent introduction. Tropical America. Uncommon. Locally common to abundant as one of the main colonizing species in the rehabilitation trial on Topside and occasional in other Topside sites and in a disturbed area above the calcination plant just off the Buada road in 2007. Not identified in the early 1980s. Has become the most common grass in disturbed sites on Tarawa in Kiribati over the past 20 years. 11 (DPNAU2007RT0392, RT0399, RT0401, RT0403, RT0420, RT2068, RT2102, RT2314, RT2408, RT2435, RT2436, RT2437, RT2481).

**Lepturus repens** (Forst. f.) R. Br. bunchgrass, beach bunchgrass
Syns. *Rottboellia repens* Forst. f.; *Monoerma repens* (Forst. f.) Beauv.
Nauruan Name: **ibugibugi**

Indigenous. Pacific Islands. Occasional. Occurring in clusters among strand vegetation and in disturbed open sites on the coastal strip. Nauru's most common indigenous grass. Helps to bind beach sand and protect coastlines from erosion. 3(58605, 58750), 5(84), 6, 7, 11 (DPNAU2007RT0043, RT0050, RT0114a, RT0115a, RT0116a, RT0117b, RT0119a, RT0121a, RT0236, RT0625, RT1451b, RT1453a, RT1454a, RT1680a, RT2736a, RT2743b, RT2751b, RT2759b, RT2822c, RT2827 RT2859).

**Melinus repens** (Willd.) Zizka Natal grass, Natal red top
Syns. *Tricholaena rosea* Nees; *Rhynchelytrum roseum* (Nees) Staph & Hubb.; *Rhynchelytrum repens* (Willd.) Hubb.; *Tricholaena repens* (Willd.) Hitchc.

Recent introduction. Southern Africa. Occasional to common. Found in clusters in waste places on coastal strip and plateau and occasionally in mined areas. 3(58655), 4(170N), 5(49), 6, 7, 8(9567) , 10, 11 (DPNAU2007RT0202, RT0205, RT0659, RT1714, RT1717).

**Oplismenus hirtellus** (L.) Beauv. basket grass
Syns. *Panicum hirtellum* L.; *Orthopogon imbecillus* R. Br.; *Oplismenus imbecillus* (R. Br.) R & S.; *O. undulatifolius* (Ard.) Beauv.

Recent introduction. Pantropical. Rare. In open area in Topside forest. 7(22322).

**Paspalum conjugatum** Berg. T-grass, sour grass

Recent introduction. Tropical America. Rare. Seen in a disturbed roadside site along the road to Buada above the calcinations plant. 11 (DPNAU2007RT2049, RT2059, RT2060, RT2061a, RT2062).

**Paspalum setaceum** Michx.

Recent introduction. Mexico and the southeastern U.S. Rare. Seen in one location in the main settlement in Aiwo in 2007. Reportedly first recorded from the Pacific Islands in the Marshall Islands in

1956 (Whistler 1995). 11 (DPNAU2007RT2853).

**Pennisetum polystachion** (L.) Schult. Mission grass, feathery pennisetem
Syns. *Pennisetum polystachyon* (L.) Schult (alternate spelling); *Pennisetum setosum* (Sw.) L. Rich.; *Cenchrus setosus* SW.; *Panicum polystachion* L.

Recent introduction. Central America and now widely naturalized in the tropics. Occasional. Present in a remnant unmined area near a road junction on Topside near active mining area in Anibare and near the rehabilitation site north of the Topside Running track. An aggressive invasive weed with seeds that disperse in the wind, water or by sticking to clothing; on the U. S. list of noxious weeds and declared a noxious weed in the Northern Territory, Australia. 10, 11 (DPNAU2007DH0248, DH0249, RT0437, RT0438, RT0439, RT0440, RT0441, RT2069).

**Saccharum officinarum** L. sugar cane
Nauruan Name: **tugage**

Pre-World War I introduction? New Guinea and Tropical Asia. Occasional. Food plant in I-Kiribati and Tuvaluan gardens at Location and Topside workshops in the 1980s and occasional in Nauruan gardens in 2007. An important supplementary food plant throughout most of the Pacific, with the sweet juicy pulp a source of sugar and an important snack food, the leaves widely used for high quality house thatching, and the chewing of the fibrous stems reportedly a main factor in good dental hygiene, which is ironic, given the role of processed sugar in tooth decay. Interspecific hybrids of *S. officinarum* and more fibrous wild canes, such as *S. spontaneum* and *S. robustum*, form the basis for the export sugar industries of Fiji and Hawaii. Apparently not traditionally important on Nauru. 5, 6, 7, 11 (DPNAU2007RT0832, RT0833, RT0941, RT0942, RT1274, RT1951, RT2545, RT2705).

**Sporobolus diander** (Retz.) Beauv. Indian dropseed
Syn. *Agrostis diander* Retz.

Recent introduction. Southern Asia. Occasional. Weed of roadsides, waste places and ruderal sites on coastal strip. 6(154), 11 (DPNAU2007RT0484, RT1431, RT1432, RT2160, RT2161, RT2508).

**Stenotaphrum micranthum** (Desv.) Hubb.
Syns. *Ophiurinella micrantha* Desv.; *Stenotaphrum subulatum* Trin.
Nauruan Name: **ibugibugi**

Indigenous. Mascarene Islands in the Indian Ocean through Malesia to eastern Polynesia and the Marshall Islands in Micronesia. Occasional. Cited by Fosberg *et al.* 1987, .but not seen or collected in 1979 or 1980. Seen occasionally in flat sites on terraces on the escarpment behind Anibare Bay and among pinnacles on the inner coastal flat in Meneng in 2007. 3, 11 (DPNAU2007DH0190, DH0191, DH0192, RT1186, RT1187, RT1192, RT1193, RT1244, RT1253b, RT1254, RT1259, RT1244, RT1253b, RT1254, RT1259, RT1803).

**Stenotaphrum secundatum** (Walter) Kuntze buffalo grass, St. Augustine grass
Syn. *Ischaemum secundatum* Walter

Recent introduction. Tropical America and Africa. Rare. Introduced lawn grass seen in the lawn in one houseyard garden on Command Ridge in 2007. 11 (DPNAU2007RT2232, RT2233, RT2234).

**Thuarea involuta** (Forst. f.) R. Br. ex R. & S.

Indigenous. Madagascar to E. Polynesia and Micronesia. Rare. Found in one small population in the outpost zone of the coastal littoral vegetation on the beach just north of the Meneng Hotel in 2007. Possibly and occasional arrival via ocean dispersal that is short-lived (ephemeral). 10, 11 (DPNAU2007RT1440, RT1441, RT1442, RT1443).

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**Zea mays** L. Maize, corn

Recent introduction. South, Central and warm North America. Uncommon. Planted old Chinese farm in Meneng in 2007 and Taiwanese vegetable project in Buada. 11 (DPNAU2007RT2540, RT2546, RT2561a, RT02647).

## PONTEDERIACEAE (Pickerel Weed Family)

**Eichhornia crassipes** (Mart. & Zucc.) Solms-Laub. water hyacinth
Syns. *Pontederia crassipes* Mart. & Zucc.; *Eichhornia speciosa* Kunth

Recent introduction. Tropical and Subtropical America. A rare water weed in Buada Lagoon and planted in tubs at Location in the 1980s. Now a serious invasive water weed that has colonized extensive areas of Buada Lagoon and is the target of a planned SPC biological control program in the future. Commonly planted as an ornamental in many parts of the world. It has escaped to become a serious pest in many areas, such as Fiji, where it clogs rivers and causes flooding and obstructs navigation. All parts are reportedly edible and could be used as pig feed on the island. 6(255), 10, 11 (DPNAU2007RT0944, RT0945, RT0946, RT0947, RT0948, RT0949, RT0956, RT0957, RT0958, RT0959, RT2617a, RT2618, RT2619a, RT2620a, RT02635b, RT02636b, RT02637, RT2697).

## TACCACEAE (Polynesian Arrowroot Family)

**Tacca leontopetaloides** (L.) O. Kuntze Polynesian arrowroot
Syns. *Leontice leontopetaloides* L.; *Tacca pinnatifida* Forst.
Nauruan Name: **damagmag, damogmog**

Aboriginal introduction. Paleotropics. Occasional. Occurring spontaneously in old gardens and in escarpment forest. Occasional in the 1980s, but not seen in 2007. Could be threatened or, possibly present but not seen in 2007 due to the prolonged drought the previous year. Tubers grated and washed to eliminate poisonous substances and made into edible starch in the past, but apparently not used by Nauruans to the extent that it was used in other parts of Micronesia and Polynesia. Paste from tuber used as an adhesive for barkcloth and other handicrafts in Polynesia and Melanesia and the fibers from the flower stem for weaving in parts of Polynesia. 5, 6(119).

## ZINGIBERACEAE (Ginger Family)

**Alpinia purpurata** (Vieill.) K. Schum. red ginger
Syns. *Guillainia purpurata* Vieill.; *Languas purpurata* (Vieill.) Kaneh.

Recent introduction. Indonesia to Pacific Is. Occasional. Planted ornamental. 3(59710), 5, 6, 7, 11 (DPNAU2007RT1691).

**Alpinia zerumbet** (Pers.) Burtt & R.M. Smith shell ginger
Syns. *Costus zerumbet* Pers.; *Alpinia nutans* (Andr.) Roscoe; *A. speciosa* (Wendl.) K. Schum.; *Catimbium speciosum* (Wendl.) Holttum.

Recent introduction. Southeast and East. Asia. Rare. Planted ornamental. 6, 11 (DPNAU2007RT0142).

**Hedychium coronarium** Koen. white ginger

Recent introduction. India. Rare. Planted ornamental and pot plant. 3(59671), 5, 6, 7.

**Nicolaia elatior** (Jack) Horan. torch ginger

Syns. *Alpinia elatior* Jack; *Phaeomeria speciosa* (Bl.) Koord; *P. magnifica* (Roscoe) K. Schum

Recent introduction. Mauritius. Rare. Planted ornamental. 6.

**Zingiber officinale** Roscoe ginger
Syn. *Zingiber zingiber* Karst.

Pre-World War II introduction. India and China. Rare. Planted in Chinese food garden at Location. Rhizome used as a spice. An increasingly important commercial crop for export and local processing in Fiji. 5, 6, 11 (DPNAU2007RT1424).

**Zingiber zerumbet** (L.) Sm. wild ginger
Syn. *Amomum zerumbet* L.

Recent introduction; reintroduced recently by Fijian expatriate community Tropical Asia. Rare. Planted medicinal plant. An important aboriginal introduction throughout much of Melanesia and Polynesia, where it is an important medicinal plant. 3, 6, 11 (DPNAU2007RT2213, RT2214).

## DICOTYLEDONAE

### ACANTHACEAE (Acanthus Family)

**Asystasia gangetica** (L.) Anders. asystasia, Chinese violet
Syns. *Justicia gangetica* L.; *Asystasia coromandeliana* Nees

Recent introduction. Paleotropics. Occasional. Planted ornamental and naturalized along pathsides, roadsides, in gardens and ruderal places. 3, 4(127N), 5, 6(231), 7, 10, 11 (DPNAU2007RT0029, RT0053, RT0874, RT1129, RT1505, RT1709, RT1757, RT1838, RT1870).

**Asystasia** sp.

Recent introduction. Pot plant. 3(58702).

**Barleria cristata** L. Philippine violet, bluebell barleria

Recent introduction. India. Rare. Planted ornamental. 3(58797), 6, 10.

**Barleria prionitis** L. porcupine flower

Recent introduction. Paleotropics. Occasional. Planted ornamental and naturalized in ruderal sites and on disturbed slope below plateau and along road from Command Ridge past the calcination plant to the Buada road. 3(58772), 6, 7, 11 (DPNAU2007RT2257, RT2258, RT2259).

**Barleria repens** Nees small bush violet, coral bush

Recent introduction. Rare. Small spreading ornamental bush with pink-orange flowers and soft shiny leaves. Seen in the best houseyard garden in Meneng District. 10 (DPNAU2007RT1966).

**Blechum pyramidatum** (Lam.) Urb.
Syns. *Blechum brownei* Juss.; *Barleria pyramidatum* Lam.

Recent introduction. Peru. Occasional. Weed in lawns, gardens, moist shady roadsides and ruderal sites, especially around Buada Lagoon. 5(60), 6, 10, 11 (DPNAU2007RT0943, RT1333).

**Crossandra infundibuliformis** (L.) Nees crossandra

Syns. *Justicia infundibuliformis* L.; *Crossandra undulaefolia* Salisb.

Recent introduction. India. Rare. Planted ornamental. 6.

**Eranthemum pulchellum** Andr. blue eranthemum
Syns. *Justicia nervosa* Vahl; *Eranthemum nervosum* (Vahl) R. Br.

Recent introduction. India. Rare. Planted ornamental. 6.

**Fittonia argyroneura** Coem. snail plant, nerve plant, silver-net leaf
Syn. *Fittonia verschaffeltii* var. *argyroneura* Nichols.

Recent introduction. Peru. Rare. Ornamental pot plant. 6.

**Fittonia verschaffeltii** (Hort. ex Lemaire) Coem. snail plant, nerve plant, painted net-leaf
Syn. *Fittonia verschaffeltii* (Hort. ex Lemaire) Coem. var. *verschaffeltii*

Recent introduction. Peru. Rare. Ornamental pot plant. 6.

**Graptophyllum pictum** (L.) Griff. caricature plant, morado
Syns. *Justicia picta* L.; *Graptophyllum hortense* Nees

Recent introduction. New Guinea. Rare. Planted ornamental. 6, 7, 11 (DPNAU2007RT0248, RT1008, RT1750, RT1754, RT1883).

**Hemigraphis alternata** (Burm. f.) T. Anders. cemetery plant
Syns. *Ruellia alternata* Burm. f.; *Hemigraphis colorata* (Bl.) Hall f.; *Ruellia colorata* Bl.

Recent introduction. Java. Rare. Planted ornamental ground cover. 6.

**Justicia fulvicoma** Schlect. & Chamisso shrimp plant, red shrimp plant
Syns. *Beloperone guttata* Brand. non Wallich; *Justicia brandegeana Wassh. & L. B. Smith; Drejerella guttata* (Brandeg.) Bremek.

Recent introduction. Mexico. Rare. Planted ornamental and pot plant. 3(58720), 5, 6.

**Nicoteba betonica** (L.) Lindau. white shrimp plant, squirrel's tail
Syn. *Justicia betonica* L.

Recent introduction. Tropical Africa to Malaya. Rare. Planted ornamental. 6, 7.

**Odontonema strictum** (Nees) O. Ktze. odonotema, red justicia
Syns. *O. tubiforme* (Bertol.) O. Ktze.; *Justicia tubaeformis* Bertol.; *Thrysacanthus strictus* Nees in DC; *O. nitidum* (Jacq.) O. Ktze.; *Justicia coccinea* Aubl.(?)

Recent introduction. Central America. Occasional. Planted ornamental. 5, 6, 7.

**Pachystachys lutea** Nees yellow shrimp plant

Recent introduction. Brazil. Rare. Pot plant. 3(58720).

**Pseuderanthemum bicolor** (Schrank) Radlk.
Syn. *Eranthemum bicolor* Schrank

Recent introduction. Malaysia. Rare. Planted ornamental. 6, 7(27810).

**Pseuderanthemum carruthersii** (Seem.) Guill. var. **carruthersii** false eranthemum

Syns. *Eranthemum carruthersii* Seem.; *E. eldorado* Hort.; *Pseuderanthemum eldorado* (Williams) Radlk.

Recent introduction. Melanesia? Occasional. Planted ornamental shrub, which was seen growing in inner coastal vegetation in a somewhat adventive state in one case. 3, 5, 6(201), 7, 10, 11 (DPNAU2007RT0063, RT0467, RT0468, RT0576, RT0757, RT0830, RT2031, RT2032).

**Pseuderanthemum carruthersii** ( Seem.) Guill. var. **atropurpureum** (Bull) Fosb.

purple false eranthemum, false face

Syns. *P. atropurpureum* (Bull) Radlk.; *Eranthemum atropurpureum* Bull.; *P. versicolor* (Hort.) Radlk.; *Eranthemum versicolor* Hort.

Recent introduction. Melanesia? Occasional. Planted ornamental shrub. 3(58777, 58792), 5, 6, 7, 11 (DPNAU2007RT0251, RT0252, RT0267, RT08310834, RT1755, RT2164).

**Ruellia prostrata** Poiret prostrate wild petunia

Recent introduction. Java. Abundant. Common weed of wasteplaces and as understorey in *Leucaena* scrub areas and other areas on topside and gradually sloping areas of the escarpment. Especially common in semi-shaded areas. Not recorded before 2007, but now abundant and spreading. 10, 11( DPNAU2007RT0179, RT0726, RT0786, RT0787b, RT1377, RT1380, RT1395b, RT1900, RT1923, RT1926, RT2070, RT2333, RT2334, RT2335, RT2348, RT2844, RT2845, RT3043).

**Sanchezia speciosa** Leonard sanchezia

Syn. *Sanchezia nobilis* sensu auct. non Hook. f.

Recent introduction. Ecuador. Rare. Planted ornamental shrub 6(161).

**Thunbergia alata** Boje black-eyed Susan

Recent introduction. Tropical Africa. Rare. Planted ornamental vine. 5.

**Thunbergia erecta** (Benth.) T. Anders. bush thunbergia

Syn. *Meyenia erecta* Benth.

Recent introduction. Tropical West Africa. Occasional. Planted ornamental erect shrub. 3(58700), 5(110), 6, 7, 11 (DPNAU2007RT0984, RT1004).

**Thunbergia grandiflora** (Roxb. ex Rottler) Roxb. Bengal clock vine, Bengal trumpet, large-flowered thunbergia

Syn. *Flemingia grandiflora* Roxb. ex Rottler

Recent introduction. India. Rare. Planted ornamental climbing vine. 6(187).

**DPNAU2007RT0304Unknown Acanthaceae, houseyard garden Aiwo District 14.9.07

## AMARANTHACEAE (Amaranth Family)

**Achyranthes canescens** R. Br.

Syn. *Achyranthes velutina* H. & A.

Indigenous? Extinct? Reported by Schumann (1888) as collected by Finsch; reported present by Burges, 1933; not seen since. 2.

**Alternanthera brasiliana** (L.) Kuntze alternanthera

Recent introduction. Tropical South America. Rare. Ornamental reported present in 2007 by Orapa. Has become weedy in some parts of the Pacific islands, such as in Fiji, since its recent introduction in the 1980s. 10.

**Alternanthera tenella** Colla joyweed, alternanthera, calico plant

Syns. *Alternanthera amoena* (Lemaire) Reg.; *A. ficoidea* L. var. *bettzickiana* (Reg.) Backer; *Alternanthera bettzickiana* (Reg.) Nichols; *A. versicolor* Reg.

Recent introduction. Brazil. Uncommon. Planted ornamental border. 6, 11 (DPNAU2007RT2049, RT2059, RT2060, RT2061a, RT2062).

**Alternanthera sessilis** (L.) R. Br. ex R. & S. joyweed

Syns. *Gomphrena sessilis* L.; *Alternanthera denticulata* R. Br.; *A. nodiflora* R. Br.; *A.* amoena *(Lem.) Voss*

Recent introduction. Pantropical. Rare. Seen as a garden weed in 1980 and again in 2007 on the coastal margin of a houseyard garden near the old abandoned cantilever in Aiwo. 6(188), 11 (DPNAU2007RT2854, RT2855, RT2865, RT2866a).

**Alternanthera sissoo** Brazilian spinach, samba spinach, sissoo spinach

Recent introduction. Brazil? Occasional. Food plant found in houseyard gardens and in a number of household vegetable gardens in 2007, but not recorded in the 1980s. Introduced in the early 1990s from Hawai'i into Kiribati as part of the PRAP Atoll Agriculture Programme to improve nutrition through increasing the supply of fresh vegetables. Grows very well on atolls. 11 (DPNAU2007RT0048, RT0261, RT1690, RT1773a, RT1887, RT1919, RT1994, RT2209, RT2944, RT2945, RT2965).

**Amaranthus dubius** Mart. ex Thell. spleen amaranth

Recent introduction. Tropical America. Occasional. Weed in home gardens, on roadsides and at Location. 3, 6, 7(22309, 22312), 11 (DPNAU2007RT0547, RT0549, RT0552, RT0950, RT2208).

**Amaranthus hypochondriacus** L. prince's feather

Syn. *A. hybridus* L. var. *hypochondriacus* (L.) Robins.

Recent introduction. Tropical America. Rare. Smooth erect herb, up to 1 m or higher; leaves, bright red-purple to purple-green; flowers, bright red-purple in thick showy feathery panicles. 6.

**Amaranthus spinosus** L. spiny amaranth, thorny amaranth

Pre-World War II introduction? Pantropical. Occasional. Weed in waste places and in gardens; occasionally cultivated in Chinese contract workers' gardens at Location. Used as a medicinal plant and leaves reportedly occasionally cooked for spinach by Chinese. 5, 6(140).

**Amaranthus tricolor** L. Joseph's coat, Chinese spinach. amaranth, pigweed

Syns. *A. gangeticus* L; *A. melancholicus* L.

Pre-World War II introduction? Tropical Asia. Occasional food plant in Chinese gardens at Location and Topside workshops in the 1980s, now uncommon and seen in the Taiwanese garden project at Buada in 2007. 5(27), 6, 11 (DPNAU2007RT2653, RT2659, RT2661).

**Amaranthus viridis** L. slender amaranth, green amaranth, pigweed

Syn. *A. gracilis* Desf.

Recent introduction. Pantropical. Occasional. Weed in waste places, primarily at Location. 4(143N), 5(26), 6, 10, 11 (DPNAU2007RT2067, RT2125, RT2412, RT2551).

**Celosia argentea** L. var. **cristata** (L.) Ktze. cock's comb
Syn. *C. cristata* L.

Recent introduction. Tropical Africa. Erect annual herb with narrow lanceolate to ovate, often reddish-green leaves and a dense, flatly-crested, elongated, fan-shaped magenta to bright red flower head. Rare. Planted ornamental. 7.

**Celosia argentea** L. var. **plumosa** (Burevenich) Ktze. celosia

Recent introduction. Tropical Africa. Uncommon. Planted ornamental. 7, 10, 11 (DPNAU2007RT0224, RT0884, RT0885, RT1747, RT1748, RT1850).

**Gomphrena globosa** L. globe amaranth, pearly everlasting

Recent introduction. Tropical America. Rare. Planted ornamental. Flowers used by Nauruans in head garlands and other ornamentation. 5(93)

**Iresine herbstii** Hook. f. iresine, bloodleaf, achyranthes

Recent introduction. Brazil. Rare. Planted ornamental. 6.

## ANACARDIACEAE (Cashew or Rhus Family)

**Mangifera indica** L. mango
Nauruan Name: **damanko**

Pre-World War I introduction. Indo-Burma. Common. Large fruit and shade tree planted in home gardens and found growing in mature spontaneous stands near Buada Lagoon and surrounding bush areas. Fruit eaten ripe and green, with ripe fruit occasionally made into jam on Nauru; used for firewood. The leaves, and sap from leaves and fruit, can cause an allergic rash. Common introduced fruit tree and important cash crop for local sale and export. Found in houseyard gardens, agricultural areas and naturalized throughout Melanesia, Polynesia and Micronesia. Has been seriously affected by fruit flies, which have been the focus of a recent SPC control program. 2, 3(58643), 5(147), 6, 7, 11 (DPNAU2007RT0988b, RT1000, RT1052, RT2406a, RT2407, RT2409b, RT2483, RT2698 RT2958, RT2968, RT3037, RT3040, RT3041, RT3042).

**Spondias dulcis** Park. Polynesian vi apple, Polynesian plum, Otaheiti apple
Syn. *Spondias cytherea* Sonn.
Nauruan Name: **dagimādere, Egigu's tree**

Aboriginal introduction? Pacific Islands. Rare. Reported present by Burgess in 1935. The tree, which formerly stood near Buada Lagoon, was reportedly damaged during World War II, and although the Nauruans tried to save it by shoring it up with cement, it died shortly thereafter. Four seedlings sent by R. Thaman to J. Audoa in 1981 in an attempt to reintroduce *S. dulcis*, but the result of plantings is unknown. One tree, 3 m tall, seen re-established in fenced food garden surrounding Buada Lagoon in July 1987, which was a mature, bearing tree in 2007, reportedly introduced from Samoa. Ripe fruit eaten. The tree, which is an important food and medicinal plant in Palau and throughout Melanesia and Polynesia, features in the well-known Nauruan legend concerning a young woman, Egigu, who became the Nauruan “woman in the moon”, after climbing the tree (**dagimādere**), restoring the sight of a blind women Enibarara who lived at the top, and marrying her third son, Maramen (the moon). 2, 7, 11 (DPNAU2007RT1079, RT1080, RT1081, RT2711, RT2712, RT2713).

**Spondias mombin** L. hog plum
Syn. *S. lutea* L.

Extinct? Tropical Asia. Reported present by Burges in 1935. 2.

## ANNONNACEAE (Custard Apple Family)

**Annona muricata** L. soursop
Nauruan Name: **dawatsip**

Pre-World War II introduction. Tropical America. Occasional. Planted in home gardens by Nauruans and non-Nauruan residents and in some areas of escarpment forest and in the Buada Lagoon area. Ripe fruit eaten raw, often with ice cream. Common recently introduced fruit tree throughout the Pacific. 2, 3(58586), 5, 6, 7, 11 (DPNAU2007RT0338, RT0721, RT0723, RT0971, RT0972, RT0973, RT2142, RT2143, RT2144, RT2417, RT2418, RT2419, RT2580, RT2928).

**Annona reticulata** L. custard apple, bullock's heart

Pre-World War II introduction. Tropical America. Rare. Planted fruit tree; found growing, possibly spontaneously, behind settlement on Military Ridge. 2, 5(146), 6, 7.

**Annona squamosa** L. sweetsop, sugar apple
Nauruan Name: **dawatsip**

Pre-World War II introduction. Tropical America. Occasional. Fruit tree planted in home gardens and at the Topside Workshops and along the borders of the former refugee camp at the Topside Running Track, and growing spontaneously in inland coastal and lower escarpment forest. Ripe fruit eaten raw. 3(58589), 5(37), 6, 7, 10, 11 (DPNAU2007RT0262, RT2138, RT2139, RT2140, RT2141).

**Cananga odorata** (Lam.) Hook. f. and Thoms. ylang-ylang, perfume tree
Syns. *Canangium odoratum* (Lam. ) Baill. ex King; *Uvaria odorata* Lam.
Nauruan Name: **derangerang, derangirang**

Recent introduction. Indomalaysia. Uncommon. Planted ornamental tree in a home gardens in Buada Lagoon area in the 1980s, but not seen in 2007. Flowers used in garlands and for scenting coconut oil. An important aboriginal introduction of considerable cultural importance throughout Melanesia and Polynesia, where the flowers are used in garlands and to scent coconut oil. Used in the commercial production of essential oil in the Philippines and Indonesia. 5(17), 6, 7.

## APIACEAE OR UMBELLIFERAE (Parsley Family)

**Apium petroselinum** L. parsley
Syns. *Petroselinum petroselinum* (L.) Karst.; *P. crispum* (Mill.) Mansf.

Recent introduction. Southern Europe and West temperate Asia. Rare. Pot herb in European home gardens; planted in a halved 50-gallon drum on Command Ridge. Leaves and stems used by European inhabitants as a spice in cooking. 5.

**Coriandrum sativum** L. coriander, cilantro, Chinese parsley

Recent introduction. Southern Europe and the Mediterranean region. Occasional. Pot herb grown in Chinese home food gardens at Location and at Topside workshops in the 1980s. Aromatic leaves used as a spice by Chinese and Indians. Dried, imported seeds an important spice in curries. 5, 6, 7.

## APOCYNACEAE (Dog-bane Family)

**Adenium obesum** Balf. desert rose, mock azalea
Syn. *Adenium coetanum* Stapf.

Recent introduction. East Africa. Uncommon. Pot plant and ornamental in home gardens. 3(58716), 5, 6(176), 7, 11 (DPNAU2007RT1334, RT2255, RT2256).

**Allamanda blanchetti** DC. purple allamanda
Syn. *Allamanda violacea* Gardn. and Field

Recent introduction. Brazil. Occasional. Planted ornamental in houseyard gardens. 3, 5, 6, 10, 11(DPNAU2007RT1022).

**Allamanda hendersonii** Bull allamanda, cup of gold
Syn. *A. cathartica* L. var. *hendersonii* (Bull) Bailey and Raff.

Recent introduction. Brazil. Rare. Planted ornamental. 3(58697), 5, 6, 10.

**Catharanthus roseus** ( L.) G. Don periwinkle, Madagascar periwinkle
Syns. *Vinca rosea* L.; *Lochnera rosea* (L.) Reichenb.
Nauruan Name: **denea**

Pre-World War II introduction. Madagascar. Common. Planted ornamental. Flowers used in garlands and parts reportedly boiled by some people and drunk as a cure for diabetes. 3(58758), 5(127), 6, 7, 10, 11 (DPNAU2007RT0163, RT0258, RT1704, RT1706, RT1841, RT3133).

**Cerbera manghas** L. cerbera, sea mango
Syns. *Cerbera odollam* sensu auct. non Gaertn.; *C. lactaria* (G. Don) Ham.
Nauruan Name: **dereiongo, dereiyongo**

Indigenous. Tropical Asia to the Pacific Islands. Rare in the 1980s but now occasional. Found planted near homes on the coastal strip and near a church at Buada. Seems to be planted, or at least protected, in built-up areas, as an attractive ornamental tree over the past 20 years. No reported use by Nauruans, but its poisonous fruit is reportedly used medicinally and to poison fish in Fiji, Samoa, Tonga and elsewhere in the Pacific. A good candidate for coastal replanting. 5(16), 6, 7, 11 (DPNAU2007RT0934, RT0935, RT0936, RT1140b, RT1141, RT1143, RT1152, RT1153, RT1154, RT1325, RT1326, RT1327, RT1328, RT1329, RT1330b, RT1331a, RT2230, RT2231, RT2731, RT2732, RT3148).

**Neisosperma oppositifolium** (Lam.) Fosb. & Sachet
Nauruan Name: ?

Indigenous. Philippines to Southeastern Polynesia and Micronesia. Rare. One very small stand of trees discovered in a clearing about 10 m up the escarpment on the west end of Anibare Bay by R. Thaman in 1996. Not located again in 2007, despite a number of attempts to do so. No Nauruan name reported for this species. A dominant inner coastal forest species on wetter atolls and on high islands in most parts of the western Pacific. Reasonable timber and firewood tree and small seed kernel edible (Photos from Tonga and Tuvalu). 9.

**Nerium oleander** L. oleander

Pre-World War II introduction. Southern Europe to Iran. Occasional. Planted ornamental. 2, 3(58783), 4, 5, 6, 7, 10, 11 (DPNAU2007RT1656, RT1658, RT2786).

**Ochrosia elliptica** Labill.
Syn. *Bleekeria elliptica* (Labill.) Koidz.
Nauruan Name: **eorara, eoerara**

Indigenous. Australia to the Pacific Islands. Occasional to common in the 1980s; uncommon to occasional in 2007. Small to medium-sized tree with bright red fruit. Tree in forest remnants on rocky outcrops on the central plateau, in escarpment forests on southern half of the island, and occasionally in home gardens on coastal strip. Wood used by Nauruans for rafters and small timber; leaves used medicinally, being crushed with coconut cream to treat rashes, especially for children; fruit used in children's games, and fruit and flowers used in garlands. 2, 3(58802), 4(168N), 5(92), 6, 7(27812) , 11 (DPNAU2007RT0107, RT0108 RT0109, RT1062, RT1631a, RT1633, RT1634, RT2367, RT2368, RT2369, RT2375, RT2376, RT2377, RT2378, RT2386, RT2388).

**Plumeria obtusa** L. white frangipani, plumeria

Nauruan Name: **demeria**

Recent introduction. Tropical America. Common. Planted ornamental in houseyard and other gardens. Flowers used in garlands and dried in sun and used to scent coconut oil (*eir*). 3(58775), 5(111), 6, 7, 11 (DPNAU2007RT0172, RT0214 RT0505b, RT0837, RT0851, RT1330a, RT1738, RT3169).

**Plumeria rubra** L. frangipani, plumeria, temple tree, graveyard tree

Syns. *Plumeria acuminata* Ait. f. and *P. acutifolia* Poir.

Nauruan Name: **demeria, arabaneit** (yellowish-white cultivar)

Pre-World War II introduction. Tropical America. Common. Planted ornamental. The name *demeria* seems to be applied to all color forms and to both species of *Plumeria*, with the older name *arabaneit* being reserved for the yellow-white cultivars with a yellow throat that are longer established in Nauru, rather than to more recently introduced pink, reddish and orangish cultivars. Leaves used medicinally and mixed with coconut oil for curing fever; flowers used in garlands and dried in the sun and used to scent coconut oil (*eir*). 2, 3(58654), 5(50), 6, 7, 11 (DPNAU2007RT0162, RT0340a, RT0491, RT0859, RT0868, RT1826, RT1827, RT1831, RT1834, RT2791, RT3033a).

**Tabernaemontana divaricata** (L.) R. Br. false gardenia, paper gardenia, crepe jasmine, scentless gardenia

Syns. *Nerium divaricatum* L.; *N. coronarium* Jacq.; *Tabernaemontana coronaria* (Jacq.) Willd.; *Ervatamia divaricata* (L.) Burkill; *E. coronaria* (Jacq.) Stapf

Recent introduction. India. Occasional. Planted ornamental. 3(58706), 5, 6(222), 7, 11 (DPNAU2007RT0227, RT0266, RT1069, RT1758, RT1759, RT02623, RT02624).

**Thevetia peruviana** (Pers.) K. Schum. be-still tree, yellow oleander

Syns. *Cerbera peruviana* Pers.; *Cascabela thevetia* (L.) Lippold; *Thevetia neriifolia* Juss. ex Steud.

Recent introduction. Peru. Occasional. Planted ornamental. 3(58704), 5(78), 6, 7, 10, 11 (DPNAU2007RT0499, RT0500, RT1958, RT1959, RT1957, RT3127).

## AQUIFOLIACEAE (Holly Family)

**Ilex** sp. holly

Recent introduction. Eurasia. Rare. Evergreen shrub with short-stemmed leaves bearing several strong spines. Planted ornamental. 6(164).

## ARALIACEAE (Panax Family)

**Polyscias balfouriana** (Andre) Bailey panax

Recent introduction. Melanesia. Rare. Planted ornamental, commonly in hedges. May only be a

variant of leaf from of *Polyscias scutellaria*. 5, 6, 7(22324).

**Polyscias filicifolia** (C. Moore ex. Fourn.) L. H. Bailey golden prince panax, fern-leaf aralia, angelica
Syn. *Polyscias cumingiana* (Presl.) Fern.- Vill.

Recent introduction. Malesia, possibly to Melanesia. Occasional. Planted ornamental, commonly in hedges. 6, 7, 11 (DPNAU2007RT0476, RT1835).

**Polyscias fruticosa** (L.) Harms parsley panax, hedge panax
Syns. *Panax fruitcosum* L.; *Nothopanax fruticosus* (L.) Miq.

Pre-World War II introduction. India to Western Polynesia. Occasional. Planted ornamental, commonly in hedges or as a living fence. 2, 3(58698), 5, 6(171), 7(22323), 11 (DPNAU2007RT2509, RT2510, RT2511).

**Polyscias guilfoylei** (Cogn. & March.) Bailey panax, hedge panax
Syns. *Aralia guilfoylei* Cogn. & March.; *Nothopanax guilfoylei* (Cogn. & March.) Merr.

Pre-World war II introduction. Melanesia to Southern Polynesia. Common. Planted ornamental, commonly as a hedge or living fence. A number of cultivars exist. 2, 3(58696), 5(20), 6, 7(27822), 11 (DPNAU2007RT0150, RT0268, RT0445, RT0446, RT1836, RT2002, RT2242).

**Polyscias scutellaria** (Burm. f.) Fosb. Panax, hedge panax
Syns. *Crassula scutellaria* Burm. f.; *Polyscias pinnata* J. R. & G. Forst.; *Nothopanax scutellaria* (Burm. f.) Merr.

Recent introduction. Southeast Asia. Occasional. Planted ornamental, commonly as a hedge or living fence. 3(58693), 5, 6, 7, 11 (DPNAU2007RT0896, RT1436, RT1876, RT1915a, RT1921, RT2608).

**Polyscias tricochleata** (Miq.) Fosb. panax
Syn. *Polyscias pinnata* Fosb. cv. *tricochleata* Stone; *Nothopanax tricochleatus* Miq.

Recent introduction. Pacific Islands. Rare. Known to be a mutant form of *P. pinnata*. Planted erect ornamental shrub with white-margined leaflets. 3(58674), 7(22325).

**Schefflera actinophylla** (Endl.) Harms Queensland umbrella tree, octopus tree
Syn. *Brassaia actinophylla* Endl.

Recent introduction. Northern Australia. Occasional. Planted ornamental. Often starts as a bird-dispersed epiphytic vine on other trees and has become invasive in Hawai'i and some other areas. 3(58672), 5, 6, 7, 11 (DPNAU2007RT0443, RT0922b, RT0924, RT02641, RT02642).

## ASCLEPIADACEAE (Milkweed Family)

**Asclepias curassavica** L. milkweed, butterfly weed, red cotton bush, bloodflower
Nauruan Name: **dupaimdupaim, dupaimdupwaim**

Pre-World War II introduction? Tropical America. Rare. Planted ornamental, but sometimes escaped as a weed in waste places in the past. Possibly now extinct on Nauru. Not seen in 2007. Flowers used for body ornamentation and making garlands. Reportedly poisonous to livestock. 5, 6.

**Calotropis gigantea** (L.) R. Br. crown flower, giant milkweed
Syn. *Asclepias gigantea* L.

Recent introduction. India to Indonesia. Occasional. Planted ornamental at the Meneng Hotel in 1980s

and uncommon in houseyard gardens in 2007; seen in roadside vegetation near mangroves in Anetan District in 2007. 3(58771), 5, 6(152), 7, 11 (DPNAU2007RT0139, RT0144, RT0804, RT1681, RT2787, RT2788, RT3134b).

**Cryptostegia grandiflora** Roxb. Ex R. Br. Indian rubber vine

Recent introduction. Madagascar. Occasional. Ornamental vine in houseyard gardens. 10, 11 (DPNAU2007RT0037, RT2942, RT2993, RT2994).

**Hoya carnosa** (L.) R. Br. wax plant, wax flower
Syns. *Asclepias carnosa* L.

Recent introduction. South China. Planted ornamental. Single specimen; could have been the Australian species, *H. australis* R. Br. (syn. *H. bicarinata* Gray). 6, 7.

**Stephanotis floribunda** Brongniart stephanotis, Madagascar jasmine
Syn. *Hoya bicarinata* A. Gray

Recent introduction. Madagascar. Uncommon. Ornamental vine climbing in one houseyard garden. 11 (DPNAU2007RT0480, RT0481).

## ASTERACEAE OR COMPOSITAE (Aster, Sunflower or Composite Family)

**Ageratum conyzoides** L. goat weed, ageratum
Nauruan Name: **bwiyat tsige, bwiyat ziege** (”goat excrement”)

Pre-World War I introduction. Tropical America. Found on low ground near Buada Lagoon and occasionally in other ruderal habitats. Leaves and flowers used in garlands and body decoration and for scenting coconut oil. 3(58652), 5(11), 6, 7, 8(9574), 10.

**Bidens alba** (L.) DC. cobbler's peg, Spanish needle
Syns. *Coreopsis alba* L.; *C. leucanthema* L.; *C. leucantha* L.; *Bidens pilosa* L. var. *radiata* sensu auct. non Sch.-Bip.; *B. leucantha* (L.) Willd.
Nauruan Name: **kauen oe, kawen oe**

Recent introduction. Tropical America. Rare. Weed on dirt pile near Topside sports oval; not seen in 1987 or thereafter. 4(142N), 5(76), 6.

**Bidens pilosa** L. cobbler's peg' Spanish needle

Recent introduction. Tropical America. Occasional? Weed in wasteplaces, ruderal habitats and gardens. Seen in FAO experimental garden at Buada in 2007. 8, 10, 11 (DPNAU2007RT1045, RT1046).

**Conyza bonariensis** (L.) Cronq. hairy horseweed
Syn. *Erigeron bonariensis* L.

Recent introduction. Pantropical. Rare in the 1980s, but common In 2007. Weed in waste places. 4(133N), 5, 8, 10, 11 (DPNAU2007RTRT0275b, RT0396, RT0397, RT0434, RT0459, RT1583, RT1616a, RT1654, RT2358, RT2450b, RT2451b, RT2453, RT3095).

**Cyanthillium cinereum** (L.) H. Rob. iron weed, little iron weed
Syn. *Vernonia cinerea* (L.) Less.

Pre-World War II introduction. Tropical Asia. Common. Weed of roadsides, wasteplaces, settled areas, and houseyard gardens and a pioneer in recently mined areas. Very important medicinal plant for treating

cuts and wounds in Fiji. 2, 3(58611), 4(118N), 5(67), 6, 7, 8(9538), 10, 11 (DPNAU2007RT0028, RT0079, RT2416, RT2530, RT2966).

**Dahlia pinnata** Cav. dahlia

Recent introduction. Mexico. Rare. Planted ornamental. 5(79), 6.

**Eclipta prostrata** (L.) L. false daisy
Syn. *Eclipta alba* (L.) Hassk.

Recent introduction. Tropical Asia, now pantropical weed. Rare. Reported present by Orapa in 2007. 10.

**Emilia sonchifolia** (L.) DC. purple sow thistle, floras paintbrush

Recent introduction. Pantropical. Occasional. Erect, Weed in waste places and as a pioneer in recently mined areas. 5(115), 6, 7(22313), 8.

**Gerbera jamesonii** Bolus Transvaal daisy, gerbera, African Daisy

Recent introduction. South Africa. Rare. Planted ornamental. 5, 6, 7.

**Gynura aurantiaca** (Bl.) DC. purple passion flower, velvet plant

Recent introduction. Java. Rare. Ornamental pot plant. 6.

**Mikania micrantha** Kunth mile-a-minute, mile-a-minute vine

Recent introduction. Tropical America. Rare. Weed in garden area on the lagoonside of the road in northeast Buada. One of Fiji's most commonly used medicinal plants; the leaves and stems are used as a blood coagulant and an antibacterial treatment for sores and open wounds. 10, 11 (DPNAU2007RT1066, RT1067, RT2715, RT2716)

**Sphagneticola trilobata** (L. C. Rich) Pruski. Creeping daisy, wedelia, trailing daisy, water zinnia, Bay Biscayne creeping ox-eye, Singapore daisy
Syn. *Silphium* trilobatum *L.; Wedelia trilobata* (L.) Hitchc..

Recent introduction. Central America, Caribbean and northern South America. Common. Perennial creeping herb with bright green three-lobed, toothed leaves and bright yellow, daisy-like, solitary flowers. Planted ornamental groundcover seen only occasionally in the 1980s but now escaped and invasive in many areas, especially around the margins of Buada Lagoon and along the beach just off the east end of the runway in 2007. One of the Pacific's most serious weeds, which should be eradicated where possible. 3(58609), 5, 6(237), 7, 10, 11 (DPNAU2007RT0375, RT0960, RT0961, RT0967, RT1510, RT1511, RT2570, RT2619, RT02635a, RT02636a, RT2761).

**Synedrella nodiflora** (L.) Gaertn. synedrella, nodeweed
Syn. *Verbesina nodiflora* L.

Recent introduction. Tropical America, but now pantropical. Occasional. Weed in low ground around Buada Lagoon, wasteplaces, gardens, roadsides and other ruderal habitats. 3(58648), 4(134N), 5(97), 6, 7, 8(9573) , 10, 11 (DPNAU2007RT0305, RT0306, RT2167, RT2168, RT2846).

**Tagetes erecta** L. marigold, Aztec marigold, African marigold

Recent introduction. Mexico. Rare. Planted ornamental. 5, 6.

**Tridax procumbens** L. wild daisy, coat buttons

Pre-World War II introduction. Tropical America. Abundant. Weed in settled areas and near airport and on topside; pioneer in recently mined areas. 2, 3(58657), 4(145N), 5(25), 6, 7, 8(9548), 10, 11 (DPNAU2007RT0006, RT1739, RT2147, RT3031).

**Zinnia elegans** Jacq. zinnia

Recent introduction. Mexico. Planted ornamental. 5(128), 6.

## BALSAMINACEAE (Balsam Family)

**Impatiens balsamina** L. balsam, garden balsam

Recent introduction. India or Africa. Rare. Planted ornamental. 5(117), 6.

**Impatiens walleriana** Hook. f. snapweed, patience plant, Zanzibar balsam
syn. *Impatiens sultanii* Hook. f.

Recent introduction. Zanzibar. Rare. Planted ornamental. 6.

## BARRINGTONIACEAE (Brazilnut Family)

**Barringtonia asiatica** (L.) Kurz. fish-poison tree, barringtonia
Syns. *Mammea asiatica* L.; *Barringtonia speciosa* Forst.; *B. butonica* Forst.
Nauruan Name: **kwenababai, eijinut** (B)

Indigenous. Indo-Pacific. Occasional. Spontaneous or planted on coastal strip, often in home gardens or along roads; larger concentrations on escarpment leading to plateau above Anibare Bay. Wood a favoured timber and fuelwood for cooking toddy syrup (*kamwaerara*); fruit possibly used to poison fish in the past. Fruit commonly used as a fish poison or stupefacient elsewhere in the Pacific. 1(48.R), 2, 3(58665), 5(36), 6, 7, 11 (DPNAU2007RT0088a, RT0089, RT0099b, RT0101, RT0111, RT0363, RT0364, RT0365, RT0366, RT0987, RT1632, RT2235, RT2236, RT2760a, RT2792, RT2793, RT2818, RT2900, RT2901a, RT2996, RT3159).

## BASELLACEAE (Basella Family)

**Basella rubra** L. Indian spinach, Ceylon spinach, Malabar nightshade
Syn. *Basella alba* L.

Recent introduction. Tropical Asia. Occasional food plant in Chinese gardens and containers at Location in the early 1980s, but rare in 2007. Seen only at the Taiwanese experimental farm at Buada. Leaves and tender stems cooked as a spinach. 5(138), 6, 11 (DPNAU2007RT2690, RT2691).

## BEGONIACEAE (Begonia Family)

**Begonia coccinea** Hook. f. angel-wing begonia

Recent introduction. Brazil. Occasional. Ornamental pot plant. 5, 6.

**Begonia rex** Putz X **B**. spp. hybrid begonia

Recent introduction. Tropical America. Occasional. Ornamental pot plant. 7.

**Begonia** spp. begonia cultivars

Recent introduction. Tropical America. Occasional. Pot plants and planted ornamentals. 5(262), 6, 7.

## BIGNONIACEAE (Bignonia Family)

**Jacaranda mimosaefolia** D. Don jacaranda
Syns. *Jacaranda acutifolia* Humb. and Bonpl.; *J. ovalifolia* R. Br.

Recent introduction. Brazil. Extirpated? One immature seedling planted as an ornamental in the early 1980s. 6, 7.

**Macfadyena unguis-cati** (L.) A.H. Gentry cat's claw vine, yellow trumpet vine

Recent introduction. West Indies and South America. Rare. Planted ornamental in Denigomodu in 2007. 10, 11 ( DPNAU2007RT1422).

**Spathodea campanulata** Beauv. African tulip tree, flame of the forest, fountain tree

Recent introduction. Tropical Africa. Occasional. Planted ornamental tree. Flowers used in garlands and for ornamentation. Has escaped cultivation to become a serious weed in places like Fiji and the Cook Islands. 3(58682), 5(123), 6, 7, 10, 11 (DPNAU2007RT1018, RT1019, RT1020, RT1130, RT1131, RT1362, RT1363, RT1364, RT1365, RT2728, RT2729).

**Tabebuia aurea** (Manso) Benth. & Hook. Ex Moore silver trumpet tree
Syn. *Tabebuia argentea* (Bureau & K. Schumann) Britton

Recent introduction. Brazil and Paraguay. Rare. Planted ornamental in houseyard garden in Meneng District. 11 (DPNAU2007RT1946, RT1947).

**Tecoma stans** (L.) Juss. ex HBK. yellow elder, yellow bells, tecoma, ginger Thomas
Syns. *Bignonia stans* L.; *Stenolobium stans* (L.) D. Don
Nauruan Name: **yellow flower, yellow bell**

Recent introduction. Tropical America. Common. Planted ornamental. Showy bright yellow flowers used in garlands and for ornamentation, especially by I-Kiribati. 3(58656), 5(193), 6, 7, 8(9570), 10, 11 (DPNAU2007RT0065, RT0482, RT0483, RT2578, RT3134a).

## BOMBACEAE (Bombax Family)

**Ceiba pentandra** (L.) Gaertn. kapok tree, silk-cotton tree
Syns. *Bombax pentandrum* L.; *Ceiba casearia* Medic.; *Bombax orientale* Spreng.
Nauruan Name: **duwōduwō**

Pre-World War II introduction. India or Africa. Occasional. Planted along road around Buada Lagoon in the 1980s; only one large tree remaining around Buada Lagoon in 2007. A stand of trees seen inland from housing in Boe District on the lower slopes of the escarpment below Buada in 2007. Fiber used in the past for stuffing pillows and mattresses. 3(58642), 5, 6, 7, 10, 11 (DPNAU2007RT2571, RT2572, RT2573, RT2574, RT2575, RT3005, RT3006).
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## BORAGINACEAE (Heliotrope Family)

**Cordia subcordata** Lam. sea trumpet, kou (Hawaii)
Nauruan Name: **eongo, eoongo, eowongo**

Indigenous. Indian Ocean to Hawaii. Uncommon. Found on coastal strip near settlement areas, either planted or protected. One single large tree in secondary forest near the top of the escarpment above the calcination plant. Soft, durable wood considered by Nauruans to be excellent timber for woodcarving, boatbuilding, construction and furniture; leaves crushed and mixed with coconut milk to prevent baldness; flowers used in garlands. Trunk highly prized for woodcarving and canoe hulls throughout Micronesia, Polynesia and Melanesia. Considered one of the most highly endangered of Nauru's important cultural plants. 3(58756), 5(77), 6, 7, 11 (DPNAU2007RT1362, RT2054, RT2058, RT2063, RT2066, RT2150, RT2152, RT2153, RT2154, RT2155, RT2744, RT2747a, RT2860, RT2861a, RT2864, RT2878, RT2880, RT2881, RT2882, RT2888, RT2889, RT2890, RT2891, RT2892, RT3152, RT3153, RT3154).

**Heliotropium procumbens** Mill. var. **depressum** (Cham.) Fosb. and Sachet heliotrope
Syns. *Heliotropium gracile* var. *depressum* Cham.; *H. coromandelianum* var. *depressum* (Cham.) A. DC.; *H. ovalifolium* Forsk. var. (Cham.) Merr.

Recent introduction. Tropical America. Rare in the 1980s, but occasional in 2007. Prostrate branched perennial herb with a stout taproot found on coastal strip along roadsides and in waste places and ruderal habitats. 4(141N), 7(22316), 10, 11 (DPNAU2007DH0273, DH0274, RT0009, RT0025, RT0125, RT0132a, RT1142, RT1718).

**Tournefortia argentea** L. f. beach heliotrope
Syns. *Messerschmidia argentea* (L.f.) I.M. Johnst.; *Argusia argentea* (L.f.) Heine; *Tournefortia sericea* Cham.
Nauruan Name: **irin**

Indigenous. Indian Ocean to Southeastern Polynesia. Occasional. Found on flats behind beaches in remnant coastal littoral forest and *Scaevola* scrub. A number of mature trees planted on Topside in the northcentral part of the island in Ewa District. Leaves eaten by pigs; tender leaves and meristem pounded to prepare medicines for curing children's rashes, diarrhoea, and fish poisoning; fruit blown through hollow papaya petioles by children. 3(58669), 5(32), 6, 7, 11 (DPNAU2007RT0226, RT0581, RT0582, RT0583, RT0589, RT0590, RT0591, RT0592, RT0627, RT0629, RT0630, RT0631, RT0661, RT0828, RT0829, RT0851, RT1275, RT1307, RT1438, RT1456, RT1457, RT1458, RT1459, RT1461, RT1462a, RT1466, RT1467, RT1468, RT1456, RT1457, RT1458, RT1459, RT1461, RT1462a, RT1466, RT1467, RT1468, RT1471c, RT1472c, RT1474c, RT1490, RT1497b, RT1520a, RT1521a, RT2096a, RT2106, RT2107, RT2109, RT2111, RT2112, RT2766).

## BRASSICACEAE OR CRUCIFERAE (Cabbage or Mustard Family)

**Brassica alboglabra** Bailey Chinese kale
Syns. *Brassica oleracea* var. *albiflora* O. Kunze; *B oleracea* var. *alboglabra* (Bailey) Musil

Pre-World War II introduction. Asia. Occasional. Planted in Chinese food gardens at Location. Leaves, stems and flowers cooked as a vegetable. 5, 6, 7, 11 (DPNAU2007RT2676, RT2677).

**Brassica chinensis** L. var. **chinensis** Chinese cabbage, Chinese white cabbage
Syn. *Brassica chinensis* Juslenius
Nauruan Name: **kaibet, kaybet**

Pre-World War II introduction. Asia. Common. Commonly cultivated in Chinese food gardens at Location and Topside workshops in the 1980s and now found in commercial vegetable farms and Taiwanese experimental garden at Buada. Leaves and stems cooked as a green vegetable. 5, 6, 7, 11 (DPNAU2007RT1369b, RT2588, RT2589, RT2595a, RT2598).

**Brassica chinensis** L. var. **parachinensis** (Bailey) Tsen and Lee flowering white cabbage
Syns. *Brassica parachinensis* Bailey; *B. chinensis* var. *oleifera* Makino

Pre-World War II introduction. Asia. Common. Commonly cultivated in Chinese food gardens at Location. Leaves, stems, and flowers cooked as a green vegetable. 5, 6.

**Brassica juncea** (L.) Czern. mustard cabbage, Indian mustard, Chinese mustard
Nauruan Name: **kaibet, kaybet**

Pre-World War II introduction. Asia. Occasional. Food plant in Chinese food gardens at Location. Leaves and stems cooked as a green vegetable. 5, 6, 7, 11 (DPNAU2007RT2671, RT2673, RT2678, RT2679, RT2680, RT2681).

**Brassica oleracea** L. var. **capitata** L. English cabbage
Nauruan Name: **kaibet, kaybet**

Pre-World War II introduction. Europe. Rare. Planted in gardens near Buada Lagoon. Leaves cooked as a vegetable. 3, 6, 7.

**Brassica pekinensis** (Lour.) Ruprecht celery cabbage, Peking cabbage, wong bok
Syns. *Brassica chinensis* var. *pekinensis* (Rupr.) Sun; *B. petsai* Bailey

Recent introduction. North China. Rare. Planted in Chinese food garden at Location. Leaves and stems cooked as a vegetable. 6.

**Rhaphanus sativus** L. var. **longipinnatus** Bailey white radish, daikon, Chinese, Japanese or Oriental radish

Pre-World War II introduction. East Asia. Occasional. Cultivated in Chinese food gardens at Location. Leaves and fleshy white tap root cooked as vegetables or eaten raw. 5, 6.

## CACTACEAE (Cactus Family)

**Cephalocereus** sp. cephalocereus

Recent introduction. Tropical America. Rare. Jointed cactus with short, funnel-shaped, night-blooming flowers. Planted ornamental. 6(204).

**Hylocereus undatus** (Haw.) Britt. and Rose night-blooming cereus, dragon fruit

Recent introduction. Mexico. Rare. Large epiphytic, climbing, night-blooming cactus seen as an immature ornamental potplant in the 1980, but planted as a fruit plant in the Taiwanese food garden project in Buada in 2007. White pulp is refreshing to eat. 6, 11 (DPNAU2007RT2666, RT2668).

**Opuntia** sp. prickly pear cactus

Recent introduction. Tropical America. Rare. Planted ornamental. 5, 6.

**Schlumbergia truncata** (Haw.) Moran Christmas cactus, Easter cactus, crab cactus
Syn. *Zygocactus truncatus* (Haw.) Schum.

Recent introduction. Brazil. Rare. Ornamental pot plant and planted ornamental. 6.

Unknown cactus cactus

Recent introduction. Rare. Small cactus pot plant. 6.

## CAPPARIDACEAE (CAPPARACEAE) (Caper Family)

**Capparis cordifolia** Lam. oceanic caper

Syns. *Capparis mariana* Jacq.; *C. spinosa* var. *mariana* (Jacq.) K. Schum.

Nauruan Name: **ekabobwiya, ekabobwija**

Indigenous. Bellona Island in Solomon Islands and Palau and Mariana Islands eastward to Henderson Island in Southeastern Polynesia. Common. Small, sometimes sprawling woody shrub found on limestone cliffs, pinnacles and limestone rock outcrops on coastal strip and on the limestone escarpment. Crushed leaves used by Nauruans as a fish poison. 2, 3(58636), 4(132N), 5(101), 6, 7, 11 (DPNAU2007DH01032, DH0084, DH0085, DH0272, RT0075, RT0272, RT0328, RT0574, RT0575, RT1236, RT1671).

**Capparis quiniflora** DC.

Syn. *Capparis richii* A. Gray

Indigenous. Eastern Indonesia (Celebes and Lombok) to Melanesia and Nauru. Occasional. Thorny, woody, high-climbing vine, with paired recurved spines. Found in plateau forest and on limestone pinnacles and cliffs of the lower and upper escarpment. 3(58591, 58799, 58804a), 5, 6, 11 (DPNAU2007DH0135, RT0734, RT0735, RT0736, RT0737, RT0742, RT1183, RT1184, RT1185, RT1194a, RT1197a, RT1553, RT1554, RT1560, RT2377a, RT2379, RT2380).

**Cleome rutidosperma** DC. blue cleome

Recent introduction. Origin? Common. Weed in waste places, gardens, around buildings, and in areas recently cleared for phosphate mining. 3(58601, 58616, 58751), 4(108N), 5, 6, 7(22303), 8(9540) , 10, 11 (DPNAU2007RT0765, RT1710, RT1712, RT2324, RT2325, RT2326, RT2328a, RT3030).

**Cleome viscosa** L. yellow cleome

Syns. *Cleome icosandra* L.; *Polonisia icosandra* (L.) W. & A.; *P. viscosa* (L.) DC.

Recent introduction. Tropical Asia or Old World Tropics. Abundant. Weed found primarily in lowland waste places, roadsides, and areas recently cleared for phosphate mining. 3(58653), 4(125N), 5(45), 6, 7(22310), 8(9542, 9572), 10, 11 (DPNAU2007RT0090, RT0091, RT1711, RT1855, RT1868a, RT2105, RT2149).

## CARICACEAE (Papaya Family)

**Carica papaya** L. papaya, pawpaw

Nauruan Name: **dababaia, dababaiya**

Pre-World War I introduction. Tropical America. Common. Fruit tree in home gardens and in contract worker gardens at Location and the Topside Workshops. Ripe fruit eaten, and made into jam, primarily by resident European community; fruit known to be a laxative; juice and flesh from green fruit (which contains the enzyme papain) used to tenderize pork and beef; white sap from small immature fruit used as a cure for ringworm; fragrant flowers used in garlands; and hollow leaf petioles used by children as pea shooters for the fruit of *Tournefortia argentea* (**irin**). Common, often naturalized, in houseyard gardens and agricultural areas and an important local cash crop throughout the Pacific, and a commercial export crop in areas such as Hawaii, Fiji, Tonga and the Cook Islands. 2, 3(58694), 5, 6, 7, 8 , 11 (DPNAU2007RT0092, RT0336, RT0340b, RT0721, RT0724a, RT0738, RT0894, RT0895, RT1866, RT2515, RT2946, RT2979b, RT2980).

## CASUARINACEAE (Casuarina Family)

**Casuarina equisetifolia** L. casuarina, she oak, ironwood, beefwood
Syn. *Casuarina litorea* L.
Nauruan Name: **tanenbaum** (German for Christmas tree), **Christmas tree**

Recent introduction. Indian Ocean to Polynesia and Micronesia. Common. Planted in houseyard gardens and as a street tree or windbreak, and spontaneous on the coastal strip and as a naturalized pioneer on some mined areas to where it has spread from trees planted near the Topside workshops. Although a common indigenous tree on sandy and rocky shores, and sometimes inland, throughout most of the western Pacific, and possibly an aboriginal introduction to some groups, such as Samoa, the casuarina seems to have been a recent post-European contact introduction to Nauru. 2, 3(58776), 4, 5(81), 6, 7, 10, 11 (DPNAU2007RT0011, RT0113, RT0402, RT0414, RT0415, RT0418b, RT0449, RT0450, RT1113, RT1114b, RT1676, RT2071, RT2095, RT2108, RT2189, RT2190a, RT2405, RT2409a, RT2414b, RT2430, RT2431, RT2887b, RT2909, RT2973).

## CHENOPODIACEAE (Goosefoot or Saltbush Family)

**Atriplex nummularia** Lindl. Australian saltbush

Said to have been introduced in 1916, but not seen in 1978 or later. 1.

**Beta vulgaris** L. var. **cycla** L. Swiss chard, silverbeet, leaf beet

Recent introduction. Europe. Rare. Food plant in Chinese garden at Location. Leaves cooked as a spinach. 5, 6.

**Spinacea oleracea** L. spinach

Recent introduction. S. W. Asia. Rare. Food plant in garden at Location. Leaves cooked as a spinach. 5, 6, 7.

## CLUSIACEAE OR GUTTIFERAE (Mangosteen Family)

**Calophyllum inophyllum** L. Portia tree, Alexandrian laurel, beach mahogany, tomano (Hawaii)
Nauruan Name: **iyo, ijo**

Indigenous. Tropical Africa to Eastern Polynesia and Micronesia. Very abundant in the 1980s, but only common or abundant now.. Dominant large tree in original pre-mining plateau (Topside) forest vegetation, common on escarpment slopes and on coastal strip, often as roadside trees or in houseyard gardens. Timber provided the best wood for house posts (*iyor*, *yor*), furniture, woodcarving and for canoe hulls in the past; sticky sap (*erebeniyo*) used for caulking canoes; kernel of green and mature fruit (*i kuan iyo* ) crushed to yield oil which is applied to hair to make it long and black; old decayed fruit skewered on coconut midribs (*engow*) in past and burned as traditional Nauruan light; and mature fruit burned as a mosquito repellent. Trees were indiscriminately felled and burned as refuse at a Topside dump in the 1980s to prepare land for phosphate mining. A tree highly valued for its timber and other purposes throughout the Pacific, the seed kernel (known commercially as punnai nut) yielding a dark green oil currently exported from Fiji. 2, 3(58740), 4(164N), 5(120), 6, 7, 11 (DPNAU2007RT0270, RT0271, RT0428, RT0431, RT0432, RT0729, RT0823, RT1105, RT1106, RT1348, RT1550, RT1551, RT1552, RT1561, RT1562, RT1567, RT1568, RT1604a, RT1619b, RT2089, RT2237, RT2284, RT2287, RT2288, RT2294, RT2295, RT2296, RT2300, RT2301, RT2303, RT2307, RT2308, RT2329b, RT2331, RT2332b, RT2444, RT2463, RT2464, RT2465, RT2484a, RT2487, RT2488a, RT2489a, RT2490a, RT2762a, RT2796, RT2797, RT2801b, RT2803, RT2811, RT2861b, RT3073b, RT3085, RT3088, RT3089, RT3090a, RT3091, RT3092, RT3098a, RT3099, RT3104, RT3173).

**Garcinia mangostana** L. mangosteen

Nauruan Name: **"chocholate tree"**

Recent introduction. Malaysia. Rare mature fruit tree seen in Nelson' Tammikin's garden in Buada in 2007. 11 (DPNAU2007RT0983, RT02630, RT02631, RT02632, RT02633, RT02634).

## COMBRETACEAE (Terminalia Family)

**Quisqualis indica** L. Rangoon creeper

Recent introduction. Tropical Asia. Occasional. Planted ornamental. 3(58790), 5(113), 6, 7, 10, 11 (DPNAU2007RT0869, RT0880, RT1844, RT1845, RT2244, RT2245).

**Terminalia catappa** L. Indian almond, Malabar almond, tropical almond

Nauruan Name: **etetah, etetö**

Indigenous. Tropical Asia and Australia to Western Polynesia and Micronesia. Common. Medium to large tree in original plateau forest, on escarpment and on the coastal strip; occasionally planted or protected in home gardens and along roads. Timber used in light construction and for woodcarving; roots used by some people to prepare a cure for dysentery; outside rind of fruit eaten when yellow and kernel eaten after the mature fruit has fallen; fruit strung as necklaces and used in black magic or sorcery. 3(58662), 5(116), 6, 7, 11 (DPNAU2007RT0073, RT0299, RT0307, RT0554, RT0556, RT0628b, RT0721, RT0724b, RT0754, RT0757, RT0996, RT1116, RT1179, RT1231, RT1278b, RT1565b, RT1639, RT1794, RT2332a, RT2345, RT2349b, RT2466, RT2885, RT2886).

**Terminalia samoensis** Rech. beach almond

Syns. *Terminalia litoralis* sensu auct. non Seem.; *Terminalia saffordii* Merr.

Nauruan Name: **deukin**

Indigenous or possibly a recent introduction. Indonesia to Micronesia and Eestern Polynesia. Occasional. Found in a number of houseyard gardens, and in a church compound, One large tree found next to a house inland from the south end of the airstrip. Could have possibly been present as an indigenous plant, but the current trees seem to be deliberately planted. It grows in some natural coastal sites in Banaba to the east of Nauru. A very important medicinal plant in Kiribati; roots used in treating mouth sores; part of plant used in a drink to treat coughing blood. The Nauruan name is probably an adaptation of the Kiribati name **te ukin**. 6, 7, 11 (DPNAU2007RT0503, RT0504 RT0505a, RT1659, RT1660, RT1661, RT1662, RT1663, RT1664, RT1665, RT1666, RT2997, RT2998, RT3026, RT3120, RT3123, RT3124, RT3125, RT3128, RT3129).

## CONVOLVULACEAE (Morning-Glory Family)

**Ipomoea aquatica** Forsk. water spinach, swamp cabbage, water convolvulus, cangcong

Nauruan Name: **Lorenzo**

Syns. *Ipomoea reptans* Poir.; *Convolvulus reptans* L.; *I. repens* Roth

Pre-World War II introduction. Tropical Asia, Africa and Australia. Food plant in Chinese and Filipino gardens at Location and Topside Workshop gardens and naturalized in muddy areas of Buada Lagoon, where it was formerly planted by the Japanese during World War II. Occasional in houseyard gardens, especially at Buada and a cash crop for supply to Chinese restaurants in Buada. Also planted in Taiwanese gardens on the escarpment in Meneng and at Buada. Tender leaves and shoots cooked as a green vegetable; usually propagated by cuttings. The plant was reportedly named after a person named Lorenzo who reportedly introduced it to Nauru. 5(24), 6, 7, 10, 11 (DPNAU2007RT1090, RT1091a, RT1916, RT1950, RT2534, RT2535, RT2548, RT2549, RT2550, RT2565, RT2617b, RT2619b, RT2620b).

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

Syn. *Convolvulus batatas* L.

` Nauruan Name: **pateta** ("potato")

Pre-World War I introduction. Tropical America. Occasional. Cultivated in contract laborers' food gardens at Location and Topside workshops; spontaneous along roadsides in some areas of Topside in the 1980s. Found in a number of Taiwanese and Nauruan gardens and plots around Buada Lagoon in 2007. Tuberous roots cooked as a staple and young leaves of some varieties occasionally cooked as a green vegetable. Important staple food plant in many areas of Melanesia, Polynesia and Micronesia. Leaves are also cooked as a vegetable green and an important livestock feed in some areas of the Pacific. 5, 6, 7, 11 (DPNAU2007RT2491, RT2497, RT2557, RT2558, RT2559, RT2560).

**Ipomoea fistulosa** Mart. ex Choisy bush morning-glory

Syn. *Ipomoea crassicaulis* (Benth.) Rob.

Recent introduction. Brazil. Occasional in the 1980s now uncommon. Planted ornamental, often along borders of home allotments. Seen as either a remnant or adventive along roadside on the Anibare-Ijuw border in 2007. Has become naturalized in other areas of the Pacific and in S. E. Asia. 3(58617), 5(198), 6, 7, 10, 11 (DPNAU2007RT0546, RT0547, RT0550, RT0551).

**Ipomoea hederifolia** L.

Syn. *Ipomoea angulata* Lam.

Recent introduction. Tropical America. Rare to uncommon. Found growing spontaneously in ruderal sites on the coastal strip, climbing in a *Leucaena leucocephala* thicket and over roadside shrubbery in Ijuw near Anibare boundary in 1987. Not seen in 2007. 5(149), 6, 7(22307), 10.

**Ipomoea littoralis** Bl.

Syns. *Ipomoea denticulata* (Desv.) Choisy; *Convolvulus denticulatus* Desv.; *I. gracilis* sensu auct. non R. Br.; *I. choisiana* Wight ex Safford

Indigenous. Malaysia and the Pacific. Rare. Roadside and waste places. Possibly seen again, but unsuccessfully photographed in 2007 in a roadside *Scaevola* thicket just north of the Anetan ponds. 8, 11?.

**Ipomoea macrantha** R. & S. wild moon flower

Nauruan Name: **erekogo, irekogo**

Syns. *Convovulus tuba* Schlect.; *I. tuba* (Schlecht.) G. Don; *I. grandiflora* sensu Koidz. non Lam.; *I. glaberrima* Boj. ex Bouton; *I. alba* sensu Taylor non L.; *Calonyction tuba* (Schlect.) Colla

Indigenous. Pantropical. Occasional. Found climbing on trees in coastal, escarpment and plateau forests and creeping on open ground in some ruderal places. Leaves possibly used medicinally by Nauruans? 3(58666, 58735), 4(131N), 5(118), 6, 7, 10, 11 (DPNAU2007RT0017, RT0018, RT0328, RT0529, RT0540, RT0725, RT0727, RT0798, RT0805, RT1484, RT2420, RT2421, RT2423).

**Ipomoea pes-caprae** (L.) Sweet ssp. **brasiliense** (L.) v. Ooststr. beach morning-glory, goat-foot morning-glory

Syns. *Convolvulus brasiliensis* L.; *C. maritimus* Desr.; *Ipomoea brasiliense* (L.) Sweet

Nauruan Name: **erekogo, irekogo** (Burges)

Indigenous. Pantropical. Abundant. Vigorous, prostrate, creeping herbaceous, vine found on beach sand, not far from the sea, and on coastal vegetation. Also found in wasteplaces, along roadsides and ruderal sites and along the margins of Buada Lagoon; occasional in houseyard gardens. Leaves crushed to yield juice which prevents hair from falling out. Protects beaches from erosion. 2, 3(58729), 4(129N), 5(29), 6, 7, 11 (DPNAU2007RT0042, RT0114b, RT0115b, RT0116b, RT0118, RT0119b, RT0121b, RT0237a, RT0284, RT0356, RT0394, RT0395, RT0409, RT0410b, RT0567a, RT0634, RT1162, RT1163, RT1166, RT1167, RT1299, RT1444a, RT1445a, RT1446a, RT1451a, RT1453b, RT1454b, RT1465a, RT1474a, RT1471a,

RT1472a, RT1474a, RT1477, RT1478a, RT1479a, RT1480a, RT1523a, RT1524a, RT1680b, RT1813, RT1814a, RT1961, RT2592a, RT2594, RT2597a, RT2735a, RT2736b, RT2737, RT2743a, RT2745, RT2746, RT2747b, RT2748, RT2751a, RT2753, RT2759a, RT2760b, RT2765a, RT2798a, RT2802b, RT2814a, RT2815, RT2816, RT2819a, RT2822a RT2857, RT3167, RT3168).

**Ipomoea triloba** L. little bell

Recent introduction. West Indies. Uncommon. Prostrate herbaceous vine with lobed leaves and light pink to purplish funnel-form morning-glory-like flowers. Roadside and wasteplace weed near airport and a number of other places. First seen in 2007. 10, 11 (DPNAU2007RT0001, RT1715, RT1716, RT1867).*

DPNAU2007RT1101Ipomoea, X unknown species, near airport Yaren District 15.9.07

**Merremia quinquifolia** (L.) Hall. f.
*Convolvulus quinquifolia* L.

Recent introduction. West Indies. Weed seen in one place in semi-open area on escarpment. 3(58765).

## CRASSULACEAE (Orpine Family)

**Kalanchoe pinnata** (Lam.) Pers. air plant, miracle plant, life plant
Syns. *Cotyledon pinnatum* Lam.; *Bryophyllum pinnatum* (Lam.) Kurz; *B. calycinum* Salisb.

Pre-world War II introduction. Indian Ocean Islands. Occasional. Planted ornamental. Common pot plant; naturalized and spreading around the water tank near Topside Workshop food gardens. 2, 3, 5, 6, 7, 10.

**Kalanchoe tubiflora** (Harvey) Hamet chandelier plant
Syns. *Bryophyllum tubiform* Harvey; *B. verticillaster* Scott-Elliot

Recent introduction. Madagascar. Rare. Ornamental potplant. 3(58715), 4 (52).

## CUCURBITACEAE (Melon Family)

**Benicia hispid** (Thunb.) Cogn. wax gourd, ash pumpkin, winter melon, white gourd, tung kwa
Syns. *Benicasa cerifera* (Fisch.) Savi; *Cucurbita hispida* Thunb.; *C cerifera* Fisch.

Pre-World War II introduction. Java. Occasional in the 1980s, but not seen in 2007. Food plant in Chinese gardens at Location. Flesh of fruit cooked as a vegetable. 5, 6, 7.

**Citrullus lanatus** (Thunb.) Matsum. and Tan. var. **caffrorum** (Alef.) Fosb. watermelon
Syns. *Citrullus vulgaris* var. *caffrorum* Alef.; *C. vulgaris* Schrad. ex Eckl. & Zeyh.

Pre-World War II introduction. South Africa. Rare. Food plant in home gardens and as spontaneous juveniles around residences and dump heaps. Fruit eaten raw. 2, 3, 5, 6, 7.

**Coccinia grandis** (L.) Voigt ivy gourd, scarlet gourd
Syn. *Coccinia cordifolia* (L.) Cogn.

Recent introduction. Tropical Africa to Australia. Rare. Single large climbing vine on screen in Chinese-Nauruan vegetable garden bordering Buada Lagoon in 2007. Fruit cooked as a vegetable. Potentially serious invasive vine. 11 (DPNAU2007RT2603, RT2604, RT2605, RT2606, RT2607, RT2608, RT2608).

**Cucumis melon** L. var. **cantalupensis** Naud cantaloupe, rock melon

Recent introduction. Southwest Asia and Africa to the Mediterranean. Uncommon. Food plant in Chinese gardens at Location in the 1980s and in some houseyard gardens and in Chinese experimental farms in 2007. Fruit flesh eaten raw. 5, 6, 11 (DPNAU2007RT2513, RT2963).

**Cucumis melo** L. var. **conomon** Makino Oriental pickling melon, ts'it kwa

Pre-World War II introduction. China. Rare. Trailing or climbing food plant in Chinese gardens at Location and Topside. Fruit cooked as a vegetable, often in soups. 5, 6, 11 (DPNAU2007RT2544).

**Cucumis sativus** L. cucumber
Nauruan Name: **kukamba**

Pre-World War II introduction. Northern India. Occasional. Food plant in houseyard gardens and in commercial vegetable gardens and experimental farms. Fruit eaten raw, and occasionally cooked. 5, 6, 7, 11 (DPNAU2007RT1027, RT2539, RT2554, RT2971).

**Cucurbita maxima** Duch. pumpkin, winter squash, autumn squash

Recent introduction? South America. Rare. Food plant, often adventive in gardens. Fruit cooked as a vegetable. 3.

**Cucurbita pepo** L. pumpkin, field pumpkin
Nauruan Name: **dabamakin**

Recent introduction. Tropical America. Occasional. Food plant, often planted or protected in waste places and gardens at Location and elsewhere on the coastal strip in the 1980s. Uncommon in 2007. Fruit cooked as a vegetable. 3, 5, 6, 7, 11 (DPNAU2007RT2541).

**Lagenaria siceraria** L. bottle gourd

Recent introduction. Tropical Africa. Uncommon. Food plant on Taiwanese-Nauruan vegetable garden bordering Buada Lagoon. 11 (DPNAU2007RT2582, RT2583, RT2584, RT2596).

**Luffa acutangula** (L.) Roxb. angled loofah
Syn. *Cucumis acutangulus* L.

Recent introduction. India, Paleotropics. Occasional. Climbing foodplant in Chinese gardens at Location and Topside. Young green fruit cooked as a vegetable. 4(162N), 5, 6, 7, 8 (9577).

**Luffa cylindrica** (L.) Roem. var. **insularum** (A. Gray) Cogn. smooth loofah, wild vegetable sponge, scrubber gourd, dish-cloth gourd
Syns. *Momordica cylindrica* L.; *M. luffa* L.; *Luffa aegyptica* Mill.; *L. insularum* A. Gray

Pre-World War II introduction. Tropical Asia, although variety *insularum* seems to be indigenous to many Pacific islands, it was probably introduced to Nauru. Occasional to locally common. Weedy found on edges of forest, waste places, and spreading over Topside topsoil dump on plateau. 3(58587, 58731), 5(75), 6, 7, 10, 11 (DPNAU2007RT0774, RT0775, RT0781, RT0782, RT0783, RT1351, RT2355, RT2403).

**Momordica charantia** L. bitter gourd, bitter melon, balsam pear

Pre-World War II introduction. Paleotropics. Occasional. Food plant in Chinese and Filipino gardens at Location and in Chinese gardens at Topside workshops and surrounding Buada Lagoon. Escaped and adventive in *Leucaena* thickets on Meneng Terrace. Fruit and young leaves occasionally cooked as vegetables. 4(144N), 5, 6, 7, 10, 11 (DPNAU2007RT0020, RT002, RT0022, RT0909, RT0910a, RT1647).
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## ELAEOCARPACEAE (Linden Family)

**Muntingia calabura** L. Panama cherry, Panama berry
Nauruan Name: **bin** ("bean")

Recent introduction. Tropical America. Occasional. Planted ornamental fruit tree; naturalised and spreading in strip-mined areas in interior Baiti District. Ripe fruit eaten as a snack food, primarily by children. 3(58752), 4(139N), 5(91), 6, 7, 10, 11 (DPNAU2007RT0990, RT0991, RT2096b, RT2097, RT2098, RT2099, RT2100, RT2145, RT2146).

## ERICACEAE (Heath Family)

**Rhododendron** sp. azalea

Recent introduction. Rare. Asia. Evergreen shrub. Flowers not seen. Planted ornamental. 6.

## EUPHORBIACEAE (Spurge Family)

**Acalypha godseffiana** Masters copper leaf, three-seeded mercury

Recent introduction. Origin uncertain, but possibly Malaysia and New Guinea. Rare. Planted ornamental and hedge plant. 11 (DPNAU2007RT0250, RT0794, RT0795, RT1752, RT1828).

**Acalypha hispida** Burm. f. cats's tail, chenille plant, red-hot poker

Recent introduction. Indonesia. Rare.Planted ornamental on Meneng Terrace in 2007. 3(58705), 5, 6, 11 (DPNAU2007RT0881, RT0882, RT1848).

**Acalypha wilkesiana** Muell.-Arg. var. **wilkesiana** Joseph's coat, copper leaf, beefsteak plant
Syns. *Acalypha amentacea* Roxb. ssp. *wilkesiana* (Muell.-Arg.) Fosb.
Nauruan Name: **Kayser bush**

Pre-World War I introduction. Melanesia. Common. Planted ornamental and hedge plant. 3(58743, 58757), 4, 5(41), 6, 7, 10, 11 (DPNAU2007RT0860, RT0861, RT1009, RT1048, RT1762, RT1849, RT1991, RT2015, RT2238).

**Acalypha wilkesiana** Roxb. f. **circinata** Muell.-Arg. picottee acalypha
Syns. *Acalypha amentacea* Roxb. f. *circinata* (Muell.-Arg.) Fosb.; *Acalypha hamiltoniana*

Recent introduction. Pacific Islands Occasional. Perennial shrub with wide, roundish variegate green leaves with toothed white margins. Planted ornamental, often as hedges. 3(58769), 5, 6, 7, 11 (DPNAU2007RT0249, RT0256, RT0257, RT0883, RT1751 RT2003).

**Breynia disticha** J.R & G. Forst var. **disticha** forma **nivosa** (W.G. Smith) Croizat
leaf-flower of the Pacific islands, snow bush
Syn. *Breynia*. *nivosa* (W.G. Sm.) Small
Nauruan Name: **eomonon** (N)(Burges,1933)

Pre-World War II introduction. Pacific Is. Rare, possibly extirpated. Planted ornamental. Not seen in 2007. 2, 3, 5, 6, 7.

**Chamaesyce atoto** (Forst. f) Croizat beach spurge
Syns. *Euphorbia atoto* Forst.f.; *Euphorbia chamissonis* (Kl. and Gke.) Boiss.
Nauruan Name: **e mai** (Burges)

Indigenous. Tropical Pacific. Rare. Spreading small shrub on seashore. 2(38.5), 3, 5(106), 6, 7.

**Chamaesyce hirta** (L.) Millsp. garden spurge, asthma plant, hairy spurge, old blood
Syns. *Euphorbia hirta* L.; *E. pilulifera* L.

Pre-World War II introduction. Pantropical. Abundant. Weed in waste places, vegetable gardens, ruderal sites and open areas; pioneer plant in recently mined areas. 2, 3(58627, 58677), 4(114N), 5(21), 6, 7, 8(9554), 10, 11 (DPNAU2007RT0045, RT0296, RT1726, RT2361).

**Chamaesyce hypericifolia** (L.) Millsp. graceful spurge
Syns. *Chamaesyce glomerifera* Millsp.; *Euphorbia glomerifera* (Millsp.) Wheeler

Recent introduction. Tropical America. Occasional. Garden, roadside, wasteplace and ruderal weed. 3(58658), 5(72), 6(223), 7, 8(9555), 11 (DPNAU2007RT0030, RT0939b, RT1155, RT2061b).

**Chamaesyce prostrata** (Ait.) Small prostrate spurge, red caustic creeper
Syn. *Euphorbia prostrata* Ait.

Pre-World War I introduction. Tropical America. Abundant in 1980s, now occasional. Prostrate annual herb. Weed along paths and open waste places; pioneer plant in recently mined areas. 1(62.R), 3(58630, 58631), 4(116N), 5(22), 6, 7, 8(9552) , 11 (DPNAU2007RT0310, RT0311, RT2162, RT2163, RT2730, RT2947).

**Chamaesyce thymifolia** (L.) Millesp. thyme-leafed spurge
Syns. *Euphorbia thymifolia* L.; *Euphorbia rubricunda* Steud.

Recent introduction. India. Occasional. Small prostrate weed along roadsides, around buildings and ruderal sites. 3(58824, 58661), 6, 7, 8(9561), 11 (DPNAU2007RT0209, RT0210, RT1736, RT1737, RT2087, RT2088).

**Cnidoscolus chayamansa** McVaugh chaya, tree spinach
Nauruan Name: **bele** (from Fijian "**bele**")

Recent introduction. Mexico. Common. Foodplant in household gardens and food gardens. Introduced in the early 1990s as part of the European Community Pacific Regional Agricultural Project (PRAP) program for atolls. Now firmly established as a nutritious green vegetable plant in Kiribati and on Nauru; one of the few recent introductions that seems to be well-suited to the dry Nauru environment. 11 (DPNAU2007RT0176, RT0177, RT0265, RT0466, RT0867, RT0888, RT0889, RT1707, RT1851, RT1852, RT1853, RT2210, RT2424b, RT2979a).
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**Codiaeum variegatum** (L.) Bl. croton
Syn. *Croton variegatum* L.

Recent introduction. Malaysia to Melanesia. Common. Planted ornamental and hedge plant. Numerous cultivars with brightly colored leaves exist. Leaves used in decorations and body ornamentation. 3(58714), 5, 6(199, 200), 7, 11 (DPNAU2007RT0129, RT0130, RT0161, RT0164, RT0241, RT0242, RT1137, RT1744, , RT1746, RT1753, RT1915b, RT3140).

**Euphorbia antiquorum** L. cactus spurge, false cactus, Malayan spurge tree

Recent introduction. India, Southeast Asia. Rare. Planted ornamental. 3(58680), 5(130), 6, 7, 11?.

**Euphorbia cyathophora** Murr. Mexican fire plant, hypocrite plant, wild poinsettia, dwarf poinsettia
Syns. *Eurphorbia heterophylla* sensu auct. non L.; *E. heterophylla* L. var. *cyathophora* (Murr.) Griseb.; *Poinsettia cyathophora* (Murr.) Kl. & Gke.

Nauruan Name: **deriba, deribeh**

Pre-World War II introduction. Tropical America. Occasional. Roadside and waste place weed; also occasional in disturbed areas in openings of *Scaevola* scrubland. 1(23.R), 2, 3(58628), 4(104N), 5(31), 6, 7(27818), 8(9556), 10, 11 (DPNAU2007RT0622, RT0623, RT1694, RT1781, RT2103, RT2104, RT2309).

**Euphorbia heterophylla** Ortega (check to see L.) wild spurge
Syns. *Euphorbia geniculata* Ortega; *Poinsettia heterophylla* (L.) Klotzsch & Garcke

Recent introduction. Texas, Mexico and the W. Indies. Occasional. Weed of roadsides and wasteplaces. 3(58623, 58667), 4(102N), 5(72), 6, 7, 8(9580), 10, 11 (DPNAU2007RT0002, RT000311, RT0926, RT2415 RT2856, RT2866b).

**Euphorbia milii** Ch. des Moul. crown-of-thorns
Syn. *Euphorbia splendens* Bojer

Recent introduction. Madagascar. Occasional. Planted ornamental and pot plant. 6(178), 11 (DPNAU2007RT1933, RT1934, RT1935, RT1936).

**Euphorbia pulcherrima** Willd. ex Klotszch poinsettia
Syn. *Poinsettia pulcherrima* (Willd.) R. Grah.

Recent introduction. Mexico. Rare. Planted ornamental. 6, 11 (DPNAU2007RT1985).

**Euphorbia tirucalli** L. pencil plant, naked lady, milk hedge

Recent introduction. E. Africa and India. Occasional in 1987, now uncommon. Planted ornamental. 5, 6(168), 10, 11 (DPNAU2007RT1149, RT1150).

**Jatropha integerrima** Jacq. rose-colored jatropha, red-flowered jatropha
Syns. *Jatropha hastata* Jacq.; *J. panduraefolia* Andr.

Recent introduction. Cuba. Occasional. Planted ornamental with bright pink flowers in houseyard gardens. Reportedly introduced into Nauru from Chuuk. 3(58796), 5, 6(276), 7, 10, 11 (DPNAU2007RT0158, RT02625, RT02638, RT02639, RT02640, RT2699).

**Jatropha podagrica** Hook. gout stalk, coral plant

Recent introduction. Central America. Rare. Succulent with a swollen stem, and small orange-red flowers. Ornamental pot plant. Not seen in 2007. 6.

**Manihot esculenta** Crantz cassava, manioc, tapioca
Syns. *Manihot utilissima* Pohl; *M. manihot* (L.) Karst.; *Jatropha manihot* L.
Nauruan Name: **dabioka** (“tapioca”)

Pre-World War II introduction. Brazil or Tropical South America. Common in the 1980s, now occasional. Food plant in I Kiribati and Tuvaluan gardens at Location and Topside workshops in the 1980s, now occasional in houseyard gardens and in some sites on the lower escarpment and near the Topside Workshops. This easy-to-grow plant, which thrives on the poorest of soils, has become the dominant staple root crop, displacing taro and yam as the dominant staple in many areas of high-island Micronesia, and in Fiji, Tonga, parts of the Cook Islands, and in the drier areas of Vanuatu, New Caledonia, and Papua New Guinea. 5, 6, 7, 11 (DPNAU2007RT0787b, RT0866, RT1041, RT1339, RT1498a, RT1920, RT2057, RT2394, RT2413, RT2414a, RT2542, RT3025).

**Pedilanthus tithymaloides** (L.) Poit. slipper flower, slipper spurge, zigzag plant, redbird cactus, ribbon cactus

Syns. *Phyllanthus carinatus* Spreng.; *Euphorbia tithymaloides* L.

Recent introduction. Caribbean. Occasional. Erect Planted ornamental. 3(58681), 5, 6, 7, 10 (DPNAU2007RT0014, RT0316, RT0864, RT1847).

**Phyllanthus amarus** Sch. & Th. sleeping spurge

Syn. *Phyllanthus niruri* L. sensu auct. plur. non L.

Recent introduction. Tropical America (despite African type locality). Abundant. Weed of gardens, roadsides, waste places and ruderal sites. 3(58685, 58733), 4(155N), 5(47), 6, 7, 8, 10, 11 (9571) (DPNAU2007RT0031, RT0083, RT0086 RT0913a, RT0939a, RT1773b, RT2025b).

**Phyllanthus societatis** M.A.

Nauruan Name: **eoemangemang, ewemangemang, eoemangmang**

Indigenous. Polynesia and Micronesia. Occasional. Found as scattered individuals and small communities in unmined areas on plateau, on slopes around plateau, at base of escarpment and on coastal strip, around cemeteries, open sites in coastal *Scaevola* scrub and occasionally in revegetated mined areas and as a pioneer plant on limestone pinnacles on the coastal strip. Straight main stems used as toy spears by children. 3(58595, 58748, 58801), 5(48, 51), 6, 7(22317), 8(9590), 10, 11 (DPNAU2007 RT0184, RT0185, RT0606, RT0607, RT0656, RT0657, RT0658, RT1559, RT1731, RT1732a, RT1735, RT1783, RT1784, RT1785, RT1789, RT1800, RT1801, RT2359).

**Ricinus communis** L. castor bean, castor oil plant

Recent introduction. Africa. Rare. Weed of roadsides and waste places. Single population seen near roadside to Buada above the calcination plant 3, 4(137N), 5(145), 6, 7, 8, 11 (DPNAU2007RT2040, RT2041, RT2042).

**Synadenium cupulare** (Boiss.) Wheeler

Recent introduction. Trop. Africa. Rare. Pot plant at Cliff Lodge. 5, 6.

## FABACEAE OR LEGUMINOSAE (Bean, Pea or Legume Family)

**Acacia auriculiformis** A. Cunn. Ex Benth. northern black wattle, earpod wattle

Recent introduction. New Guinea, Torres Strait Island and northern Australia. Uncommon. Planted tree in a few houseyard gardens on coastal strip and Command Ridge. 11 (DPNAU2007RT1930, RT1931, RT1932, RT1938, RT1944, RT2246, RT2247, RT2248, RT2249, RT2250).

**Acacia farnesiana** (L.) Willd. sweet acacia, West Indian blackthorn, cassie flower

Syns. *Mimosa farnesiana* L.; *Vachellia farnesiana* (L.) W. & A.

Nauruan Name: **katin, debena** (B)

Pre-World War I introduction. Tropical America. Occasional in the 1980s, but uncommon in 2007. Found in waste places and on roadsides. Glue made from seed pod. Fragrant flowers used in garlands. 2, 3(58640), 4(159N), 5, 6, 7, 8(9568), 10, 11 (DPNAU2007RT0914, RT0915, RT0916, RT0918, RT2523, RT2524, RT2525, RT2526).

**Acacia** sp. acacia

Recent introduction. Australia? Rare. Planted ornamental tree. 3(58699).

**Adenanthera pavonina** L. red-bead tree, false sandlewood

Nauruan Name: **bin** ("bean")

Recent introduction. Malaysia. Common in the 1980s, but very abundant and spreading and invasive in disturbed forest and escarpment sites in 2007. Spontaneous tree in escarpment and Buada forests and in older strip-mined areas. An extensive almost monospecific forest is found on the inner unmined margins of the limestone escarpment inland from the north end of Anibare Bay where the Japanese stayed during World War II. Bright red seeds used in necklaces and seed kernel eaten by children. 3(58804), 5(142), 6, 7, 10,11 (DPNAU2007RT0105, RT0368, RT0921, RT1051, RT1054, RT1061, RT1063b, RT1200, RT1201b, RT1202, RT1203, RT1205b, RT1209, RT1210, RT1211b, RT1212, RT1213, RT1216, RT1217, RT1218, RT1219, RT1220, RT1221, RT1223, RT1224, RT1263, RT1581, RT1605, RT1607, RT1608, RT1626, RT1627, RT1628, RT1635, RT1636, RT1637, RT1791, RT1793, RT1795, RT3004, RT3067a, RT3069).

**Alysicarpus vaginalis** (L.) DC. alysicarpus, one-leaved clover

Syns. *Hedysarum vaginale* L; *Alysicarpus nummularifolius* (L.) DC.

Recent introduction. Paleotropics. Common. Weed in roadsides and wasteplaces open or semi-open places, along jeep tracks in unmined forest, and a pioneer plant in recently mined areas. 2, 3(58744, 58763), 4(115N), 5(88), 6, 7, 10, 11 (DPNAU2007RT0008, RT0046, RT0572, RT1578, RT1586, RT2148).

**Arachis hypogaea** L. peanut, groundnut

Recent introduction. South America. Planted in the Taiwanese garden project at Buada in 2007. 11 (DPNAU2007RT2655, RT2656, RT2670).

**Bauhinia monandra** Kurz pink bauhinia, orchid tree, pink butterfly tree, St. Thomas tree

Recent introduction. Burma. Occasional. Planted ornamental. 3(58785), 5, 6(224), 7, 11 (DPNAU2007RT1016, RT1017, RT02626).

**Bauhinia variegata** L white bauhinia, orchid tree, butterfly tree, purple orchid tree

Recent introduction. India, Burma and China. Rare. The tree is variable with the two main varieties being *B. variegata* var. *variegata*, with pale purple to rose petals, with purple or crimson veins or blotches, and var. *candida* with white petals with green veins, and somewhat purplish on the exterior. Planted ornamental tree. 6(194), 7.

**Bauhinia** x **blakeana** Dunn Blake's orchid tree

Recent introduction. Rare. Mature planted ornamental tree seen in a houseyard garden in Buada in 2007. According to Whistler, it is perhaps a hybrid between *B.* variegata and *B. purpurea*. 11 (DPNAU2007RT0989, RT1085, RT2702, RT2708).

**Caesalpinia bonduc** Roxb. beach nicker, gray nicker, nicker bean

Nauruan Name: **dugienae, dogienae**

Indigenous. Pantropical. Rare and seen as a large shrub in a coastal thicket and in overgrown garden on Command Ridge in 1980. Occasional and spreading in a dense population on the escarpment above Location and the hospital in 2007. A serious noxious weed that should be eradicated if possible from settled areas. Beautiful grey seeds used to make expensive necklaces in Hawai'i. 5(114), 6(158, 212, 269), 11 (DPNAU2007RT1092, RT1093, RT1097, RT1372, RT1373, RT1374, RT1375, RT1376, RT1386, RT1387, RT1388, RT1389, RT1390, RT2195, RT2198, RT2199).

**Caesalpinia pulcherrima** (L.) Swartz pride of Barbados, dwarf poinciana, Barbados flower fence

Syn. *Poinciana pulcherrima* L.

Recent introduction. Tropical America. Occasional. Planted ornamental. 3(58789), 5(38), 6, 7, 11 (DPNAU2007RT0320, RT0928, RT1885 RT1893).

**Cajanus cajan** (Mill.) Millsp. pigeon pea, red gram, arhar dhal (Hindi)
Syns. *Cajanus indicus* Spreng.; *C. flavus* DC.; *Cajan cajan* (L.) Millsp.; *Cystisus cajan* L.

Recent introduction. India and southeast Asia. Said to have been introduced in 1935, but not seen in 1978 or thereafter, but possibly re-introduced since then by expatriate Indian contract employees. Cultivated food plant. 1.

**Calliandra surinamensis** Benth. pink powder puff

Recent introduction. Northern South America. Uncommon. Planted ornamental in gardens on coastal strip. 11 (DPNAU2007RT1148, RT1954, RT1955, RT1956, RT1954, RT1955, RT1956).

**Calopogonium mucunoides** Desv. calopo, calopogonium

Recent introduction. Tropical America. Uncommon. Locally abundant weed in low ground around Buada Lagoon and along roadside north of the Meneng Hotel in 2007. Probably originally introduced as a green manure and nitrogen-fixing plant, but now naturalized. 3(58651), 6(153), 10, 11 (DPNAU2007RT1501, RT150, RT1504).

**Canavalia cathartica** Thou. Mauna Loa bean (Hawaii)
Syns. *Canavalia microcarpa* (DC.) Piper; *C. turgida* Graham (of Burges list)
Nauruan Name: **erekogo, irekogo**

Indigenous. Pantropical. Occasional. Rather coarse creeping and high climbing vine on trees in escarpment forest and in areas of limestone pinnacles and outcrops near the base of the escarpment. 2(49.5), 3(58737, 58800), 5(135), 6, 7, 11 (DPNAU2007RT0096, RT0097, RT0098, RT0730, RT0799, RT0800, RT0801, RT1060, RT1144, RT1238, RT1576, RT1796, RT1797, RT2212).

**Canavalia ensiformis** (L.) DC. Jack bean, horse bean
Syn. *Dolichos ensiformis* L

Recent introduction. West Indies. Reported by Schumann (1898) as collected by Finch, but not seen in the 1980s. Possibly present in the Taiwanese garden project at Buada and reportedly brought from elsewhere in Nauru. 1, 11 (DPNAU2007RT2682).

**Canavalia rosea** (Sw.) DC. sea bean, bay bean
Syns. *Canavalia maritima* (Aubl.) Thou.; *C. obtusafolia* (Lam.) DC.
Nauruan Name: **erekogo, irekogo**

Indigenous. Pantropical. Rare. Found in beach vegetation north of Gabab Channel in 1981. Not seen since. 7(27804).

**Cassia fistula** L. golden shower tree, Indian laburnum, pudding-pipe tree

Recent introduction. Tropical Asia. Uncommon. Planted ornamental with showy yellow flowers at NPC residences on Command Ridge. 3(58529, 58788), 5, 6, 7, 11 (DPNAU2007RT2172, RT2173, RT2174, RT2175, RT2176).

**Cassia glauca** Lam. scrambled-egg tree
Syns. *Cassia sulfurea* DC. ex Colladon; *Senna sulfurea* (DC. ex Colladon) Irwin & Barneby

Recent introduction. India. Rare. Planted ornamental. 6(170, 175), 7.

**Cassia grandis** L.f. pink shower tree, horse cassia

Recent introduction. Central America. Rare. Planted in home garden at Buada. 7.

**Cassia javanica** L. pink-and-white shower tree

Recent introduction. Java and Sumatra. Uncommon. A couple of mature trees planted in houseyard gardens around Buada Lagoon. Planted ornamental. 11 (DPNAU2007RT1001, RT1002, RT1005, RT1006, RT1011, RT1012)

**Centrosoma pubescens** Benth. centro

Recent introduction. Tropical South America. Reported in 1935 to have been introduced, but not seen in 1978 or thereafter until 2007, when a large population was seen growing in an open disturbed area on the lower escarpment in Boe District near the Aiwo border. A widely used pasture legume and nitrogenous cover or green manure crop. 1, 10, 11 (DPNAU2007RT3010, RT3011, RT3012, RT3013, RT3014, RT3015, RT3016, RT3017, RT3018, RT3022).

**Chamaecrista nictitans** (L.) Moensch. chamaecrista, partridge pea, Japanese tea
Syns. *Cassia lechenaultiana* DC.; *C. mimosoides* Linn.

Recent introduction. Rare. Sub-shrubby weed with yellow flowers found along the road above and to the south of Buada forest in 2007. 10, 11 (DPNAU2007RT1094, RT1095).

**Cicer arietinum** L. chick pea, garbanzo bean, Indian gram, common gram, chana (Hindi)

Recent introduction. Western Asia. Extinct. Common food and fodder legume reported in 1935 to have been introduced, but not seen in the 1980s or thereafter. 1.

**Clitorea ternatea** L. butterfly pea

Recent introduction. Tropical America or Pantropical. Occasional. Planted ornamental. 3(58778), 5(71), 6(246), 7, 11 (DPNAU2007RT1703).

**Crotalaria goreensis** Guitl. & Pers. rattlepod

Recent introduction. West Africa. Common. Weed of waste places, roadsides and other ruderal sites on coastal strip and on plateau. 3(58593, 58612, 58738), 4(106N), 5(3, 58), 6, 7(22311), 8(9569), 11 (DPNAU2007RT0285, RT0386, RT0404, RT0411, RT0412, RT2050, RT2051, RT2055, RT2056).

**Crotalaria retusa** L. rattlepod

Recent introduction. Trop. Asia. Rare. Weed of ruderal habitats and roadsides. 4(158N).

**Crotalaria spectabilis** Roth rattlepod
Syn. *Canavalia sericea* Retz.

Recent introduction. India and Paleotropics. Occasional. Weed near Buada Lagoon, in gardens, and near coast in Nibok; occasionally cultivated in home gardens. 3(58647), 4, 6, 7, 8(9579).

**Cyamopsis tetragonoloba** (L.) Taub. cluster bean, guar (Hindi)
Syns. *Cyamopsis psoraloides* (Lam.) DC.; *Psoralea tetragonoloba* L.; *Dolichos psoraloides* Lam.

Recent introduction. India. Extinct. Cultivated food plant, the young tender pod which are cooked as a vegetable; reported in 1935 to have been introduced, but not seen in the 1980s or thereafter. 1.

**Delonix regia** (Bojer) Raf. poinciana, royal poinciana, flame tree, flamboyant, flame of the forest
Nauruan Name: **bin** ("bean"), **red tree**

Pre-World War II introduction. Madagascar. Occasional. Planted ornamental with crimson-orange flowers in houseyard gardens . Flowers used in garlands. 3(58620), 5(121), 6, 7, 11 (DPNAU2007RT0877, RT0917, RT1820, RT1821, RT2917, RT2920, RT3034, RT3035, RT3036).

**Derris trifoliata** Lour. beach derris root, beach poison vine
Syns. *Derris uliginosa* Benth.; *Robinia uliginosa* Willd.

Indigenous. Tropical Africa to Polynesia. Uncommon. In forest on cliffs and steep slopes of escarpment surrounding the central plateau. No reported use in Nauru, although the roots, which contain rotenone, are often used for fish poison throughout the Pacific. Seen in the 1980s but not in 2007. 3(58803), 6.

**Desmodium incanum** DC. Spanish clover
Syn. *Desmodium canum* (Gmel.) Sch. & Th.

Recent introduction. West Indies. Occasional. Weed of gardens, roadside and ruderal sites. 10, 11 (DPNAU2007RT0451, RT0452).

***Desmodium sandwichensis**??? Check 11 Seen in ruderal site near mangrove in Meneng District (DPNAU2007RT0197, RT0198, RT0460, RT0461, RT2156, RT2157).

**Desmodium tortuosum** (Sw.) DC. Florida beggarweed
Syns. *Desmodium purpureum* (Mill.) Fawc. & Rendle; *Hedysarum purpureum* Mill.; *H. tortuosum* Sw.

Recent introduction. West Indies and Central America. Common in the 1980s, occasional in 2007. Weed of roadsides, slopes in settled areas, waste places and ruderal sites. 3(58639, 58741), 4(110N), 5(87), 6, 7(22308), 10, 11 (DPNAU2007RT0131, RT0175, RT00195, RT0297, RT1846, RT2935).

**Desmodium triflorum** (L.) DC. tropical trefoil, three-flowered beggarweed
Syn. *Hedysarum triflorum* L.

Recent introduction. Pantropical. Common. Weed in gardens, lawns and in shaded ruderal habitats and along paths in mined area on plateau. Possibly deliberately introduced as a green manure and cover crop. 3(58708, 58803), 4(126N), 5(148), 6, 7, 10, 11 (DPNAU2007RT0026, RT1147, RT1589, RT2297, RT2306, RT2320).

**Dolichos lablab** L. hyacinth bean, lablab bean, dolichos, bovanist bean, Egyptian bean
Syns. *Dolichos purpureus* L.; *Lablab purpureus* (L.) Sweet; *L. niger* Medik.; *L. vulgaris* Savi

Recent introduction. Paleotropics. Rare. Food plant in Filipino gardens at Location in the 1980s and in a Tuvaluan woman's home garden in Buada in 2007. The young pods and tender seeds cooked as a vegetable. Said to have been introduced in 1935 and established by 1936. 1, 5, 6, 11 (DPNAU2007RT1084b, RT1089, RT2707).

**Entada phaseoloides** (L.) Merr. water vine, St. Thomas bean
Syns. *Entada scandens* (Linn.) Benth.; *Mimosa scandens* Linn.; *Lens phaseoloides* Linn.

Indigenous. Tropical Asia, through Malesia east to Cook Islands. Rare. Drift seedling seen on beach to the east of the east end of the runway in 2007. 11 (DPNAU2007RT2826).

**Erythrina variegata** L. var. **variegata** variegated coral tree

Recent introduction. Pacific Is. Uncommon. Planted ornamental. 3, 5(39), 6, 7, 11

(DPNAU2007RT0140, RT0932, RT0933, RT0937, RT1111, RT1701, RT1702).

**Erythrina variegata** var. **orientalis** (L.) Merr. coral tree, dadap
Syns. *Erythrina indica* Lam.; *E. corallodendron* var. *orientalis* (L.) Merr.
Nauruan Name: **yora, yoreh**

Indigenous. Indopacific. Occasional. Planted or spontaneous on coastal strip and in old strip-mined land; a number of large specimens along road near Nauru Phosphate Company tennis court area. One large tree at the Meneng Hotel and some in houseyard gardens. Used and in canoe construction in the past and flowers used in garlands in the past. Nitrogen fixing tree planted as living fence posts elsewhere in the Pacific Islands. 3(58737a), 5, 6, 7, 11 (DPNAU2007RT0023, RT0071, RT0277, RT0290, RT0292, RT0332, RT0333, RT0473, RT0474, RT1114a, RT202, RT2029, RT2030, RT2926).

**Gliricidia sepium** (Jacq.) Kunth ex Walp. gliricidia, madre de cacao (mother of cocoa)
Syn. *Robinia sepium* Jacq.

Recent introduction. Central and northern South America. Planted roadside ornamental on Meneng Terrace in 1981. Not seen in 2007. Widely used in tropical America and elsewhere as a shade tree for tree for cocoa, bananas and coffee and as a living fence and windbreak. 7(22320).

**Hardenbergia violacea** (Schneer.) F.C. Stern sarsaparilla

Recent introduction. Australia. Rare. A climbing or scrambling evergreen herb; leaves, simple; inflorescence, clusters of violet flowers with yellow markings. Ornamental pot plant. 6.

**Indigofera hirsuta** L. hirsute indigo

Recent introduction. Africa and Madagascar to southern Asia and Australia. Occasional. In plateau forest along path. Seen as a weed in FAO experimental garden in 2007 in north Buada. 3 (58614, 58730), 5(136), 8(9545), 11 (DPNAU2007RT1035, RT1044, RT2086, RT2130, RT2404).

**Indigofera spicata** Forsk. creeping indigo
Syns. *Indigofera hendecaphylla* Jacq.

Recent introduction. Africa and Madagascar to Yemen, southeast Asia and Australia. Occasional. Roadside weed on coastal strip and plateau. 4 (123N), 6, 7.

**Leucaena leucocephala** (Lam.) de Wit leucaena, koa haole(Hawaii), lead tree, wild tamarind
Syns. *Leucaena glauca* (L. ex Willd.) Benth
Nauruan Name: **bin** ("bean"

Pre-World War II introduction. Tropical America. Abundant. Spontaneous in disturbed unmined habitats on topside, on escarpment slopes below plateau and in isolated stands on coastal strip, often extending into the coastal littoral vegetation. Used as firewood. Shiny brown seeds used in necklaces elsewhere. 3(58638), 4(161N), 5(9), 6, 7, 8(9564), 10, 11 (DPNAU2007RT0005, RT0771, RT0787c, RT0789a, RT0910b, RT1499b, RT2136, RT2137, RT2312, RT2321, RT2322, RT2327, RT2328b, RT2338, RT2340, RT2341, RT2344, RT2349a, RT2350, RT2354, RT2356, RT2743c, RT2752).

**Mimosa pudica** L. var. **tetrandra** (HBK ex Willd.) DC. sensitive plant
Syn. *M. tetrandra* HBK ex Willd.

Recent introduction. Tropical America. Rare. Roadside weed near Buada Lagoon. 4(156N), 6(190), 10, 11 (DPNAU2007RT1013, RT1014a).

**Peltophorum pterocarpum** (DC.) Backer ex Heyne yellow poinciana, copperpod, golden flamboyant, yellow flame tree

Syns. *Peltophorum inerme* (Roxb.) Naves; *P. ferrugineum* (Dcne.) Benth.; *Inga pterocarpa* DC.; *Caesalpinia inermis* Roxb.; *C. ferruginea* Dcne.

Recent introduction. Malaysia to Northern Australia. Rare in the 1980s and occasional in 2007. Planted ornamental tree on Military Ridge in 1980. 5, 6, 11 (DPNAU2007RT1115, RT1117, RT1118, RT2180, RT2181, RT2182, RT2187, RT2188, RT2197).

**Phaseolus vulgaris** L. string bean, French bean, haricot bean

Recent introduction. Tropical America. Uncommon. Planted in a number of Taiwanese gardens around Buada Lagoon. 11 (DPNAU2007RT2561b, 2564, RT2565, RT2568, RT2569, RT2660, RT2662, RT2664).

**Pithecellobium dulce** (Roxb.) Benth. blackhead, Madras thorn, Manila tamarind

Recent introduction. Rare. A large individual tree planted in a houseyard garden just off the road in Aiwo District in the NPC complex area. 11 (DPNAU2007RT1132, RT1133, RT1134, RT1135, RT1139).

**Samanea saman** (Jacq.) Merr. rain tree, monkeypod tree
Syns. *Albizia saman* (Jacq.) F. v. Muell.; *Mimosa saman* Jacq.; *Enterolobium saman* (Jacq.) Prain ex King; *Pithecellobium saman* (Jacq.) Benth.; *Inga saman* (Jacq.) Willd.

Recent introduction. Tropical America. Rare. Ornamental tree in home gardens on Meneng Terrace and at Buada. Seen only at Buada in 2007. Grows well and could offer potential for planting as a shade tree. 5, 6, 7, 11 (DPNAU2007RT1070, RT1072, RT1078, RT2725, RT2726).

**Senna alata** (L.) Roxb. golden candelabra bush, Roman candle tree, candle bush, ringworm bush
Syn. *Cassia alata* L.

Recent introduction. Mexico. Uncommon. Planted ornamental. Leaves widely used as a cure for ringworm, but reportedly not in Nauru. 5, 6, 10, 11 (DPNAU2007RT0149, RT0156, RT1125, RT1126, RT1127, RT1698, RT2240).

**Senna occidentalis** (L.) Link coffee senna, arsenic bean
Syn. *Cassia occidentalis* L.
Nauruan Name: **tan braua** ("sunflower")

Pre-World War II introduction. Tropical America. Abundant. Weed of waste places and roadsides. Dried seeds boiled as a tea substitute during World War II, a use learned from the Japanese; soft leaves cooked as a spinach and used medicinally by the Chinese. 2, 3(58529), 4(128N), 5(13), 6, 7, 8(9547), 10, 11 (DPNAU2007RT0004, RT0766, RT0913b, RT1358, RT1882, RT2046, RT2315, RT2438, RT2847).

**Sophora tomentosa** L. silverbush

Indigenous. Indian Ocean to eastern Polynesia and Micronesia. Uncommon. A single individual seen in the coastal strand vegetation about 10 m from the outpost zone about 100 m north of the Meneng Hotel on 17 September and another two seedlings in the outpost zone among drift seedlings on the beach to the east of the east end of the runway. . Probably an ocean-dispersed ephemeral species that comes and goes. Deliberately introduced to Tarawa from Onotoa Atoll as an indigenous nitrogen-fixing species in Kiribati. 11 (DPNAU2007DH0246, DH0247, RT1447a, RT1448, RT1449a, RT1450, RT2812, RT2813, RT2820, RT2821).

**Tamarindus indica** L. tamarind

Recent introduction. Tropical Asia. Uncommon. A number of mature trees seen in houseyard gardens in Buada, on the coastal strip and on upper Meneng Terrace in 2007. 10, 11 (DPNAU2007RT1413, RT1414

RT1415 RT1416 RT1417 RT1418, RT1653, RT1655).

**Vigna marina** (Burm.) Merr. beach pea
Syns. *Vigna lutea* (Sw.) A. Gray; *Phaseolus marinus* Burm.; *Dolichos luteus* Sw.
Nauruan Name: **erekogo**

Indigenous. Pantropical. Common. Found on beaches and in open sites and waste places behind beaches; reported by Burges (1935) to be growing plentifully wherever soil is fairly heavy and moist, e.g., as at Buada. He reported that the Nauruans have always considered that other plants grew better if near *Vigna* . . .. Plant used medicinally; leaves crushed to bathe young girls' hair and to make adult hair grow long and black; leaves used to cover earthen oven (*eom*, *eyom)*. 1(30.R), 2, 3(58610), 4(120N), 5(33), 6, 7, 8, 10, 11 (DPNAU2007RT0116c, RT0117a, RT0136, RT0578, RT0806, RT2272, RT2347, RT2592b, RT2595b, RT2799, RT2802a, RT2814a, RT2822b, RT2970).
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**Vigna sesquipedalis** (L.) Fruw. long bean, yard-long bean, snake bean, asparagus bean, asparagus pea
Nauruan Name: **bin** ("bean")
Syns. *Dolichos sesquipedalis* L.; *Vigna unguiculata* (L.) Walp. ssp. sesquipedalis (L.) Verdc. *Vigna sinensis* (L.) Endl. ex Hassk. var. *sesquipedalis* (L.) Koern.

Pre-World War II introduction. Tropical Africa. Common. Food plant in Chinese gardens at Location and Topside workshops in the 1980s. Found in the FAO Experimental gardens and Chinese gardens in 2007. Eaten as a vegetable and served as a cooked vegetable in Chinese restaurants in Nauru. 5, 6, 11 (DPNAU2007RT1029, RT1033, RT1034, RT1369a, RT2591, RT2592b, RT2595b, RT2597b, RT2774b).

## GENTIANACEAE (Gentian Family)

**Fagraea berteroana** A. Gray ex Benth. pua (Polynesia)
Nauruan Name: **eijinut**? (Burgess)
Syns. *Carissa grandis* Bertero ex. Guill.; *Fagraea berteriana* A. Gray ex Benth.; *F. berteriana* Benth. ex Seem.; *F. grandis* Pancher & Sebert

Indigenous? Pacific Islands, from New Caledonia to as far east as the Marquesas and Hawaii, although possibly an aboriginal introduction in these areas. Extinct; reported by Hambruch in 1910, but not seen in 1933 or thereafter. Fragrant flowers used in garlands and to scent coconut oil in Polynesia and Melanesia. 1.

## GERANIACEAE (Geranium Family)

**Pelargonium** x **hortorum** geranium, fish geranium
Syn. *Pelargonium hortorum* Bailey

Recent introduction. So. Africa. Rare. Pot plant. 6.

## GESNERIACEAE (Gloxinia Family)

**Columnea gloriosa** Sprague showy column flower, columnea

Recent introduction. C. America. Rare. Pot plant. 6.

**Columnea** sp. columnea

Recent introduction. Trop. America. Rare. Pot plant. 6.

**Episcia cupreata** (Hook.) Hanst. episcia, peacock plant
Syn. *Achimenes cupreata* Hook.

Recent introduction. Colombia and Venezuela. Occasional. Pot plant. 5,6.

**Saintpaulia ionantha** Wendl. African violet, Saintpaulia

Recent introduction. Trop. E. Africa. Rare. Pot plant. 5,6.

## GOODENIACEAE (Naupaka Family)

**Scaevola taccada** (Gaertn.) Roxb. half-flower, beach saltbush
Syn. *Scaevola sericea* Vahl.
Nauruan Name: **emet, emed, emit** (Burges 1935)

Indigenous. Tropical Asia to Hawaii. Very abundant. Dominant species in strand vegetation and one of first colonizers on strip-mined areas. Also planted and protected in houseyard gardens. Wood considered good for smoking (cooking) fish and the black noddy bird (an important delicacy at feasts); hollow branches used as guns to shoot gum balls (*egato*) and small balls carved from pandanus; inner bark used in the past to make headbands which resembled noddy-bird feathers and which were worn for traditional dances; leaves used to wrap food and to cover the earth oven (*eom*, *eyom)*; *Scaevola* and *Guettarda speciosa* (*iut*) flowers the first flowers smelled by returning sailors; flowers used in garlands and either added directly, or boiled with coconut oil to scent it; leaves crushed to yield a juice to retard loss of hair and cure rashes; inner bark scraped to yield medicine for abscesses or boils, and white ripened fruit squeezed into eyes as a pre-eye-drops cure for conjunctivitis. 2, 3(58622, 58761), 5(30), 6, 7(27801), 11 (DPNAU2007RT0039, RT0041, RT0049, RT0114c, RT0119c, RT0121c, RT0123, RT0237b, RT0278, RT0279, RT0384, RT0418a, RT0421b, RT0422, RT0579b, RT0580b, RT0587a, RT0604, RT0605, RT0620a, RT0621a, RT0813, RT1306a, RT1324, RT1447b, RT1449b, RT1453c, RT1454c, RT1465b, RT1471b, RT1472b, RT1474b, RT1478b, RT1479b, RT1480b, RT1515, RT1516, RT1518, RT1519, RT1520b, RT1521b, RT1522, RT1523b, RT1524b, RT1529, RT1530, RT1588, RT1595, RT1601, RT1602, RT1609, RT1612, RT1619a, RT1768, RT1806, RT1814b, RT2290, RT2293a, RT2317, RT2318, RT2468, RT2482, RT2488b, RT2489b, RT2490b, RT2798b, RT2805, RT2819b, RT2825, RT3038b, RT3105, RT3106).

## HERNANDIACEAE (Hernandia Family)

**Hernandia nymphaeifolia** (Presl.) Kubitzki hernandia, lantern tree
Syns. *Hernandia sonora* L.; *H. peltata* Meissn.; *H. ovigera* senus auct. non L.; *Biasolettia nymphaeifolia* Presl
Nauruan Name: **etiu, yetiu, etsiw**

Indigenous. Tropical Asia to the Pacific Islands. Uncommon. Tree on or near base of escarpment. Large stand of over ten trees behind a house in Ijuw District near the border of Anibare District and near the bottom of the escarpment behind Capelli's store. Very light wood, which is sometimes found in the form of driftwood, used for canoe outriggers, pull-floats for fishermen to tie fish to, and corks for bottles; fruit rubbed against rock to burn each other in traditional games. 5(10), 6, 7(27819) , 11 (DPNAU2007RT0816, RT0817, RT0818, RT0819, RT0820, RT0821, RT0824, RT0825, RT0826, RT1335, RT1338, RT1340, RT1347, RT1349, RT1352, RT1353, RT1354, RT1355, RT1357, RT2862, RT2863, RT2884).

## LAMIACEAE (Mint Family)

**Plectranthus amboinicus** (Lour.) Spreng. Indian borage

Syns. *Coleus amboinicus* Lour.; *Coleus aromaticus* Benth.

Recent introduction. Africa and India to Indonesia. Uncommon. Pot plant at Location and at Indian residence at Meneng Terrace. Seen at the USP Centre and in one other houseyard garden in Location in 2007. Leaves used as a spice in curries and medicinally. 6 (211), 7, 11 (DPNAU2007RT0931, RT2913).

**Coleus pumilus** Blanco creeping coleus
Syn. *Coleus repens* Gurke

Recent introduction. West Africa. Occasional. Pot plant. 3 (58781, 59673), 5, 6.

**Hyptis rhomboidea** Mart. & Gal. rhomboid mintweed
Syn. Sometimes mistakenly called *Hyptis capitata* Jacq. which is apparently not found in the islands

Recent introduction. Tropical America. First recorded in the Pacific from Guam prior to 1970. Rare. Single population seen in a disturbed roadside site above the decalcination plant on the road to Buada lagoon. Erect herb with 4-angled stems and irregularly toothed opposite leaves and long-stalked globose white flower heads with many stamens. Has become a rapidly spreading noxious weed in Samoa. 11 (DPNAU2007RT2045).

**Mentha piperita** L. mint, peppermint
Syns. *Mentha* x *piperita* L. (*M. aquatica* L. x *M. spicata* L.)

Recent introduction. Europe. Rare. Pot herb planted in old oil drum on Command Ridge and at Indian residence at Meneng Terrace. 6, 7.

**Ocimum basilicum** L. basil, sweet basil
Nauruan Name: **dementsi**

Pre-World War II introduction. Africa to the Pacific Islands. (Paleotropics). Occasional. Planted in home gardens; common in I Kiribati and Tuvaluan gardens at Location in the 1980s. Fragrant flowers and leaves used in garlands and for scenting coconut oil. 2, 3, 5(141), 6, 7(22305), 11 (DPNAU2007RT0153, RT2027).

**Ocimum tenuiflorum** L. sacred basil, holy basil, tulsi (Hindi)
Nauruan Name: **demere**
Syn. *Ocimum sanctum* L.

Pre-World War II introduction. Tropical Asia, now Pantropical. Uncommon. Planted ornamental in houseyard gardens. Fragrant flowers and leaves used in garlands and headbands and for scenting coconut oil. 5, 6, 7, 11 (DPNAU2007RT1280).

**Plectranthus oertendahlii** Fries Swedish ivy, prostrate coleus

Recent introduction. S. Africa. Rare. Pot plant. Not seen in 2007. 3(58673, 58781), 5, 6.

**Solenostemon scutellarioides** (L.) Codd painted nettle, coleus, painted-leaf plant
Syns. *Coleus scutellarioides* (L.) Benth.; *C. blumei* Benth.; *Plectranthus scutellarioides* (L.) R. Br.; *Ocimum scutellarioides* L.

Recent introduction. Malaysia. Uncommon. Planted ornamental and pot plant. 5, 6, 7, 11 (DPNAU2007RT0875, RT1840).

## LAURACEAE (Laurel Family)

**Cassytha filiformis** L. beach dodder, giant dodder, devil's twine
Nauruan Name: **denuwanini, denuwenini, eduwinini** (Burges, 1935)

Indigenous. Pantropical. Abundant. Parasite on other plants, found generally on natural vegetation at all elevations in coastal areas, Topside vegetation and occasionally in mined areas. Entire plant used as garlands and headbands; plant used for black magic by I Kiribati and other islanders, a practice occasionally copied by Nauruans; tender tips used at times in the past for scenting coconut oil; fruit eaten by children in the past. 2(23.5), 3(58590), 4(163N), 5(6), 6, 7, 8(9566), 10, 11 (DPNAU2007RT0354, RT0355, RT0421a, RT0632, RT0762, RT0769, RT0403, RT2286, RT2293b, RT2313, RT2817, RT3038a, RT3202).

**Persea americana** Mill. avocado, avocado pear, alligator pear
Syns. *Laurus persea* L.; *Persea gratissima* Gaertn. f.

Recent introduction. Mexico. Rare. Seedling planted in garden at Meneng Terrace. One large mature tree seen in a houseyard garden in Buada in 2007. 5, 11 (DPNAU2007RT0962, RT0963, RT0964, RT0965).

## LYTHRACEAE (Lythrum Family)

**Lagerstroemia indica** L. crape myrtle

Recent introduction. South China. Rare. Planted ornamental on Command Ridge. 3(58712), 5, 6.

## MALPIGHIACEAE (Malpighia Family)

**Stigmaphyllon ciliatum** (Lam.) Juss. Brazilian golden vine, golden cup, orchid vine

Recent introduction. West Indies to Brazil. Rare. Planted ornamental climber. 3(58725), 6.

**Tristellateia australasiae** Rich. bagnit, shower of gold climber
Syn. *Tristellateia australis* Rich.

Recent introduction. Malaysia and Australia. Uncommon. Planted ornamental climber with yellow flowers. 5, 6(179, 205), 7, 11 (DPNAU2007RT2253, RT2775).

## MALVACEAE (Mallow Family)

**Abelmoschus esculentus** (L.) Moench. okra, gumbo, lady's finger; bindi (Fiji Hindi)
Syn. *Hibiscus esculentus* L.

Recent introduction. Asia. Rare to uncommon. Food plant in Taiwanese food garden project at Buada in 2007. Preferred cooked vegetable of many Indian families. 11 (DPNAU2007RT2658).

**Abelmoschus manihot** (L.) Medik. bush spinach, edible hibiscus; bush hibiscus spinach, bele (Fiji)
Syn. *Hibiscus manihot* L.
Nauruan Name: **bele** (from Fijian "**bele**")

Recent introduction. Southeast Asia. Occasional in past now uncommon. Food plant in gardens at Location and Topside Workshop and occasionally in other home gardens. Nutritious slippery green leaves cooked as a green vegetable by Solomon Islanders, Tuvaluans, I-Kiribati and Fijians. Along with taro leaves, one of the two most important leafy green vegetables in the Pacific Is. Should be planted more widely as a vitamin-rich vegetable. 5, 6(105), 7, 11 (DPNAU2007RT2217).

**Abutilon asiaticum** (L.) Sweet var. **supraviride** Fosb. Asian mallow

Nauruan Name: **ekaura, inen ekaura**

Indigenous. S. E. Asia to the Pacific Is. Occasional. Found in waste places and ruderal habitats along coastal strip, especially near the Ijuw-Anibare boundary, along trails to topside and among pioneering weeds in topsoil in areas recently cleared for phosphate mining. Tender meristem used to scent coconut oil; flowers used in garlands and headbands. 2, 3(58807, 58805), 4(107N), 5(107), 6, 7(22306), 11 (DPNAU2007DH0071, DH0072, DH0073, DH0109, DH0110, RT0557, RT0558, RT0559, RT0560, RT0561a, RT0563, RT0564, RT0565, RT0654, RT0655, RT0744, RT0745, RT0746, RT1910, RT3171, RT3172, RT3205).

**Gossypium barbadense** L. sea-island cotton, cotton
Syns. *Gossypium brasiliense* Macf.; *G. peruvianum* Cav.
Nauruan Name: **duwōduwō**

Recent pre-World War I introduction. Tropical America. Extinct? Collected by Burges in 1935, but not seen by subsequent collectors. Grown by Nauruans in the past for the cotton which was used to stuff mattresses and pillows. The Nauruan name for cotton is the same as for kapok (*Ceiba pentandra*). 2.

**Hibiscus mutabilis** L. changeable rose mallow, changeable rose, variable rose
Nauruan Name: **dorot** ("the rose")

Recent introduction. South China. Rare. Planted ornamental along road to Meneng Terrace in the 1980s and in a houseyard garden in Boe in 2007. 5(157), 7, 11 (DPNAU2007RT3032).

**Hibiscus rosa-sinensis** L. hibiscus, red hibiscus, China rose
Nauruan Name: **dorot** ("the rose")

Recent introduction. Tropical Asia. Common. Planted ornamental and hedge plant; flowers used in garlands and for decoration. One of the commonest and most widespread of all ornamental plants in tropical regions. A number of different cultivars exist, including hybrids. 3(58791), 5(126), 6, 7, 11 (DPNAU2007RT0015, RT1771, RT1772, RT1832, RT1842, RT2522, RT3138b).

**Hibiscus schizopetalus** (Mast.) Hook. f. coral hibiscus, dragon flower
Nauruan Name: **dorot** ("the rose")

Recent introduction. East Africa. Rare. Shrub with deeply dissected (laciniate) flowers with pink-and-white to coral-red petals. Planted ornamental. Not seen in 2007. 3(58770), 5(125), 6.

**Hibiscus tiliaceus** L. beach hibiscus, hibiscus tree
Nauruan Name: **ekwane**

Indigenous. Pantropical. Very abundant. Forms thickets and forest on escarpment surrounding plateau, on inner and outer edges of coastal strip and in areas inland and surrounding mangrove swamps. Timber used for house construction and considered good for canoe outriggers, poles for noddy bird nets, and the best wood for the construction of frigate bird nesting platforms (*eteo*, *etea*); very soft pieces of wood rubbed together in the past to make fire by friction in the procedure known as *ikumo*; inner bark (bast fiber) used to make white fiber, which after stripping off outer bark and soaking in mud and sea water, is used to make skirts (*ridi*), special hula skirts (*ingung*), and baskets (*ebwer*, *eber*); fibre used for straining coconut cream and for lashing house rafters; leaves used for wrapping pig and other foods for cooking in the earth oven (*eyom*, *eom*); leaves cooked with water as a cure for diarrhoea. 1(22.R), 2, 3(58747), 4(169N), 5(28), 6, 7, 11 (DPNAU2007RT0475, RT0544, RT0683, RT0684, RT0704, RT0721, RT0722, RT0907, RT1164, RT1165, RT1168, RT1169, RT1170, RT1171, RT1172, RT1173, RT1174, RT1266, RT1267, RT1268, RT1269, RT1480c, RT1481, RT1483, RT1488a, RT1489, RT1497a, RT1499a, RT1500, RT1565a, RT1631b, RT1822, RT2738, RT2739, RT2740, RT2741, RT2742, RT2754, RT2755, RT2756, RT2757, RT2758).

**Hibiscus** ornamental hybrids hybrid hibiscus
Nauruan Name: **dorot** ("the rose")

Recent introduction. Rare. Origin? Planted ornamentals. 3, 5, 6, 7, 11 (DPNAU2007RT0152, RT0862, RT0863, RT0877, RT1829, RT1830).

**Malvastrum coromandelianum** (L.) Garcke false mallow
Syns. *Malvastrum tricuspidatum* A. Gray; *Malva coromandeliana* L.

Recent introduction. Central America to the southern United States. Common. Weed in settled areas, roadsides, wasteplaces and ruderal sites. 3(58694, 58728, 58766), 5, 6(207), 7, 8, 10, 11 (DPNAU2007RT0217, RT0470, RT2273, RT2967) **.**

. **Malviscus arboreus** Cav. var. **drummondii** (Torr. & A. Gray) Drummond's Turk's cap
Syn. *Malviscus drummondii* Torr. & A. Gray

Recent introduction. Tropical America. Rare. Seen in one houseyard garden on upper Meneng Terrace near the former State House. 11 (DPNAU2007RT1426, RT1427).

**Malviscus penduliflorus** Moc. & Sessé ex DC. sleeping hibiscus, Turk's cap
Syns. *Malvaviscus arboreus* Cav. var. *penduliflorus* (Moc. & Sessé ex DC.) Schery

Recent introduction. Mexico to Brazil. Occasional. Planted ornamental. 5(124), 6.

**Sida acuta** Burm. f. spiny-headed sida, broom weed
Syns. *Sida carpinifolia* L.f.; *S. glomerata* Cav.
Nauruan Name: **coffee bush**

Recent introduction. Pantropical. Occasional. Weed on coastal strip, along roadside, and in and near thickets. Two forms, a narrow ovate-lanceolate-leaved form (22303) and a broader-leaved form (96) exist. 3(58615, 58649, 58806), 5(23, 96), 6, 7(22303), 8(9558, 9582), 10, 11.

**Sida fallax** Walp. golden mallow, ilima (Hawaii), te kaura (Kiribati)
Nauruan Name: **ekaura, idibin ekaura**

Indigenous. Indo-Pacific. Rare or extripated? Small downy plant with attractive small hibiscus-like yellow-orange flowers. Found in ruderal habitats on coastal strip and in areas cleared recently for phosphate mining in the 1980s and 1990s. Not seen in 2007. Unopened flower buds used, after soaking in coconut oil to retard their opening and make them last, to make headbands and necklaces worn by dancers and sportsmen during special occasions, such as traditional wrestling; dried and treated leaves used by I Kiribati, in Kiribati, as a very strong fertilizer and mulch for ceremonial giant swamp taro (*Cyrtosperma chamissonis*) gardens. 1(5.R), 2(7.5), 5(108), 6(160, 162), 9.

**Sida rhombifolia** L. broomweed, broom plant, Cuba jute, Paddy's lucerne
Nauruan Name: **coffee bush, itsi** ("tea")

Recent introduction. Pantropical. Common. Weed of roadsides, waste places and semi-shaded areas. Tea made from leaves during World War II; leaves boiled in water used to treat blisters. 3(58621), 4(138N), 5, 6, 7, 8(9575), 10, 11 (DPNAU2002RT0378, RT0494, RT0908, RT1904, RT2983).

**Sida spinosa** L. var. **angustifolia** (Lam.) Griseb. prickly sida

Recent introduction. Pantropical. Occasional. Weed in waste places. 4, 6.

**Thespesia populnea** (L.) Sol. ex Correa Thespian's tree, milo (Hawaii, Polynesia)
Nauruan Name: **itira, itirya**

Indigenous. Paleotropics. Occasional. Growing along the coastal margins of mangroves in Anetan and

in a number of coastal sites in Meneng and Aiwo; planted on golf course along entrance to old clubhouse and occasionally in houseyard gardens. Considered the best wood for traditional house construction, woodcarving, furniture and canoe outriggers; wood also used in traditional stick games. One of the best trees for replanting and coastal reforestation. 1(73.R), 2, 3(58745), 4(165N), 5(57), 6, 7(27821), 11 (DPNAU2007RT0223, RT0224, RT0225, RT0238, RT0789b, RT1157, RT1158, RT1159, RT1160, RT1161, RT1282, RT1283, RT1284a, RT1285a, RT1286a, RT1289, RT1290, RT1297, RT1301, RT1302, RT1306b, RT1312, RT1313, RT1321a, RT1764, RT1765, RT1766, RT1807, RT1808, RT1809, RT1810, RT1811, RT1812, RT1817, RT1818, RT2843, RT2848, RT2849, RT2850, RT2976, RT2977).

## MELIACEAE (Mahogany Family)

**Melia azedarach** L. Indian lilac, China berry, Persian lilac, pride of India

Nauruan Name: **gadong, gadung**

Pre-World War I introduction. Tropical Asia. Occasional. Planted ornamental and spontaneous on coastal strip, in strip-mined area on plateau, near the Topside Oval, and on escarpment slopes near phosphate processing plant. Seen as an adventive in a number of open fields and planted near the FAO experimental garden in north Buada in 2007. 2, 3(58732), 4(122N), 5(74), 6, 7, 11 (DPNAU2007RT1037, RT1038, RT1047, RT1908, RT1909, RT2132, RT2399, RT2577).

**Sandoricum koetjape** (Burm. f.) Merr. santol (Philippines)

Syns. *Sandoricum indicum* Cav.; *Melia koetjape* (Burm. f.) Merr.

Recent introduction. Malesia. Extinct? Small recently planted seedling growing in Filipino home garden at Location in 1980. No longer present in 1981 or thereafter. 5.

## MORACEAE (Mulberry Family)

**Artocarpus altilis** (Park.) Fosb. breadfruit

Syns. *Artocarpus incisus* (Thunb.) L.f.; *A. communis* Forst.

Nauruan Name: **deme**

Aboriginal introduction. Malayo-Pacific. Common. Planted staple tree crop on coastal strip. Fruit cooked as a staple food; sap (*denda*) used as an adhesive for caulking canoes and a chewing gum; leaves used for wrapping food for cooking, for parcelization of fresh food, and as plates; medicine for curing ear aches made by crushing juice from the tender growing tips at the ends of branches (meristems). Two main cultivars of *A. altilis* are *deme* and *modenewe* or *modenawe* ("modern way"). Important staple food tree throughout the Pacific Islands. One of the most important trees for protection and replanting for food security. 2, 3(58753), 5, 6, 7, 11 (DPNAU2007RT0347, RT0456a, RT0458a, RT0791, RT0974, RT0975, RT1399, RT1400, RT1905, RT1906, RT1907, RT2425b, RT2427, RT2772, RT2778, RT2779, RT2784, RT2904, RT2931, RT3135, RT3136, RT3137).

**Artocarpus heterophyllus** Lam. jakfruit, jackfruit

Pre-World War II introduction. Indomalaysia. Rare. Planted fruit tree reported present by Burges in 1933; young tree seen in Topside Workshop food gardens in 1987. A mature tree seen in one houseyard garden at Buada in 2007. Ripe fruit eaten; immature fruit cooked as a supplementary staple in curries by Indians. 2, 6, 11 (DPNAU2007RT02627, RT02628, RT02629).

**Artocarpus mariannensis** Trec. Marianas breadfruit

Nauruan Name: **damenkamor**

Aboriginal introduction? Micronesia. Occasional. Planted staple fruit tree. Same uses as for *A. altilis*,

but fruit of *A. mariannensis* eaten raw and cooked. 3(58755), 5, 6, 7, 11 (DPNAU2007RT0497, RT0498, RT3160, RT3161, RT3162, RT3163).

**Ficus benghalensis** L. Indian banyan, east Indian fig, Vada tree

Nauruan Name: **eyayo**

Recent introduction. India. Common. Planted ornamental tree and roadside tree on coastal strip and in housing areas on the escarpment and the main tree on the golf course. 3(58749), 5(53), 6, 7, 11 (DPNAU2007RT0211, RT0330, RT0331, RT0348a, RT0453, RT1823, RT1837, RT2183, RT2184, RT2185, RT2186, RT2190b, RT2252, RT2893, RT2894, RT2901b, RT2902, RT2903, RT2905, RT2915, RT2916, RT2923, RT2924, RT2978b).

**Ficus benjamina** L. weeping fig, weeping banyan, Benjamin tree

Recent introduction. Occasional. Tropical Asia. Planted ornamental and shade tree. 11 (DPNAU2007RT1649, RT1651 RT1652, RT1928, RT1937, RT1943, RT1977, RT2576).

**Ficus elastica** Roxb. Indian rubber tree, rubber plant, Indian rubber fig

Recent introduction. India to Nepal and Malaya, perhaps southward to Java. Uncommon. Planted ornamental tree. 5, 6, 7, 11(DPNAU2007RT00194, RT1723, RT1724, RT1993).

**Ficus microcarpa** L. f. Chinese banyan, laurel fig

Recent introduction. Tropical Asia and western Micronesia. Occasional. Ornamental trees in houseyard gardens in a number of other locations. First reported in 2007. 11 (DPNAU2007RT0485, RT0486, RT0487, RT0488, RT1411, RT1412, RT1939, RT1940, RT2033).

**Ficus prolixa** Forst. f. var. **carolinensis** (Warb.) Fosb. Pacific banyan
Nauruan Name: **eaeo, eyayo, yayo**

Indigenous. New Caledonia and Micronesia to southwestern Polynesia (*F. prolixa*). Very abundant in the 1980s, now abundant. Medium to large tree, 2 to 20 m high, with many aerial roots descending from branches. Common on plateau in areas of unmined forest, in older strip-mined areas, and on the escarpment and coastal strip, primarily on coral-limestone pinnacles and outcrops. *F. prolixa* seems to be one of the only species capable of long-term colonization of residual pinnacles in strip-mined areas and could become dominant in the disclimax vegetation. Berry-like fruit (*moduru*) eaten cooked and mixed with boiled sap (toddy or *karawai*) from the coconut flower spathe (*kamerara*) to make a dish known as *dedangan* or *dedengan* which can keep for two to four weeks, and, if cooked and dried in the sun, will keep for years if stored in a dry place; sap used as chewing gum (*ikumi, kumi*). 1, 3(58663), 5(19), 6, 7, 11 (DPNAU2007RT0085, RT0087, RT0088b, RT0099a, RT0100, RT0104, RT0106, RT0110, RT0322 RT0348b, RT0423b, RT0822 RT0871 RT0872 RT0873, RT1188, RT1201a, RT1205a, RT1207, RT1208, RT1211a, RT1260, RT1261, RT1356, RT1370, RT1371, RT137, RT1379, RT1391, RT1392, RT1393, RT1394, RT0406, RT1549, RT1570, RT1792, RT2084, RT2085, RT2092, RT2364, RT2370b, RT2371, RT2372, RT2373, RT2374, RT2381, RT2382, RT2383b, RT2384b, RT2385, RT2387, RT2439, RT2440, RT2441, RT2978a, RT3009, RT3147).

**Ficus tinctoria** Forst. f. Dyer's fig, native fig
Nauruan Name: **debero**

Recent introduction. Southeast Asia to Polynesia and Micronesia. Uncommon. Planted food tree in Rev. James Aigimea's garden behind the house in the 1980s. Found near an I-Kiribati residence at Location in 2007. Fruit eaten cooked; fruit also cooked and mashed and mixed with boiled coconut syrup (*kamirara*, *kamerara*) to make a pudding (*dedengan*). Plant reportedly introduced from Kiribati, where it is known as **te bero** and is a supplementary staple in many areas and a major staple in the drier islands of southern Kiribati. Use learned by some Nauruans from I-Kiribati, but recipe essentially the same as used by Nauruans for *F. prolixa*. 5(104), 6, 7(27808), 11 (DPNAU2007RT0343, RT0344, RT0345, RT0346, RT2932, RT2933, RT2937, RT2938, RT2939, RT2940, RT2941).

**Ficus** sp.

Recent introduction. Planted ornamental. Rare. 5 (197).

## MORINGACEAE (Moringa Family)

**Moringa oleifera** Lam. horseradish tree, drumstick tree, saijan, seijan (Hindi)
Syns. *Guilandina moringa* L.; *Moringa moringa* (L.) Millsp.

Recent introduction. India. Occasional to common. Food plant in Indian home gardens on Meneng Terrace and Command Ridge and in Filipino Gardens at Location. Nutritious leaves, fruit, and flowers cooked as vegetables by resident Filipino and Indian families. Now planted in many Nauruan gardens. Very common food tree planted by Indians in Fiji. 5, 6, 7, 10, 11 (DPNAU2007RT0010, RT0012, RT0893, RT0906, RT0994, RT1859, RT2224, RT2225, RT2226, RT2260, RT2261, RT2410, RT2411).

## MYRTACEAE (Myrtle Family)

**Callistemon viminalis** (Sol. Ex Gaert.) G. Don ex Loudon — weeping bottlebrush

Recent introduction. New South Wales. Rare. Single plant seen in houseyard garden on Command Ridge in 2007. 11 (DPNAU2007RT2250).

**Eucalyptus** sp. — eucalyptus, gum tree

Recent introduction. Australia. Rare. Tree with peeling bark; leaves, aromatic; flowers, petals absent, with numerous showy stamens; fruit, a woody capsule, opening by slits; seeds, small and numerous. Planted ornamental tree in Nauruan houseyard garden. 6.

**Pimenta dioica** (L.) Merr. — allspice
Syn. *P. officinalis* Lindl.; *Myrtus pimenta* L.; *M. dioica* L.

Recent introduction. Central America and West Indies. Rare. Planted ornamental seedling in home garden. Not seen in 2007. 6.

**Psidium guajava** L. — guava
Nauruan Name: **kuwawa**

Recent introduction. Tropical America. Common. Occasionally planted or protected in home gardens; spontaneous on coastal strip and locally abundant on margins of unmined forest on plateau and in regrowth in mined areas. Hybrid improved cultivar planted in Taiwanese vegetable project at Buada. Wood an excellent firewood and makes good fishing poles; leaves used to treat diarrhoea; ripe fruit eaten and made into jams. 3(58650, 58767), 4(105N), 5(94), 6, 7, 8, 10, 11 (DPNAU2007RTRT0435, RT0436 RT0767, RT0772, RT0773, RT1121, RT1774, RT2081c, RT2083, RT2268, RT2492, RT02648, RT2665 RT2667, RT3007, RT3008, RT3203, RT3204).

**Syzygium malaccense** (L.) Merr. and Perry — Malay apple, mountain apple
Syns. *Eugenia malaccensis* L.

Recent introduction. Southeast Asia. Rare. Planted fruit tree seedling in Tuvaluan garden at Location. Common aboriginal introduction throughout most of high-island Melanesia and Polynesia, where the fruit is eaten. 5, 6.

## NYMPHAEACEAE (Waterlily Family)

**Nymphaea** sp. — water lily

Recent introduction. E. and S. Africa and Madagascar. Rare. Planted ornamental in water tanks and in small household fish ponds. 3(58684), 4, 5(251).

## NYCTAGINACEAE (Four-O'clock Family)

**Boerhavia repens** L. — boerhavia, pigweed
Syn. *Boerhavia diffusa* sensu auct non L.

Indigenous. Africa to Hawai'i. Uncommon. Weed of roadsides, wasteplaces and ruderal sites. Plant fed to pigs; used as a vegetable in times of food scarcity in Kiribati. Common in Kiribati, but reported here for the first time from Nauru. 11 (DPNAU2007RT0260, RT1756)

**Bougainvillea glabra** Choisy bougainvillea, lesser bougainvillea
Nauruan Name: **sita, tsitta**

Recent introduction. Brazil. Occasional. Planted ornamental. Flowers used by I-Kiribati in garlands. 3(58726), 5, 6, 7, 11 (DPNAU2007RT1965).

**Bougainvillea** x **buttiana** Holttum & Standley hybrid bougainvillea
Syn. Mistakenly identified as *Bougainvillea spectabilis* Willd.
Nauruan Name: **tsita, tsitta**

Recent introduction. Horticultural origin. Common. Planted ornamental in household gardens. Flowers used in garlands and decorations. According to Whistler (2000), it is commonly misidentified as the Brazilian species, *B. spectabilis* Willd., and is apparently a hybrid of two other species, one of which is possibly *B. spectabilis*. 5, 6, 7, 11 (DPNAU2007RT0068, RT0269, RT1119, RT1120, RT1145, RT1146).

**Mirabilis jalapa** L. four-o'clock, marvel of Peru, false jalap
Nauruan Name: **teoua, teowa**

Recent introduction. Peru. Occasional. Planted ornamental; spontaneous in some places on coastal strip in the 1980s. Flowers used in garlands. Reportedly used by I Kiribati to treat rickets by boiling a handful of petioles in toddy, which is then drunk to correct distortion of the bones. 3(58784), 5, 6, 7, 11 (DPNAU2007RT1890, RT1891).

**Pisonia grandis** R. Brown pisonia, lettuce tree, bird-catcher tree
Syn. *Pisonia alba* Span.
Nauruan Name: **yangis, yangys, yangits**

Indigenous. Indopacific. Occasional. Tree in unmined plateau forest along the crest of the escarpment above the northern portion of Anibare Bay and on unmined residual rocky limestone outcrops. Occasionally planted in houseyard gardens and at Location contract workers settlement. Very brittle wood used in past as an inferior fuel; most important roosting habitat for noddy birds, *darur* (*Anous stolidus*) which are an important ceremonial food. Leaves cooked as a nutritious vegetable in Kiribati to combat malnutrition and fed to pigs in Tonga. 6, 7, 11 (DPNAU2007RTRT0334, RT0335, RT0541, RT0542, RT0543, RT1178, RT1189, RT1190, RT1191, RT1194b, RT1195, RT1196, RT1197b, RT1199, RT1225, RT1226, RT1227, RT1229, RT1230, RT1232, RT1237, RT1240, RT1241, RT1243, RT1276, RT1277, RT1278a, RT1279, RT1648, RT1650, RT2395, RT2396, RT2397, RT2398, RT2424a, RT2425a, RT2930).

## OLEACEAE (Olive Family)

**Jasminum multiflorum** (Burm. f.) Andr. star jasmine, downly jasmine
Syns. *Nyctanthes multiflora* Burm. f.; *Jasminum pubescens* Willd.

Recent introduction. India. Rare. Planted ornamental. 5, 6.

**Jasminum sambac** (L.) Ait. Arabian jasmine, pikake (Hawaii)
Syn. *Nyctanthes sambac* L.
Nauruan Name: **rimone**

Pre-World War II introduction. India. Occasional. Planted ornamental, especially in I-Kiribati and Tuvaluan gardens at Location in the 1980s. Occasional in Nauruan gardens in 2007. Flowers used in garlands and for scenting oil. 3(58719), 5(18), 6, 7 11 (DPNAU2007RT0495, RT0927, RT0980).

## ONAGRACEAE (Evening Primrose Family)

**Ludwigia hyssopifolia** (G. Don) Excell swamp primrose, willow primrose
Syns. *Jussiaea linifolia* Vahl.; *Jussiaea hyssopifolia* G. Don

Recent introduction. Pantropical. Paleotropics through Malesia to Australia and Micronesia and a more recent introduction into Fiji and Samoa. Rare in the early 1980s but a common weed in swampy areas along the margins of Buada Lagoon in 2007. Previously identified as *Ludwidgia octovalvis* (Jacq.) Raven, but the species seen in 2007 was identified as *L. hyssopifolia* by Warea Orapa. Both species possibly exist. 4 (150), 10, 11 (DPNAU2007RT0954, RT0955, RT2613, RT2614, RT2615).

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**Ludwigia octovalvis** (Jacq.) Raven swamp primrose, willow primrose
Syns. *Jussiaea suffruticosa* L.; *Oenothera octovalvis* Jacq.

Recent introduction. Pantropical. Rare. Weed in swampy area bordering mangroves in Meneng. A weed, possibly growing together with *L. hyssopifolia* along the margins of Buada Lagoon in 2007. 4 (150), 11 (DPNAU2007RT02622).

## OXALIDACEAE (Wood Sorrel Family)

**Averrhoa bilimbi** L. belimbi

Recent introduction. Malaya to India. Uncommon. Three large trees planted near Indian homes on Meneng Terrace. Fruit eaten ripe; green and ripe fruit made into pickles by Indian families. 7, 11 (DPNAU2007RT0897, RT0899, RT0900, RT0901, RT0902, RT0903, RT1123, RT1124, RT1861, RT1862, RT1863, RT1864, RT1865 RT1894, RT2999, RT3000, RT3001, RT3002, RT3003).

**Averrhoa carambola** L. carambola

Recent introduction. Malaysia and Southeast Asia. Rare. Small fruit tree in Taiwanese garden project at Buada. 11 (DPNAU2007RT2650)

**Oxalis corniculata** L. yellow wood-sorrel, creeping wood-sorrel

Pre-World War I introduction; reported by Schumann and Lauterbach (1901) as collected by Finsch. Paleotropical and paleosubtropical; now cosmopolitan. Rare. Weed at MQ 40 Command Ridge. 1, 6(163).

**Oxalis regnelli** Miq. Purple shamrock
Syns. *O. regnelli* var *triangularis*; *O. Triangularis* var. *purpurea*

Recent introduction. South America. Rare. Herb with a scaly underground stem, folded, broadly triangular purple clover-like leaves, and white flowers. Seen as a hanging potplant in houseyard garden in Nibok in 2007. 11 (DPNAU2007RT3126a).

## PASSIFLORACEAE (Passion Flower Family)

**Passiflora coccinea** Aubl. scarlet passion flower

Recent introduction. Tropical America. Rare. Planted ornamental. 6.

**Passiflora edulis** Sims passionfruit

Recent introduction. Brazil. Rare. Two small seedlings in home garden in the early 1980s and a number of plants seen in the Taiwanese nursery at Buada Lagoon in 2007. Supplementary food plant in many parts of the Pacific and currently or formally an important cash crop in Niue, Fiji, W. Samoa, Hawaii and Papua

New Guinea. 6, 11 (DPNAU2007RT02640).

**Passiflora foetida** L. var. **hispida** (DC.) Killip. wild passionfruit, stinking passion flower, love-in-a-mist

Syn. *P. hispida* DC. ex Triana & Planch

Nauruan Name: **oatamo, watamo**

Pre-World War II introduction. Tropical America. Occasional. Weed, generally on plateau, but also on escarpment and coastal strip, along roadsides, trailsides and in thickets ruderal habitats. Tangy pulp and seeds eaten by children and some adults. 2, 3(58592), 4(117N), 5(54), 6, 7, 8(9581), 10, 11 (DPNAU2007RT0208, RT0212, RT0213, RT0341, RT1727, RT2133, RT2337, RT2579).

## PIPERACEAE (Pepper Family)

**Peperomia obtusifolia** (L.) A. Dietr. jade plant, baby rubber plant

Syn. *Piper obtusifolia* L.

Recent introduction. West Indies and Florida. Rare. Pot plant. 3(58691), 6, 7.

**Peperomia pellucida** (L.) HBK. peperomia

Syns. *Peperomia pellucidum* L.; *P. lineata* Miq. ex Yuncker

Recent introduction. Tropical America. Uncommon. Weed of pot plants and shady moist areas around homes. 5(7), 6, 8, 10, 11 (DPNAU2007RT1877, RT1878, RT2019, RT2024).

## PLUMBAGINACEAE (Leadwort Family or Plumbago Family)*

**Plumbago auriculata** Lam. Cape plumbago, Cape leadwort, blue plumbago

Syn. *Plumbago capensis* Thunb.

Recent introduction. South Africa. Rare. Seen as a potted plant in one houseyard garden in Meneng District in 2007. 11 (DPNAU2007RT1974, RT1975).

## POLYGALACEAE (Polygala Family)

**Polygala paniculata** L. bubblegum plant

Recent introduction. Tropical America. Rare. Weed along Topside running track and in other waste places. Not seen in 2007. 5, 6(203), 7.

## POLYGONACEAE (Buckwheat Family)

**Antigonon leptopus** Hook. and Arn. Mexican creeper, chain of love, coral vine, corallita

Recent introduction. Mexico. Occasional in the 1980s but now locally abundant and spreading. Planted ornamental and spontaneous in waste places and ruderal habitats. Invasive and climbing in almost monospecific stands on the escarpment above Location and the hospital. 3(58679), 5(59), 6, 7, 8(9562), 10, 11 (DPNAU2007RT0324, RT0325, RT0326, RT0327, RT1007b, RT1381, RT1382, RT1383, RT1384, RT1385, RT1395, RT2168, RT2169, RT2191).

**Coccoloba uvifera** (L.) Jacq. sea grape

Syn. *Polygonum uvifera* L.

Recent introduction. Trop. America. Rare. Planted ornamental near Buada Lagoon. 3(58787), 6.

## PORTULACACEAE (Purslane Family)

**Portulaca grandiflora** Hook. portulaca, purslane, pigface

Recent introduction. Brazil. Rare. Planted ornamental. 3(58659), 5, 6, 7.

**Portulaca oleracea** L. pig weed, purslane, wild purslane

Nauruan Name: **debois, doboiy**

Recent introduction. Uncertain origin but now Cosmopolitan. Occasional. Weed in gardens and waste places, especially in sandy, hydromorphic soils of the shores of Buada Lagoon. Cooked leaves and stems eaten after pounding and mixing with coconut flower spathe syrup (*kamerara*); important famine food during World War II; plants fed to pigs; leaves and stems boiled with water being used to cure scabies. 3(58624, 58734), 5(4), 6, 7, 8, 10, 11 (DPNAU2007RT0054, RT0055, RT0294, RT2553, RT2867).

## PUNICACEAE (Pomegranate Family)*

**Punica granatum** L. ornamental flowering pomegranate

Recent introduction. Middle East, perhaps Iran. Rare. Planted ornamental in a couple of houseyard gardens. 11 (DPNAU2007RT0492, RT0493).

## RHAMNACEAE (Buckthorn Family)

**Colubrina asiatica** (L.) Brongn. soapbush, hoop withe

Syns. *Ceanothus asiaticus* L.; *Ceanothus capsularis* Forst. f.

Nauruan Name: **ewongup**

Indigenous. Paleotropical. Common. Found in forests on plateau and on cliffs and slopes and at base of escarpment and in thickets on the inner margins of the escarpment. Rolled leaves used with flowers of other species in garlands. A traditional source of soap in other Pacific islands, although not reportedly used for this purpose on Nauru. 2, 3(58641), 4(113N), 5(69), 6, 7, 10, 11 (DPNAU2007RT0095, RT0323, RT0383, RT0562, RT0567b, RT0751, RT0752, RT0753, RT0758, RT0759a, RT0777, RT0784, RT0886, RT0887, RT3044, RT3045, RT3170, RT3206).

**Ziziphus mauritiana** Lam. Indian jujube

Recent introduction. India and Southeast Asia to the East Indies. Rare. Two mature fruiting trees seen in Taiwanese experimental garden at Buada in 2007. 11 (DPNAU2007RT2684, RT2685, RT2686).

## RHIZOPHORACEAE (Mangrove Family)

**Bruguiera gymnorrhiza** (L.) Lam. f. brown mangrove

Syns. *Rhizophora gymnorhiza* L.; *R. conjugata* L.; *Bruguiera gymnorhiza* Savigny; *B. rheedi* Bl.; *B. eriopetala* W. & Arn.; *B. conjugata* (L.) Merr.

Nauruan Name: **etum, etam**

Indigenous. Indopacific. Occasional. Localized in system of brackish lakes or lagoons near base of escarpment in Meneng, Anabar, Ijuw and Anetan Districts (lake in Anabar known as Araro). A couple large trees also seen behind houses near ponds in Meneng District and near a pool to the north of Buada Lagoon. Reportedly present around the main Buada Lagoon in the past. Strong wood excellent for house construction; pre-germinated seed (fruit) eaten cooked, after scraping, drying in the sun and then boiling; the Nauruan delicacy known as *etum* or *etam*, is prepared by mixing the grated pre-germinated seed with coconut milk and then baking; skin of seed used to prepare a black dye for traditional skirts (*ridi*). 2, 3(58746), 4(167N), 5(103), 6, 7, 11 (DPNAU2007RT0188, RT0189, RT0207, RT0608, RT0609, RT0612, RT0613, RT0614, RT0675, RT0676, RT0677, RT0678, RT0679b, RT0680, RT0681, RT0682, RT0691, RT0692, RT0693, RT0694, RT0695a, RT0698, RT0699, RT0700, RT0701, RT0702, RT0703, RT0712, RT0713, RT0714, RT0715, RT0716, RT0717, RT0718, RT0807, RT0808, RT0809, RT0811, RT1030, RT1284b, RT1285b, RT1286b, RT1287b, RT1288, RT1291, RT1295, RT1314, RT1315, RT1316, RT1317, RT1318, RT1319, RT1320a, RT1322a, RT1707, RT1713, RT1728, RT1734, RT3179, RT3180, RT3181, RT3182, RT3183, RT3185, RT3191, RT3194, RT3195, RT3196a, RT3197, RT3198, RT3199, RT3200, RT3201, RT3202).

**Rhizophora stylosa** Griff. mangrove

Syns. *Rhizophora mucronata* Lam. var. *mucronata*; *R. mucronata* Lam. var. *stylosa* Schimper

Nauruan Name: **dadongo**

Indigenous. Indopacific. Localized in a small population in the inner part of a system of brackish lakes or lagoons near base of escarpment in Ijuw. First identified in 1996 by Thaman and Hassall. 9?, 11 (DPNAU2007RT0641, RT0643, RT0644, RT0645, RT0646, RT0647, RT0666, RT0667, RT0670, RT0673, RT0674, RT0685, RT0686, RT0687, RT0688, RT0689, RT0690, RT0706, RT0707, RT0708, RT0709, RT3184, RT3186, RT3187, RT3188, RT3189, RT3190, RT3192).

## ROSACEAE (Rose Family)

**Filipendula rubra** (J. Hill) B.L. Rob. queen of the prairies

Recent introduction. Central United States. Rare. Planted ornamental. 6.

**Rosa damascena** Mill. damask rose

Nauruan Name: **dorot** ("the rose")

Recent introduction. Western Asia. Occasional. Planted ornamental. 5(80), 6.

## RUBIACEAE (Coffee Family)

**Aidia racemosa** (Cav.) Trivengadum

Syns. *Aidia cochinchinensis* sensu auct. Non Lour.; *Randia cochinchinensis* sensu auct. non Lour.) Merr.; *Stylocornya racemosa* Cav.; *Randia graeffei* Reinecke

Nauruan Name: **enga, enguh, ikwanimwi**

Indigenous. Tropical Asia to western Polynesia. Rare. Rare shrub with edible fruits in escarpment forest. A small population of a few individuals seen in a single location on a seaside escarpment terrace just below the main ridge above Anibare Bay in 2007. Ripe fruit eaten, especially by children. 2(K9), 6(165), 9, 11 (DPNAU2007RT1245, RT1246, RT1247, RT1248, RT1249, RT1250, RT1252, RT1253a, RT1255, RT1256,

RT1257, RT1258).

**Dentella repens** J. & G. Forst. dentella

Recent introduction. Pantropical. Rare. Small-leaved creeping weed seen in parking lot outside Rehabilitation Building. 11 (DPNAU2007RT2038).

**Gardenia augusta** (L.) Merr. august gardenia
Syns. *Varneria augusta* L.; *Gardenia florida* L.; *G. jasminoides* Ellis; *G. radicans* Thunb.

Recent introduction. China. Uncommon. Planted ornamental. 6, 7, 11 (DPNAU2007RT1969).

**Gardenia taitensis** DC. Tahitian gardenia, tiare Tahiti (Tahiti)
Nauruan Name: **tiare**

Recent introduction. Pacific Islands. Rare in the 1980s, occasional in 2007. Planted ornamental in Tuvaluan garden at Location in the 1980s and in Nauruan houseyard gardens in 2007. Fragrant flowers used in garlands and to scent coconut oil. 6, 7, 11 (DPNAU2007RT0243 RT0477, RT1075, RT1076, RT1077, RT1760, RT1777, RT1941, RT1942 RT1976, RT2720, RT3117, RT3118, RT3119, RT3120).

**Gardenia** sp. Professor Pucci gardenia

Recent introduction. Origin. Rare. Planted ornamental. 6.

**Guettarda speciosa** L. guettarda
Nauruan Name: **iut, yut**

Indigenous. Tropical Asia to the Pacific Islands. Occasional. Found in woods and thickets on coastal strip, but less common in forest on plateau near escarpment; common in regrowth in older strip-mined areas; planted in home gardens. Straight pieces of timber make excellent house rafters and used for canoe parts and handicrafts; bark scraped and mixed with other plant extracts, eg., *Scaevola sericea* (*emet*) and *Cordia subcordata* (eongo) to produce a medicine for beriberi; leaves used to parcel food and as plates; flowers used in garlands and decorations, often after soaking in coconut oil; flowers considered the best for scenting coconut oil; juice from flowers used as a deodorant; flowers and young leaves soaked in water to make a love potion, which is drunk by women, who when sweating, make men go crazy (reportedly learned from I-Kiribati); juice of flowers mixed with coconut juice used to keep hair healthy. 2, 3(58759), 5(70), 6, 7(27806), 11 (DPNAU2007RT0013, RT0836, RT0878, RT1597, RT1598, RT1610, RT1611, RT1613b, RT1741, RT1782, RT2291, RT2390, RT2484b, RT2488c, RT2489c, RT2490c, RT2767, RT2768, RT2790, RT3033b).

**Hedyotis corymbosa** (L.) Lam.
Syn. *Oldlandia corymbosa* L.

Recent introduction. Pantropical. Uncommon. Weed in waste places and ruderal habitats. 4(140N), 5(143), 6, 8(9560), 10, 11 (DPNAU2007RT1722, RT2064X, RT2065X, RT2128, RT2129, RT2974, RT2975).

**Ixora casei** Hance giant red ixora
Syns. *Ixora duffii* Baine; *I. carolinensis* Hosok.; *I. longifolia* Smith

Recent introduction. Caroline Is. (Southeast Asia?). Occasional. Planted ornamental in Nauru, but reportedly wild, and indigenous to Palau, Chuuk (Truk) and Pohnpei (Ponape) and Kosrae (Kusaie). Flowers used in ornamentation and garlands. 3(58707), 5, 6, 7, 11 (DPNAU2007RT0245, RT0246, RT0247, RT0981, RT0982, RT1749, RT2221, RT2222).

**Ixora chinensis** Lam. Chinese ixora

Recent introduction. China and East Indies. Uncommon. Planted ornamental and potplants. Seen

as Meneng Hotel and in houseyard gardens in 2007. 11 (DPNAU2007RT0067, RT2009).

**Ixora coccinea** L. red ixora, flame of the woods
Syn. *Ixora fraseri* Hort. ex Grant

Recent introduction. Southeast Asia. Occasional. Planted ornamental. 5, 6(202), 11 (DPNAU2007RT0539).

**Ixora finlaysoniana** Lam. white ixora, fragrant ixora

Recent introduction. Thailand and Southeast Asia. Rare. Planted ornamental. 11 (DPNAU2007RT1107, RT1108).

**Ixora siamensis** Wallich ex G. Don pink ixora, Siamese ixora

Recent introduction. Southeast Asia. Uncommon. Planted ornamental on Command Ridge. 11 (DPNAU2007RT2220).

**Morinda citrifolia** L. beach mulberry, Indian mulberry, noni (Hawai'i)
Nauruan Name: **deneno**

Indigenous. Tropical Asia and Australia to Southeastern Polynesia. Common. Common to abundant on coastal strip, often protected or planted around homes and in waste areas; occasional in plateau forest and in older strip-mined areas. Plants kept around homes to ward off evil spirits; small pieces cut up and rubbed on hands, face, etc., to ward off evil spirits; roots ground to provide a yellow dye; ripe fruit eaten raw, but far more commonly eaten in the past; fruit cooked and mixed with coconut syrup to make pudding (*dedangan*); fruit and branches cooked to eliminate evil smells, especially after war; roots and branches crushed and squeezed to cure rashes, fruit and roots crushed and cooked to cure headaches, tender leaves heated up with coconut oil and used as a poultice to suck puss out of boils (*ibir*, *ibur*), raw fruit ground and drank as a cure for diabetes, and fruit cooked and used as a cure for dysentery. Plant also a very important medicinal and multi-use plant throughout the Pacific. In Kiribati, where there have been recent outbreaks of vitamin A-deficiency-induced night blindness among young children, programs encouraging mothers to feed children the cooked leaves of vitamin A-rich *M. citrifolia* have reportedly improved the situation. One local producer making noni juice for local sale and export. 2, 3(58754), 5(98), 6, 7(27807), 11 (DPNAU2007RT0072, RT0168, RT0180, RT0408, RT0464a, RT0624, RT0728 RT0770, RT1498b, RT1616b, RT1620, RT1740, RT1799, RT2243, RT2319, RT2329a, RT2330, RT2339, RT2342a, RT2343, RT2383a, RT2384a, RT2449a, RT2451a, RT2452a, RT278, RT3073a, RT3176, RT3216, RT3217, RT3218, RT3219).

**Mussaenda erythrophylla** Schum. and Thonn. red mussaenda, Ashanti blood

Recent introduction. Ghana. Rare. Planted ornamental. 6(195).

**Mussaenda erythrophylla** x **philippica** 'Queen Sirikit' pink mussaenda
Syn. Sometimes mistakenly identified as *Mussaenda frondosa* L.

Recent introduction. Tropical Africa and Madagascar to South Asia. Rare. Planted ornamental. 6(248), 11 (DPNAU2007RT1979).

**Pentas bussei** K. Kr. red pentas, red star cluster

Recent introduction. Tropical Africa? Rare. Planted ornamental. 3(58675), 6, 11 (DPNAU2007RT2241, RT2952).

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**Pentas lanceolata** (Forsk.) K. Schum. pentas, Lady Fletcher, Egyptian star cluster
Syns. *Ophiorrhiza lanceolata* Forsk.; *Pentas carnea* Benth.

Recent introduction. Tropical Africa, Madagascar, Comorro Islands and Arabian Peninsula. Occasional. Planted ornamental. 3(58689), 5, 6(233,166), 7, 11 (DPNAU2007RT1695, RT1696, RT1973, RT2951).

**Spermacoce assurgens** R. & P. buttonweed
Syns. *Spermacoce suffrutescens* Jacq.; *Borreria laevis* sensu auct. plur. non (Lam.) Griseb.

Recent introduction. Southern Asia. Uncommon in 1980s, now common. Weed in waste places and houseyard gardens. 5(2), 6, 10, 11 (DPNAU2007RT1151, RT1854).

**Spermacoce bartlingiana** (DC) Fosb. buttonweed

Recent introduction. Southern Asia. Occasional. Weed in waste places and ruderal sites. 11 (DPNAU2007RT0219, RT0274b, RT0275a, RT0293, RT1068).

**Tarenna sambucina** (Forst. f.) Dur. ex Drake
Syns. *Coffea sambucina* Forst. f.; *Stylocornya sambucina* (Forst. f.) A. Gray; *Tarenna glabra* Merr.

Indigenous? New Caledonia to S.E. Polynesia and Micronesia. Extinct? Reported present by Burges in 1935, but not collected since. 2.

## RUTACEAE (Rue Family)

**Citrus aurantifolia** (Christm.) Swingle lime
Syn. *Limonia aurantifolia* Christm.
Nauruan Name: **derem, deraim**

Recent introduction. Malesia. Occasional. Planted fruit tree in houseyard gardens. Juice of fruit used to marinate raw fish and to make drinks. 3(58695), 5, 6(221), 7, 11 (DPNAU2007RT0151, RT0919, RT0920, RT0951, RT0992, RT0993, RT0994, RT1271, RT2426, RT2428, RT2710, RT3121).

**Citrus limon** (L.) Burm. f. lemon
Syns. *Citrus medica* var. *limon* L.; *C. limonum* Risso; *C. limonia* Osbeck

Recent introduction. East Asia. Rare. Planted fruit tree. Reportedly more abundant in the past. Juice used to marinate raw fish and to make drinks. 5, 6, 7, 11 (DPNAU2007RT1897).

**Citrus mitis** Blanco calamondin orange, kalamantsi

Recent introduction. East Asia. Occasional. Planted fruit tree in houseyard gardens. Fruit squeezed on food and used to make drinks and marmalade. 11 (DPNAU2007RT0870, RT0890, RT0891, RT0892, RT0904, RT0905, RT1856, RT1857, RT1858).

**Citrus reticulata** Blanco tangerine, mandarin orange
Syns. *Citrus deliciosa* Ten.; *C. nobilis* Lour. var.

Recent introduction. Rare. East Asia. Immature planted fruit tree. 5, 6.

**Citrus sinensis** (L.) Osbeck orange, sweet orange
Syn. *C. aurantium* var. *sinensis* L.

Recent introduction. South Asia. Uncommon. Immature planted fruit tree seen in the 1980s; reportedly more common in past and planted by the Japanese during World War II. Mature trees seen in a few houseyard gardens in Buada and on Chinese experimental farm in Buada in 2007. 6, 7, 11 (DPNAU2007RT0952, RT0953, RT1074, RT2663 RT2669).

**Murray koenigii** (L.) Spreng. curry leaf, Indian bay leaf, tej patti, karipilai

Recent introduction. India and Southeastern Asia. Uncommon. A number of single trees planted in houseyard gardens on the Meneg Hotel compound and in the NPC Settlement at Location. Young leaves cooked as a spice in curries and soups, mainly by resident Indian families. 11 (DPNAU2007RT1644, RT1645, RT1646, RT2207, RT2906, RT2907, RT2908).

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**Murraya paniculata** (L.) Jack. mock orange, orange jessamine, orange jasmine, satin wood
Syns. *Chalcas paniculata* L.; *Murraya exotica* L.

Recent introduction. Tropical Asia, Malesia and Australia. Uncommon. Planted ornamental and pot plant at Location in the 1980s and in houseyard gardens in 2007. 6(184), 7, 11 (DPNAU2007RT0477, RT0478, RT1429, RT1430).

## SAPINDACEAE (Soapberry Family)

**Dodonaea viscosa** (L.) Jacq. native hop bush
Syn. *Ptelea viscosa* L.
Nauruan Name: **eteweo, eteweau**

Indigenous. Pantropical. Common. Common in scrub and occasional in plateau forest; occasional in revegetated older mined areas. Strong but flexible trunks and branches used for fishing rods and for frames for flying-fish and noddy nets; leaves occasionally used to scent coconut oil. 2, 3(58598, 58637), 5(73), 6, 7, 8(9578) , 11 (DPNAURT0381, RT0382 RT0400, RT0410a, RT1579, RT1596, RT1604b, RT1613a, RT1614, RT2076, RT2077, RT2081a, RT2082, RT2311, RT2316, RT2362, RT2449b).

**Nephelium litchi** Camb. lychee, lychee nut
Syn. *Litchi chinensis* Sonn.

Recent introduction. South China. Rare. Planted fruit tree seedling. 6.

## SAPOTACEAE (Sapodilla Family)

**Chrysophyllum cainito** L. star apple, cainito

Recent introduction. West Indies. Rare. Planted fruit tree seedling. 6.

## SAXIFRAGACEAE (Saxifrage Family)

**Saxifraga sarmentosum** L. f. mother of millions, mother of thousands, strawberry geranium

Recent introduction. East Asia. Rare. Pot plant. 4 (144).

## SCROPHULARIACEAE (Snapdragon Family)

**Angelonia salicariaefolia** Benth. angelonia, monkey face
Syns. *Angelonia angustifolia* Benth.

Recent introduction. Tropical America. Occasional. Planted ornamental. 3(58723), 5, 711 (DPNAU2007RT1692, RT1693).

**Angelonia biflora** Benth. angelonia
Syn. *Angelonia gardneri* Hook.;
Recent introduction. Tropical America. Rare.. 6(256). Planted ornamental

**Bacopa procumbens** (Mill.) Greenm.
Syns. *Erinus procumbens* Mill.); *Herpestris chamaedryoides* HBK.; *Bacopa chamaedryoides* (HBK.) Wettst.

Recent introduction. Tropical America. Weed in lawns and disturbed places. 3 (58813).

**Russelia equisetiformis** Schlect. and Cham. firecracker flower, fountain bush
Nauruan Name: **dokaibangi, dugaibangi, dogaibwangi**

Recent introduction. Mexico. Occasional. Planted ornamental; growing as an escaped adventive along roadside along the upper escarpment road passing above NPC housing toward the calcination plant.. 3(58678), 4(157N), 5, 6(213), 7, 10, 11 (DPNAU2007RT2227, RT2263, RT2264, RT2265, RT02644, RT02645, RT02646, RT2785, RT2911, RT2912).

**Russelia sarmentosa** Jacq.

Recent introduction. Mexico. Rare. Planted ornamental. 3 (58795).

**Scoparia dulcis** L.

Recent introduction. Tropical America. Rare. Weed of waste places. Seen off the main road to Buada above the calcination plant. 6(159), 8(9557), 11 (DPNAU2007RT2064, RT2065).

## SOLANACEAE (Nightshade Family)

**Capsicum annuum** L. vars. annual chilli pepper, red pepper
Nauruan Name: **epeba**

Recent introduction. Tropical America. Occasional. Planted spice plant in expatriate garden at Meneng Terrace in the 1980s and in Chinese commercial vegetable gardens and some Nauruan houseyard gardens in 2007. Fruit used to spice food. 6, 7, 11 (DPNAU2007RT1886, RT2206, RT2532, RT2533, RT2961).

**Capsicum annuum** L. var. **grossum** (L.) Sendtn. bell pepper, sweet pepper, sweet capsicum, paprika,
Syn. *Capsicum grossum* L.; *C. dulce* Hort. ex Dun.

Recent introduction. Tropical America. Rare. Food plant in Topside workshop gardens in the a980s and occasional in 2007. Fruit eaten raw in salads and cooked as a green vegetable. 5, 6, 11 (DPNAU2007RT2587).

**Capsicum frutescens** L. tabasco, bird chilli, perennial chilli
*Capsicum minimum* Roxb.
Nauruan Name: **epeba**

Recent introduction. Tropical America. Uncommon. Planted or protected in Tuvaluan garden at Location and in Topside Workshop gardens in the 1980s and in a Tuvaluan women's home garden at Buada in 2007. Reportedly much more common in the past. Fruit used to spice foods, often placed in bottles with coconut juice which is then used as a "vinegar" or sauce. 6, 11 (DPNAU2007RT1082, RT2701, RT2706).

**Cestrum nocturnum** L. night-blooming cestrum, night-blooming jasmine, queen of the night

Recent introduction. West Indies. Occasional. Planted ornamental. 5(15), 6, 10, 11 (DPNAU2007RT0159, RT0160, RT0342, RT0865, RT1705, RT1896, RT1957, RT2934).

**Datura metel** L. datura, cornucopia, jimson weed
Syn. *Datura fastuosa* L.

Recent introduction. Southeast Asia. Rare. Planted ornamental. 6.

**Nicotiana tabacum** L. tobacco

Recent introduction. Tropical America. Rare. Planted in home gardens; reportedly more common in the past. Leaves dried and cured for smoking. Not seen in 2007. 3, 5, 6.

**Physalis angulata** L. cape gooseberry, bladderberry, ground cherry
Nauruan Name: **watamo, oatamo**

Recent introduction. Tropical America. Common. Weed in low ground near Buada Lagoon, on road fill in currently mined areas, and in disturbed soil, gardens and wasteplaces on the coastal strip. Ripe small tomato-like fruit eaten by children. 2, 3(58645, 58768), 4(130N), 5(14), 6, 7(22321), 8(9541), 10, 11 (DPNAU2007RT1036, RT1039, RT1040).

**Physalis lagascae** R & S. ground cherry, wild cape gooseberry, bubble fruit
Syn. *Physalis minima* L.
Nauruan Name: **watamo, oatamo**

Recent introduction. Tropical America. Rare. Weed in low ground near Buada Lagoon. 3(58646).

**Solanum lycopersicum** L. tomato
Syn. *Lycopersicon esculentum* Mill.

Recent introduction. Tropical America. Occasional. Food plant at Location and in expatriate home gardens; spontaneous in waste heaps in the 1980s; common in commercial vegetable gardens and the Taiwanese nursery at Buada in 2007. 5, 11 (DPNAU2007RT1028, RT2672, RT2674).

**Solanum melongena** L. egg plant, aubergine, brinjal

Recent introduction. South Asia. Rare in the 1980s; occasional in 2007. Food plant in home gardens and in Chinese market gardens and the experimental farm in 2007. 5, 6, 11. (DPNAU2007RT1026, RT1086, RT2654, RT2689).

**Solanum tuberosum** L. potato, Irish potato

Recent introduction. Andes Mountains, South America-Andes. Rare. Immature food plant at Location in the 1980s, grown from an imported potato. 5, 6, 7.

## STERCULIACEAE (Cocoa Family)

**Waltheria indica** L. waltheria, boater bush, velvet leaf
Syns. *Waltheria americana* L.; *W. elliptica* Cav.

Recent introduction. Possibly native to Hawai'i or tropical America, but now pantropical. Occasional. Weed of waste places, roadsides, vacant lots and ruderal habitats on coastal strip. 3(58668), 4(112N), 5(5, 109a), 6, 7(22301), 8(9599), 10, 11 (DPNAU2007RT0126, RT0507, RT0619, RT0626, RT1640, RT1641, RT1911, RT2346).

## SURIANACEAE (Quassia Family)

**Suriana maritima** L. bay cedar

Nauruan Name: ?

Indigenous. Pantropical. Rare. Rare coastal plant. Seen as a small drift seedling in 1981. Not seen in 2007. Common on sandy beaches and coral rubble on many atolls and small oceanic islands. 7(27820)

## TILIACEAE (Linden Family)

**Triumfetta procumbens** Forst. f. beach burr

Nauruan Name: **ikiau, ikiow, igiau, giau** (Burges, 1935)

Indigenous. Paleotropics. Rare. Growing along coastal strip and in open areas in coastal thickets in the 1980s. Probably incorrectly reported as *T. semitriloba* Jacq. by Burgess in 1935. Seen planted in a seaside houseyard garden in 1996, but not seen in 2007. Juice from crushed leaves used medicinally to cure filariasis and fever, to retard hair from falling out, and for a gelatinous post-natal medicine which is drunk by mothers to help rid them of afterbirth; crushed leaves and stems also mixed with toddy (*kerawai*) and used as poultices on boils. 1, 2, 4(111N), 5(109), 6, 7(27803).

## TURNERACEAE (Turnera Family)

**Turnera ulmifolia** L. yellow alder, sage rose, Marilopez, West Indian holly

Nauru Name: **linkbelt**

Recent introduction. Mexico and the Caribbean to northern South America. Occasional. A recent introduction, probably in the late 1980s or early 1990s. Planted as an ornamental in household gardens. Has become naturalized and adventive in Fiji and other countries, and was probably introduced into Tarawa via Nauru where it was common by the mid-1990s and spreading rapidly in cultivation on Banaba because of its bright yellow flowers. Flowers used in garlands and flower arrangements. 9, 10, 11 (DPNAU2007RT0253, RT0254, RT0255, RT0596, RT0598b, RT2794, RT2943).

## URTICACEAE (Nettle Family)

**Laportea ruderalis** (Forst. f.) Chew

Syns. *Urtica* ruderalis *Forst. f.; Fleurya ruderalis* (Forst. f.) Gaud. ex Wedd.

Indigenous. Malayo-Pacific. Rare. Growing in shady areas near caves and in moist habitats at the base of the limestone escarpment in the 1980s. Found on limestone on the face of escarpment above the north end of Anibare Bay in 2007. 5(99), 6, 7(27809) , 11 (DPNAU2007DH0182, RT1176, RT1177).

**Pellionia** cf **deveauana** watermelon begonia

Recent introduction. Trop. Asia. Small, creeping, succulent, perennial herb; leaves, 2.5 to 7 cm long, oval, attractive, variegated with combinations of purple, light green, bronzy-green or gray depending on the species and cultivar; inflorescences, inconspicuous, greenish. Pot plant. 6, 11 (DPNAU2007RT1982a).

**Pilea cardieri** Gagn. and Guill. aluminum plant

Recent introduction. Vietnam. Occasional. Pot plant. 5, 6.

**Pilea microphylla** (L.) Liebm. artillery plant

Syns. *Parietaria microphylla* L.; *Pilea muscosa* Lindl.

Recent introduction. Tropical America. Occasional. Weed in pot plants and under planted ornamentals. 3(58713), 5(8), 6, 7, 10, 11 (DPNAU2007RT0274a, RT1879, RT2528, RT2529, RT3126b).

**Pilea nummularifolia** (Sw.) Wedd. creeping Charlie

Recent introduction. Tropical America. Uncommon. Pot plant; ground cover in shaded areas. 5, 6.

## VERBENACEAE (Verbena Family)

**Clerodendrum inerme** L. var. **oceanicum** A. Gray beach privet
Nauruan Name: **eamwiye, eamwije, eyamwiye, eyamwije**

Indigenous. Indomalaysia, Australia and the Pacific Islands. Common. Abundant on limestone cliffs and pinnacles, forming luxuriant curtains near edge of escarpment and on parts of coastal strip in Anetan District and on limestone around the landlocked mangrove lagoons in the northeastern part of the island; occasionally a planted ornamental. Fragrant flowers used in garlands; leaves reportedly pounded and used as a cure for leprosy in the past (cure reportedly received in a dream). 2, 3(58664), 4(103N, 166N), 5, 6, 7(27817), 10, 11 (DPNAU2007RT0078, RT0567b, RT0568, RT0569b, RT0599a, RT0602a, RT0650, RT0651, RT0668, RT0669, RT0671, RT0672, RT0695b, RT0697, RT0705, RT0710, RT0711, RT0759b, RT1298, RT1320b, RT1321b, RT1322b, RT1672, RT1673, RT3193, RT3196b).

**Clerodendrum paniculatum** L. pagoda flower

Recent introduction. Eastern Tropical Asia. Uncommon. Planted ornamental. 5, 6(235), 7, 11 (DPNAU2007RT1888, RT1889, RT1914).

**Clerodendrum quadriloculare** (Blanco) Merr. Philippine glorybower

Recent introduction. Philippines. Uncommon. Planted ornamental in houseyard gardens. Has escaped to become an adventive weed in Fiji. 10, 11 (DPNAU2007RT0597, RT0598a)

**Clerodendrum thomsonae** Balf. f. bleeding heart

Recent introduction. West Africa. Rare. Planted ornamental and potplant. 3(58794), 5, 6, 7(27817), 11 (DPNAU2007RT0923, RT2017).

**Duranta erecta** L. golden dewdrops, golden eardrops
Syn. *Duranta repens* L.

Recent introduction. Tropical America. Occasional. Planted ornamental. 5, 6, 7, 10, 11 (DPNAU2007RT0259, RT1109, RT1110, RT1138, RT1428, RT1997, RT1998, RT2721).

**Lantana camara** L. var. **aculeata** (L.) Mold. lantana
Nauruan Name: **magiroa**

Pre-World War II introduction. Tropical America. Occasional. Planted ornamental; naturalized in ruderal sites and in unmined open plateau forest; occasional in older revegetated strip-mined sites; dense population in disturbed scrubland north of Buada Lagoon. Flowers used in garlands. The first Nauruan to plant lantana was reportedly a woman by the name of Magiroa who stole it from a garden of an expatriate British Phosphate Company employee, hence the Nauruan name. 2, 3(58599, 58798), 4(101N), 5(42), 6, 7, 8(9563), 10, 11 (DPNAU2007RT1049, RT1049, RT1575).

**Lantana camara** L. var. drap d'or cloth of gold lantana

Recent introduction. Tropical America. Occasional. Cultivar with single yellow flowers. Planted ornamental. 3, 6, 11 (DPNAU2007RT0146, RT0155, RT1700, RT1967).

**Phyla nodiflora** (L.) E. Greene turkey tangle, mat grass, false thyme
Syns. *Lippia nodiflora* (L.) Michx.; *Verbena nodiflora* L.

Recent introduction. Warm temperate America. Occasional. Seen in ruderal places around some structures on the coastal strip. Low ground cover with rounded serrated leaves and small white or lavender flowers reported from Majuro (Thaman and Vader Velde 2002), Enewetak (Lamberson 1982) and naturalized on Kwajelein (Whistler & Steele 1999. 11 (DPNAU2007RT0127, RT0128, RT0132b, RT0135).

**Premna serratifolia** L. premna
Syns. *Premna obtusifolia* R. Br.; *P. gaudichaudii* Schauer; *P. integrifolia* L.; *P. taitensis* Schauer; *P. corymbosa* (Burm. f.) Rottl. & Willd.; *P. alba* Lam.
Nauruan Name: **idibiner, idibinerr**

Indigenous. Indopacific. Common. Common tree on coastal strip, in escarpment forest and in scrubland and in the understorey or old coconut plantations; common in home gardens. Timber used for house rafters in the past; wood considered to be among the best firewood for cooking pandanus; leaves boiled with coconut oil to scent it; flowers used in garlands; young leaves used as poultices to help wounds heal. 1(49.R), 2(8.5), 3(58597, 58633), 5, 6, 7(27810), 11 (DPNAU2007RT0181, RT0215, RT0216, RT0433, RT0501, RT0616, RT0618, RT1592, RT1599, RT1780, RT1824, RT1825, RT2101, RT2135, RT2304, RT2305, RT2478, RT2479, RT2480, RT2918, RT2919, RT3100, RT3101).

**Stachytarpheta dichotoma** (Ruiz & Pav.) Vahl white rat's tail
Syns. *Verbena dichotoma* Ruiz & Pav. ; *Stachytarpheta australis* Moldenke ; *S. australis* f. *albiflora* Moldenke

Recent introduction. Cuba and Mexico to Peru and Argentina. Rare. Single plant seen along road in a houseyard garden at Buada. 11 (DPNAU2007RT1024).

**Stachytarpheta jamaicensis** (L.) Vahl Jamaica vervain, blue rat's tail
Syns. *Verbena jamaicensis* L.; *Stachytarpheta indica* (L.) Vahl
Nauruan Name: **edidubai, edidubaiy**

Pre-World War II introduction. Tropical America. Uncommon blue-flowered weed reported present by Burges in 1935, but not seen again until 2007, when seen in a small population in an open field northeast of the hospital. 2, 11 (DPNAU2007RT1396, RT1397).

**Stachytarpheta urticaefolia** Sims blue rat tail, false verbena
Syn. *Cymburus urticaefolius* Salisb.
Nauruan Name: **edidubai, edidubaiy**

Pre-World War II introduction. Tropical America. Common. Common blue-flowered weed in waste places and ruderal habitats, especially along roadsides. Mature dried black fruits reportedly eaten by some children. 3(58632), 4(109N), 5(12), 6, 7, 8(9543), 11 (DPNAU2007RT0166, RT0178, RT0206, RT0317, RT1014b, RT1398, RT1927, RT3062).

**Vitex trifolia** L. var. **bicolor** (Lam) Mold. blue vitex
Syn. *Vitex negundo* L. var. *bicolor* (Willd.) H. J. Lam
Nauruan Name: **dagaidu, dogaidu**

Indigenous. East Africa to the Pacific Islands. Occasional. Occasional in some forest stands on coastal strip in low-lying areas near base of escarpment and in some home gardens. Branches used for fishing rods for small fish; flowers and leaves used in garlands and other body ornamentation; seeds used to make garlands; young leaves and meristem crushed with coconut oil as a cure for fever blisters; juice of fruit drunk as a cure for fits and convulsion. 2, 3(58635), 4(119N), 5(19, 56), 6, 7, 8(9584), 11 (DPNAU2007RT0138, RT0357, RT0358, RT0359, RT0360, RT0535, RT0536, RT0566, RT1924).

## VITACEAE (Grape Family)

**Cissus** sp. cissus

Recent introduction. Tropical Asia? Rare. Planted ornamental. 6.

**Vitis** sp. grape

Recent introduction. Southeastern Europe to India. Rare. 5, 6.

Appendix II. Enumeration, by family, of plants reported present on Nauru prior to the 1980s, in the 1980s and 1990s and during the recent surveys in 2007 by Orapa and Thaman, Hassall and Takeda. The listing of families begins with ferns (Pteridophytes), followed by gymnosperms, and then monocotyledon and dicotyledon flowering plants (Angiosperms). Notes: ? = identification not verified or doubtful; * indigenous species seen only as and ornamental that could have been introduced (e.g., the bird's-nest fern, *Asplenium nidus*); the numbers in parentheses e.g., 2 (1) indicate the number of new (or previously reported) species not reported in the 1980-90s that makes up the 2007 total or the pre-1980s total.

| GROUP/Family | Pre-1980 | | 1980-90s | | 2007 | | Subtotals | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Indg | Intro | Indg | Intro | Indg | Intro | Indg | Intro | Species |
| **FERNS** | | | | | | | | | |
| Adiantaceae | | | | | | | | 1 | 1 |
| Aspleniaceae | 1 | - | - | 1* | - | - | 1 | - | 1 |
| Nephrolepidiaceae | | | 2 | 1 | 2 | | 2 | 1v | 3 |
| Ophioglossaceae | - | - | 1 | - | - | - | 1 | - | 1 |
| Polypodiaceae | - | - | 2? | - | 1 | - | 2? | - | 2 |
| Psilotaceae | 1 | - | 1 | - | 1 | - | 1 | 1 | 1 |
| Pteridaceae | - | - | 1 | 1 | 2? | - | 2 | 1 | 3 |
| Synopteridaceae | - | - | - | - | - | 1 (1) | - | 1 | 1 |
| **SUBTOTAL** | **2** | **-** | **7** | **3** | **6 (1)** | **2 (1)** | **8** | **4** | **12** |
| | | | | | | | | | |
| **GYMNOSPERMS** | | | | | | | | | |
| Araucariaceae | - | - | - | 1 | - | 2 (1) | - | 2 | 2 |
| Cupressaceae | - | - | - | - | - | 1 (1) | - | 1 | 1 |
| Cycadaceae | - | - | - | 1 | - | 2 (1) | - | 2 | 2 |
| **SUBTOTAL** | **-** | **-** | **-** | **2** | **-** | **5** | **-** | **5** | **5** |
| | | | | | | | | | |
| **ANGIOSPERMS** | | | | | | | | | |
| **Monocotyledons** | | | | | | | | | |
| Agavaceae | - | - | - | 9 | - | 9 (1) | - | 10 | 10 |
| Alliaceae | - | - | - | 7 | - | 2 | - | 7 | 7 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Amaryllidaceae | - | (1) | - | 11 | | 6 (1) | - | 13 | 13 |
| Araceae | - | - | - | 26 | - | 14 (2) | - | 28 | 28 |
| Arecaceae | 1 | - | 1 | 6 | 1 | 11 (7) | 1 | 13 | 14 |
| Bomeliaceae | - | - | - | 4 | - | 1 | - | 4 | 4 |
| Cannaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Commelinaceae | - | - | - | 5 | - | 3 (1) | - | 6 | 6 |
| Cyperaceae | 1 | - | 2 | 5 | 2 | 4 (1) | 2 | 6 | 8 |
| Dioscoreaceae | - | - | - | 2 | - | 1(1) | - | 3 | 3 |
| Heliconiaceae | - | - | - | 4 | - | 1 | - | 4 | 4 |
| Iridaceae | - | - | - | 3 | - | - | - | 3 | 3 |
| Liliaceae | - | - | - | 6 | - | 3 | - | 6 | 6 |
| Marantaceae | - | - | - | 6 | - | 3 (1) | - | 7 | 7 |
| Musa | - | 1 | - | 3 | - | 2 | - | 3 | 3 |
| Orchidaceae | - | - | - | 5 | - | 1? | - | 5 | 5 |
| Pandanaceae | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Poaceae | - | 1 | 2 | 24 | 3 (1) | 17 (12) | 3 | 36 | 39 |
| Pontederiaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Taccaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Zingiberaceae | - | - | - | 6 | - | 3 | - | 6 | 6 |
| **SUBTOTAL** | 3 | 3 (1) | 6 | 136 | 7 (1) | 84 (27) | 7 | 164 | 171 |
| **Dicotyledons** | | | | | | | | | |
| Acanthaceae | - | - | - | 22 | - | 10 (2) | - | 24 | 24 |
| Amaranthaceae | 1 (1) | - | - | 11 | - | 8(2) | 1 | 13 | 14 |
| Anacardiaceae | - | 2(1?) | - | 2 | - | 2 | - | 3 | 3 |
| Annonaceae | - | 2 | - | 4 | - | 2 | - | 4 | 4 |
| Apiaceae | - | - | - | 2 | - | - | - | 2 | 2 |
| Apocynaceae | 1 | 2 | 3 | 9 | 2 | 8 | 3 | 9 | 12 |
| Aquifoliaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Araliaceae | - | 1 | - | 7 | - | 6 | - | 7 | 7 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Asclepidiaceae | - | - | - | 3 | - | 2 (1) | - | 4 | 4 |
| Asteraceae | - | 2 | - | 14 | - | 9 (1) | - | 15 | 15 |
| Balsaminaceae | - | - | - | 2 | - | - | - | 2 | 2 |
| Basellaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Begoniaceae | - | - | - | 3 | - | - | - | 3 | 3 |
| Bignoniaceae | - | - | - | 3 | - | 4 (2) | - | 5 | 5 |
| Bombaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Boraginaceae | - | - | 2 | 1 | 2 | 1 | 2 | 1 | 3 |
| Brassicaceae | | | - | 7 | - | 4 (1) | - | 8 | 8 |
| | | | | | | | | | |
| Cactaceae | - | - | - | 5 | - | 1 | - | 5 | 5 |
| Capparaceae | 1 | - | 2 | 2 | 2 | 2 | 2 | 2 | 4 |
| Caricaceae | - | 1 | - | 1 | - | 1 | - | 1 | 1 |
| Casuarinaceae | - | 1 | - | 1 | - | 1 | - | 1 | 1 |
| Chenopodiaceae | | 1 (1) | - | 2 | - | - | - | 3 | 3 |
| Clusiaceae | 1 | - | 1 | - | 1 | 1 | 1 | 1 | 2 |
| Combretaceae | - | - | 2 | 1 | 2 | 1 | 2 | 1 | 3 |
| Convolvulaceae | 1 | - | 3 | 5 | 3? | 6 (2) | 3 | 7 | 10 |
| Crassulaceae | - | 1 | - | 2 | - | 1 | - | 2 | 2 |
| Cucurbitaceae | - | 1 | - | 9 | - | 7 (2) | - | 11 | 11 |
| Elaeocarpaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Ericaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Euphorbiaceae | 1 | 4 | 2 | 21 | 1 | 20 (2) | 2 | 23 | 25 |
| Fabaceae | 2 | 9 (3) | 6 | 30 | 6 (2) | 35 (13) | 8 | 46 | 54 |
| Gentianaceae | 1? | - | - | - | - | - | 1 | - | 1 |
| Geraniaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Gesneriaceae | - | - | - | 4 | - | - | - | 4 | 4 |
| Goodeniaceae | 1 | - | 1 | - | 1 | - | 1 | - | 1 |
| Hernandiaceae | - | - | 1 | - | 1 | - | 1 | - | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lamiaceae | - | 1 | - | 7 | - | 5 (1) | - | 8 | 8 |
| Lauraceae | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Lecythideaceae | 1 | - | 1 | - | 1 | - | 1 | - | 1 |
| Lythraceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Malpighiaceae | - | - | - | 2 | - | 1 | - | 2 | 2 |
| Malvaceae | 4 | 1 (1) | 4 | 10 | 3 | 9 (2) | 4 | 13 | 17 |
| Meliaceae | - | 1 | - | 2 | - | 1 | - | 2 | 2 |
| Moraceae | 1 | 2 | 1 | 7 | 1 | 8 (2) | 1 | 9 | 10 |
| Moringaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Myrtaceae | - | - | - | 4 | - | 2 (1) | - | 5 | 5 |
| Nymphaeaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Nyctaginaceae | - | - | 1 | 3 | 2 (1) | 4 (1) | 2 | 4 | 6 |
| Oleaceae | - | - | - | 2 | - | 1 | - | 2 | 2 |
| Onagraceae | - | - | - | 1 | - | 2 (1) | - | 2 | 2 |
| Oxalidaceae | - | 1 | - | 2 | - | 3 (2) | - | 4 | 4 |
| Passifloraceae | - | 1 | - | 2 | - | 2 (1) | - | 3 | 3 |
| Piperaceae | - | - | - | 2 | - | 2 | - | 2 | 2 |
| Plumbaginaceae | - | - | - | - | - | 1 | - | 1 | 1 |
| Polygalaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Polygonaceae | - | - | - | 2 | - | 1 | - | 2 | 2 |
| Portulacacaeae | - | - | - | 2 | - | 1 | - | 2 | 2 |
| Punicaceae | - | - | - | - | - | 1 | - | 1 | 1 |
| Rhamnaceae | 1 | - | 1 | - | 1 | 1 | 1 | 1 | 2 |
| Rhizophoraceae | 1 | - | 1 | - | 2 | - | 2 | - | 2 |
| Rosaceae | - | - | - | 2 | - | - | - | 2 | 2 |
| Rubiaceae | 4 (1) | - | 3 | 11 | 3 | 14 (5) | 4 | 16 | 20 |
| Rutaceae | - | - | - | 5 | - | 6 (2) | - | 7 | 7 |
| Sapindaceae | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 2 |
| Sapotaceae | - | - | - | 1 | - | - | - | 1 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Saxifragaceae | - | - | - | 1 | - | - | - | 1 | 1 |
| Scrophulariaceae | - | - | - | 6 | - | 3 | - | 6 | 6 |
| Solanaceae | - | 1 | - | 10 | - | 6 | - | 10 | 10 |
| Sterculiaceae | - | - | - | 1 | - | 1 | - | 1 | 1 |
| Surianaceae | - | - | 1 | - | - | - | - | 1 | - |
| Tiliaceae | 1 | - | 1 | - | - | - | 1 | - | 1 |
| Turneraceae | - | - | - | - | - | 1 | - | 1 | 1 |
| Urticaceae | - | - | 1 | 4 | 1 | 2 | 1 | 4 | 5 |
| Verbenaceae | 3 | 2 (1) | 3 | 5 | 3 | 9 (3) | 3 | 9 | 12 |
| Vitaceae | - | - | - | 2 | - | - | - | 2 | 2 |
| **SUBTOTAL** | 28 (2) | 37 (7) | 43 | 281 | 40 (3) | 225 (49) | 48 | 337 | 385 |
| **GRAND TOTAL** | 33 (2) | 40 (8) | 56 | 422 | 53 (5) | 316 (77) | 63 | 510 | 573 |

## Coastal Flat Vegetation (between strand and cliff/slope)

This portion of the bottomside was sampled using eleven transects located in the same positions as above, and using the same sites. The sites were classified as highly disturbed ( 6 sites), swampy ( 2 sites) and relatively flat ( 3 sites). The distribution of sites is indicative of the pressure of urbanization on the bottomside.

The only indigenous species apparently able to colonize the disturbed sites were *Hibiscus tiliaceus* (sometimes dominant) and *V. marina. C. nucifera , M. citrifolia, S. sericea* and *Clerodendrum inerme* were occasional species.

In the swampy transects, *H. tiliaceus* was again dominant, with some *C. nucifera* locally abundant. Twenty-one other species were recorded rarely in these sites, including the mangroves *Bruguiera gymnorrhiza* and *Rhizophora stylosa*.

On the relatively undisturbed flat sites, *C. nucifera* was dominant, with *Calophyllum inophyllum* occasional. *Premna serratifolia* was commonly found in small numbers, as were *P. scolopendria* , *Phyllanthus societatis* and *Guettarda speciosa*. These could be regarded as indicator species.

Again, these areas are quite depauperate with respect to indigenous species.

## Escarpment Vegetation

The cliffs and slopes between the bottomside and topside areas make up the escarpment zone. Again, 11 transects were sampled in the same manner as above. Of these sites, one was extremely disturbed and had no vegetation, 3 were precipitous, almost vertical cliffs, and 7 were gradual slopes with some intermittent pinnacles.

The vegetation of the pinnacle cliffs was found to be clearly dominated by *Ficus prolixa* ( 25% cover), with occasional trees of *Terminalia catappa* and *H. tiliaceus*. The canopy varies between 12 and 20 metres, indicating a tall woodland structure. The ground layer was dominated by *P. scolopendria* ( 25% cover, an indicator), and *Nephrolepis hirsutula/bisserata* was often recorded. A further four species were recorded rarely in these areas, including *C. inophyllum* and *Barringtonia asiatica. Capparis cordifolia* and *Clerodendrum inerme* are locally abundant on pinnacle outcrops, where the latter often dominates, festooned over the pinnacle surface.

This vegetation type also occurs on the topside, on and around the crests of hills, where pinnacles dominate the surface, and the areas have not been mined. These isolated stands act as refugia for wildlife and a source of seed material for natural regeneration of the surrounding mined areas. A sample from one of these areas showed high dominance by *F. prolixa*, and minor amounts of *T. catappa, Ochrosia elliptica, G. speciosa* and *Pisonia grandis*. These sites have great conservation significance.

In contrast to the cliff sites, those transects with more gentle slopes along the escarpment were dominated by *T. catappa* with 25 to 50% cover. *H. tiliaceus* was dominant at two sites, as could be expected from its distribution on the flat areas.

The introduced *Adenanthera pavonina* also dominated at one transect, with 50 to 75% cover. Although it occurred at only one site, its ability to dominate the canopy at that site was unquestioned, with an extremely high density of seedlings in the lower layers of vegetation, up to 25 per square metre.

*Annona muricata* is also naturalized in the understorey and is locally abundant. Twenty-five more species were recorded in these transects, with *P. scolopendria, N. hirsutula, Colubrina asiatica, M. citrifolia, Guettarda speciosa*, and *P. obtusifolia* noted as uncommon, but widespread.

## Original Topside Forest

The structure and floristics of the original plateau vegetation have been deduced in the main from Manner et al. 1984, 1985) and interpretation of vertical aerial photographs taken at various times from 1976 onwards. It appears that the forests were relatively homogeneous over the whole island, with the exception of the *Ficus*-dominated pinnacle areas, and other sites purposely cleared for the traditional cultivation of *Pandanus*. The area surrounding Buada Lagoon is also a special case, and is discussed separately below.

More than 90% of the plateau is considered to have been covered by a mixture of mid-dense to dense tall forest dominated by *Calophyllum inophyllum* . Manner et al (1984, 1985) reported a maximum basal area of $129m^2$ per hectare and an average canopy height of 16 metres. The data from a series of point quadrats show a range of tree densities from 1.29 to 10.7 trees per 100 square metres.

Other species occasionally in the canopy are *Guettarda speciosa* and *Morinda citrifolia*. The introduced *Psidium guajava* is locally abundant, and *Pandanus* often occurs near the escarpment. In the ground layer, *P. scolopendria* and *N. biserrata* are abundant in the shade of the *C. inophyllum*, and *Psilotum nudum* is similarly common. In open areas, the introduced *Lantana camara* is abundant.

Single individuals or small groups of *C. inophyllum* also remain in isolated places where mining has occurred all around but not on the summits of small hills where the phosphate deposits have presumably been not worth the effort of clearing the vegetation.

Where the forest remains around Buada Lagoon in areas not yet mined, the tree canopy is generally over 20 metres, taller than other sites on the topside. Dominant species are the indigenous *C. inophyllum* and the introduced *Mangifera indica* . In some places, *A. pavonina* is abundant (see above). The greater height of this forest type may be due to the proximity to the water table and deeper humus-rich soils in this depression. It is worth noting here, and will be discussed further below, that the mango trees are extremely tall and slender compared with the normal shape, and this reflects their senescent nature.

## Regeneration Vegetation (post-mining)

The study of Manner et al (1984, 1985) divided the regeneration vegetation into two phases with respect to the occurrence of dominant species. These were the first forty years after mining, and the second forty years and beyond. During the first phase, a number of herbaceous exotic weeds quickly colonized the sunny, open spaces, along with the wind-dispersed *P. scolopendria* and *N. biserrata* . *Mariscus javanicus* becomes locally dominant in some parts, along with *Scaevola taccada, Morinda citrifolia, Dodonaea viscosa, Fimbristylis cymosa* and *Calymperes tahitense* . Foliage cover is extremely variable depending on the amounts of recent rainfall, with a sparse shrubland being the most common vegetation structure.

The dominant species change gradually after forty years from mining, with co-dominance slowly shown by *Ficus prolixa, Premna obtusifolia*, *Phyllanthus societatis*, and *Polypodium scolopendria*. These indigenous species seem able to establish and displace the exotic weeds that dominate in the early stages of succession, and which cannot survive in the greater shade produced by the larger life-forms. After 60 years of revegetation however, growth is such that the tree species are only 4 to 6 metres tall, and the vegetation structure is a Low Open Woodland.

In some areas between Command Ridge and Buada Lagoon that were mined early in the Century by hand methods, the pits in between the pinnacles have been flattened, and *Calophyllum inophyllum* is found growing in these pits. It is not known whether this is an artifact of the mining method and represents an early attempt at regeneration, or whether it is a natural phenomenon. In any case these areas may have been mined up to eighty-five years ago, and the trees appear to be well established. This situation is not thought

to represent what is likely to happen in the vast majority of mined lands. Where *C. inophyllum* is observed in areas that appear to have been mined, close examination usually reveals that it is growing in spots where the pinnacles naturally occur above the surface, and hence these areas were not actually mined at all (see Figure

It is interesting to note that 20 indigenous species altogether were recorded by Manner et al. (1984, 1985) as established in the regeneration areas. These species may form the basis for selection of a planting strategy to stabilize the land after removal of the pinnacles.

**- Bare Ground** - areas of bare ground due to earthworks for roads, carparks and stockpiles, rubbish dump, etc.

**1b - Ruderal** - weed communities associated with extreme disturbance such as roadsides and vacant land in uncultivated places. Abundant weeds include *Cenchrus echinatus, Eragrostis tenella, Euphorbia hirta, Fimbristylis cymosa* and *Cyanthillium cinereum (Vernonia cinerea)* . *Chamaesyce prostrata, Eleusine indica, Alysicarpus vaginalis* and *Lepturus repens* are also common. Structural type is normally Closed grassland/ forbland. Such areas were probably important habitats for the endangered species of *Abutilon, Boerhavia* and *Sida* in the past.

**1c - Cultural** - vegetation appreciably disturbed by people and substituted or replaced by ornamentals and food plants. A survey of sixteen house yard gardens found the following species to be abundant: *Cocos nucifera, Morinda citrifolia, Guettarda speciosa, Plumeria obtusa, Hibiscus rosa-sinensis, Premna obtusifolia, Crinum asiaticum, Polyscias* varieties, *Ixora* varieties, and *Artocarpus altilis.* Structural type varies.

**1d - Regeneration** - sites mined 0 to 50 years ago. Dominant indigenous species are: *Scaevola sericea, Morinda citrifolia, Dodonea viscosa, Fimbristylis cymosa,* and *Polypodium scolopendria.* Structure is sparse shrubland. *Ophioglossum petiolatum* occurs as a minor indicator species.

**1e - Regeneration** - sites mined more than 50 years ago. Dominant species are: *Ficus prolixa, Premna obtusifolia, Phyllanthus societatis* and *Polypodium scolopendria*. Structure is Low open woodland.

## Freshwater and Littoral Vegetation

**2a - Buada Lagoon** - The majority of surrounds are a Tall woodland dominated by *Cocos nucifera*. In the groundlayer are the same species as the Ruderal type, with *Cyperus javanicus* being often abundant. Some *Vigna marina* and *Musa* varieties occur in an abandoned garden area.

**2b - Ijuw and Anabar Lagoons** - The surrounds of these fresh to brackish water lagoons are dominated by *Clerodendrum inerme* climbing on the pinnacles, and *Bruguiera gymnorrhiza* and *Rhizophora stylosa* where the substrate is a muddy shore. Structure is a Tall open forest/ tall closed vineland.

## Very Tall Closed Forest ( 20-35 metre canopy)

**3a - *Calophyllum inophyllum - Mangifera indica*** (Buada only). Other canopy species include *Cocos nucifera, Adenanthera pavonina,* and *Ficus prolixa.* Groundlayer dominants are *Polypodium scolopendria, Nephrolepis biserrata* and seedlings of *Adenanthera pavonina.* The scrambling climber *Caesalpinia bonduc* forms locally impenetrable thickets.

## Tall Closed Forest ( 12-20 metre canopy)

**4a - *Calophyllum inophyllum - Polypodium scolopendria*** This is the remnant forest that once covered most of topside. Other occasional canopy species are: *Guettarda speciosa* and *Morinda citrifolia*. The groundlayer dominant is *Polypodium scolopendria*.

**4b - *Ficus prolixa - Terminalia catappa - Hibiscus tiliaceus*** This map unit occurs on the escarpment and the relictual areas on topside where the pinnacles are above the surface. Other occasional canopy species include: *Pisonia grandis, Terminalia catappa, Guettarda speciosa* and *Ochrosia elliptica*. The groundlayer is very sparse, and the endangered *Aidia cochinchinensis* occurs in this habitat.

**4c - *Adenanthera pavonina*** This species occasionally occurs as a monospecific stand along particular areas of the escarpment, where its seedlings are so dense that they are considered likely to interfere with the regeneration potential of other nearby species. This species may need to be carefully managed where it is spreading into other vegetation types.

## Tall Open Forest ( 12-20 metre canopy)

**5a - *Calophyllum inophyllum*** - This is the same type as **4a**, except selective clearing in the past has led to a reduced foliage cover. These two types occur in a mosaic pattern in unmined areas.

**5b - *Cocos nucifera - Premna obtusifolia*** This vegetation type is typical of the 'coconut lands' of the bottomside, that are now neglected in the main. These areas are subject to on-going disturbance from the pressure to expand housing sites.

## Mid-high Closed Forest ( 6-12 metre canopy)

**6a - *Hibiscus tiliaceus - Vigna marina* -** A number of other species occupy this vegetation type including *Cocos nucifera*, but are relatively rare due to continuous clearing for development.

## Tall Closed Shrubland ( 1-3 metre canopy)

**7a - *Scaevola sericea - Ipomoea pes-caprae*** The beach strand is also subject to continuing pressure from urban spread, and some species have become rare and endangered within this vegetation type( for example, the scattered individuals of *Tournefortia argentea*).

Appendix IV. Listing of weedy or potentially weedy species reported on Nauru based on studies over the past 25 years and a recent study by Orapa of the SPC Land Resources Division in early 2007.

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**KEY**

**Under Abundance**
V = very abundant
A = abundant
C = common
O = occasional
U = uncommon
R = rare

**Under Status**

A = Adventive spreading naturally, but not yet invasive
I = Invasive in major areas of the island and difficult to eradicate.
O = Found mainly as an ornamental plant
N = Native species found mainly in native habitats, although sometimes weedy or invasive (indicated by I)
U = useful multipurpose plant.
W = Weed growing wild in waste places, gardens, roadsides open lots and other ruderal sites but not considered noxious and invasive or hard to control

---

| FAMILY | GENUS | SPECIES | ABUNDANCE | STATUS |
|---|---|---|---|---|
| Acanthaceae | Asystasia | Gangetica | O | W |
| Acanthaceae | Barleria | cf repens | R? | O |
| Acanthaceae | Barleria | cristata | U | O |
| Acanthaceae | Barleria | prionitis | U | I |
| Acanthaceae | Blechum | pyramidatum | O | W,I |
| Acanthaceae | Hemigraphis | alternata | E | O |
| Acanthaceae | Nicoteba | betonica | E | O |
| Acanthaceae | Pseuderantherum | carruthersii | C | O |
| Acanthaceae | Ruelia | prostrata | A | I |
| Acanthaceae | Sanchezia | speciosa | E | O |
| Acanthaceae | Thunbergia | alata | E | W |
| Agavaceae | Agave | sisalana | C | I |
| Agavaceae | Sanseviera | trifasciata | O | I,O |
| Amaranthaceae | Alternanthera | brasiliana | R? | O |
| Amaranthaceae | Alternanthera | sessilis | R | W |

| | | | | |
|---|---|---|---|---|
| Amaranthaceae | Amaranthus | dubius | O | W |
| Amaranthaceae | Amaranthus | spinosus | E | W |
| Amaranthaceae | Amaranthus | viridis | O | W |
| Amaranthaceae | Celosia | argentea | U | O |
| Annonaceae | Annona | muricata | O | F,I |
| Annonaceae | Annona | reticulata | R? | F,I |
| Annonaceae | Annona | squamosa | O | F,I |
| Apocynaceae | Allamanda | cathartica | R? | O |
| Apocynaceae | Allamanda | blanchetii | U | O |
| Apocynaceae | Catharanthus | rosea | C | O |
| Apocynaceae | Cryptostegia | grandiflora | O | O |
| Apocynaceae | Nerium | oleander | O | O |
| Apocynaceae | Thevetia | peruviana | U | O |
| Araceae | Epipremnun | pinnatum | O | O,A |
| Araceae | Syngodium | augustatum | O | O,A |
| Araliaceae | Schefflera | actinophylla | O | O |
| Asclepiadaceae | Calotropis | gigantea | O | O,A |
| Asteraceae | Ageratum | conyzoides | U | W |
| Asteraceae | Bidens | alba | E | W |
| Asteraceae | Bidens | pilosa | U | W |
| Asteraceae | Conyza | bonariense | C | W |
| Asteraceae | Cyanthillium | cinereum | C | W |
| Asteraceae | Eclipta | alba | R | W |
| Asteraceae | Emilia | sonchifolia | R? | W |
| Asteraceae | Mikania | micrantha | U | W |
| Asteraceae | Sphagneticola | trilobata | A | I,O |
| Asteraceae | Synedrella | nodiflora | C | W |
| Asteraceae | Tridax | procumbens | A | W |
| Bignoniaceae | Macfadyena | unguis-cati | O | O |
| Bignoniaceae | Spathodea | campanulata | O | O |
| Bignoniaceae | Tecoma | stans | C | O |
| Bombacaceae | Ceiba | pentandra | U | U |
| Boraginaceae | Heliotropium | procumbens | O | W |
| Brassicaceae | Lepidium | cf virginicum | R? | W |
| Capparaceae | Cleome | rutidosperma | C | W |
| Capparaceae | Cleome | viscosa | A | W |
| Casuarinaceae | Casuarina | equisetifolia | C | I |
| Combretaceae | Quisqalis | indica | O | O |
| Commelinaceae | Tradescantia | pallida | U | O |
| Commelinaceae | Tradescantia | spathacea | O | O,A |
| Convolvulaceae | Ipomoea | aquatica | O | F,I |
| Convolvulaceae | Ipomoea | fistulosa | O | O |
| Convolvulaceae | Ipomoea | macrantha | O | N |
| Convolvulaceae | Ipomoea | pes-capre | A | N,W |
| Convolvulaceae | Ipomoea | triloba | U | W |
| Crassulaceae | Kalanchoe | pinnata | R | O,A |
| Curcubitaceae | Luffa | cylindrica | O | F,A |
| Curcubitaceae | Coccinea | grandis | R | F |
| Curcubitaceae | Momordica | charantia | O | F,A |

| | | | | |
|---|---|---|---|---|
| Cyperaceae | Cyperus | compressus | O | W |
| Cyperaceae | Cyperus | iria | E | W |
| Cyperaceae | Cyperus | involucratus | O | O |
| Cyperaceae | Cyperus | rotundus | C | W |
| Cyperaceae | Fimbristylis | cymosa | A | N |
| Cyperaceae | Fimbristylis | dichotoma | U? | W |
| Cyperaceae | Kyllinga | nemoralis | U | W |
| Cyperaceae | Mariscus | javanicus | C | N,W |
| Elaeocarpaceae | Muntingia | calabura | O | A,U |
| Euphorbiaceae | Acalypha | wilkesiana | C | O |
| Euphorbiaceae | Chamaesyce | hirta | A | W |
| Euphorbiaceae | Chamaesyce | hypericifolia | O | W |
| Euphorbiaceae | Chamaesyce | prostrata | O | W |
| Euphorbiaceae | Chamaesyce | thymifolia | O | W |
| Euphorbiaceae | Cnodosculus | chayamansa | C | F |
| Euphorbiaceae | Euphorbia | cyathophora | O | W |
| Euphorbiaceae | Euphorbia | geniculata | O | W |
| Euphorbiaceae | Euphorbia | tirucali | U | O |
| Euphorbiaceae | Jatropha | integerrima | O | O |
| Euphorbiaceae | Phyllanthus | amarus | A | W |
| Euphorbiaceae | Phyllanthus | societatis | C | N |
| Euphorbiaceae | Ricinus | commus | R | W |
| Fabaceae | Acacia | farnesiana | U | A |
| Fabaceae | Adenanthera | parvonina | A | I |
| Fabaceae | Alysicarpus | vaginalis | C | W |
| Fabaceae | Caesalpinia | bonduc | O | I |
| Fabaceae | Calopogonum | mucunoides | U | W? |
| Fabaceae | Centrosema | pubescens | U | A |
| Fabaceae | Chamaecrista | nictitans | R | A |
| Fabaceae | Clitoria | ternata | R | O,A |
| Fabaceae | Crotalaria | goreensis | O | W |
| Fabaceae | Crotalaria | retusa | E | W |
| Fabaceae | Crotalaria | spectabilis | R? | W |
| Fabaceae | Desmodium | incanum | O | W |
| Fabaceae | Desmodium | tortuosum | O | W |
| Fabaceae | Desmodium | triflorum | C | W |
| Fabaceae | Indigofera | nr suffruticosa | ? | ? |
| Fabaceae | Indigofera | hirsuta | O | W |
| Fabaceae | Indigofera | spicata | U? | W,I? |
| Fabaceae | Leucaena | leucocephala | A | I |
| Fabaceae | Mimosa | pudica | U | W |
| Fabaceae | Senna | alata | O | O |
| Fabaceae | Senna | occidentalis | A | W |
| Fabaceae | Sophora | tomentosa | R | N |
| Fabaceae | Tamarindus | indicus | U | F |
| Fabaceae | Vigna | marina | C | N,W |
| Lamiaceae | Hyptis | capitata | R | W |
| Lauraceae | Cassytha | filiformis | A | I |
| Liliaceae | Crinum | asiaticum | O | O |

| | | | | |
|---|---|---|---|---|
| Liliaceae | Gloriosa | superba | U | P |
| Malvaceae | Abutilon | asiaticum | O | I,W |
| Malvaceae | Malvastrum | coromandelianum | C | W |
| Malvaceae | Sida | acuta | O | W |
| Malvaceae | Sida | spinosa | R? | W |
| Malvaceae | Sida | fallax | E? | I,W |
| Malvaceae | Sida | rhombifolia | C | W |
| Meliaceae | Azadirachta | indica | R | ? |
| Meliaceae | Melia | azedarach | O | O,A? |
| Moringaceae | Moringa | oleifera | O | F |
| Myrtaceae | Psidium | guajava | C | F,I |
| Nyctiginaceae | Boerhavia | coccinea | O | W |
| Nyctiginaceae | Boerhavia | repens | U | W |
| Onagraceae | Ludwigia | hyssopifolia | O | I? |
| Onagraceae | Ludwigia | octovalvis? | R? | I? |
| Oxalidaceae | Oxalis | corniculata | R? | W |
| Oxalidaceae | Oxalis | regnelli | R | O |
| Passifloraceae | Passiflora | foetida | O | W |
| Piperaceae | Peperomia | pellucida | U | W |
| Poaceae | Arundo | donax | O | O,A? |
| Poaceae | Axonopus | compressus | R | W |
| Poaceae | Botriochloa | bladhii | C | W |
| Poaceae | Brachiaria | cf paspaloides | R | W |
| Poaceae | Brachiaria | subquadripara | O | W |
| Poaceae | Cenchius | brownii | R? | W |
| Poaceae | Cenchrus | ciliaris | U | W,I |
| Poaceae | Cenchrus | echinatus | C | W,I |
| Poaceae | Chloris | inflata | O | W |
| Poaceae | Chrysopogon | aciculatus | O | W |
| Poaceae | Cynodon | dactylon | O | W |
| Poaceae | Dactyloctaenum | aegyptium | O | W |
| Poaceae | Dactyloctaenum | ctenioides | R? | W |
| Poaceae | Dichanthium | sp | O | W |
| Poaceae | Digitaria | bicornis | R? | W |
| Poaceae | Digitaria | ciliaris | O | W |
| Poaceae | Digitaria | radicosa | U | W |
| Poaceae | Digitaria | setigera | O | W |
| Poaceae | Digitaria | violascens | R? | W |
| Poaceae | Echinochloa | colonum | U | W |
| Poaceae | Eleusine | indica | A | W |
| Poaceae | Eragrotis | cf pectinacea | O | W |
| Poaceae | Eragrotis | tenella | C | W |
| Poaceae | Eustachys | petrea | O | W |
| Poaceae | Lepturus | repens | O | N,W |
| Poaceae | Melinis | repens | O | W |
| Poaceae | Oplimenus | hirtellus | R? | W |
| Poaceae | Paspalum | conjugatum | U | W |
| Poaceae | Paspalum | setaceum | R | W |
| Poaceae | Pennisetum | polystachion | O | W,I? |

| | | | | |
|---|---|---|---|---|
| Poaceae | Sporobolus | diander | O | W |
| Poaceae | Stenotaphrum | micranthum | U | I |
| Poaceae | Stenotaphrum | secundatum | R | O |
| Poaceae | Thuarea | involuta | R | N |
| Polygonaceae | Antignon | leptopus | C | O,I |
| Ponterderiaceae | Eichornia | crassipes | C | I |
| Portulacaeae | Portulaca | oleracea | O | W |
| Rhamnaceae | Colubrina | asiatica | C | N,I |
| Rubiaceae | Dentella | repens | R | W |
| Rubiaceae | Hedyotis | corymbosa | U | W |
| Rubiaceae | Spermacoce | assurgens | C | W |
| Rubiaceae | Spermacoce | bartlingiana | O | W |
| Scrophulariaceae | Russellia | equisetifolia | O | O,A |
| Scrophulariaceae | Scoparia | dulcis | R | W |
| Solanaceae | Cestrum | sp nr diurnum | O | O |
| Solanaceae | Physalis | angulata | O | W |
| Solanaceae | Physalis | lagascae | R? | W |
| Tiliacae | Waltheria | indica | O | W |
| Tuneriaceae | Tuneria | ulmiflora | O | O |
| Urticaceae | Laportea | ruderalis | R | N |
| Urticaceae | Pilea | microphylla | O | W |
| Verbenaceae | Clerodendrum | inerme | C | N |
| Verbenaceae | Clerodendrum | paniculatum | U | O |
| Verbenaceae | Clerodendrum | quadriloculare | R | O |
| Verbenaceae | Durantia | erecta | O | O |
| Verbenaceae | Lantana | camara | O | I |
| Verbenaceae | Phyla | nodiflora | O | W |
| Verbenaceae | Stachytarpheta | dichotoma | R | O |
| Verbenaceae | Stachytarpheta | jamaicensis | U | W |
| Verbenaceae | Stachytarpheta | urticifolia | C | W |
| Verbenaceae | Vitex | trifolia | | |