

The Red List of Trees of Guatemala



Jose Luis Vivero, Michelle Szejner,
James Gordon and Georgina Magin



FAUNA & FLORA INTERNATIONAL (FFI), founded in 1903 and the world's first international conservation organization, acts to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable, are based on sound science and take account of human needs.

BOTANIC GARDENS CONSERVATION INTERNATIONAL (BGCI) is a membership organization linking botanic gardens in over 100 countries in a shared commitment to biodiversity conservation, sustainable use and environmental education. BGCI aims to mobilize botanic gardens and work with partners to secure plant diversity for the well-being of people and the planet. BGCI provides the Secretariat for the IUCN/SSC Global Tree Specialist Group.

THE GLOBAL TREES CAMPAIGN is a joint initiative between FFI, BGCI and the UNEP World Conservation Monitoring Centre (UNEP-WCMC), in association with other partners around the world, working for the conservation of threatened trees and their habitats.

THE IUCN/SSC GLOBAL TREE SPECIALIST GROUP forms part of the Species Survival Commission (SSC), the largest of IUCN's six volunteer commissions with a global membership of 8000 experts. SSC advises IUCN and its members on the wide range of technical and scientific aspects of species conservation and is dedicated to securing a future for biodiversity. The aims of the IUCN/SSC Global Tree Specialist Group are to promote and implement global red listing for trees and act in an advisory capacity to the Global Trees Campaign.

SPONSOR

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COMPILERS

Jose Luis Vivero, member of the IUCN/SSC Global Tree Specialist Group

Michelle Szejner, Universidad del Valle de Guatemala

James Gordon, Fairchild Tropical Botanic Garden, Miami, USA

Georgina Magin, Global Trees Campaign Coordinator, Fauna & Flora International

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FOREWORD

Trees are important to the well-being of people in every country of the world, providing essential ecological, economic and cultural services. The first global assessment of the conservation status of trees worldwide indicated that around 8000 tree species are threatened with extinction. This information was published in 1998 in *The World List of Threatened Trees* and was subsequently incorporated into the IUCN Red List. The IUCN/SSC Global Tree Specialist Group has now taken on the important role of revising the global conservation status of trees, building up our knowledge of threatened tree species around the world.

The collection of information on tree species of conservation concern is vital for planning conservation action. The second role of the IUCN/SSC Global Tree Specialist Group is to act as an advisory body for the Global Trees Campaign, which aims to save the world's most threatened tree species and the habitats where they grow. The Campaign was developed by Fauna & Flora International (FFI) and the UNEP World Conservation Monitoring Centre (UNEP-WCMC) in direct response to the publication of *The World List of Threatened Trees*. Botanic Gardens Conservation International (BGCI) joined the campaign in 2005 and now provides the Secretariat for the IUCN/SSC Global Tree Specialist Group.

The Global Trees Campaign provides an important practical mechanism for implementation of the Global Strategy for Plant Conservation (GSPC) of the Convention for Biological Diversity. Global tree red listing contributes directly to Target 2 of the Strategy, which calls for a provisional list of threatened plant species by 2010. In many ways Target 2 underpins the other

ambitious targets, which relate to *in-situ* and *ex-situ* conservation and sustainable use and trade in plants.

Tree red listing is also very important in planning for sustainable forest management. Projects of the Global Trees Campaign contribute both to the GSPC and to international forest objectives, especially those relating to halting the loss of forest biodiversity and supporting sustainable forest management and rural livelihoods.

The Global Tree Specialist Group is committed to undertaking a global assessment of the conservation status of tree species. We are working on both a taxonomic and regional basis, making the most of available resources and expertise. This second publication, *The Red List of Trees of Guatemala*, draws on the knowledge of a wide range of experts and involved government and academic institutions in Guatemala as well as researchers overseas. It summarizes currently available information on tree species based on more detailed species profiles and makes a strong plea for conservation action. An immediate priority is to conserve the 10 Critically Endangered tree species that are found only in Guatemala, as part of the sustainable management of Guatemala's rich forest resources.

Sara Oldfield
Chair of the IUCN/SSC Global Tree
Specialist Group

ACRONYMS

CATIE	Tropical Agricultural Research and Higher Education Centre
CECON	Nature Conservation Centre, Guatemala
CEPF	Critical Ecosystem Partnership Fund
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CONAMA	National Council of Environment, Guatemala
CONAP	National Council for Protected Areas, Guatemala
DBH	Diameter at Breast Height
Defra	Department of Environment, Food and Rural Affairs, UK
ENCA	National School of Agricultural Training, Guatemala
FAO	Food and Agriculture Organization
FFI	Fauna & Flora International
INAB	National Forestry Institute, Guatemala
IUCN	The World Conservation Union
MAGA	Ministry of Agriculture, Livestock and Food
NGO	Non-government organization
SIGAP	System of Protected Areas of Guatemala
SNU	United Nations System
SSC	Species Survival Commission
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
URL	University of Rafael Landívar, Guatemala
USAC	University of San Carlos, Guatemala
USAID	United States Agency for International Development
UVG	University of Valle, Guatemala

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INTRODUCTION

FORESTS AND BIODIVERSITY IN GUATEMALA

The name Guatemala comes from the word *Quauhtemalan*, a Nahuatl word meaning 'land of trees'. This name was given because of the exuberant vegetation that existed in the country at the time of the Spanish colonization (Holdridge *et al.* 1950). The flora of Guatemala is one of the richest and most varied in the world (Gentry 1982), due to its biogeographic position (between the Neartic and Neotropical regions) and to its interoceanic position (between the Atlantic and Pacific Oceans). It also has a diversity of terrestrial formations and soil types, and wide ranges in altitude (0-4220 m above sea level), precipitation levels (400-5000 mm) and average yearly temperature (10-30°C). These variations in temperature and rainfall within relatively small areas result in 14 different life zones, according to Holdridge (1967), or 18, according to the National Forestry Institute (INAB 2001). Guatemala is at the heart of one of the Biodiversity Hotspots of Mesoamerica (Mittermeier *et al.* 1999, Myers *et al.* 2000). These 'hotspots' have been defined as areas characterized by exceptional numbers of species with high levels of endemism and which experience high levels of threat.

Forest in Guatemala covers 42,865 km² or 39 per cent of the area of the country, with broadleaved forest more widespread than conifer forest. Forty-three per cent of the country's forest cover occurs in the Department of Petén, which has a total of

21,264 km² of predominantly broadleaved forest. The department with the most conifer forest is Huehuetenango (INAB 2000), where the majority of the conifer species reported in the country can be found. Fifty-five per cent of the country's forest occurs within protected areas (INAB-CONAP-MAGA-UVG-PAFG 2004).

A range of forest types are found, including mangrove forest on the southern coast, dry forest and spiny bush in the east, montane conifer forest and tropical forest in the north, cloud forest in the west and in the Verapaces, paramo on the volcanoes and the Cuchumatanes, and mixed forest (conifer and broadleaved) in the Altiplano.

Guatemala has more than 8000 higher plant species, including 1403 woody species in 550 genera and 105 families. There are 28 species of conifer and more than 500 species of broadleaved trees (CONAMA 1999, Villar 1998, CEPF 2004, FAO 2004), with a high level of endemism (Asociación Becaria de Guatemala 1995). Twenty-five per cent of the genera are restricted to the Nearctic region (Islebe & Kappelle 1994). This tremendous diversity of flora and fauna is illustrated in Table 1.

As shown in this table, there is a high level of endemism amongst Guatemala's plant and animal species. There is also a high level of threat. Conservation is thus of the utmost importance. Various initiatives to study and catalogue the biodiversity of

Guatemala are underway, e.g. The Nature Conservancy's programme of Cloud Forests in the Volcanic Chain, the Mesoamerican Biological Corridor, the United States Agency for International Development's (USAID) Project Proarcas, the World Bank's Project MIRNA, and so on. These programmes have produced a range of documents about the conservation state of many species. However, the results have not always been adequately distributed, either within or outside the country, so the valuable information they have produced is not always readily available.

THREATS TO THE FORESTS

The rate of deforestation in Guatemala is estimated at 900 km² a year (INAB 2002; see Table 2), 73 per cent within broadleaved forest and 23 per cent in coniferous forest. According to projections carried out by the National Forestry Institute (INAB), this rate of deforestation will result in the elimination of the country's forest cover in approximately 40 years. The montane ecosystem (forests between 1500-3000 m) is one of the most threatened because of demographic pressure leading to conversion to agricultural land and exploitation for firewood, and because of climate change (Islebe *et al.* 1995, Islebe & Véliz-Pérez 2001). The sub-alpine forests of Guatemala (found between 3150-3800 m) are subject to particular pressure and will probably disappear in the next few years if no immediate action is taken (Islebe 1996).

TABLE 1: Diversity and endemism in various taxonomic groups in Guatemala

Species	Plants	Birds	Mammals	Amphibians	Reptiles	Freshwater fish
FAO (2004)	8000	669*	250	112	209	230
CEPF (2004)	8681	738	251	112	231	
Endemic species						
(FAO 2004)	1171	5	4	40	19	27
% endemism	14.64	0.75	1.60	35.71	9.09	11.74

*204 are migratory birds

TABLE 2: Annual rate of deforestation in Guatemala (km²)

Year	Area deforested (km ² /year)
1977	637
1983	600
1989	556
1990	600-900
1993	900
1997	900

Apart from altering the ecological equilibrium, this forest destruction is threatening many species of trees and shrubs with extinction. Species such as *Abies guatemalensis*, *Podocarpus oleifolius*, *Cedrela odorata*, *Swietenia humilis*, *Swietenia macrophylla* and others are now considered threatened.

Many of the threats to Guatemala's forest are related to increasing human population and the unequal distribution of land, which forces poor farmers to view forests as a source of agricultural land. Population density has reached more than 300 people per km² in many zones of the Altiplano, resulting in a drastic increase in land use, with conversion of forest into agricultural land, cattle ranches and human settlements. The majority of the population use firewood for cooking and heat, leading to additional pressure on the country's forest resources.

Guatemala has suffered from a lack of appreciation of the importance of forest genetic resources and their contribution to the struggle against poverty and hunger (Shimizu & Vivero 2004). The result is that the conservation and utilization of forests have not been viewed as strategic elements in the economic and social development of Guatemala. However, it appears that this perception is starting to change. In a recent report, the United Nations Development Programme (UNDP) positioned the forestry sector as one of the four sectors to spur economic growth and human development (PNUD 2003),

BOX 1: Unsustainable use of pinabete, a threatened flagship species

Pinabete (*Abies guatemalensis*), a fir, is found in several departments in the east and west of Guatemala along the volcanic chain, in montane forests over 2500 m. The species is listed in Appendix 1 of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

During December, pinabete suffers from uncontrolled cutting of the branches for use as Christmas trees. Regeneration of the species is naturally low, due to the small number of cones produced and the poor viability of the seeds. Cone production occurs in December, coinciding with the branch cutting. The practice thus considerably reduces the reproductive capacity of the species. Because of high demand for the branches and the multiple damage done to many trees at some sites, it has disappeared from some areas (Lopez 1999).

and INAB, jointly with the Ministry of Agriculture, Livestock and Food (MAGA) and the Food and Agriculture Organization (FAO), released a policy paper in 2005 on how forest resources contribute to food security and poverty alleviation (INAB 2005).

The principal processes that affect forests in Guatemala are listed below. While several of these anthropogenic disturbances may be compatible with forest and tree conservation if managed well, in reality the impact is all too often negative.

- i) *Shifting agriculture (slash and burn)*. This process, combined with the increasing population and the opening-up of areas with roads, is producing fragmentation of the forest, a reduction in the size of the forests and a loss of biodiversity.
- ii) *Forest fires*. These provoke a loss of forest biodiversity and weakening of the trees, making them more susceptible to disease.
- iii) *Illegal extraction and over-exploitation of a limited range of species*. This has resulted in some species being in danger of extinction in Guatemala, e.g. *Swietenia macrophylla* (mahogany), *Cedrela odorata* (cedar) and *Abies guatemalensis* (pinabete). There are two

types of illegal extraction: firstly, the extraction of species with high market value, both nationally and internationally (e.g. *Cedrela odorata* and *Swietenia macrophylla*); secondly, the extraction of timber by rural communities for local use, most commonly conifer species such as *Pinus strobus* and *Pinus ayacahuite*.

- iv) *Use of fuelwood*. Wood remains the principal energy source in Guatemala, although the percentage of the population reliant on fuelwood has decreased in the past few years.

MEASURES FOR THE PROTECTION AND MANAGEMENT OF FORESTS AND THREATENED SPECIES IN GUATEMALA

There are two institutions in Guatemala responsible for the management of forest resources. The National Forestry Institute (INAB) is in charge of the administration of forests outside protected areas, while the National Council for Protected Areas (CONAP) is in charge of the management of protected areas. The System of Protected Areas of Guatemala (SIGAP) consists of 115 legally declared protected areas covering a total of 31,831 km², equivalent to 29.23 per cent of the national territory. CONAP is also responsible for the conservation of threatened species and the

BOX 2: Legal framework for the protection of forests and tree species

The Forest Policies of Guatemala have as their strategic aim the strengthening of SIGAP and the protection and conservation of strategic forest ecosystems, as well as the productive management of natural forests.

The Forest Law of Guatemala (Legislative Decree 101-96) created the National Forestry Institute (INAB), which, amongst other responsibilities, develops programmes and projects for the conservation of forests and collaborates with entities that require their support.

The Law for Protected Areas (Decree 4-89 of the Congress and reforms to the Decrees 18-89 and 110-96) established as objectives of CONAP: (a) to achieve the conservation of the genetic diversity of the wildlife, flora and fauna of the country; (b) to develop capacity for the sustainable utilization of species; (c) to defend and preserve the natural heritage of the nation.

The Red List of the Wild Flora of Guatemala (Resolution No. ALC/028/2001 of CONAP) was published in 2001 in the Official Diary of Central America.

preparation of the official Red List of Guatemala (see below).

A series of legal measures for the protection of the forests and forest species serve to regulate the use and conservation of trees and shrubs (see Box 2). Amongst the *ex-situ* measures for the conservation of

forest species, the Seed Bank for Forest Species – BANSEFOR – is particularly noteworthy. This is a project of INAB that collects and distributes forest seeds, and could be a key element in the conservation of rare and threatened tree species. The establishment of nurseries and forest plantations to reproduce threatened

BOX 3: Threatened trees of Guatemala listed on CITES Appendices I and II

Abies guatemalensis and *Balmea stormae* are listed on Appendix I of CITES, which includes species in danger of extinction that are or could be threatened by trade. Trade in these species is subject to strict regulations to prevent further danger to their survival, and can only be authorized under exceptional circumstances. The removal of *Balmea stormae* from Appendix I is currently being considered by the CITES Plants Committee, since it is the subject of almost no international trade.

Swietenia humilis, *Swietenia macrophylla* and *Guaiacum sanctum* are listed on Appendix II of CITES, which includes species not necessarily in danger of extinction now, but that could become so if the trade is not subject to strict regulation to avoid a level of use incompatible with their survival. Two species of *Dalbergia* that are found in Guatemala (*D. retusa* and *D. stevensonii*) may be proposed for inclusion in Appendix II shortly.

trees for reforestation could also be a useful component of efforts to conserve and manage species in danger of extinction.

EXPLOITATION OF FOREST SPECIES

There are an estimated 502 tree and 120 shrub species that are used for various purposes in Guatemala. Forest species can be grouped according to their principal usage: timber, firewood, human consumption, forage, medicine, ornament and those that produce latex or industrial resin. In addition to these primary uses, tree and bush species may be used for dye, handicraft, tanning works, rituals, oil extraction, cosmetics and hallucinogens.

Through resolution 1/31/97, the Board of INAB classifies forest species according to their economic value in the market. In the past, forest exploitation has focused on a small number of trees with high commercial value (*Pinus oocarpa*, *Pinus maximinoi*, *Pinus caribaea*, *Cupressus lusitanica*, *Swietenia macrophylla* (mahogany) and *Cedrela odorata* (cedar)). This selective exploitation caused populations of some of these species (e.g. mahogany, cedar) to decrease to critical levels, thus reducing the value of the forest. *Swietenia humilis* is no longer a commercially viable species in Guatemala due to its overexploitation (Magin 2006).

There is now a higher level of awareness amongst stakeholders in the forestry sector about the need for sustainable forest management. However, the number of forest species used by the timber industry in Guatemala has also increased in recent years, and several more threatened species are now exploited. The most commonly used threatened conifer species is *Pinus tecunumanii*, while threatened broadleaves that have joined the list of harvested trees include *Zanthoxylum belizense* and *Pouteria amygdalina*. A number of species are listed on CITES (see Box 3).

RED LIST OF THREATENED SPECIES IN GUATEMALA

The Government of Guatemala, according to Decree 110-96, is obliged to have an up-to-date list of all the threatened fauna and flora in the country. Accordingly, a process of evaluating species was carried out in the period 1999-2001, through resolution ALC/039-99 (for animals) and ALC/028/2001 (for plants), with the resulting list of threatened fauna and flora being published in the *Diario de Centroamerica* (Official Bulletin of the State of Guatemala) in 1999 and 2001.

The evaluation of species in Guatemala was undertaken using criteria developed by Guatemalan scientists, using the best information that was available at the time. Some elements of the IUCN Red List Categories and Criteria Version 2.3 (IUCN 1994) were used, as well as elements of a system devised by The Nature Conservancy (TNC), and the listings on the CITES Appendices. The resulting system classified species into three categories: CONAP 1, 2 or 3. The criteria used were less precise and detailed than the IUCN Red List Criteria, and had wide margins of uncertainty (Carton de Grammont & Cuarón 2006) and application (see Box 4). The list of species produced by this process contains 154 species of trees and shrubs, including at least 32 that are endemic to the country.

The CONAP classification system and resulting categories and criteria are specific to Guatemala and do not permit an easy comparison with species in neighbouring countries, or the positioning of Guatemala within a world context of conservation and threatened species.

In addition to this national list, the IUCN Red List of Threatened Species (IUCN 2006; see www.iucnredlist.org) contains global listings for plants and animals that occur in Guatemala, which have been

BOX 4: CONAP categories of use and threat in Guatemala

CATEGORY 1: Includes species that are in danger of extinction. These species can be used exclusively for scientific reasons or for propagation. Exportation and commercialization of these species from the wild is prohibited; trade is only permitted if specimens, parts or derivatives can be proved to have been produced in captivity or through cultivation.

CATEGORY 2: Includes species with distribution restricted to one habitat type (endemics) and species of low population density. These species can be used for scientific reasons or for propagation. Their use must be controlled via management plans and requires an Environmental Impact Study.

CATEGORY 3: Includes species which may not at present be in danger of extinction but could become threatened if their use is not regulated. These species can be used for scientific reasons or for propagation; trade must be regulated through scientifically developed management plans approved by the competent organization or institution.

evaluated according to IUCN Red List Criteria largely by outside experts. In many cases these evaluations were done with very little or no reference to national experts or information sources within Guatemala.

Perhaps unsurprisingly, there are very significant differences in the species included on the two lists. The lack of convergence between them is well illustrated by trees: in the CONAP (2001) list there are 154 tree species threatened at the national level, while in the *World List of Threatened Trees* (Oldfield *et al.* 1998), which summarizes the IUCN tree evaluations, there are 106 species from Guatemala listed as globally threatened. However, the lists have only 18 tree species in common. It appears that information that exists outside the country about the trees of Guatemala does not coincide with that existing within the country, and vice versa.

There was therefore a clear need to combine all current information on the status of tree species in Guatemala to produce a single Red List of threatened trees, which could be used by both IUCN

and CONAP. A project was developed, Red Listing, Mapping and Conservation Status for the Threatened Trees of Guatemala, to evaluate the conservation status of trees in Guatemala according to the most recent IUCN Red List Categories and Criteria (IUCN 2001) and to publish a revised Red List of threatened trees of the country. The project was developed as part of the Global Trees Campaign (www.globaltrees.org), led by Fauna & Flora International. Support for publication of this document came from Defra (the United Kingdom Government's Department of Environment, Food and Rural Affairs).

RED LISTING, MAPPING AND CONSERVATION STATUS FOR THE THREATENED TREES OF GUATEMALA – METHODOLOGY

For the purposes of the project, a tree was defined as an erect plant, perennial, with only one true trunk (Smith *et al.* 2004), which develops an aerial part that is partially woody and which can be differentiated into various layers: cambium, woody and bark (Frans 1994), with a diameter at breast height (DBH) of 10 cm or more and a height greater than 6-7 m. This

definition avoids the inclusion of palms and bushy species.

A candidate list of tree species was first drawn up, including all species on the existing CONAP and IUCN lists. This gave a total of 224 species. All species of the genus *Quercus* found in Guatemala were added to the list, since this group is the subject of global evaluation by the IUCN/SSC Global Tree Specialist Group (see Box 5). This gave a total working list of 248 tree species.

An exhaustive search for synonyms of each species and their distribution in Mesoamerica, particularly in Guatemala, was then conducted (see Annex II). This was done using, principally, the *Flora of Guatemala* (Standley & Steyermark 1946-1977, Steyermark 1950) and the TROPICOS database held at Missouri Botanical Garden (mobot.mobot.org/W3T/Search/vast.html).

In October 2004 a meeting of botanists and timber experts was held to revise the initial list and prioritize the remaining

species based on the following criteria:

1. Endemic species
2. Species present in both Red Lists (national and IUCN)
3. All species in the genus *Quercus*
4. Threatened *Magnolia* and *Dalbergia* species
4. Species listed on CITES
5. Rare and little-known species

This list was then taken to Missouri Botanical Garden and revised by specialists of particular families or regions, resulting in further removal or addition of species. Through this process, a list of 156 tree species was produced. Thirty-four of these species were not included in either of the existing Red Lists for Guatemala. A further two taxa were later dropped from the list: *Quercus vicentensis* because it is not present in the country and *Pinus strobus* var. *chiapensis* because the project decided not to assess varieties.

All available information on the remaining 154 species within Guatemala was then

gathered, including information on populations, distribution, uses and threats. All the herbaria and botanical libraries of Guatemala were visited, including the herbaria of the Faculty of Agronomy of the University of San Carlos, Guatemala (USAC), the Faculty of Biology of the USAC, the Nature Conservation Centre (CECON), CECON-USAC, and the Herbarium of the University of Valle (UVG). The herbaria and libraries of the Missouri Botanical Garden (MBG) and the New York Botanical Garden (NYBG) in the United States of America were also visited, thanks to financial assistance from both institutions.

A bibliographical review of published literature and unpublished (grey) material on these species in Guatemala was carried out in the USAC, the UVG, various governmental institutions (CONAP, INAB), international organizations (World Bank, Tropical Agricultural Research and Higher Education Centre (CATIE), Food and Agriculture Organization (FAO)) and NGOs such as Fundacion Defensores de la Naturaleza, CECON and TNC. Information about each species in Guatemala was compiled and organized under the following headings: taxonomy, habitat, distribution, management, conservation, threats, threat category and references. These species files will be incorporated into the IUCN Red List database, to ensure the information gathered is as widely available as possible.

Using this information, an assessment was made for each species against the IUCN Red List Categories and Criteria version 3.1 (2001) (IUCN 2001; Annex I), and a Red List status, and criteria where appropriate, was assigned to each species for its Guatemalan populations. For endemic species these national Red List Categories and Criteria represent global evaluations, while for species that also occur outside Guatemala, a global category was assigned through a separate process (see below).

Box 5: Threat status of *Quercus*, *Magnolia* and *Dalbergia* species in Guatemala

The IUCN/SSC Global Tree Specialist Group is assessing the conservation status of the world's tree species for the IUCN Red List and as a contribution towards the Convention on Biological Diversity's Global Strategy for Plant Conservation. The assessments are being undertaken on both a geographical and taxonomic basis. At the time of this Guatemalan project, global assessments of all members of the family Magnoliaceae and the genus *Quercus* were underway, with the genus *Dalbergia* identified as a priority group for attention. Assessment of all conifer species is being undertaken by the IUCN/SSC Conifer Specialist Group (Farjon & Page 1999).

As part of this Guatemalan project, the national status of two species of *Dalbergia*, two of *Magnolia* and 23 of *Quercus* were evaluated. These included two species endemic to Guatemala, for which these evaluations were therefore global assessments: *Magnolia guatemalensis* (EN), a beautiful tree restricted to humid and swampy areas of the central highlands in Verapaces and Sierra de las Minas Biosphere Reserve; and *Quercus flagellifera* (VU), a rare tree found in several departments in the western highlands and southeastern lowlands.

Once the information compilation and status assessments were complete, a workshop was organized in collaboration with the National Council for Protected Areas (CONAP). The workshop, which was held in Guatemala City on 5-6 September 2005, was attended by over 20 specialists from diverse institutions, both academic and governmental. The aim of the meeting was to check and confirm the proposed Guatemalan national categories and criteria for the threatened tree species, in order to ensure that the final output of the project, *The Red List of Trees of Guatemala*, is as accurate as possible and enjoys the full support of the national scientific and governmental community. All the global evaluations will be submitted in due course to IUCN for inclusion in the global Red List of threatened species.

GLOBAL ASSESSMENT OF SPECIES RESTRICTED TO MESOAMERICA

As stated above, the aim of the Guatemalan project was to revise the national Guatemalan tree Red List and reconcile the differences between the list compiled using CONAP national criteria and the Guatemalan species on the global IUCN Red List. The project therefore gathered information on the populations of the species identified within Guatemala and assessed their threat status within the country. This was a very thorough and inclusive process, involving all national stakeholders and a review of all available information.

The project did not, however, attempt a comprehensive review of the global status of species on the candidate list that also occur outside Guatemala. In order to expand the scope and usefulness of the work, and to ensure that the conservation of Guatemalan trees is properly contextualized with global priorities, an additional preliminary assessment of candidate species that also occur outside Guatemala but are restricted to neigh-

boring countries in Mesoamerica was undertaken (Mesoamerica is defined as southern Mexico, Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama). For species already on the IUCN Red List (IUCN 2006) (albeit that most were listed using the old (version 2.3) Red List Categories and Criteria), revision was only attempted where the current status was considered erroneous or obsolete. The global assessments that were not changed are included here for completeness.

Information on the status of these more widespread species is inevitably fragmentary and more difficult to compare; in particular estimates of decline in species populations are incomplete across this large area. Thus apart from the information gathered from Guatemala, the global assessments are based primarily on distribution data from monographs, checklists and databases.

Species on the candidate list that occur more widely (e.g. ranging to South America and beyond) were not assessed at a global scale and only their national threat status is given, together with their existing IUCN global status if they have one.

THE RED LIST OF TREES OF GUATEMALA

The Red List of Trees of Guatemala presents 154 species whose status within Guatemala has been evaluated according to the IUCN Red List Categories and Criteria version 3.1 (2001) (see Annex I). The principal results of the Guatemalan evaluations are presented in Table 3.

There are 48 species endemic to Guatemala, for which the national categories also represent global categories. The numbers of endemic species in each Red List Category are shown in Table 4. Many of these endemic species have a very restricted distribution within the country, and may only be known from one or two collections in one department. The highest

degree of endemism occurs in the Northern Corridor (Alta Verapaz, Baja Verapaz, Quiché and Huehuetenango): over 25 species are found solely in this area. Little is known about these species. Genera such as *Ocotea* (Lauraceae), *Pouteria* (Sapotaceae) and *Eugenia* (Myrtaceae) exhibit notable diversity in Guatemala, and many of the species in these groups are endemic.

As shown in the table, there are 19 species evaluated as Critically Endangered within the country. Many of these are only known from the type specimen collected more than 50 years ago, and have never been found again, and the localities are in areas which are under threat. Ten of the Critically Endangered species are endemic to Guatemala. These endemic and very poorly known species should be top priorities in efforts to conserve the threatened flora of Guatemala, since their disappearance from the country would mean their global extinction.

A further 81 species have a distribution restricted to Mesoamerica (as defined above), giving a total of 129 tree species that are found only in Mesoamerica. Twenty-three are found only in the south of Mexico (Chiapas) and Guatemala, political entities that share very similar biogeographical characteristics and which are rich in endemics, not only in the plant kingdom but also other taxonomic groups. For example, the area is classified by BirdLife International as an Endemic Bird Area (Stattersfield *et al.* 1998).

Table 5 shows the numbers of Guatemalan trees endemic to Mesoamerica in each Red List Category. It should be noted that, unlike the comprehensive Guatemalan national evaluations, the new global evaluations (Proposed Global Categories) are only preliminary assessments. Further information on these species outside Guatemala or comments on the proposed categories and criteria would be much appreciated – please

contact the IUCN/SSC Global Tree Specialist Group at GTSG@bgci.org.

RECOMMENDATIONS

Despite nearly half the country being covered with primary and secondary forest, the potential of the forest sector as a resource for combating poverty has been overlooked in Guatemala. It is only recently that international organizations have highlighted its importance as an engine of growth for rural areas (SNU 2003). Few studies have addressed the economic contribution of forest products to rural livelihoods and food security (Shimizu & Vivero 2004), the latter being one of the most pressing issues associated with extreme poverty and ethnic discrimination in the country.

The Red List of Trees of Guatemala should be used as a tool in the valuation of the country's forest resources and the prioritization of actions for the conservation and sustainable use of forests. Having been developed and endorsed by a wide range of governmental and academic institutions in Guatemala, it should also assist the two mandatory institutions (CONAP and INAB) to work together to preserve the most threatened tree species, several of which have a high commercial value.

The 19 tree species considered Critically Endangered should be the subject of immediate action, to ground truth their range and populations and to initiate specific *in-situ* or *ex-situ* conservation measures to avoid their extinction. Priority should be given to those 10 Critically Endangered trees that are restricted to Guatemala, most of which are only known from a single location. A further 36 species (23 endemic) are considered Data Deficient, mostly because they are only known from a single collection made some time ago. These species should also be priorities for action, to gather

information on their status, biology and ecology and to initiate conservation measures where necessary.

Current conservation activities and research undertaken by environmental organizations – such as Conservation International (CEPF 2004), The Nature Conservancy, IUCN, WWF, Fauna and Flora International, Fundación Defensores de la Naturaleza, Fundación para el Desarrollo y la Conservación (FUNDAECO) and the Wildlife Conservation Society, among others – should incorporate action for threatened tree species within their biodiversity conservation initiatives, and assign high priority to preventing the extinction of the Critically Endangered and Data Deficient endemic species. Threatened trees could be used as indicators in the determination of Important Plants Areas (Palmer & Smart 2002).

Finally, a considerable amount of information on the woody biodiversity of Guatemala has been produced by national

and international universities, research centres and non-government organizations (NGOs) (see Cordero & Boshier 2003, Castañeda 2004 for recent publications). Much of this information is kept in NGO offices or university repositories and is never published for a wider audience (e.g. Marcos 1999, Martínez 1999, Medinilla 1999, Rosito 1999, Paiz 2001). The development of a partnership between CONAP, INAB, USAC, the University of Rafael Landívar (URL), UVG and national and international biodiversity conservation institutions to produce an online database containing all 'grey' literature on forests and tree species of Guatemala would be extremely useful. A similar database for bird information is currently being promoted by the Sociedad Guatemalteca de Ornitología (www.avesdeguatemala.org).

TABLE 3: National Red List Categories for species within Guatemala

IUCN Category	CR	EN	VU	NT	DD	LC
Number of species	19	42	28	17	36	13

TABLE 4: Red List Categories for endemic species (national and global categories)

IUCN Category	CR	EN	VU	NT	DD	LC
Number of species	10	13	2	0	23	0

TABLE 5: Proposed and current global Red List Categories for Mesoamerican endemic species that occur in Guatemala

IUCN Category	CR	EN	VU	NT	DD	LC	LR/nt*
Number of species	0	9	25	10	6	40	1

* Low risk/near threatened – a category from Version 2.3 (1994) Categories and Criteria that no longer exists in Version 3.1 (2001). There is one species that is currently listed on the IUCN Red List in this category and has not been re-evaluated during this project.

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The Red List of Trees of Guatemala



J.L. Vivero

Magnolia guatemalensis



ABBREVIATIONS

DEPARTMENTS WITHIN GUATEMALA

AV	Alta Verapaz	JA	Jalapa	SM	San Marcos
BV	Baja Verapaz	JU	Jutiapa	SO	Sololá
CM	Chimaltenango	PE	Petén	SR	Santa Rosa
CQ	Chiquimula	PR	El Progreso	SU	Suchitepéquez
ES	Escuintla	QU	Quiché	TO	Tonicapán
GU	Guatemala	QZ	Quetzaltenango	ZA	Zacapa
HU	Huehuetenango	RE	Retalhuleu		
IZ	Izabal	SA	Sacatepéquez		

OTHER COUNTRIES

BE	Belize	GU	Guatemala	NI	Nicaragua
CR	Costa Rica	HO	Honduras	PA	Panama
ES	El Salvador	ME	Mexico	OT	Others

SPECIES ENDEMIC TO GUATEMALA

Since these 48 species occur only in Guatemala, the assessments undertaken during this project and the resulting Red List Categories and Criteria represent the global status of the species. Version 3.1 (2001) of the IUCN Red List Categories and Criteria was used (see Annex I). Any listings on the 2006 IUCN Red List are also indicated; this list will be changed when these new assessments have been accepted. The CONAP listings are also given.

Aiouea guatemalensis (Lundell) Renner

Lauraceae

Distribution GU
 Within Guatemala PE, AV, IZ
 CONAP 2
 Proposed Glob. Cat. EN B1ab(iii)

Tree or shrub reaching heights of up to 8 m that grows in high evergreen forests in association with *Orbygnia* spp. Very few collections have been made in only three departments of Guatemala, all from at least 35 years ago.

Aiouea parvissima (Lundell) Renner

Lauraceae

Distribution GU
 Within Guatemala PE, IZ
 CONAP 2
 Proposed Glob. Cat. EN B1ab(i,ii,iii)

Shrub or small tree measuring 7 m in height that grows in secondary shrub forests in association with *Manilkara*. Found in only three hilltop locations, despite the presence of much suitable habitat in the country.

Alchornea integrifolia Pax. & K. Hoffm.

Euphorbiaceae

Distribution GU
 Within Guatemala AV, BV
 CONAP 2
 Proposed Glob. Cat. DD

Tree with a height of 6-25 m growing in swampy forests at elevations of 1000-1500 m. It has been reported in two departments in Guatemala and one collection has been made in Colombia (pending confirmation). This species needs further study as few collections have been made and scant reproductive material is available.

Beilschmiedia steyermarkii C.K. Allen

Lauraceae

Distribution GU
 Within Guatemala PE, AV
 CONAP 2
 Proposed Glob. Cat. EN B1ab(i,ii,iii)+2ab(i,ii,iii)

Tree measuring 25 m growing at elevations of 300-400 m. This species has only been collected twice, in Petén and Alta Verapaz, over 30 years ago, and there is no information regarding its ecological or biological characteristics.

Buddleja megalcephala Donn. Sm.

Loganiaceae

Distribution GU
 Within Guatemala CM, SO, TO, QZ, HU, SM
 CONAP 1
 Proposed Glob. Cat. CR B2ab(ii,iii)

Tree measuring 12 m growing in mountains with high forests at elevations of 2400-4000 m, associated with *Pinus*, *Abies*, *Cupressus* and *Juniperus*. In *Flora of Guatemala* (Standley & Steyermark 1946-1977) it is reported in six departments in Guatemala but there is only a single supporting herbarium specimen from Huehuetenango in 1991, hence its threat status.

Calliandra carcerea Standl. & Steyererm.

Mimosaceae

Distribution GU
 Within Guatemala PR, ZA
 CONAP 2
 Proposed Glob. Cat. EN A2cd; B2ab(ii,iii)

Tree or shrub with dense, hard wood. There are only two collections of this species: the type collection from in El Progreso in 1942 and one from the Department of Zacapa in 2000.

Capparis steyermarkii Standl.

Capparidaceae

Distribution GU
 Within Guatemala IZ
 CONAP 1
 Proposed Glob. Cat. CR B1ab(i,ii,iii)+2ab(i,ii,iii)

Small tree on which there is practically no information apart from the relatively detailed and precise type description. Only two collections made in Izabal, the most recent in 1975.

Casimiroa emarginata Standl. & Steyererm.

Rutaceae

Distribution GU
 Within Guatemala SM
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 15 m. The only information is from the type collection from the Volcano Tajumulco (2500 m) in San Marcos, dating from 1940. The description of the species is incomplete and it is difficult to associate it with any other described Mexican or Central American species.

Cedrela imparipinnata DC.

Meliaceae

Distribution GU
 Within Guatemala CM
 CONAP 2
 Proposed Glob. Cat. DD

The taxonomy of this species is uncertain because the only available information is from the type collection of a number of incomplete fragments from Volcano Fuego, Chimaltenango. The collection of other specimens to confirm information is urgently needed.

Clethra skutchii Standl. & Steyerl.

Clethraceae

Distribution GU
 Within Guatemala QZ
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 20 m growing in mountain rainforests at elevations of 1300-3000 m. Only two collections are known from two different sites in the Department of Quetzaltenango (Volcano Santa María), dating from 1934 and 1940.

Cordia cardenasiana J.S. Miller

Boraginaceae

Distribution GU
 Within Guatemala PE
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 15 m. This is a very rare species which has not been adequately described (its fruit has not been studied). The only available specimen is from the type collection from Petén dating from 1967.

Cordia skutchii I.M. Johnst.

Boraginaceae

Distribution GU
 Within Guatemala QZ
 CONAP 2
 Proposed Glob. Cat. DD

Tree measuring 6 m growing in mixed forest and rainforest at elevations of 1100-3800 m. Recorded only from Volcano Santa María, Department of Quetzaltenango, prior to 1945.

Croton quercetorum Croizat

Euphorbiaceae

Distribution GU
 Within Guatemala JA
 CONAP 1
 Proposed Glob. Cat. DD

Shrub or small tree measuring 8 m growing at 1600 m in rainforest and associated with *Quercus*. The only available information is the type location report (Montaña de Cahuite), which indicated that it was abundant, but it has not been collected for over 60 years.

Cymbopetalum steyermarki N.A. Murray

Annonaceae

Distribution GU
 Within Guatemala HU
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 23 m growing at elevations ranging from 200-800 m. There is only the type specimen (complete) collected from the Sierra de los Cuchumatanes (Huehuetenango) by Steyerl in 1942.

Esenbeckia echinoidea Standl. & Steyerl.

Rutaceae

Distribution GU
 Within Guatemala CQ, PR, ZA, GU
 CONAP 2
 Proposed Glob. Cat. EN B2ab(i,ii,iii,iv)

Small tree measuring 5-7 m growing on rocky slopes, in lowland forests or places with dense vegetation at elevations of 300-1200 m. All herbarium records are by Standley and Steyerl and there are no recent citations.

Eugenia cervina Standl. & Steyerl.

Myrtaceae

Distribution GU
 Within Guatemala AV
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 10 m growing in rainforests at elevations of 250-400 m. Only two collections have been made in Cubilguitz (Alta Verapaz), dating from 1942. Nothing more is known about this species.

Eugenia papalensis Standl. & Steyerl.

Myrtaceae

Distribution GU
 Within Guatemala HU
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 12 m growing in montane forest at elevations of 1800-3000 m. Only the type collection from Huehuetenango, which dates from 1942 and which did not include flowers, has been studied.

Eugenia shookii Lundell

Myrtaceae

Distribution GU

Within Guatemala PE

CONAP 1

Proposed Glob. Cat. DD

Tree measuring 20 m growing in high evergreen forest. Only two collections have been made at the same place over 40 years ago.

Garrya corvorum Standl. & Steyerl.

Garryaceae

Distribution GU

Within Guatemala HU

CONAP 2

Proposed Glob. Cat. EN B2ab(i,ii,iii,iv)

Tree or shrub measuring 2-15 m growing in high mountain forests alongside *Juniperus* and *Pinus* in rocky soil and marl at elevations of 3000-4000 m. This species is only known in the Sierra de los Cuchumatanes, where it has been collected several times.

Juglans steyermarkii W.E. Manning

Juglandaceae

Distribution GU

Within Guatemala HU

CONAP 1

Proposed Glob. Cat. DD

Tree measuring 17 m which grows at an elevation of 1200-1300 m. Produces edible walnuts and wood similar to other walnut species. All information regarding this species comes exclusively from the type collection from Huehuetenango in 1942.

Magnolia guatemalensis Donn. Sm.

Magnoliaceae

Distribution GU

Within Guatemala AV, BV, ZA, SR

CONAP 2

Proposed Glob. Cat. EN A2c; B2ab(ii,iii,iv)

Very attractive tree measuring 15 m with tough shiny leaves and red shiny stipules and sepals. It grows in swamp areas among forests at elevations of 1300-2000 m. It is relatively abundant in marshes in Tactic (Alta Verapaz), where it forms dense stands, but at other locations it is found as isolated trees within the forest.

Mimosa canahuensis Standl. & Steyerl.

Mimosaceae

Distribution GU

Within Guatemala PR

CONAP 1

Proposed Glob. Cat. DD

Only the type collection made by Steyerl in 1942 in the Canahuís Mountains is known. There is no further information about this species.

Mosannonna guatemalensis (Lundell) Chatrou

Annonaceae

Distribution GU

Within Guatemala AV

CONAP 2

Proposed Glob. Cat. DD

Tree measuring 7 m only known from the type collection in 1964. No data is available on its habitat and its fruit and seeds are unknown.

Mouriri steyermarkii Standl.

Melastomataceae

Distribution GU

Within Guatemala PE, IZ

CONAP 2

Proposed Glob. Cat. EN B2ab(ii,iii)

Tree reaching heights of up to 12 m, sometimes taking the form of a shrub. It grows in low evergreen forest at elevations below 100 m. It is distributed throughout forests in Petén and Izabal, but the most recent collection (there have only been three in total) is 40 years old.

Myrciaria ibarrae Lundell

Myrtaceae

Distribution GU

Within Guatemala PE

CONAP 1

Proposed Glob. Cat. DD

Tree measuring 10 m growing in lowland forests associated with *Manilkara zapota*. There have been two collections from the type location gathered in 1960.

Ocotea amplifolia (Mez & Donn. Sm.) van der Werff

Lauraceae

Distribution GU

Within Guatemala QU

CONAP 1

Proposed Glob. Cat. DD

The only information comes from the type collection that was from the Department of Quiché, but it is not known where or when. Nothing more is known about this species.

Ocotea bajapazensis Lundell

Lauraceae

Distribution GU

Within Guatemala BV

CONAP 1

Proposed Glob. Cat. CR B2ab(iii,iv)

Grows at elevations ranging from 100-300 m. It has been collected several times but only at the type location, most recently in 1977. Nothing more is known about this species.

Ocotea barbatula Lundell

Lauraceae

Distribution GU

Within Guatemala BV

CONAP 1

Proposed Glob. Cat. CR B2ab(iii,iv)

Collected only in a very restricted area (Unión Barrios and Niño Perdido) several times between 1975 and 1977. There are no reports of the species since 1977.

Ocotea contrerasii Lundell

Lauraceae

Distribution GU

Within Guatemala BV

CONAP 1

Proposed Glob. Cat. CR B2ab(iii,iv)

Collected only in a very restricted area (Unión Barrios and Niño Perdido) several times between 1975 and 1977. There are no reports of the species since 1977.

Ocotea euvenosa Lundell

Lauraceae

Distribution GU

Within Guatemala AV

CONAP 1

Proposed Glob. Cat. DD

The only information is from the type collection made in Alta Verapaz in 1964. There is no further information regarding this species.

Ocotea nigrita (Lundell) Lundell

Lauraceae

Distribution GU

Within Guatemala PE, IZ

CONAP 1

Proposed Glob. Cat. EN B2ab(i,ii,iii,iv)

Grows in low rainforest (200-300 m). Infrequently collected, only from Petén (1969) and Izabal (1972, 1975). There is no further information regarding this species.

Ocotea oblongiflora van der Werff

Lauraceae

Distribution GU

Within Guatemala QZ

CONAP 1

Proposed Glob. Cat. DD

All information regarding this species comes exclusively from the type collection gathered at elevations of between 1400-1800 m in Quetzaltenango. Nothing more is known about this species.

Ocotea racemifolia Lundell

Lauraceae

Distribution GU

Within Guatemala AV

CONAP 1

Proposed Glob. Cat. DD

The only information is from the type specimen collected in Alta Verapaz in 1968. There is no further information regarding this species.

Persea perglauca Lundell

Lauraceae

Distribution GU

Within Guatemala BV

CONAP 1

Proposed Glob. Cat. CR B1ab(ii,iv)+2ab(ii,iv)

All information is from four collections undertaken in Baja Verapaz between 1971 and 1975. There is no further information regarding this species.

Persea sessilis Standl. & Steyerl.

Lauraceae

Distribution GU

Within Guatemala PR, ZA

CONAP 1

Proposed Glob. Cat. CR B2ab(i,ii,iii,iv)

Only found in the Sierra de las Minas Biosphere Reserve, at elevations of 1800-3000 m. There is very little botanical information on this species and its taxonomy needs clarification since imperfect material was used in the study of its flowers and fruits. However, it appears clear that it belongs to the genus *Persea*.

Phyllonoma cacuminis Standl. & Steyerl.

Saxifragaceae

Distribution GU

Within Guatemala BV, ZA

CONAP 2

Proposed Glob. Cat. CR B2ab(i,ii,iii,iv)

Tree measuring up to 14 m growing in mixed wet forest between

2000-2600 m. Restricted to the Sierra de las Minas and peripheral areas. Only two collections made, the most recent in 1995.

Pleurothyrium wesrphalii van der Werff

Lauraceae

Distribution GU
Within Guatemala AV
CONAP 1
Proposed Glob. Cat. DD

Tree measuring 20 m growing at elevations ranging from 900-1100 m. Only two individuals are known, which were collected in the type location in Alta Verapaz 30 years ago.

Pouteria areolatifolia Lundell

Sapotaceae

Distribution GU
Within Guatemala PE
CONAP 1
Current Glob. Cat. VU D2 (ver. 2.3 1994, WCMC)
Proposed Glob. Cat. CR B1ab(i,ii,iii)+2ab(i,ii,iii)

Large tree measuring 40 m in height with a DBH of 1 m growing in high evergreen and semi-evergreen forests where *Manilkara zapota* is the dominant species. Only found in its type location to the south of Petén, with three collections dating from the 1970s.

Pouteria briocheoides Lundell

Sapotaceae

Distribution GU
Within Guatemala PE
CONAP 2
Current Glob. Cat. VU D2 (ver. 2.3 1994, WCMC)
Proposed Glob. Cat. EN B1ab(i,ii,iii,iv); C2a(ii)

Tree measuring 15 m growing in high evergreen forest and semi-evergreen forest in lowlands where *Manilkara zapota* is the dominant species. It has only been found in two locations in Petén.

Pouteria quicheana Cronquist

Sapotaceae

Distribution GU
Within Guatemala PE, AV, QU
CONAP 2
Proposed Glob. Cat. VU B1ab(i,ii)

Tree growing in mixed forests in the vicinity of water. There are three herbarium registries in three different departments indicating that, although it is not very well known, the species probably has a wide distribution but occurs at a low density.

Pouteria rufotomentosa (Lundell) T.D. Penn.

Sapotaceae

Distribution GU
Within Guatemala BV
CONAP 2
Current Glob. Cat. VU D2 (ver. 2.3 1994, WCMC)
Proposed Glob. Cat. CR B2ab(i,ii,iii,iv)

Tree measuring 15 m with a DBH of 30 cm growing in the high evergreen forest and in the lowlands. Only four collections have been made at the type location, Niño Perdido in Baja Verapaz, dating 1977. Its fruit is unknown.

Quercus flagellifera Trel.

Fagaceae

Distribution GU
Within Guatemala AV, CQ, PR, SU, CM, SO, HU, SM
CONAP 2
Proposed Glob. Cat. VU A2cd

Grows in mixed wet or rainforest at 1250-2500 m. It is distributed throughout the mountains in the east and central part of Guatemala and is a difficult species to identify. This and other species of the genus require taxonomic study using molecular techniques.

Rondeletia chinajensis Standl. & Steyerl.

Rubiaceae

Distribution GU
Within Guatemala AV
CONAP 1
Proposed Glob. Cat. DD

Small tree measuring between 6-9 m in height. All information is from the type collection gathered in 1942 at Cerro Chinaja, Alta Verapaz, at 400-700 m.

Saurauia veneficorum Standl. & Steyerl.

Actinidiaceae

Distribution GU
Within Guatemala AV, IZ, CQ
CONAP 2
Proposed Glob. Cat. DD

Tree measuring 6 m growing in rainforest at elevations of 500-1700 m. It could be a synonym of *S. waldeheimii*, and recent collections in Izabal indicated a significantly different habitat, calling for a new collection in the type location (Concepción las Minas, Chiquimula). Its presence in Alta Verapaz, indicated in *Flora of Guatemala* (Standley & Steyermark 1946-1977), has not been corroborated by a herbarium specimen.

Sideroxylon hirtiantherum T.D. Penn.

Sapotaceae

Distribution GU
 Within Guatemala PE
 CONAP 2
 Current Glob. Cat. VU B1+2c, D2 (ver. 2.3 1994, WCMC)
 Proposed Glob. Cat. EN A2c; B2ab(iii,iv)

Tree measuring 15 m growing in high evergreen forests alongside *Manilkara zapota*. Its fruit has not been described. Studies have focused solely on the type location, Petén, from where it was collected in 1975-1977.

Sideroxylon ibarrae (Lundell) T.D. Penn.

Sapotaceae

Distribution GU
 Within Guatemala BV
 CONAP 2
 Current Glob. Cat. VU B1+2c, D2 (ver. 2.3 1994, WCMC)
 Proposed Glob. Cat. EN B2ab(i,ii,iii,iv)

Tree measuring 20 m growing in tropical rainforest. All information is based on the only three collections made in 1975 at the type location.

Stillingia cruenta Standl. & Steyerl.

Euphorbiaceae

Distribution GU
 Within Guatemala BV
 CONAP 2
 Proposed Glob. Cat. DD

Tree or shrub measuring 8 m growing on dry, rocky ground in Baja Verapaz in pine oak forests at 1500 m. The only known specimen is the type collection gathered in 1942, and the collectors affirmed that it was abundant. It has not been observed since then.

Viburnum euryphyllum Standl. & Steyerl.

Caprifoliaceae

Distribution GU
 Within Guatemala HU
 CONAP 3
 Proposed Glob. Cat. EN C2a(ii)

Tree measuring 9 m restricted to the Sierra de los Cuchumatanes (2500-3000 m), from where the species was described in 1942. It has been collected twice recently, also in Huehuetenango.

SPECIES ENDEMIC TO MESOAMERICA

The following 81 species that occur in Guatemala and other countries in Mesoamerica (see p. 11) have been assessed at the Guatemalan national level, following the process outlined on p.11. For each species, the current global category (Current Glob. Cat.) as listed on the 2006 IUCN Red List is given, if one exists. If the species does not currently have a global category, or if the current category is considered erroneous or obsolete, a proposed global category (Proposed Glob. Cat.) is given. These have been assigned following a preliminary assessment done during this project, using the process outlined on p.11, except for conifer, Magnoliaceae and *Quercus* species. These groups have been the subject of recent assessments by the Conifer Specialist Group (previously Data Deficient conifer species only) and the Global Tree Specialist Group (see Box 5), and the resulting proposed categories are presented here. Proposed categories have been or will be submitted to IUCN for acceptance and inclusion in the IUCN Red List.

Abies guatemalensis Rehder

Pinaceae

Distribution ME, GU, ES, HO
 Within Guatemala JA, PR, ZA, SO, TO, QZ, QU, HU, SM
 Guatemalan Nat. Cat. EN A2c
 CONAP 1
 Current Glob. Cat. VU A1d (ver. 2.3 (1994),
 Conifer Specialist Group)

CITES Appendix I

Tree characteristic of the mountain rainforest of Central America, most abundant between 2800-3200 m elevation. It grows in single-species forests or is interspersed with *Pinus ayacahuite*, *Cupressus lusitanica*, *Quercus* spp. and occasionally *Pinus rudis*. It is the species in the genus *Abies* with the most southerly distribution. Within Guatemala, *A. guatemalensis* is of considerable cultural value to indigenous communities and is well known amongst the general public. The widespread use of its branches as Christmas trees, the low natural regeneration and the drastic reduction of its cloud-forest habitat have led to its inclusion in Category 1 of the CONAP Red List in Guatemala.

Acacia dolichostachya S.F. Blake

Mimosaceae

Distribution ME, GU, BE, HO
 Within Guatemala PE, BV, HU
 Guatemalan Nat. Cat. NT
 CONAP 3
 Current Glob. Cat. LR/nt (ver. 2.3 (1994), WCMC)
 Proposed Glob. Cat. LC

Shrub or tree reaching heights of up to 15 m. It grows in deciduous and semi-evergreen forests, and is also found among sand dune vegetation at elevations of between 300-1000 m. It is a common

species well distributed throughout the Yucatan peninsula but has only been collected once in Honduras (Tegucigalpa). It contains tannins and is an aromatic honey plant with medicinal uses as well as a good shade tree. In the Department of Petén (Guatemala), it is subject to unregulated use for construction and firewood, which may lead to the species becoming threatened in the future.

Acer negundo subsp. ***mexicanum*** (DC.) Wesm.

Aceraceae

Distribution ME, GU
 Within Guatemala AV, BV, SA, CM, TO, QZ, QU, HU, SM
 Guatemalan Nat. Cat. VU B1ab(i,ii,iii)
 CONAP 3
 Current Glob. Cat. VU B1+2c (ver. 2.3 (1994), WCMC)
 Proposed Glob. Cat. LC

Tree reaching heights of up to 30 m. It grows in deciduous and pine-oak forests and among riparian vegetation on well-drained soils at elevations of 1200-3000 m. It is distributed throughout the mountains of Mexico and Guatemala, where it is not uncommon although widely dispersed and present at low densities.

Acer skutchii Rehder

Aceraceae

Distribution ME, GU
 Within Guatemala GU, ZA, QU
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii)
 CONAP 2
 Proposed Glob. Cat. LC

Deciduous tree reaching heights of between 20-30 m. It grows along riverbanks and in mixed rainforest at elevations of 1600-2600 m, and in gullies of the Sierra de las Minas. In Guatemala, it has only been collected twice from the Departments of Zacapa and Quiché. The wood is used for posts and in the construction of other objects.

Aegiphila skutchii Moldenke

Verbenaceae

Distribution ME, GU, HO, NI
 Within Guatemala SU
 Guatemalan Nat. Cat. DD
 CONAP 1
 Current Glob. Cat. VU C2a (ver. 2.3 (1994), C. Nelson)

Tree reaching heights of up to 12 m which occurs in high and medium evergreen forest at elevations of 1200-1700 m. Although distributed from Mexico to Nicaragua, very little is known about this species. In Guatemala it has only been collected on one occasion in the Department of Suchitepéquez.

Amphipterygium adstringens (Schtdl.) Standl.

Julianaceae

Distribution ME, GU, NI, CR
 Within Guatemala CQ, PR, ZA
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)
 CONAP 2
 Proposed Glob. Cat. LC

A dominant species in lower deciduous forests, reaching heights of up to 8 m. It is distributed throughout the region's dry forests, doing particularly well in areas affected by periodic fire. Within Guatemala it is still relatively abundant in the dry region of the Department of El Progreso, but its dry forest habitat is being encroached upon by the growing population of the Motagua Valley. The bark has astringent properties and a high tannin content, and is used for local medicinal purposes and for production of red dye.

Anaxagorea guatemalensis Standl.

Annonaceae

Distribution ME, GU, BE, HO
 Within Guatemala PE, IZ
 Guatemalan Nat. Cat. VU B1ab(i,iii)
 CONAP 3
 Proposed Glob. Cat. LC

Shrub or tree measuring 6 m in height growing at elevations of 50-500 m. This is a rare species which has been infrequently collected throughout its known range. A number of collections have been made in the Sierra de las Minas Biosphere Reserve, although most are from the same locality. In Belize it has a number of local uses but in Guatemala none has been reported.

Balizia leucocalyx (Britton & Rose) Barneby & J.W. Grimes

Mimosaceae

Distribution ME, GU, BE, HO
 Within Guatemala PE, IZ
 Guatemalan Nat. Cat. EN A2cd; B2ab(i,ii,iii)
 CONAP 3
 Proposed Glob. Cat. LC

Tree reaching heights of up to 40 m. It forms part of the upper stratum of high evergreen forests, growing in alluvial or calcareous soils and along riverbanks. It is also sometimes found on grasslands below 400 m. It is associated with *Guatteria anomala*, *Terminalia amazonia* and *Dialium guianense*. Its wood is used for floorboards, staves and planks. In Sayaxché (Petén) this tree is reportedly used as sawn wood under management plans. In Guatemala only one collection has been made in Izabal in 1971.

Balmea stormae Martínez

Rubiaceae

Distribution ME, GU, ES
 Within Guatemala JA, ZA, ES, GU, HU
 Guatemalan Nat. Cat. CR A2ac
 CONAP 1
 Proposed Glob. Cat. VU B1ab(iii)

CITES Appendix I

Tree or shrub measuring 7 m, ground-rooted or epiphytic on *Quercus* spp. The plant has been documented in dry and rocky areas of Michoacán (México) and with *Quercus* in mixed rainforest in Guatemala at elevations of 1400-2300 m. Within Guatemala, it has been infrequently collected on the slopes of the Volcano Pacaya but the departments referred to in the *Flora of Guatemala* (Standley & Steyermark 1946-1977) have not yielded recent records. It is a popular plant with local inhabitants in its area of distribution due to its bright red flowers, and was traditionally sold in Central America as a Christmas tree.

Calyptranthes contrerasii Lundell

Myrtaceae

Distribution GU, BE
 Within Guatemala PE, AV
 Guatemalan Nat. Cat. VU A2c; B1ab(i,ii,iii); C2
 CONAP 2
 Proposed Glob. Cat. NT

Tree or shrub measuring 4-8 m growing in rainforest dominated by *Manilkara* at a maximum altitude of 500 m. Within Guatemala, only three localities are known, all from over 30 years ago, but these are widely separated, suggesting a relatively large area of distribution. Known to be used locally for construction timber in parts of its range.

Calyptranthes paxillata McVaugh

Myrtaceae

Distribution ME, GU, ES
 Within Guatemala AV, BV
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)
 CONAP 2
 Proposed Glob. Cat. NT

Tree or shrub measuring between 3-6 m growing in rainforest and cloud forest at elevations of 900-1800 m. Very few specimens have been collected in Guatemala, all from a small area.

Capparis lundellii Standl.

Capparidaceae

Distribution ME, GU
 Within Guatemala PE
 Guatemalan Nat. Cat. CR B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)
 CONAP 1

Proposed Glob. Cat. VU B1ab(iii)

In Guatemala, only two collections have been made at the type location, Laguna del Tigre National Park, 40 years apart. The park is highly threatened by drug cartels, cattle ranching and illegal wildlife trade.

Cedrela tonduzii C. DC.

Meliaceae

Distribution ME, GU, ES, NI, CR, PA
 Within Guatemala JU, JA, PR, GU, SU, SA, CM, QZ, HU, SM
 Guatemalan Nat. Cat. NT
 CONAP 3
 Proposed Glob. Cat. LC

Tree measuring up to 40 m growing at intermediate elevations, typically in pre-montane and low montane primary and secondary forests at 1200-2800 m, in wet to very wet climatic conditions. It is a fast-growing heliophytic species, producing smooth-grained wood with a characteristic aroma used in the manufacture of furniture, cabinets and musical instruments and for general construction.

Chiranthodendron pentadactylon Larreategui

Sterculiaceae

Distribution ME, GU
 Within Guatemala PR, ZA, SA, CM, SO, TO, QZ, QU, HU, SM
 Guatemalan Nat. Cat. NT
 CONAP 3
 Proposed Glob. Cat. LC

Tree measuring 15-30 m growing in pine-oak forests and mesophyllc mountain forests at elevations of 2000-3000 m. It is a very attractive mixed rainforest tree due to its abundant red flowers, which can be used medicinally to treat a variety of conditions. Naturally restricted in distribution, direct exploitation of the species and logging of its habitat are contributing to its decline.

Cordia cordiformis I.M. Johnst.

Boraginaceae

Distribution ME, GU
 Within Guatemala SR, GU
 Guatemalan Nat. Cat. DD
 CONAP 1
 Proposed Glob. Cat. DD

Tree measuring 6 m. In Guatemala it grows at an elevation of 800 m, and there have been only three collections, two over a century ago. The third was possibly cultivated.

Cordia prunifolia I.M. Johnst.

Boraginaceae

Distribution ME, GU, CR, PA
 Within Guatemala PE, AV, BV, PR, ZA, SU, SA

Guatemalan Nat. Cat. VU B2ab(iii)

CONAP 3

Proposed Glob. Cat. LC

Tree measuring 10-20 m growing at a wide range of elevations and in different types of forests: dry forest in El Progreso and rainforest in Baja Verapaz. It is often confused with *C. stenoclada*. Considered threatened because of its scarcity and restricted distribution.

Cordia stenoclada I.M. Johnst.

Boraginaceae

Distribution ME, GU

Within Guatemala PE

Guatemalan Nat. Cat. DD

CONAP 1

Proposed Glob. Cat. LC

Tree measuring 10-16 m growing in the medium and high semi-evergreen forest and in forests with *Quercus* at altitudes ranging from 0-500 m. Only known from the humid areas of southern Mexico and Guatemala, with only one collection in Guatemala from Petén. This species is very similar to *C. prunifolia*, although considered as a different taxon in the TROPICOS database and by several authors (Szejner, pers. comm.).

Crudia lacus Standl. & Steyerm.

Caesalpiniaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA

Within Guatemala IZ

Guatemalan Nat. Cat. CR B2ab(i,iii)

CONAP 1

Proposed Glob. Cat. DD

Tree widely distributed throughout Central America. In Guatemala it has only been collected in Izabal, the type collection dating from 1942.

Cupania mollis Standl.

Sapindaceae

Distribution ME, GU, ES

Within Guatemala BV, SR, GU

Guatemalan Nat. Cat. VU B2ab(ii)

CONAP 2

Current Glob. Cat. LR/cd (ver. 2.3 (1994), WCMC)

Proposed Glob. Cat. LC

There is no data regarding habitat in any of the three countries where it occurs. It has been only infrequently collected in Guatemala, with two specimens from more than 35 years ago: only one from recent times.

Cymbopetalum mirabile R.E. Fr.

Annonaceae

Distribution ME, GU

Within Guatemala PE, IZ

Guatemalan Nat. Cat. VU B1ab(i,ii,iii); C2a(i)

CONAP 3

Proposed Glob. Cat. VU B1ab(iii)

Shrub or small tree measuring 2-6 m growing on slopes and rocky mountains at high elevations, associated with *Manilkara* and *Orbigynya*. Distributed throughout Chiapas (Mexico), Petén and Izabal, where it is very rare and infrequently collected.

Cymbopetalum penduliflorum (Dunal) Baill.

Annonaceae

Distribution ME, GU, BE

Within Guatemala PE, AV, IZ, GU, HU

Guatemalan Nat. Cat. EN B2ab(ii)

CONAP 2

Proposed Glob. Cat. LC

Tree measuring 25 m with a crown in the form of a pyramid. It grows in high evergreen forests with well-drained deep soil at elevations ranging from 150-1500 m. Dried petals are used as a condiment in the preparation of *atoles* (a traditional beverage) and occasionally in coffee. It also has several medicinal uses. Although it has a wide distribution, it is a rare species.

Cymbopetalum stenophyllum Donn. Sm.

Annonaceae

Distribution ME, GU

Within Guatemala SR, QZ, RE

Guatemalan Nat. Cat. CR B2ab(i,ii,iii)

CONAP 1

Proposed Glob. Cat. EN A2c

Shrub or small tree measuring 2-7 m growing in tropical rainforest, on red clay soils on steep slopes close to water in high precipitation areas, at elevations of 100-600 m. This species is scant in both countries, with few localities known.

Dalbergia stevensonii Standl.

Fabaceae

Distribution ME, GU, BE

Within Guatemala PE, AV, IZ, QU

Guatemalan Nat. Cat. EN A2cd; B2ab(ii,iii)

CONAP 2

Proposed Glob. Cat. VU A2cd

Large tree measuring 20-30 m. Reported to grow in large stands along or close to rivers as well as in drier areas. Guatemala exports sawnwood from this species, but there is no information concerning its ecology or distribution in the country or the extent of logging. An assessment of the species in the wild is urgently needed.

Decatropis paucijuga (Donn. Sm.) Loes.

Rutaceae

Distribution ME, GU, ES, HO

Within Guatemala HU

Guatemalan Nat. Cat. CR B2ab(ii,iii)+C2a(i)

CONAP 1

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Proposed Glob. Cat. EN B1ab(iii)

Tree growing in dry forest at elevations of 700-1600 m. Within Guatemala, there is only the type collection and a subsequent collection in 1993, both in the Department of Huehuetenango.

Decazyx macrophyllus Pittier & S.F. Blake

Rutaceae

Distribution: GU, HO, CR

Within Guatemala: IZ

Guatemalan Nat. Cat. EN B2ab(ii,iii); C2a(i,ii)

CONAP 2

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Large tree growing in mixed rainforest close to sea level. Its wood is used for construction. In Guatemala, there have been two collections from the Department of Izabal in 1966 and 1975.

Desmopsis lanceolata Lundell

Annonaceae

Distribution ME, GU, CR

Within Guatemala IZ, SO, QZ, SM

Guatemalan Nat. Cat. EN B2ab(i,ii,iii)

CONAP 1

Proposed Glob. Cat. VU B1ab(i)

Shrub or small tree measuring 3-6 m. Within Guatemala, it grows at elevations of 150-2000 m in the wet pre-montane forests of Izabal and on the slopes of Volcano Atilán, and is a very rare species.

Diospyros johnstoniana Standl. & Steyerl.

Ebenaceae

Distribution GU, ES

Within Guatemala SA

Guatemalan Nat. Cat. CR B2ab(iii)

CONAP 2

Proposed Glob. Cat. EN B1ab(iii)

Tree measuring 5-8 m growing in densely wooded wet ravines and mountain forests at elevations of 1000-1600 m. In Guatemala there is only the type collection gathered along a river in Sacatepéquez.

Erblichia odorata Seem.

Turneraceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA

Within Guatemala PE, AV, IZ

Guatemalan Nat. Cat. EN B2ab(ii,iii)

CONAP 2

Proposed Glob. Cat. LC

Large tree reaching heights of 40 m and a DBH of 50 cm. There is some confusion surrounding its taxonomy, and it has often been included in the genus *Piriqueta*, although the most recent taxonomic treatment considers it better ascribed to the genus *Erblichia* (Arbo 1995). It grows in low rainforests (Petén) at an elevation of 900 m. Documented records exist only in Petén, although it has been reported in Quiché, Alta Verapaz and Izabal.

Guatteria anomala R.E. Fr.

Annonaceae

Distribution ME, GU, ES

Within Guatemala AV

Guatemalan Nat. Cat. DD

CONAP 1

Current Glob. Cat. LR/nt (ver. 2.3 (1994), WCMC)

Proposed Glob. Cat. LC

Enormous tree measuring up to 60 m with a DBH of 6 m. In Yucatan it is a dominant species of the high evergreen forest, growing on rolling hills in deep calcareous soils at elevations ranging from sea level to 450 m. It is associated with *Balizia leucocalyx*, *Terminalia amazonia* and *Dialium guianense*. It has been collected only once in Guatemala, in Alta Verapaz, and, despite being such a large and majestic tree, little is known about this species.

Hampea sphaerocarpa Fryxell

Malvaceae

Distribution GU, HO

Within Guatemala IZ

Guatemalan Nat. Cat. DD

CONAP 1

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Proposed Glob. Cat. NT

Small tree measuring 10 m growing in tropical rainforest up to elevations of 900 m. Within Guatemala, one single collection has been made in Izabal (uncertain location) dating back to 1918, and virtually nothing is known about the species.

Hyperbaena mexicana Miers

Menispermaceae

Distribution ME, GU, BE, ES, HO

Within Guatemala PE, IZ, PR, SR, QZ, RE, HU

Guatemalan Nat. Cat. VU B2ab(iii)

CONAP 2

Proposed Glob. Cat. LC

Tree measuring 15 m growing in high evergreen forest, low forest of Petén and semi-arid forest, between 150-1400 m. Several collections

have been made in Guatemala from different habitats, although only four are since 1900.

Ilex quercetorum I.M. Johnst.

Aquifoliaceae

Distribution ME, GU, ES, HO

Within Guatemala ZA, QU, HU

Guatemalan Nat. Cat. CR B2ab(i,ii,iii,iv)

CONAP 2

Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Tree measuring 15 m growing in rainforest or oak forests at 1500-2000 m. Within Guatemala, three collections were made in Quiché, the most recent in 1964, although it is also cited in *Flora of Guatemala* (Standley & Steyermark 1946-1977) as growing in Zacapa and Huehuetenango, but there are no herbarium records to support its presence in these two departments.

Inga cookii Pittier

Mimosaceae

Distribution GU, BE, HO

Within Guatemala PE, AV, IZ, SO

Guatemalan Nat. Cat. VU A2c

CONAP 2

Proposed Glob. Cat. LC

Tree measuring 8 m growing in mixed forests on calcareous rock associated with *Manilkara zapota*, and in pine rainforests above 1500 m. Several collections have been made in Guatemala between 400-1500 m, although there are only five localities.

Juniperus comitana Martínez

Cupressaceae

Distribution ME, GU

Within Guatemala BV, ZA, HU

Guatemalan Nat. Cat. EN A2cd; B2ab(i,ii,iii,iv)

CONAP 1

Current Glob. Cat. VU B1+2c (ver. 2.3 (1994),
Conifer Specialist Group)

Tree measuring 10 m growing in pine-oak forests between 1300-2500 m. In Baja Verapaz it is found on dry rocky mountainsides, in the Sierra de los Cuchumatanes on dry dolomitic soil and in Zacapa it grows on cliffs. In all three cases its habitat is being reduced due to clearance for agriculture.

Juniperus standleyi Steyermark

Cupressaceae

Distribution ME, GU

Within Guatemala GU, HU, SM

Guatemalan Nat. Cat. VU B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)

CONAP 1

Current Glob. Cat. EN B1+2b (ver. 2.3 (1994),
Conifer Specialist Group)

Tree measuring 15 m growing in high montane forests at 3000-4100 m in marl soils. In very wet forest conditions it grows in full sunlight forming small woods. It is used for firewood, as a remedy for rheumatism and to make sheep corrals. It has a very restricted distribution and is also threatened by the expansion of agriculture and grazing in the areas where it occurs.

Leucaena leucocephala ssp. *ixtahuacana* C.E. Hughes

Mimosaceae

Distribution ME, GU

Within Guatemala HU

Guatemalan Nat. Cat. EN B1ab(i,iii)+2ab(ii,iii)

CONAP 2

Current Glob. Cat. LR/cd (ver. 2.3 (1994) C. Hughes)

Proposed Glob. Cat. LC

Small tree with a round and compact crown. It is restricted to a small area in the north of Guatemala (Cuilco and Selegua river valleys) and on the border with Mexico at elevations of 1300-2000 m. It is grown close to houses for its legumes and immature seeds, which are consumed locally and sold in nearby markets. It is also used medicinally to cure stomach parasites.

Leucaena magnifica (C.E. Hughes) C.E. Hughes

Mimosaceae

Distribution GU, ES?

Within Guatemala CQ, JU?

Guatemalan Nat. Cat. EN B2ab(ii,iii); C2a(i)

CONAP 2

Current Glob. Cat. EN B1+2c, C1+2a (ver. 2.3 (1994),
C. Hughes)

Tree reaching heights of up to 20 m growing in deciduous and mixed dry tropical forests and on degraded or disturbed soil together with leguminous trees or shrubs such as *Acacia*, *Lonchocarpus* and other trees such as *Swietenia* and *Simarouba*. Within Guatemala, its distribution is limited to a 400 km² area of Chiquimula, although in *Flora of Guatemala* (Standley & Steyermark 1946-1977) it is also cited in Jutiapa. It has been reported in El Salvador in an unknown location, although further searches have failed to confirm its presence there.

Lonchocarpus phaseolifolius Benth.

Fabaceae

Distribution ME, GU, ES, HO, NI, CR

Within Guatemala ZA, SR, RE

Guatemalan Nat. Cat. DD

CONAP 2

Current Glob. Cat. CR C2b (ver. 2.3 (1994), C. Nelson)

Proposed Glob. Cat. LC

Small tree or shrub growing in rocky, dry or wet shrub-filled gullies from sea level to 700 m. Its wood is used for general construction, rustic furniture, fuel and stakes. The taxonomy of this species is not well defined for it is only known through a description of incomplete specimens in Kew, and for Guatemala there is only one reported collection dating from 1940.

Lonchocarpus phlebophyllus Standl. & Steyerl.

Fabaceae

Distribution ME, GU, HO, NI, CR
 Within Guatemala CQ, ZA
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)+C2a(f)
 CONAP 2
 Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)
 Proposed Glob. Cat. LC

Small tree growing on rocky, dry and shrub-filled slopes at 400-700 m. The only specimens are the type collection gathered in Chiquimula in 1940 and a recent collection from a different location in the same Department. Its reported presence in Zacapa Department has no herbarium support.

Lonchocarpus santarosanus Donn. Sm.

Fabaceae

Distribution ME, GU, BE, ES, HO, CR
 Within Guatemala CQ, SR, SU
 Guatemalan Nat. Cat. DD
 CONAP 3
 Current Glob. Cat. VU B1+2c (ver. 2.3 (1994), WCMC)

Tree measuring 8 m growing at elevations of 1500-1600 m. Within Guatemala only two collections have been made, the type collection dating from 1894 and another in 1969, although *Flora of Guatemala* (Standley & Steyerl 1946-1977) also cites it as occurring in Suchitepéquez Department.

Magnolia yoroconte Dandy

Magnoliaceae

Distribution ME, GU, BE, HO
 Within Guatemala AV, HU
 Guatemalan Nat. Cat. EN A2c; B2ab(ii,iii,iv)
 CONAP 1
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Tree measuring up to 40 m growing in low montane rainforest and associated with *Pinus*, *Quercus* and *Liquidambar* forests, typically along river banks at elevations of 400-1500 m. Its distribution in Guatemala is very fragmented, with only 11 populations registered in the country, each with very few trees and separated from other populations by over 100 km. There appears to be very little regeneration in natural forest conditions.

Montanoa guatemalensis B.L. Rob. & Greenm.

Asteraceae

Distribution GU, ES, HO, NI, CR
 Within Guatemala AV, JA, SR, GU, SA, CM, QZ, QU, HU, SM
 Guatemalan Nat. Cat. NT
 CONAP 3
 Proposed Glob. Cat. LC

Tree measuring 5-10 m growing on mountain slopes just below the cloud forest at elevations of 1200-2000 m, associated with *Chaepthelia mexicana*, *Ulmus*, *Oreopanax* and *Boconia*. Although it has been reported in many departments (Standley & Steyerl 1946-1977), there is herbarium support for just three. The habitat for this species is severely affected by the extension of the agricultural frontier and human pressure.

Ocotea guatemalensis Lundell

Lauraceae

Distribution GU, HO, CR? PA?
 Within Guatemala BV
 Guatemalan Nat. Cat. CR B2ab(iii,iv)
 CONAP 1
 Proposed Glob. Cat. DD

Two small population centres have been reported, one in the mountains of Central Honduras and Guatemala, and another in northern Panama and southern Costa Rica, although its presence in the latter has not been fully confirmed. In Guatemala it has only been collected at the type location in 1975 and 1976. No reports have been received since then, and nothing more is known.

Ocotea standleyi C.K. Allen

Lauraceae

Distribution ME, GU
 Within Guatemala AV, BV, QZ, SM
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)
 CONAP 2
 Proposed Glob. Cat. NT

Small tree measuring 6 m growing in a mixed, dense, wet and montane forest between 800-2500 m, although it is typically found above 1500 m. In Guatemala there are only two herbarium specimens (from Alta and Baja Verapaz), and its presence in other departments remains unconfirmed. It is considered globally Near Threatened due to its limited range and the conversion and fragmentation of its habitat.

Ocotea verapazensis Standl. & Steyerm.

Lauraceae

Distribution GU, NI, CR
 Within Guatemala AV, BV, IZ, SM
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)
 CONAP 2
 Proposed Glob. Cat. VU B1ab(iii)

Small tree ranging between 6-12 m in height growing in dense, wet montane forest between 1500-2000 m. There are a number of specimens in Guatemala and Costa Rica but its presence in Nicaragua is unconfirmed.

Oreopanax arcanus A.C. Smith

Araliaceae

Distribution ME, GU
 Within Guatemala HU, SO
 Guatemalan Nat. Cat. DD
 CONAP 1
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Tree reaching heights of 12 m growing on steep slopes of *Quercus* rainforest at elevations of 1600-3000 m. Guatemala only has the type collection gathered in 1942 in Huehuetenango.

Oreopanax echinops (Cham. & Schltdl.) Decne. & Planch.

Araliaceae

Distribution ME, GU, HO
 Within Guatemala AV, BV, PR, SU, SA, CM, SO, TO, QZ, HU, SM
 Guatemalan Nat. Cat. LC
 CONAP 3
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Tree or shrub reaching a height of 10 m growing in deciduous forest and cloud forest alongside *Quercus* and *Pinus* and with secondary vegetation at elevations between 1500-2400 m.

Oreopanax peltatus Linden

Araliaceae

Distribution ME, GU, ES, NI, CR
 Within Guatemala AV, BV, ZA, SA, SO
 Guatemalan Nat. Cat. LC
 CONAP 3
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Tree measuring 10-15 m growing in deciduous forests alongside *Quercus* and *Pinus* and in high evergreen forests between 1000-2000 m. It is a very ornamental tree sometimes planted in Guatemalan gardens. Its leaves are sold in markets to wrap food and soap because of their longevity.

Oreopanax sanderianus Hemsl.

Araliaceae

Distribution ME, GU, BE, ES, HO
 Within Guatemala GU, CQ, SR, SA, CM
 Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)
 CONAP 1
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), N. Ramirez-Marcial & M. González-Espinosa)

Tree measuring 18 m growing in wet cloud forest and in low evergreen forests up to 3900 m. In Guatemala it is reportedly grown for ornamental use. Few localities are known.

Pinus tecunumanii Eguluz & J.P. Perry

Pinaceae

Distribution ME, GU, BE, ES, HO, NI
 Within Guatemala BV, JA, PR, ZA, GU, SO, TO, QZ, QU, HU, SM
 Guatemalan Nat. Cat. NT
 CONAP 3
 Current Glob. Cat. VU A2c (ver. 2.3 (1994), Conifer Specialist Group)

Large tree measuring up to 50 m growing in tropical mountain forests between 500-2700 m in valleys and on high plateaus with deep fertile soils. It is frequently found in single species stands; associated species include *Pinus ayachahuite*, *P. oocarpa*, *Quercus* and *Liquidambar styraciflua*. The wood is very versatile and is used in heavy construction, interior joinery and furniture, plywood, crafts and turned articles, and to a lesser degree as firewood. Although it has a wide geographical and altitudinal range and regenerates well in disturbed forest, the species is regarded as Vulnerable due to the exploitation of its wood and the clearance of land for agriculture. However, it is being used in reforestation schemes in Guatemala.

Piscidia grandifolia (Donn. Sm.) I.M. Johnst.

Fabaceae

Distribution ME, GU, ES, HO, NI, CR
 Within Guatemala BV, CQ, JA, SR, ES, GU, SA, HU
 Guatemalan Nat. Cat. VU A2cd
 CONAP 3
 Proposed Glob. Cat. LC

Tree measuring 15 m growing in forests, slopes and ravines between 400-1900 m. An important species for the indigenous peoples of Central America for its resinous, hard wood and use as a source of fish poison. The roots are also used for medicinal purposes. It is subject to unregulated commercial exploitation in Guatemala.

Pistacia mexicana Kunth.

Anacardiaceae

Distribution ME, GU, HO
 Within Guatemala BV, CQ, JU, JA, PR, GU, SA, QU, HU
 Guatemalan Nat. Cat. VU B2ab(iii)
 CONAP 3
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), N. Ramirez-Marcial & M. González-Espinosa)

Tree or shrub measuring 9 m growing in dry rocky forests between 600-2200 m, associated with *Quercus*, *Oreopanax* and *Zanthoxylum*. All collections of this species in Guatemala have been since 2000 and, although rare, its known distribution may increase with further collections.

Podocarpus matudae Lundell

Podocarpaceae

Distribution ME, GU, ES, HO
 Within Guatemala HU
 Guatemalan Nat. Cat. CR B1ab(i,ii,iii,iv); C2a(ii)
 CONAP 1
 Current Glob. Cat. DD (ver. 2.3 (1994), Conifer Specialist Group)
 Proposed Glob. Cat. NT (Conifer Specialist Group)

Large tree with a DBH of 1.5 m growing at elevations of 1100-2300 m. Only one collection has been made in Guatemala, at Laguna Yolnabaj in Huehuetenango in 1998.

Pouteria amygdalina (Standl.) Baehni

Sapotaceae

Distribution GU, BE
 Within Guatemala PE
 Guatemalan Nat. Cat. VU A2c; B1ab(iii,iv); C2a(ii)
 CONAP 2
 Current Glob. Cat. VU B1+2c (ver. 2.3 (1994), WCMC)

Large tree measuring 35 m in height with a DBH of 60 cm growing in evergreen forests in marl soils at around 800 m. It is known in the Department of Petén, Guatemala, and in a location in Belize very close to Petén.

Pouteria squamosa Cronquist

Sapotaceae

Distribution ME, GU
 Within Guatemala IZ
 Guatemalan Nat. Cat. EN B2ab(iii); C2a(ii)
 CONAP 2
 Current Glob. Cat. VU B1+2c, D2 (ver. 2.3 (1994), WCMC)

Tree measuring 12 m growing in the high evergreen forest, in lowlands and in areas close to bodies of water at an elevation of 250 m. Only two collections have been made in Guatemala, both close to the coast: one in 1940 and another more recently in 1997. It has only been

collected a few times in Mexico. However, the area with suitable habitat for the species is relatively large, and it is possible that it will be found to occur more widely in the future.

Quercus benthamii DC.

Fagaceae

Distribution ME, GU, ES, HO, NI, CR, PA
 Within Guatemala BV, JU, JA, CM, SO, QZ, SM
 Guatemalan Nat. Cat. VU A2cd
 CONAP 2
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), K. Nixon *et al.*)
 Proposed Glob. Cat. VU A2cd (Global Tree Specialist Group)

Tree growing on wet and rainy mountains at an elevation of 1500-3000 m. It is typically used for firewood and coal. It belongs to a taxonomically complicated group and many authors consider it to be a synonym of *Q. bumelioides* Liebm.

Quercus bumelioides Liebm.

Fagaceae

Distribution ME, GU, ES, HO, NI, CR, PA
 Within Guatemala BV, PR, ZA, GU, HU
 Guatemalan Nat. Cat. NT
 CONAP 3
 Current Glob. Cat. VU A1c (ver. 2.3 (1994), K. Nixon *et al.*)
 Proposed Glob. Cat. NT (Global Tree Specialist Group)

Dominant species of mixed mountain and cloud forest (associated with *Abies*) between 1500-3200 m growing on volcanic, silt-clay, acidic, deep and well-drained soils. In Guatemala and Costa Rica it hybridizes with other *Quercus*. It has many synonyms owing to its complicated taxonomy and high variability. Its highly resistant, durable wood is used for furniture, posts, floorboards and agricultural tools, and its bark produces tannins used for leather tanning. Its preferred habitat (mountain cloud forest) is threatened by human pressure and agricultural encroachment.

Quercus cortesii Liebm.

Fagaceae

Distribution ME, GU, BE, HO, NI, CR, PA
 Within Guatemala PE
 Guatemalan Nat. Cat. DD
 CONAP 1
 Proposed Glob. Cat. LC (Global Tree Specialist Group)

Grows in wet and dry forests or montane forests between 1200-1550 m. Although it is reported in many countries of the Central American isthmus, there are no herbarium entries of collections from Guatemala. In *Flora of Guatemala* (Standley & Steyermark 1946-1977), it is only reported in the Department of Petén.

Quercus crispifolia Trel.

Fagaceae

Distribution ME, GU, ES
Within Guatemala AV, BV, CQ, JA, PR, GU, QU, SM

Guatemalan Nat. Cat. NT

CONAP 2

Proposed Glob. Cat. DD (Global Tree Specialist Group)

Grows in rainforests at 900-2700 m. There are a number of documented registries for Guatemala but very little data regarding its ecology.

Quercus crispipilis Trel.

Fagaceae

Distribution ME, GU
Within Guatemala ZA, GU, SU, CM, SO, TO, QZ, QU, HU

Guatemalan Nat. Cat. NT

CONAP 3

Proposed Glob. Cat. LC (Global Tree Specialist Group)

Grows on plains and dry mountainsides at 750-2700 m. It is very common in Huehuetenango where it is associated with pine trees, forming stands which dominate slopes in the driest regions of this Department. Its taxonomy is somewhat unclear (Muller 1942).

Quercus elliptica Née

Fagaceae

Distribution ME, GU, BE, ES, HO, NI
Within Guatemala CQ, ZA, HU

Guatemalan Nat. Cat. EN B2ab(iii,iv)

CONAP 2

Proposed Glob. Cat. LC (Global Tree Specialist Group)

Grows in pine-oak forests in wet sectors within dry areas in low mountain foothills at 300-1500 m. There are only two citations for Guatemala: one in the Sierra de las Minas (1939) and another in Camotán (2004).

Quercus insignis M. Martens & Galeotti

Fagaceae

Distribution ME, GU, BE, HO, NI, CR, PA
Within Guatemala PE, AV, BV, IZ, CQ, PR, ZA, GU, SA, SO, HU

Guatemalan Nat. Cat. NT

CONAP 3

Proposed Glob. Cat. NT (Global Tree Specialist Group)

Grows in mountain wet or rainforest in stands of oak or pine-oak between 800-2000 m. Very sporadic in cloud forest (Sierra de las Minas) at higher elevations (2500-3000 m). It is reportedly abundant in Nicaragua, but scarce in Guatemala.

Quercus lancifolia Schlttdl. & Cham.

Fagaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA
Within Guatemala AV, CQ, JA, PR, ES, GU, SU, SA, SO, QZ, RE,

HU, SM

Guatemalan Nat. Cat. NT

CONAP 3

Proposed Glob. Cat. LC (Global Tree Specialist Group)

Grows in wet or dry mixed mountain forests at elevations of 500-2400 m. It has a number of synonyms and three different leaf shapes throughout its distribution, meaning that its taxonomy is uncertain and requires further study.

Quercus oleoides Schlttdl. & Cham.

Fagaceae

Distribution ME, GU, BE, HO, NI, CR
Within Guatemala PE, AV, IZ, CQ, ZA, GU

Guatemalan Nat. Cat. VU A2cd

CONAP 2

Proposed Glob. Cat. LC (Global Tree Specialist Group)

This is a slow-growing tree found in wet or dry evergreen forests, either single-species forests or mixed with other oak species such as *Q. peduncularis*. It has a wide ecological range, extending from sea level to low mountain elevations up to 1800 m. It grows on plains or on slopes, often in pine forest lowlands, and it is a dominant species among beach vegetation and gallery forests along the Atlantic coast. It is abundant in areas frequently affected by fire and in locations characterized by occasional flooding. Its habitat is often decimated by man-made fires and is being encroached upon by cane and coffee plantations.

Quercus pilicaulis Trel.

Fagaceae

Distribution ME, GU
Within Guatemala BV, JU, ZA, GU, SA, CM, SO, TO, QZ, HU,

SM

Guatemalan Nat. Cat. NT

CONAP 3

Proposed Glob. Cat. DD (Global Tree Specialist Group)

Grows on plains or on dry or wet mountainsides, associated with oak and pine-oak forests with an elevation range of 300-3200 m. It is only found in the mountains of Guatemala and Chiapas (Mexico), but is fairly common within its range. Although considered a good species in Guatemala, this is contested by botanists in Mexico, hence its proposed global status.

Quercus polymorpha Schlecht. & Cham.

Fagaceae

Distribution ME, GU

Within Guatemala AV, CQ, JA, ZA, CM, HU

Guatemalan Nat. Cat. VU A2cd

CONAP 3

Proposed Glob. Cat. NT (Global Tree Specialist Group)

It grows on slopes of wet or dry oak forests at 900-2100 m. Its distribution ranges from the eastern Sierra Madre (Mexico) to a few Guatemalan mountain ranges.

Quercus segoviensis Liebm.

Fagaceae

Distribution ME, GU, BE, ES, HO, NI

Within Guatemala JA, PR, ZA, GU, SO, QZ, HU, SM

Guatemalan Nat. Cat. DD

CONAP 2

Proposed Glob. Cat. LC (Global Tree Specialist Group)

Grows in wet or dry mountain forests and is common in certain pine-oak forests between 1000-2500 m. However, all confirmed records are over 60 years old and its taxonomy and relation to other species require further study.

Quercus skinneri Benth.

Fagaceae

Distribution ME, GU, BE, ES, HO, NI

Within Guatemala AV, BV, ES, GU, SU, SA, CM, SO, QZ, QU, HU, SM

Guatemalan Nat. Cat. NT

CONAP 3

Proposed Glob. Cat. NT (Global Tree Specialist Group)

Grows in rainforest, mixed dense forests of the Pacific plains and on volcanic slopes between 1000-2400 m. It is one of Central America's most polymorphic *Quercus* species and its differentiation from *Q. xalapensis* is not completely clear. It grows at mid or high elevations in the arid mountains of the western high plain, although today its population has been considerably reduced. In Guatemala, it is also commonly found in coffee plantations in Alta Verapaz and in the mountains of Volcano Acatenango. In Quetzaltenango the leaves of this species are used to fertilize mountainside fields.

Quercus skutchii Trel.

Fagaceae

Distribution ME, GU

Within Guatemala GU, SA, CM, QZ, QU, HU

Guatemalan Nat. Cat. EN A2cd

CONAP 2

Current Glob. Cat. DD (ver. 2.3 (1994), K. Nixon *et al.*)

Proposed Glob. Cat. EN A2cd (Global Tree Specialist Group)

Grows on plains and dry mountain pine-oak slopes between 1800-2900 m and is occasionally associated with *Juniperus*. In Guatemala, the sites where it was collected in the 1930s have been almost entirely deforested but it has recently been collected in other departments.

Quiina schipii Standl.

Quiinaceae

Distribution GU, BE, HO, NI, CR, PA

Within Guatemala PE, IZ

Guatemalan Nat. Cat. VU B2ab(iii,iv)

CONAP 3

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Proposed Glob. Cat. LC

Tree measuring 10-18 m growing in rainforest close to sea level at 0-300 m. One single collection was made in Izabal, although local specialists indicate that it is frequently found in Petén.

Sideroxylon eucoriaceum (Lundell) T.D. Penn.

Sapotaceae

Distribution ME, GU

Within Guatemala BV

Guatemalan Nat. Cat. EN B2ab(i,ii,iii,iv)

CONAP 2

Current Glob. Cat. VU B1+2c (ver. 2.3 (1994), WCMC)

Tree measuring 25 m with a DBH of 1.2 m found in lowlands, rainforest and secondary forest. Its fruit is edible and in some places it is used for wood. Within Guatemala, only three collections are known, all from Baja Verapaz (Unión Barrios and Niño Perdido) between 1975 and 1977.

Sideroxylon floribundum Griseb. subsp. ***belizense*** (Lundell)

T.D. Penn.

Sapotaceae

Distribution ME, GU, BE

Within Guatemala PE, IZ

Guatemalan Nat. Cat. VU A2cd

CONAP 3

Current Glob. Cat. VU A1c (ver. 2.3 (1994), WCMC)

Proposed Glob. Cat. NT

Endemic to the Yucatan peninsula, this tree measures 20 m with a DBH of 0.5 m and grows in rainforest in marl soil between sea level and 400 m, where the dominant species is *Manilkara zapota*. In Guatemala only three collections have been recorded in Petén, one just recently in the Maya Biosphere Reserve. However, the presence of suitable protected, unexplored habitat suggests that it may be found to occur more extensively.

Sideroxylon stevensonii (Standl.) T.D. Penn.

Sapotaceae

Distribution GU, BE
 Within Guatemala PE, AV
 Guatemalan Nat. Cat. EN B1ab(iii,iv)+2ab(iii,iv)
 CONAP 2
 Current Glob. Cat. VU B1+2c (ver. 2.3 (1994), WCMC)

Tree measuring 45 m with a DBH of 0.9 m growing in low elevation rainforest, forests dominated by *Manilkara zapota*, and in low montane forest in marl soil below 1000 m. It is known in Petén (Guatemala) and Belize and has recently been found in Alta Verapaz. Latex from this species is used regionally as a substitute for gum.

Simira salvadorensis (Standl.) Steyerem.

Rubiaceae

Distribution ME, GU, BE, ES
 Within Guatemala PE, AV, IZ, ES, GU, SU, RE
 Guatemalan Nat. Cat. NT
 CONAP 3
 Proposed Glob. Cat. LC

Evergreen tree measuring 20 m in height and forming an important part of the middle stratum of the high or medium evergreen forests dominated by *Brosimum alicastrum* and associated with *Terminalia*, *Dialium* and *Gutteria*. It grows in black rendzine soils deriving from calcareous material. It is used in rural construction, for tool handles and turned articles, and for firewood. Globally widespread in southeast Mexico, Belize and Guatemala.

Swietenia humilis Zucc.

Meliaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA
 Within Guatemala CQ, ZA, ES, GU, RE, HU
 Guatemalan Nat. Cat. VU A2cd; B2ab(i,ii,iii,iv)
 CONAP 2
 Current Glob. Cat. VU A1cd (ver. 2.3 (1994), WCMC)
 CITES Appendix II

Tree measuring 15-20 m in height growing in dry and pre-montane dry forest, able to tolerate a range of soil types from fertile to infertile calcareous. It is a heliophytic species and reaches the forest canopy, but its regeneration is very scant. In Guatemala it is distributed along the Motagua Valley almost all the way to the Atlantic coast. Its wood is high quality and durable and is used in construction, flooring, decorative panels, wood carvings and crafts and for fine furniture. Reforestation and conservation have recently been undertaken, and its prolific seed production and fast regeneration offer promising prospects for sustainable use.

Taxus globosa Schltld.

Taxaceae

Distribution ME, GU
 Within Guatemala BV, PR, ZA, HU
 Guatemalan Nat. Cat. VU B2ab(i,ii,iii,iv)
 CONAP 2
 Current Glob. Cat. LR/nt (ver. 2.3 (1994),
 Conifer Specialist Group)

Shrub or small tree reaching heights of up to 15 m. Its preferred habitat is the mesophilic montane forest at elevations of 2000-3000 m. It is restricted to the Sierra de las Minas (from where there are herbarium records), the volcanic mountain chain of Sierra de los Cuchumatanes, Guatemala, and southern Mexico. The leaves, bark and seeds contain an alkaloid known as taxine, which is being studied for its anti-cancer properties.

Tetrorchidium brevifolium Standl. & Steyerem.

Euphorbiaceae

Distribution ME, GU, HO
 Within Guatemala AV, BV
 Guatemalan Nat. Cat. EN B2ab(iii,iv)
 CONAP 2
 Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Small tree. Little is known about its habitat in Guatemala; it was collected from a pristine forest in Alta Verapaz in 1939 but has not been observed there since. The other Guatemalan collections were in the 1970s in Unión Barrios and more recently in Niño Perdido (Baja Verapaz).

Trichilia breviflora S.F. Blake & Standl.

Meliaceae

Distribution ME, GU, BE, HO, NI
 Within Guatemala PE, AV
 Guatemalan Nat. Cat. EN B2ab(iii,iv)
 CONAP 2
 Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Small tree measuring 10 m growing in low wetlands and evergreen forests. All collections in Guatemala are over 35 years old and are from a very specific area between the north of Alta Verapaz and Petén.

Trichilia chirriactensis (Standl. & Steyerem.) T.D. Penn.

Meliaceae

Distribution ME, GU, BE, HO, NI
 Within Guatemala PE, AV
 Guatemalan Nat. Cat. DD
 CONAP 2
 Current Glob. Cat. VU D2 (ver. 2.3 (1994), WCMC)

Tree measuring 20 m growing at elevations of 300-900 m.

In Guatemala, only two collections have been reported, both in Alta Verapaz more than 60 years ago, although in *Flora of Guatemala* (Standley & Steyermark 1946-1977) it is also cited as being present in Petén. The fruit is unknown.

Viburnum mortonianum Standl. & Steyermark.

Caprifoliaceae

Distribution GU, ES

Within Guatemala CQ

Guatemalan Nat. Cat. DD

CONAP 2

Current Glob. Cat. DD (ver. 2.3 (1994), WCMC)

Shrub or small tree whose fruit is unknown. The only report in Guatemala is the type collection gathered in Chiquimula in 1939 at an elevation of 1500 m.

Zygia cognata (Schltdl. & Cham.) Britton & Rose

Mimosaceae

Distribution ME, GU, BE, HO

Within Guatemala PE, AV, IZ

Guatemalan Nat. Cat. VU B2ab(i,ii,iii,iv)

CONAP 3

Proposed Glob. Cat. LC

Tree measuring up to 8 m in height growing in rainforest, along riverbanks and on forest fringes between 50-300 m. In Guatemala, there is only one herbarium entry, although Standley and Steyermark (1946-1977) mention that it has been collected a number of times in Izabal, Petén and Alta Verapaz.

WIDESPREAD SPECIES (NOT RESTRICTED TO MESOAMERICA)

The following 15 more widespread species have been assessed within Guatemala but not on a global scale within this project. New Guatemalan National Categories are presented here. If the species has an existing global category, or if a new global listing has recently been proposed by another assessor, this is included, with reference to the version of the IUCN Red List Categories and Criteria under which the species was assessed (see p. 11). Further information on the current status of these species in countries other than Guatemala would be most welcome.

Barnebydendron riedelii (Tul.) J.H. Kirk.

Caesalpiniaceae

Distribution ME, GU, ES, HO, CR, PA, OT

Within Guatemala PE, ZA

Guatemalan Nat. Cat. EN B2ab(i,ii,iii)

CONAP 3

Global Category NE

Tree measuring 15-35 m growing in dry rocky areas with little other vegetation, at elevations of 100-900 m. There have been very few collections in Guatemala, and it is scarce in its area of distribution. This species is reportedly cultivated in Florida (USA), Cuba, Guatemala, Costa Rica and Panama.

Bourreria huanita (Llave & Lex.) Hemsl.

Boraginaceae

Distribution ME, GU, BE, ES, HO, NI, OT

Within Guatemala AV, IZ, CQ, JU, ZA, ES, GU, SA, CM, QZ, QU

Guatemalan Nat. Cat. NT

CONAP 3

Global Category NE

Tree measuring 8-15 m growing in rainforests from sea level to an elevation of 2100 m, mostly at 900-1200 m, from central Mexico to the border with Nicaragua. The variety featuring large flowers is considered particularly rare. The tree has medicinal properties and its wood is very resistant – individuals have been known to live up to three centuries. The species is very difficult to propagate. In Guatemala there are few reports of these trees in the wild, and a specimen found in Calvary Church, Antigua, Guatemala, has been declared part of the National Cultural Heritage.

Cedrela odorata L.

Meliaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala PE, PR, SR, ES, SU, RE

Guatemalan Nat. Cat. VU A2cd

CONAP 2

Current Glob. Cat. VU A1cd+2cd (ver. 2.3 (1994),
Americas Regional Workshop)

CITES Appendix III (Colombia, Peru)

Tree measuring 20-30 m, occasionally reaching 40 m. This is a frequently occurring heliophytic species typical of secondary forests, but also grows in grasslands or agricultural areas in calcareous soils or soils rich in organic matter. In Guatemala, it is found in dry Pacific coastal forests and rainforests on both sides of the country, ranging in elevation from sea level to 1200 m. It forms colonies in secondary vegetation, abandoned pasture land and agricultural land. In Guatemala it is still relatively easy to find, but it is subject to enormous pressure from logging, hence its threat status. Colombian and Peruvian populations are listed in CITES Appendix III.

Dalbergia retusa Hemsl.

Fabaceae

Distribution ME, GU, BE, HO, NI, CR, PA, OT

Within Guatemala AV, ZA, QU

Guatemalan Nat. Cat. EN B2ab(ii,iii)

CONAP 2

Current Glob. Cat. VU A1acd (ver. 2.3 (1994),
Americas Regional Workshop)

Tree measuring 15-20 m growing at low elevations or on plains up to 700 m with a hot climate. It is found in the Pacific region of Central America from Panama to the southwest of Mexico, and is associated with *Tabebuia ochracea*, *Sideroxylon capiri* and *Swietenia macrophylla*. It yields a hard, fine-grained, waterproof wood known as Cocobolo, which is highly valued for crafts, cabinet-making, construction and musical instruments. In Guatemala there are no reliable reports of this species or its uses.

Guaiacum sanctum L.

Zygophyllaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala PE, BV, CQ, PR, ZA, GU

Guatemalan Nat. Cat. VU A2ad

CONAP 1

Current Glob. Cat. EN C2a (ver. 2.3 (1994),
Americas Regional Workshop)

CITES Appendix II

Medium-sized tree not exceeding 20 m in height. Widely distributed throughout Central America and the Caribbean, growing at elevations from sea level to 700 m in dry and semi-arid conditions with

precipitation under 1500 mm a year. Associated species include *Astronium graveolens*, *Tabebuia ochracea* and *Sideroxylon capiri*. Its wood is very dense and water resistant, and has been harvested for hundreds of years for boats and other uses. Although it is one of the most commercially exploited species in the region, the taxonomy of this genus is not very clear.

Juglans olanchana Standl. & L.O. Williams

Juglandaceae

Distribution ME, GU, ES, HO, NI, OT

Within Guatemala AV, BV, GU, SA, CM, QU, HU

Guatemalan Nat. Cat. NT

CONAP 2

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Semi-deciduous tree reaching heights of up to 40 m. Grows mostly in wet and very wet mountain areas at elevations of between 400-1500 m in deep, rocky or sandy soil, frequently along the banks of rivers and streams. It is associated with species such as *Cojoba arborea*, *Terminalia amazonia* and *Cedrela odorata*. It is widely distributed from Mexico to Nicaragua, and within Guatemala it is very common in the Departments of Alta and Baja Verapaz. The wood is used in light construction and for floorboards, musical instruments, decoration and high-quality cabinet-making. Its walnuts are edible, and tannin is extracted from the shells for leather tanning; the bark is also used locally to treat diabetes and blood diseases.

Myroxylon balsamum (L.) Harms.

Fabaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala PE, ES, GU, SU, QZ, RE, HU

Guatemalan Nat. Cat. EN B1ab(i,ii,iii,iv)

CONAP 3

Global Category NE

Tall tree reaching heights of 45 m and a DBH of 1 m ranging from Mexico to the Brazilian and Peruvian Amazon. Within Guatemala, its presence is documented only in Petén and Guatemala Departments; its occurrence in other departments has never been confirmed. Characteristic of pristine primary forests, it is found in evergreen rainforest at elevations of 100-700 m in very wet climates. It prefers calcareous soils, or those derived from igneous materials on hillocks or well-drained flat areas, and is often associated with *Brosimum*, *Pseudobombax* and *Manilkara*. It is used as a medicinal plant, in rituals, as fuel and as a drink. The balm resin is used in the perfume industry, in incense and in medicines, and the dried fruits have been used to treat scabies. In Cobán, Guatemala, it was customary to add a few seeds to spirits as a flavour enhancer. Its wood is hard, heavy and aromatic and is used in construction, cabinet-making, for decorative purposes and the manufacture of guitars and marimbas. This species was specially protected by a papal order from Rome

during the Colonial Period, as it provided the raw material for church incense. The lack of supportive records, its numerous traditional uses and the fact that it is restricted to pristine forest qualify this species as Endangered.

Podocarpus guatemalensis Standl.

Podocarpaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala IZ, PR

Guatemalan Nat. Cat. VU A2cd

CONAP 2

Current Glob. Cat. DD (ver. 2.3 (1994),
Conifer Specialist Group)

Proposed Glob. Cat. LC (Conifer Specialist Group)

Tree measuring 30 m in height with a DBH of 75 cm. This is the only gymnosperm tree species growing in the Guatemalan lowlands, in wet or very wet climate at elevations of 50-150 m, on hillocks or in well-drained areas. Although this is a scant species throughout its distribution, its regeneration tends to be good. Within Guatemala, herbarium records are concentrated around the eastern part of the Sierra de las Minas (outside the Biosphere Reserve) and Punta de Manabique.

Sterculia apetala (Jacq.) H. Karst.

Sterculiaceae

Distribution ME, GU, ES, HO, NI, CR, PA, OT

Within Guatemala PE, AV, PR, ZA, SR, ES, GU, SU, SO, RE,
SM

Guatemalan Nat. Cat. NT

CONAP 2

Global Category NE

Evergreen tree measuring 25 m, although it can reach heights of 40 m, with a DBH of 2 m. It grows in high evergreen forests, middle elevation semi-evergreen forests, and at lower elevations from sea level to 800 m. Its wood is used in rural construction, for posts and canoes and as firewood. The flowers, bark and leaves are used as home-made remedies. The roots contain a substance serving as a raw material in the manufacture of cortisone. Isolated specimens of this species are typically found along boundaries, roads or paths where it is particularly useful in providing shade for livestock. Within Guatemala, it is mostly found on the Pacific slope, where forests are being transformed to cane and maize plantations. There are few herbarium records of the species in Guatemala, although it is present in several departments.

Swietenia macrophylla King

Meliaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala PE, AV, IZ, PR, SU, QU

Guatemalan Nat. Cat. VU A2cd+B2ab(ii,iii)

CONAP 3

Current Glob. Cat. VU A1cd+2cd (ver. 2.3 (1994), WCMC)

CITES Appendix II

Non-deciduous tree typically 30-45 m high, although it has been known to reach 70 m with a DBH of 3 m. It grows in evergreen and semi-evergreen forests – generally at lower elevations (50-900 m) – with both dry and wet climates and medium-fertility soils. The species grows well in the lowlands of Guatemala's Atlantic coast, but populations on the Pacific side are not commercially viable. This is one of the most important woods on the world market.

Taxodium mucronatum Tenore

Taxodiaceae

Distribution ME, GU, HO, NI, CR, OT

Within Guatemala AV, BV, PR, SR, GU, SA, HU, SM

Guatemalan Nat. Cat. VU B2ab(i,ii,iii)

CONAP 2

Current Glob. Cat. LC (ver. 3.1 (2001), A. Farjon)

Deciduous conifer associated with riverbanks and bodies of water between 900-1700 m. It is propagated by seed and is fast growing. A few authors consider *Taxodium distichum* and *T. mucronatum* to be synonyms, but most consider them different species. Although recorded as present in a number of departments, many specimens are cultivated.

Zanthoxylum caribaeum Lam.

Rutaceae

Distribution ME, GU, BE, HO, NI, CR, PA, OT

Within Guatemala PE, AV, IZ

Guatemalan Nat. Cat. VU B2ab(iii,iv)

CONAP 3

Global Category NE

Tree measuring 25 m growing in medium elevation rainforest between 50-1300 m. It was originally used for medicinal purposes and in construction. Few locations are known in Guatemala, but all are very recent.

Zanthoxylum ekmanii (Urb.) Alain

Rutaceae

Distribution ME, GU, BE, HO, NI, CR, PA, OT

Within Guatemala PE, IZ

Guatemalan Nat. Cat. EN A2cd

CONAP 2

Global Category NE

Deciduous tree reaching heights of up to 30 m with a DBH of 1 m. Found close to rivers and watercourses at elevations of 0-1700 m, preferring open sunny areas or secondary vegetation. It is used in general construction, carpentry, cabinet-making, plywood and moulding, and is very good for paper pulp. Its restricted habitat preferences combined with current economic uses suggest that it is a threatened species.

Zanthoxylum ferrugineum Radlk.

Rutaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Within Guatemala SA

Guatemalan Nat. Cat. DD

CONAP 2

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Dioecious tree measuring 15 m in height growing in deciduous and evergreen forests between 600-1850 m, with a distribution ranging from Mexico to Colombia. There are neither official registries nor specific sites for Guatemala, but it is cited in *Flora of Guatemala* (Standley & Steyermark 1946-1977), hence its inclusion here.

Zanthoxylum juniperinum Poepp.

Rutaceae

Distribution ME, GU, BE, HO, NI, CR, PA, OT

Within Guatemala PE, AV, IZ, CQ, JA, PR, ZA, QZ, HU, SM

Guatemalan Nat. Cat. NT

CONAP 3

Global Category NE

Tree measuring 15 m growing in rainforest between 100-2700 m. Although it is cited in 10 departments and allegedly has very diverse habitats (Standley & Steyermark 1946-1977), official records have only been found to corroborate its occurrence in two departments (Jalapa and Petén). Specialists recommend further collection and a taxonomic review focusing on the high-plain individuals to determine whether or not they represent a different species.

LEAST CONCERN SPECIES

The following 11 species have been assessed by this project as Least Concern on both a global scale and nationally within Guatemala.

Annona primigenia Standl. & Steyermark.

Annonaceae

Distribution ME, GU, BE

Blepharidium guatemalense Standl.

Rubiaceae

Distribution ME, GU, HO

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Cymbopetalum mayanum Lundell

Annonaceae

Distribution ME, GU, BE, HO

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Quercus acatenangensis Trel.

Fagaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA, OT

Quercus brachystachys Benth.

Fagaceae

Distribution ME, GU

Quercus candicans Née

Fagaceae

Distribution ME, GU

Quercus conspersa Benth.

Fagaceae

Distribution ME, GU, HO

Quercus peduncularis Née

Fagaceae

Distribution ME, GU, BE, ES, HO, NI

Quercus sapotifolia Liebm.

Fagaceae

Distribution ME, GU, BE, ES, HO, NI, CR, PA

Quercus tristis Liebm.

Fagaceae

Distribution ME, GU, ES, HO

Vitex gaumeri Greenm.

Verbenaceae

Distribution ME, GU, BE, HO

Current Glob. Cat. EN C2a (ver. 2.3 (1994), C. Nelson)

Annex I

IUCN RED LIST CATEGORIES AND CRITERIA

Extinct (EX)

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

Extinct in the Wild (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Critically Endangered (CR)

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

Endangered (EN)

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

Vulnerable (VU)

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

Near Threatened (NT)

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

Least Concern (LC)

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

Data Deficient (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this

category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. DD is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

Not Evaluated (NE)

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

THE CRITERIA FOR CRITICALLY ENDANGERED, ENDANGERED AND VULNERABLE

Critically Endangered (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild:

- A. Reduction in population size based on any of the following:
1. An observed, estimated, inferred or suspected population size reduction of 90 per cent over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
 2. An observed, estimated, inferred or suspected population size reduction of 80 per cent over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
 3. A population size reduction of 80 per cent, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum

of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of 80 per cent over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 100 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at only a single location.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
 2. Area of occupancy estimated to be less than 10 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at only a single location.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 250 mature individuals and either:
1. An estimated continuing decline of at least 25 per cent within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR
 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - (a) Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than 50 mature individuals, OR
 - (ii) at least 90 per cent of mature individuals in one subpopulation.
 - (b) Extreme fluctuations in number of mature individuals.
- D. Population size estimated to number fewer than 50 mature individuals.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 50 per cent within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).
- Endangered (EN)**
- A taxon is Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild:
- A. Reduction in population size based on any of the following:
1. An observed, estimated, inferred or suspected population size reduction of 70 per cent over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
 2. An observed, estimated, inferred or suspected population size reduction of 50 per cent over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
 3. A population size reduction of 50 per cent, projected or suspected to be met within the next 10 years or three

generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of 50 per cent over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 5000 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at no more than five locations.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
 2. Area of occupancy estimated to be less than 500 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at no more than five locations.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

C. Population size estimated to number fewer than 2500 mature

individuals and either:

1. An estimated continuing decline of at least 20 per cent within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - (a) Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than 250 mature individuals, OR
 - (ii) at least 95 per cent of mature individuals in one subpopulation.
 - (b) Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20 per cent within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

Vulnerable (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild:

- A. Reduction in population size based on any of the following:
1. An observed, estimated, inferred or suspected population size reduction of 50 per cent over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are: clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
 2. An observed, estimated, inferred or suspected population size reduction of 30 per cent over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
 3. A population size reduction of 30 per cent, projected or suspected to be met within the next 10 years or three

generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of 30 per cent over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 20,000 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at no more than 10 locations.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
 2. Area of occupancy estimated to be less than 2000 km², and estimates indicating at least two of a-c:
 - (a) Severely fragmented or known to exist at no more than 10 locations.
 - (b) Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - (c) Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 10,000 mature individuals and either:
1. An estimated continuing decline of at least 10 per cent within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR
 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - (a) Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than 1000 mature individuals, OR
 - (ii) all mature individuals are in one subpopulation.
 - (b) Extreme fluctuations in number of mature individuals.
- D. Population very small or restricted in the form of either of the following:
1. Population size estimated to number fewer than 1000 mature individuals.
 2. Population with a very restricted area of occupancy (typically less than 20 km²) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 10 per cent within 100 years.

Source: IUCN (2001)

Accepted name	Synonym	Basionym
	<i>M. punctatum</i> Klotzsch <i>Myrospermum pereirae</i> Royle <i>Myrospermum sonsonatense</i> Pereira ex Oersted. <i>Myrospermum toluiferum</i> (A. Rich.) DC. <i>Toluifera pereirae</i> Baill. <i>Toluifera balsamum</i> var. <i>pereirae</i> (Royle) Baill.	
<i>Piscidia grandifolia</i> (Donn. Sm.) I.M. Johnst.	<i>Ichthyomethia grandifolia</i> (Donn. Sm.) S.F. Blake	<i>Derris grandifolia</i> Donn. Sm.
FAGACEAE		
<i>Quercus acatenangensis</i> Trel.	<i>Quercus longifolia</i> Liebm. <i>Q. acutifolia</i> subsp. <i>longifolia</i> A. DC. <i>Q. xalapensis</i> var. <i>longifolia</i> Wenzig <i>Q. donnell-smithii</i> Trel. <i>Q. ambivenulosa</i> Trel.	
<i>Quercus benthamii</i> A. de Candolle	<i>Quercus baruensis</i> C.H. Mull. <i>Q. lowilliamsii</i> C.H. Mull. <i>Q. rapurahuensis</i> Pittier ex Seemen <i>Q. undulata</i> Benth. <i>Q. gemmata</i> Trel.	
<i>Quercus bumelioides</i> Liebm.	<i>Quercus acapulcensis</i> Trel. <i>Q. acherdophylla</i> Trel. <i>Q. duratifolia</i> C.H. Mull. <i>Q. mulleri</i> Martínez <i>Q. petiolata</i> (Trel.) E. Murray <i>Q. rubramenta</i> Trel. <i>Q. panamandinaea</i> C.H. Mull. <i>Q. pacayana</i> C.H. Mull. <i>Q. boquetensis</i> Standl. <i>Q. chiriquiensis</i> Trel. ex C.H. Mull. <i>Q. citrifolia</i> Liebm. <i>Q. salicifolia</i> var. <i>seemannii</i> (Liebm.) Wenz. <i>Q. copeyensis</i> C.H. Mull. <i>Q. rapurahuensis</i> Pittier ex Seemen <i>Q. pittieri</i> Wesmael ex Seemen <i>Q. wesmaeli</i> Trel. <i>Q. tahuasalana</i> Trel. <i>Q. salicifolia</i> Née <i>Q. seemannii</i> Liebm. <i>Q. eugeniaefolia</i> Liebm. <i>Q. granulata</i> Liebm. <i>Q. borucasana</i> Trel.	
<i>Quercus candicans</i> Née <i>Quercus conspersa</i> Benth.	<i>Quercus calophylla</i> Schlecht. & Cham. <i>Quercus acutifolia</i> var. <i>conspersa</i> A. DC. <i>Q. acutifolia</i> var. <i>microcarpa</i> A. DC. <i>Q. correpta</i> Trel. <i>Q. grahami</i> var. <i>coyulana</i> Trel.≈ <i>Q. grahami</i> var. <i>nelsoni</i> Trel. <i>Quercus anglohondurensis</i> C.H. Mull. <i>Q. brenesii</i> Trel. <i>Q. tenuiaristata</i> Trel.	
<i>Quercus cortesii</i> Liebm.	<i>Quercus amphioxys</i> Trel. <i>Q. incrassata</i> Trel.	
<i>Quercus crispifolia</i> Trel.	<i>Quercus cerifera</i> Trel. <i>Q. cinnamomea</i> Trel.	
<i>Quercus crispipilis</i> Trel.	<i>Quercus comayaguana</i> Trel. <i>Q. guayabalana</i> Trel. <i>Q. yoroensis</i> Trel. <i>Q. hondurensis</i> Trel. <i>Q. linguifolia</i> Liebm. <i>Q. nectandrifolia</i> Liebm. <i>Q. oajacana</i> Liebm. <i>Q. yoroensis</i> var. <i>aguanana</i> Trel.	
<i>Quercus elliptica</i> Née	<i>Quercus schippii</i> Standl. <i>Q. davidsoniae</i> Standl. <i>Q. oocarpa</i> Liebm. <i>Q. seibertii</i> C.H. Mull. <i>Q. strombocarpa</i> Liebm. <i>Q. tomentocaulis</i> C.H. Mull. <i>Q. warscewiczii</i> Liebm. <i>Q. yunckeri</i> Trel.	
<i>Quercus insignis</i> M. Martens & Galeotti		

Accepted name	Synonym	Basionym
<i>Quercus lancifolia</i> Schltld. & Cham.	<i>Quercus corrugata</i> var. <i>microcarpa</i> Wenzig. <i>Q. corrugata</i> var. <i>granulifera</i> Trel. <i>Q. corrugata</i> var. <i>ipalensis</i> Trel. <i>Q. excelsa</i> Liebm. <i>Q. pilgeriana</i> Seemen <i>Q. cyclobalanoides</i> Trel. <i>Q. reevesii</i> Trel. <i>Q. aaata</i> C.H. Mull. <i>Q. boqueronae</i> Trel. <i>Q. leiophylla</i> A. DC. <i>Q. molinae</i> C.H. Mull. <i>Q. ovoidensis</i> Matuda <i>Q. yousei</i> Trel. <i>Q. corrugata</i> Hook <i>Q. pilaria</i> Trel.	
<i>Quercus oleoides</i> Schltld. & Cham.	<i>Quercus lutescens</i> M. Martens & Galeotti <i>Q. retusa</i> Liebm. <i>Q. oleoides</i> var. <i>australis</i> Trel. <i>Q. virens</i> A. DC.	
<i>Quercus peduncularis</i> Née	<i>Quercus peduncularis</i> var. <i>callosa</i> (Benth.) A. Camus <i>Q. barbanthera</i> var. <i>calva</i> Trel. <i>Q. barbanthera</i> Trel. <i>Q. callosa</i> Benth. <i>Q. aguana</i> Trel. <i>Q. barbeyana</i> Trel. <i>Q. arachnoidea</i> Trel. <i>Q. dolichopus</i> E.F. Warb. <i>Q. peduncularis</i> subsp. <i>callosa</i> A. Camus <i>Q. tomentosa</i> Willdenow	
<i>Quercus pilicaulis</i> Trel.	<i>Quercus peduncularis</i> subsp. <i>pilicaulis</i> A. Camus <i>Q. peduncularis</i> subsp. <i>hurteri</i> A. Camus <i>Q. tomentosa</i> var. <i>bulata</i> A. DC. <i>Q. tomentosa</i> var. <i>abbreviata</i> A. DC.	
<i>Quercus polymorpha</i> Schlecht. & Cham.	<i>Quercus petiolaris</i> Benth. <i>Q. varians</i> Mart. & Gal. <i>Q. guatemalensis</i> A. DC. <i>Q. turbinata</i> Liebm.	
<i>Quercus sapotaefolia</i> Liebm.	<i>Quercus sapotaefolia</i> Liebm. <i>Q. elliptica</i> var. <i>microcarpa</i> A. DC. <i>Q. guatemalensis</i> A. DC. <i>Q. correpta</i> Trel. <i>Q. wesmaeli</i> Trel. <i>Q. persifolia</i> var. <i>achoteana</i> Trel. <i>Q. parviglans</i> Trel. <i>Q. amissiloba</i> Trel. <i>Q. apanecana</i> Trel. <i>Q. donnell-smithii</i> Trel. <i>Q. microcarpa</i> Liebm. <i>Q. siguatepequeana</i> Trel.	
<i>Quercus segoviensis</i> Liebm.	<i>Quercus achoteana</i> Trel. <i>Q. reticulata</i> var. <i>segoviensis</i> (Liebm.) Wenzig. <i>Q. achoteana</i> var. <i>sublanosa</i> Trel. <i>Q. matagalpana</i> Trel. <i>Q. peduncularis</i> var. <i>sublanosa</i> (Trel.) C.H. Mull.	
<i>Quercus skinneri</i> Benth.	<i>Quercus chiapasensis</i> Trel. <i>Q. salvadorensis</i> Trel. <i>Q. grandis</i> Liebm. <i>Q. trichodonta</i> Trel. <i>Q. hemipteroides</i> C.H. Mull. <i>Q. grandis</i> var. <i>tenuipes</i> Trel. <i>Q. xalapensis</i> Bonpl. <i>Q. monserratisensis</i> C.H. Mull.	
<i>Quercus skutchii</i> Trel.	<i>Quercus crispipilis</i> var. <i>pannosifolia</i> <i>Q. aristigera</i> Trel. <i>Q. chichavacana</i> Trel. <i>Q. chimaltenangana</i> Trel. <i>Q. pannosifolia</i> C.H. Mull.	
<i>Quercus tristis</i> Liebm.	<i>Quercus scherzeri</i> Trel. <i>Q. consociata</i> Trel. <i>Q. castanea</i> A. DC.	

Accepted name	Synonym	Basionym
	<i>Q. castanea</i> var. <i>sublobata</i> A. DC.	
JUGLANDACEAE		
<i>Juglans olanchana</i> Standl. & L.O. Williams	<i>Juglans guatemalensis</i> W.E. Manning	
JULIANACEAE		
<i>Amphipterygium adstringens</i> (Schltdl.) Standl.	<i>Juliana adstringens</i> (Schltdl.) Schltdl.	<i>Hypopterygium adstringens</i> Schltdl.
LAURACEAE		
<i>Aiouea guatemalensis</i> (Lundell) Renner		<i>Aniba guatemalensis</i> Lundell
<i>Aiouea parvissima</i> (Lundell) Renner		<i>Aniba parvissima</i> Lundell
<i>Ocotea amplifolia</i> (Mez & Donn. Sm.) Van der Werff	<i>Cinnamomum amplifolium</i> (Mez & Donn. Sm.) Kosterm.	<i>Phoebe amplifolia</i> Mez. & Donn. Sm.
<i>Ocotea euvenosa</i> Lundell	Replaced Name: <i>Ocotea venosa</i> Lundell	
<i>Ocotea nigrita</i> (Lundell) Lundell		<i>Nectandra negrita</i> Lundell
LOGANIACEAE		
<i>Buddleja megalcephala</i> Donn. Sm.	<i>Buddleja hypsophila</i> I.M. Johnst.	
MELASTOMACEAE		
<i>Mouriri steyermarkii</i> Standl.	<i>Mouriri petenensis</i> Lundell	
MELIACEAE		
<i>Cedrela odorata</i> L.	<i>Cedrela mexicana</i> M.J. Roemer <i>C. yucatanica</i> S.F. Blake <i>C. occidentalis</i> C. DC. <i>C. guianensis</i> Adr. Jussieu <i>C. paraguariensis</i> Martius <i>C. velloziana</i> M.J. Roemer <i>C. glaziovii</i> C. DC. <i>C. paraguariensis</i> var. <i>multijuga</i> C. DC. <i>C. dugesii</i> Watson <i>C. adenophylla</i> Martius <i>C. paraguariensis</i> var. <i>hassleri</i> C. DC. <i>C. mexicana</i> var. <i>puberula</i> C. DC. <i>C. hassleri</i> (C. DC.) C. DC. <i>C. mourae</i> C. DC. <i>C. sintenisii</i> C. DC. <i>C. brachystachya</i> (C. DC.) C. DC. <i>C. rotunda</i> S.F. Blake <i>C. whitfordii</i> S.F. Blake <i>C. ciliolata</i> S.F. Blake <i>C. longipes</i> S.F. Blake <i>C. longipetiolulata</i> Harms. <i>C. palustris</i> Handro. <i>C. odorata</i> var. <i>xerogeiton</i> Rizzini & Heringer <i>C. cubensis</i> Bisse. <i>C. paraguariensis</i> var. <i>brachystachya</i> C. DC. <i>Surenus brownii</i> (Loefling ex Kuntze) Kuntze <i>S. guianensis</i> (Adr. Jussieu.) Kuntze <i>S. glaziovii</i> (C. DC.) Kuntze <i>S. mexicana</i> (M.J. Roemer) Kuntze <i>S. velloziana</i> (M.J. Roemer) Kuntze <i>Cedrela pacayana</i> Harms. <i>Swietenia bijuga</i> P. Preuss <i>S. cirrhata</i> S.F. Blake <i>Swietenia belizensis</i> Lundell <i>S. macrophylla</i> var. <i>marabaensis</i> Ledoux & Lobato <i>S. candollei</i> Pittier <i>S. krukovii</i> Gleason <i>S. tessmannii</i> Harms.	
<i>Cedrela tonduzii</i> C. DC.		
<i>Swietenia humilis</i> Zucc.		
<i>Swietenia macrophylla</i> King		
<i>Trichilia breviflora</i> S.F. Blake & Standl.	<i>Trichilia privigna</i> Standl. & Steyerem.	
<i>Trichilia chirriactensis</i> (Standl. & Steyerem.) T.D. Penn.		<i>Guarea chirriactensis</i> Standl. & Steyerem.
MENISPERMACEAE		
<i>Hyperbaena mexicana</i> Miers.	<i>Hyperbaena guatemalensis</i> Standl. <i>Hyperbaena nectandriifolia</i> Standl. <i>Hyperbaena phanerophlebia</i> Standl.	

Accepted name	Synonym	Basionym
MIMOSACEAE		
<i>Acacia dolichostachya</i> S.F. Blake	<i>Senegalia dolichostachya</i> (S.F. Blake) Britton & Rose	
<i>Balizia leucocalyx</i> (Britton & Rose) Barneby & J.W. Grimes	<i>Albizia leucocalyx</i> (Britton & Rose) L. Rico	<i>Samanea leucocalyx</i> Britton & Rose
<i>Inga cookii</i> Pittier	<i>Pithecellobium leucocalyx</i> (Britton & Rose) Standl.	
<i>Leucaena magnifica</i> (C.E. Hughes) C.E. Hughes	<i>Inga subvestita</i> Standl.	
<i>Zygia cognata</i> (Schltdl. & Cham.) Britton & Rose	<i>Leucaena shannonii</i> subsp. <i>magnifica</i> C.E. Hughes	
	<i>Inga stevensonii</i> Standl.	<i>Inga cognata</i> Schltdl.
	<i>Feuilleea cognata</i> (Schltdl.) Kuntze	
	<i>Pithecellobium stevensonii</i> (Standl.) Standl. & Steyerem.	
	<i>P. cognatum</i> (Schltdl.) Benth.	
	<i>Zygia stevensonii</i> (Standl.) Record.	
PINACEAE		
<i>Abies guatemalensis</i> Rehder	<i>Abies tacanensis</i> Lundell	
	<i>Abies guatemalensis</i> var. <i>tacanensis</i> (Lundell) Martínez	
<i>Pinus strobus</i> var. <i>chiapensis</i> Martínez	<i>Pinus chiapensis</i> (Martínez) Andresen	
	<i>P. strobus</i> subsp. <i>chiapensis</i> (Martínez) E. Murray	
<i>Pinus tecunumanii</i> Eguiluz & J.P. Perry	<i>Pinus oocarpa</i> var. <i>achoteranae</i> Martínez	
	<i>Pinus patula</i> subsp. <i>tecunumanii</i> (Eguiluz & J.P. Perry) Styles	
	<i>P. patula</i> Schltdl. & Cham.	
PODOCARPACEAE		
<i>Podocarpus guatemalensis</i> Standl.	<i>Podocarpus guatemalensis</i> var. <i>allenii</i> (Standl.) J. Buchholz. & N.E. Gray	
	<i>P. guatemalensis</i> var. <i>pinetorum</i> (Bartlett) J. Buchholz & N.E. Gray	
	<i>P. pinetorum</i> Bartlett	
	<i>P. allenii</i> Standl.	
RUBIACEAE		
<i>Blepharidium guatemalense</i> Standl.	<i>Blepharidium mexicanum</i> Standl.	
	<i>Tocoyena tabascensis</i> Standl.	
<i>Rondeletia chinajensis</i> Standl. & Steyerem.	<i>Arachnothryx chinajensis</i> (Standl. & Steyerem.) Borhidi	
<i>Simira salvadorensis</i> (Standl.) Steyerem.	<i>Sickingia lancifolia</i> Lundell	<i>Calderonia salvadorensis</i> Standl.
	<i>S. lancifolia</i> var. <i>puberula</i> Lundell	
	<i>S. mollis</i> Lundell	
	<i>S. multiflora</i> Lundell	
	<i>S. salvadorensis</i> (Standl.) Standl.	
	<i>S. vestita</i> Lundell	
RUTACEAE		
<i>Decatropis paucijuga</i> (Donn. Sm.) Loes.		<i>Polyaster paucijuga</i> Donn. Sm.
<i>Zanthoxylum caribaeum</i> Lam.	<i>Zanthoxylum gentlei</i> Lundell	
	<i>Z. occidentale</i> Rose	
	<i>Z. rugosum</i> A. St.-Hil. & Tul.	
	<i>Z. caribaeum</i> subsp. <i>caribaeum</i>	
	<i>Z. chiloperone</i> Mart. ex Engl.	
	<i>Z. chiloperone</i> var. <i>angustifolium</i> Engl.	
	<i>Z. nelsonii</i> Rose	
	<i>Z. elephantiasis</i> Macfad	
	<i>Fagara caribaea</i> (Lam.) Krug. & Urb.	
	<i>F. chiloperone</i> (Mart. ex Engl.) Engl. ex Chodat. & Hassl.	
	<i>F. occidentalis</i> (Rose) Engl.	
	<i>F. elephantiasis</i> (Macfad.) Krug. & Urb.	
	<i>F. chiloperone</i> var. <i>angustifolia</i> (Engl.) Engl. ex Chodat. & Hassl.	
	<i>F. rugosa</i> (A. St.-Hil. & Tul.) Engl.	
<i>Zanthoxylum ekmanii</i> (Urb.) Alain.	<i>Zanthoxylum belizense</i> Lundell	<i>Fagara ekmanii</i> Urb.
	<i>Z. sobrievlae</i> D.R. Simpson.	
<i>Zanthoxylum ferrugineum</i> Radlk.	<i>Zanthoxylum mollissimum</i> (Engl.) P. Wilson	
	<i>Z. anodynum</i> Ant. Molina	
	<i>Z. dugandii</i> Standl.	
	<i>Z. matudai</i> Lundell	
	<i>Fagara dugandii</i> (Standl.) Dugand	
	<i>Fagara mollissima</i> Engl.	
<i>Zanthoxylum juniperinum</i> Poepp.	<i>Zanthoxylum procerum</i> Donn. Sm.	
	<i>Z. minutiflorum</i> Tul.	
	<i>Z. ocumarensis</i> (Pittier) Steyerem.	
	<i>Z. acuminatum</i> (Sw.) Sw.	
	<i>Z. acuminatum</i> subsp. <i>juniperinum</i> (Poepp.) Reynel.	

Accepted name	Synonym	Basionym
	<i>Z. acreanum</i> (K. Krause) J.F. Macbr. <i>Z. pringlei</i> S. Watson <i>Fagara procera</i> (Donn. Sm.) Engl. <i>F. acreana</i> K. Krause <i>F. minutiflora</i> (Tul.) Engl. <i>F. pringlei</i> (S. Watson) Engl. <i>F. acuminata</i> Sw. <i>F. juniperina</i> (Poepp.) Engl. <i>F. ocumarensis</i> Pittier <i>F. warmingiana</i> Engl.	
SAPOTACEAE		
<i>Pouteria amygdalina</i> (Standl.) Baehni	<i>Bumelia lauriflora</i> Standl. <i>Sideroxylon amygdalinum</i> (Standl.) Standl. <i>Pouteria binatosepala</i> Lundell <i>P. psilocarpa</i> Baehni	<i>Lucuma amygdalina</i> Standl.
<i>Pouteria rufotomentosa</i> (Lundell) T.D. Penn. <i>Sideroxylon eucoriaceum</i> (Lundell) T.D. Penn. <i>Sideroxylon floribundum</i> Griseb. subsp. <i>belizense</i> (Lundell) T.D. Penn. <i>Sideroxylon hirtiantherum</i> T.D. Penn.	<i>Bumelia eucoriacea</i> (Lundell) Lundell <i>Mastichodendron belizense</i> (Lundell) Cronquist <i>M. erythrocarpum</i> Lundell <i>Bumelia parviflora</i> (Lundell) Lundell Replaced name: <i>Mastichodendron parviflorum</i> Lundell	<i>Peteniodendron rufotomentosum</i> Lundell <i>Mastichodendron eucoriaceum</i> Lundell <i>Sideroxylon belizense</i> Lundell
<i>Sideroxylon ibarrae</i> (Lundell) T.D. Penn. <i>Sideroxylon stevensonii</i> (Standl.) T.D. Penn.	<i>Sideroxylon rufotomentosum</i> Standl. <i>Bumelia stevensonii</i> (Standl.) Stearn.	<i>Bumelia ibarrae</i> Lundell <i>Dipholis stevensonii</i> Standl.
STERCULIACEAE		
<i>Chiranthodendron pentadactylon</i> Larreategui	<i>Cheirostemon platanooides</i> Bonpl. <i>Chiranthodendron platanooides</i> (Bonpl.) Baill.	
<i>Sterculia apetala</i> (Jacq.) H. Karst.	<i>Chichaea acerifolia</i> C. Presl. <i>C. hilariana</i> C. Presl. <i>Clompanus apetauls</i> (Jacq.) Kuntze <i>C. chichus</i> (A. St.-Hil. ex Turpin) Kuntze <i>C. haenkeanus</i> Kuntze <i>C. punctatus</i> (DC.) Kuntze <i>Opsopea foetida</i> Raf. <i>Sterculia carthaginensis</i> Cav. <i>S. chicha</i> A. St.-Hil. ex Turpin. <i>S. acerifolia</i> (C. Presl.) Hemsl. <i>S. capitata</i> (Jacq.) G. Karst. ex I. Seym. <i>S. convoluta</i> St.-Lag. <i>S. helicteris</i> Pers. <i>S. elata</i> Clucke <i>S. punctata</i> DC.	<i>Helicteres apetala</i> Jacq.
TAXACEAE		
<i>Taxus globosa</i> Schltld.	<i>Taxus baccata</i> subsp. <i>globosa</i> (Schltld.) Pilg.	
TAXODIACEAE		
<i>Taxodium mucronatum</i> Tenore	<i>Cuprespinnata mexicana</i> (Carrière) J. Nelson <i>Taxodium distichum</i> var. <i>mexicanum</i> (Carrière) Gordon <i>T. distichum</i> var. <i>mucronatum</i> (Ten.) A. Henry <i>T. mexicanum</i> Carrière <i>T. montezumae</i> Decae <i>T. distichum</i> Kunth.	
TURNERACEAE		
<i>Erblichia odorata</i> Seem.	<i>Piriqueta odorata</i> (Seem.) Urb. <i>Piriqueta xylocarpa</i> Sprague & L. Riley <i>Erblichia standleyi</i> Steyerm. <i>E. xylocarpa</i> (Sprague & L. Riley) Standl. & Steyerm.	
ZYGOPHYLLACEAE		
<i>Guaiaicum sanctum</i> L.	<i>Guaiaicum multijugum</i> Stokes <i>G. guatemalense</i> Planch. ex Rydb. <i>G. sloanei</i> Shuttl. ex A. Gray	

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Photos

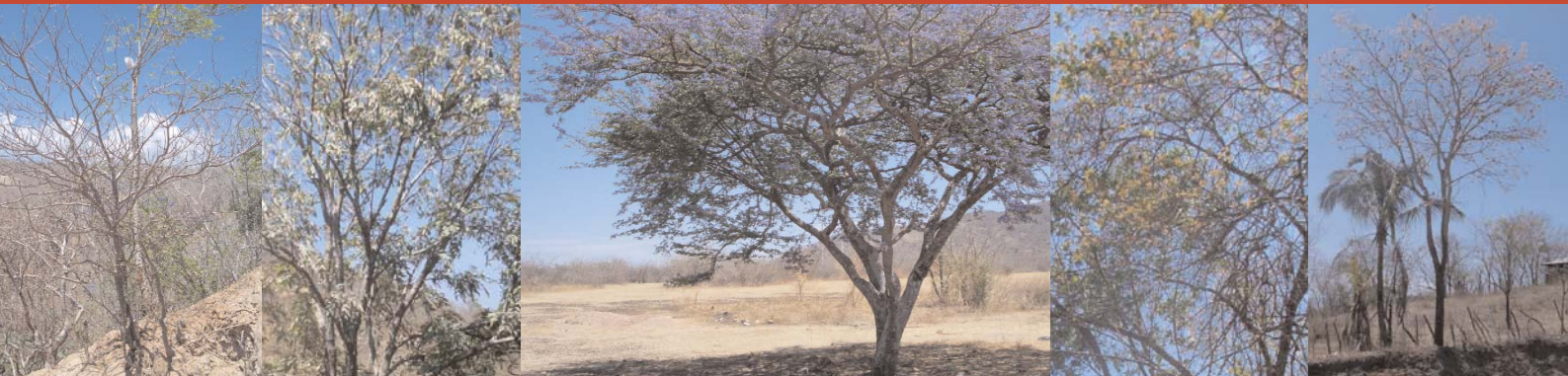
Front cover (left to right) and back cover (right to left): *Pistacia mexicana*; *Swietenia macrophylla*; *Guaiacum sanctum*; *Cedrela odorata*; *Amphipterygium adstringens*.

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The Red List of Trees of Guatemala



The flora of Guatemala is one of the richest and most varied in the world, with a high degree of endemism. It is also facing a high level of threat. This publication presents the first complete assessment of all Guatemala's woody plants against the IUCN categories and criteria, allowing the identification of priorities and the development of appropriate conservation action to secure their future.

This document has been produced by the Global Trees Campaign under the auspices of the IUCN/SSC Global Tree Specialist Group. The Global Trees Campaign is a joint initiative of Fauna & Flora International, Botanic Gardens Conservation International and the UNEP World Conservation Monitoring Centre, aiming to save the world's threatened trees and the habitats where they grow.

For further information please
contact:

Fauna & Flora International
Great Eastern House
Tenison Road
Cambridge CB1 2TT
United Kingdom

Tel: + 44 (0) 1223 571000
Fax: + 44 (0) 1223 461481
E-mail: info@fauna-flora.org
Web: www.fauna-flora.org
www.globaltrees.org