# The Red List of the Endemic Trees of Guatemala

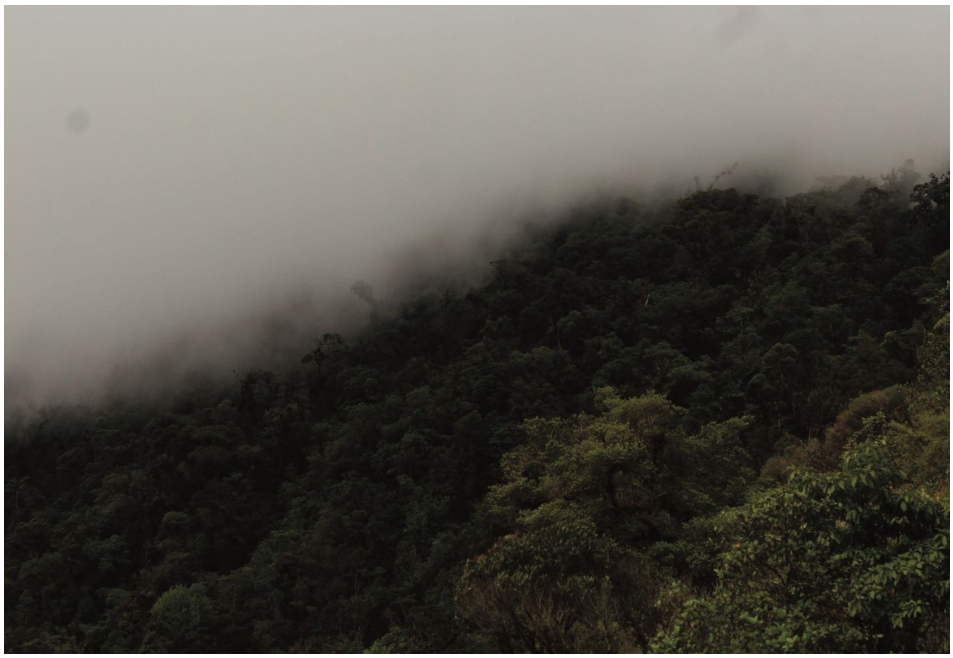
AnaLu MacVean and Emily Beech



BOTANIC GARDENS CONSERVATION INTERNATIONAL
GTA Global Tree Assessment
GTSG GLOBAL TREE SPECIALIST GROUP
Franklinia FONDATION
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KINSLEY SCHOOL OF ENGINEERING, SCIENCES AND TECHNOLOGY
ENVIRONMENTAL HORTICULTURE

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Cloud forest in Guatemala (Javier Rivas-Romero)

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Back cover: Young seedling of *Chamaedorea falcifera* (Donald R. Hodel)

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## IUCN Red List Categories

- EX Extinct
- EW Extinct in the Wild
- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- NT Near Threatened
- LC Least Concern
- DD Data Deficient
- NE Not Evaluated



*Myrtillocactus eichlamii* (Mario Veliz)

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*Celtis guatemalensis* branch with mature and immature drupes (Knut Eisermann)



*Stanmarkia spectabilis* (Frank Almeda)

# Foreword



*Erythrina atitlanensis*
(David Neill, courtesy of Tropicos (https://tropicos.org) and the Missouri Botanical Garden)

There are few living structures on Earth as extraordinary as a forest. To the casual observer, a forest may appear as an assemblage of trees. To science, however, it is an intricate network of life, shaped over millions of years through evolution, adaptation, and countless ecological interactions. Throughout my professional journey as a Forest Engineer, I have come to understand that forests cannot be appreciated solely through their economic value or ecological functions. They embody the history of life itself. Each species represents an irreplaceable chapter in an evolutionary story still unfolding, while every ecosystem reflects a delicate balance forged over time. Once that balance is disrupted, its recovery may require centuries—or may never occur at all.

This publication is therefore much more than a scientific contribution. It is a reminder that knowledge is among humanity's greatest instruments of hope. Every discovery, every dataset, every field observation, and every scientific collaboration strengthens our collective capacity to understand the complexity of nature and to make wiser decisions for its future. For Mesoamerica, this message resonates with particular urgency, because it is internationally recognized as one of the world's most biologically diverse regions, where mountains, tropical forests, cloud forests, wetlands, dry ecosystems, and coastal landscapes converge to create an extraordinary mosaic of life.

This is why research such as this is so important. They expand the frontiers of scientific knowledge while inspiring dialogue among researchers, policymakers, educators, conservation practitioners, and society as a whole. They remind us that evidence-based decision-making is indispensable if we are to build a future where development and environmental integrity reinforce one another rather than compete. As Vice Minister of Environment of Guatemala, I firmly believe that science and public policy must advance hand in hand. Effective environmental governance can only emerge when rigorous research informs decision-making, and when that knowledge is translated into meaningful action.

May this publication inspire not only scientific curiosity, but also a renewed sense of stewardship. May it encourage us to see every tree not simply as part of a forest, but as part of humanity's life-support system. And may it remind us that the true measure of our progress will not be found in what we extract from nature, but in what we choose to protect.

*The future will not ask how much we know about nature. It will ask what we did with that knowledge.*

**José Rodrigo Rodas Ramos**
Forest Engineer
Vice Minister of Environment
Republic of Guatemala

# Executive Summary

Mesoamerica contains around 10% of the biodiversity of the world and around 20,000 plant species, with many endemics in the region. Until recently, there was limited data available regarding endemic trees and their extinction risk in Guatemala. The goal of this publication is to provide a comprehensive updated list of the endemic trees of Guatemala and their conservation status.

There are 2,002 native tree species in Guatemala and 108 endemic trees. Ninety-seven species were assessed as threatened with extinction (90%). Almost all of the threatened species (95%, 92 species) are assessed using criterion B, restricted geographic range. All other categories are used for only a few species, indicating a lack of population size or reduction data. The most important threat is agriculture affecting 90% of endemic threatened tree species, followed by exploitation for timber and firewood (72%).

In terms of conservation actions, there are only 16 endemic tree species of Guatemala (15%) reported as being held in *ex situ* collections, with the majority being horticultural favorites. There are 28 endemic trees that are reported in a protected area, 10 species where it is unknown if they occur in a protected area, and 70 species (65%) that are not found in a protected area. This includes 66 threatened species, highlighting a gap in the protected area network when it comes to threatened endemic trees. Sixty-two species of endemic trees are found in Key Biodiversity Areas. At least 53 species could be trigger species for Alliance of Zero Extinction sites. These are sites where over 95% of the population of a Critically Endangered or Endangered species are found within a discrete location. There are 68 threatened tree species that have no *in situ* or *ex situ* protection. These species are priorities for urgent conservation action.

This is the first comprehensive assessment of the conservation status of Guatemala's endemic trees and this effort marks an important step in ensuring that they do not go extinct. Further actions are required to protect threatened species. This publication gives a baseline for prioritizing further conservation efforts and inspiring action to improve the conservation status of endemic tree species in Guatemala.



Sierra del Merendón, Guatemala (AnaLu MacVean)

# Background

Mesoamerica is a small region of the Earth (5% land area) that encompasses México to Panamá. The region, however small, contains around 10% of the biodiversity of the world and around 20,000 plant species (Missouri Botanical Garden, 2026). Of all the countries, Guatemala's flora is one of the most rich and diverse of Central America due to a combination of climates, soils, varying elevations (0 to 4,211 meters above sea level) as well as a complex geological history (MacVean, 2009; Iturralde-Vinent, 2006). The name of the country "Guatemala" comes from the nahuatl "Cuauhtemallan" which means the place of many trees or lands of the forests. Guatemala is home to 2,002 tree species and of these 108 are endemic to the country (BGCI, 2026a). An endemic organism is defined as a taxon being unique to a defined geographic location and occurring naturally nowhere else in the world. Endemic species, for example, are usually confined (isolated) mountain ranges and volcanoes. Due to their limited distribution and usually small population sizes these species are particularly vulnerable and in some cases susceptible to extinction due to external threats.

Remarkably, there is limited data available regarding endemic plants, and trees in particular, that exist in the country (see Case Study 1). Additionally, there is very little documentation of the extinction risk of such species. International Union for Conservation of Nature (IUCN) Red List assessments are recognized as a standard for identifying the extinction risk to species (IUCN, 2026). The only relevant publication regarding the conservation status of trees was done twenty years ago (Vivero et *al*., 2006) and these assessments were not published on the IUCN Red List. There are also a few taxonomic Red Lists that include species endemic to Guatemala, such as Magnoliaceae (Cicuzza et *al*., 2007; Rivers et *al*., 2016) and Oaks (Oldfield and Eastwood, 2007).

As part of the Global Tree Assessment initiative (Box 1), this comprehensive assessment of Guatemalan endemic tree species for the IUCN Red List began in 2019. Very few species had published Red List assessments. The majority of species included in this publication were assessed between 2019 and 2024 and included in a recent analysis of the endemic trees of Mesoamerica (see Beech et *al*., 2025). Included in the analysis are 18 additional assessments for endemic trees that were submitted to the IUCN Red List in 2026 but are yet to be published. Our objective is to provide a comprehensive updated list of all the endemic trees of Guatemala including their distribution and level of threat.

**Box 1: Global Tree Assessment**

GTA
Global Tree Assessment

The Global Tree Assessment is an initiative coordinated by Botanic Gardens Conservation International (BGCI) in partnership with the IUCN Species Survival Commission Global Tree Specialist Group to assess the conservation status of the world's tree species. The Global Tree Assessment is the largest global assessment project to date, resulting in IUCN Red List assessments of nearly 50,000 tree species carried out by more than 1,000 tree experts. In October 2024, trees were considered a comprehensively assessed group on the IUCN Red List with over 47,000 tree assessments available. The data collated by the Global Tree Assessment is now accessible through the GlobalTree Portal.

https://www.bgci.org/resources/bgci-databases/globaltree-portal/

# Methodology

The list of endemic trees of Guatemala was taken from GlobalTreeSearch (BGCI, 2026a) and includes only validly published names as of August 2026.

A tree is defined following the IUCN SSC Global Tree Specialist Group definition of
*"a woody plant with usually a single stem growing to a height of at least two meters, or if multi-stemmed, then at least one vertical stem five centimeters in diameter at breast height."*.

The majority of the data included in this analysis came from published IUCN Red List assessments (IUCN, 2026), with a small percentage from unpublished assessments or reassessments submitted to the IUCN Red List (18 species).

For each species, information was collected from a variety of sources on distribution, population, habitat and ecology, uses, threats and conservation measures. Species extinction risk was assessed using the IUCN Red List Categories and Criteria version 3.1 (IUCN 2012). Assessments were compiled in the IUCN SIS system before being submitted to the IUCN Red List Unit. During the assessment process, maps were created in csv format for each species, which included information on the origin and presence of each individual point following the IUCN mapping guidelines (Red List Technical Working Group, 2025).

The IUCN Red List has nine categories: (Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (NE)) (Figure 1), determined by applying five criteria (A – Population size reduction, B – Geographic range, C – Population size and decline, D – Very small or restricted population and E – Quantitative Analysis).



*Magnolia stefaniana* seedlings (Fredy Archila)

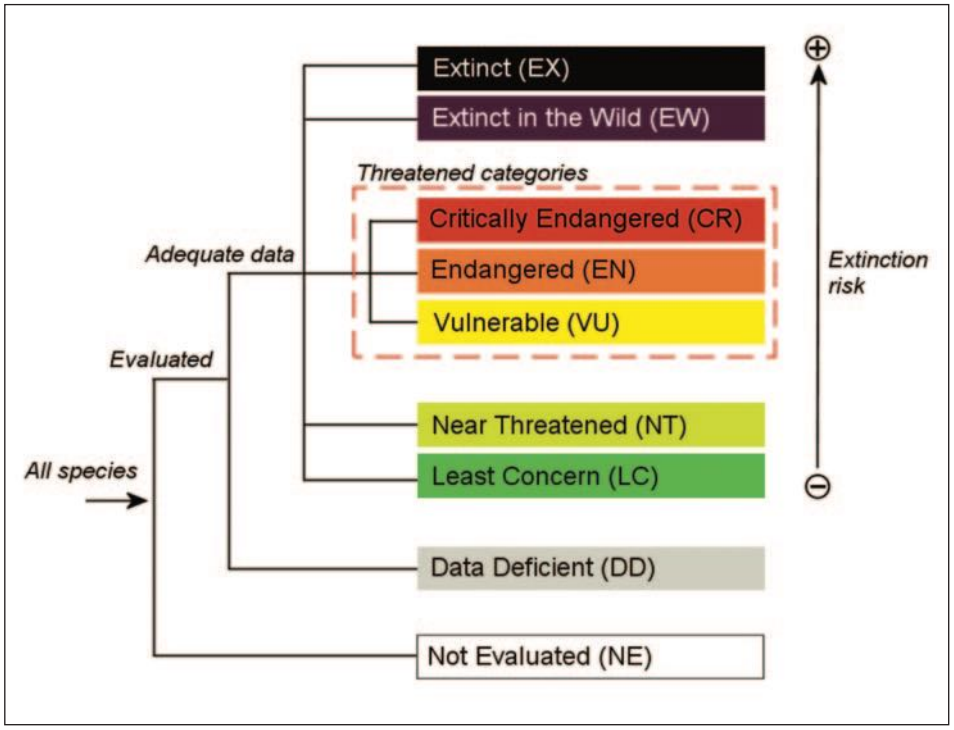



Figure 1. Structure of the categories (IUCN, 2012).

A species can be assessed under more than one criterion. The three threatened categories are Critically Endangered, Endangered and Vulnerable. Species close to meeting the thresholds for the threatened categories are listed as Near Threatened. Data Deficient is used for species where there is not sufficient information to assess the species, or the data is extremely uncertain (see Appendix 3 for full definitions).

Percentage estimates of extinction risk were calculated using the recommended IUCN formula (IUCN, 2022).

Threat classifications generally follow Luedtke *et al.* (2023) apart from where indicated with an * (Table 1).

Information on *ex situ* collections was taken from BGCI's PlantSearch database (BGCI, 2026b), with exact matches only, and supplemented with information within the IUCN Red List assessments.

Presence in protected areas was taken from the assessment (Yes/No/Unknown), and for those species without documentation in the assessment, the map file was overlaid with the World Database on Protected Areas (WDPA) (UNEP-WCMC and IUCN, 2026). If there was no map, the presence was recorded as unknown.

Presence in a Key Biodiversity Area (KBA) was also determined by overlaying the map data with the KBA GIS polygon dataset (BirdLife International, 2026). Existing trigger species for KBAs were determined in the same dataset.

Potential Alliance for Zero Extinction (AZE) sites were identified using the methodology detailed in Davies *et al.* (2024), rerunning the analysis with the data from the 2025.1 IUCN Red List release.

Data on conservation actions was taken from BGCI's Conservation Action Tracker in July 2026 (BGCI, 2026c).

The maps in Appendix 1 were generated using the Esri ArcPy Python library in ArcGIS Pro Notebook (version 3.6.1). A standardised layout map was created and used across all species with a fixed legend, national boundary, geographic extent, north arrow, scale bar and protected area layer in Guatemala.



*Erythrostemon guatemalensis* (Knutt Eisermann)

| Threat groupings | IUCN Threat Classification Scheme |
|---|---|
| Development (infrastructure or urban) | 1 Residential & commercial development and 4 Transportation & service corridors |
| Agriculture | 2 Agriculture & aquaculture |
| Energy production and mining | 3 Energy production & mining |
| Exploitation (timber/plant harvesting) | 5 Biological resource use |
| Human disturbance | 6 Human intrusions & disturbance |
| Fire | 7.1 Fire & fire suppression |
| Water management | 7.2 Dams & water management |
| Problematic species* | 8 Invasive and other problematic species, genes & diseases |
| Pollution | 9 Pollution |
| Geological events | 10 Geological events |
| Climate change | 11 Climate change & severe weather |

Table 1. Threat grouping used in this publication

## CASE STUDY 1: History of Guatemalan Botanical Explorations

**AnaLu MacVean**
Environmental Horticulture Department,
York College of Pennsylvania

Guatemala has been known for centuries as a floristic rich region due to its long geological history and varied climatic, topographic conditions. The first account of the plants of the region was done by Francisco Hernández but the description and drawings of plants were lost in a fire at the Escorial Palace in 1617. It was not until the 18th century that collections in Guatemala became more systematic. The Spanish crown sent the first expedition to New Spain (1786 to 1803) which included parts of México, Central America and the Caribbean. José Longinos, José Mariano de Mociño and Martín de Sessé were the main explorers of the trip to the region known as Nueva Guatemala. Unfortunately Longinos died before returning to Spain, none of the collections or drawings were ever published and their Plantae Novae Hispaniae and Flora Mexicana were almost published but were interrupted by Mociño's exile from Spain. The collections were fragmented and moved to Montpellier and Geneva where they were studied by Augustin Pyramus de Candolle and nearly 2,000 watercolor drawings eventually ended up being purchased by the Hunt Institute in Pittsburgh. The drawings are known as the Torner collection. The collection was named after Catalan collector Jaime Torner, who held them for years. Mociño also worked on a Flora of Guatemala which included descriptions using the Linnaean system and watercolor drawings. The work was finally published by Maldonado Polo in 1996.

In the 19th century there were several collections, mostly centered around useful plants. Antonio Bertoloni, an Italian botanist residing in Bologna, received a small collection from Joaquín Velasquéz, a commander from the Mexican army. Bertoloni published *Florula guatimalensis* in 1840, which is commonly cited as the original publication. However, recent findings show that previous publications of Alessandrini of 1838 and 1840 include the original descriptions by Bertoloni which predate *Florula guatimalensis*. George Ure Skinner, a British merchant, moved to Guatemala in 1831 and became an indigo and cochineal exporter. He became a well known naturalist and was interested in insects, birds and orchids. He would send all his collections to England. James Bateman, a student of Horticulture at Oxford, asked for orchids to be sent to him from Guatemala. Many of the orchids Skinner sent are depicted in the marvelous (and very big) book known as the Orchidaceae of Mexico and Guatemala. Their collaboration resulted in descriptions of many species including the national flower of Guatemala the monja blanca, known as *Lycaste skinneri alba* and recently changed to *Lycaste virginalis*. Karl Theodore Hartweg, a German from London Horticultural Society visited Guatemala in 1839 and collected many conifers and Jean Jules Linden, a Belgian horticulturist visited 1838-1840 to collect orchids. Hermann Wendland, in 1856-1857 collected mainly orchids, aroids and palms. He also recorded the daily life of Central American people, describing traditions, food, religion, culture and politics.

However, the biggest collection was done in the late 19th century by Osbert Salvin and Frederick DuCane Godman, both British naturalists. Their collaboration to the survey would many years later produce what today is known as the *Biologia Centrali-Americana*. Neither Salvin nor Godman were botanists, so they contacted Sir Joseph Hooker from Kew Gardens, and he suggested contacting William Botting Hemsley to lead that part (Figure 1). Five botanical parts were published including plants from Kew collected in Guatemala as well as Salvin's collections.

Other collectors that came to Guatemala were Hans von Türckheim (German counselor to Guatemala), Padre Heyde (Priest from Joyabaj, Quiché who collected with Ernesto Lux), Eduard and Caecilie Seler (anthropologists from the Ethnological Museum in Berlin) and John Donnel Smith (biologist from Peabody Institute in Baltimore, MD). Guatemala did not have a national herbarium and in 1923 Guatemalan botanist Ulises Rojas established the USCG Herbarium associated with Centro de Estudios Conservacionistas (CECON) part of the Universidad de San Carlos de Guatemala.

## CASE STUDY 1: Cont'd




Figure 1. Example of a drawing from the explorations of the *Biologia Centrali Americana*. *Godmania aesculifolia* (Kunth) Standl. (*G. marcrocarpa*). Plate from Hemsley, W. Botting (William Botting). 1879. Biologia Centrali-Americana, or, Contributions to the knowledge of the fauna and flora of Mexico and Central America. no. [53-57] v. 5, London : Published for the editors by R.H. Porter and Dulau & Co. Courtesy of the Smithsonian Libraries and Archives.

In the early to mid 20th century American institutions led the way to explorations in Latin America. Paul Standley from the Field Museum of Natural History in Chicago started an extensive research program to work on the project called Flora of Guatemala. He was later joined by colleague Julian Steyermark. Jointly they collected more than 50,000 specimens from all over the country. Other botanical experts helped in the collection efforts, namely Cyrus Lundell working in the lowlands in the Petén region and Jason R. Swallen, grass expert from the US National Herbarium. After Standley's death Louis O. Williams finished some later parts of the flora. The Flora of Guatemala project spanned from 1946 to 1976 and consists of twelve volumes, including keys and black and white drawings.

Between the period between 1960 to 1996 Guatemala went through a civil war that was fought between the government and various rebel groups. Very few botanical explorations were done during this period. However, several herbaria were initiated during this period. Herbario UVAL located at the Universidad del Valle de Guatemala, was created in 1974 as a teaching laboratory and established as a formal reference collection and official herbarium in 1990. AGUAT Herbarium was established in 1979 at the Universidad de San Carlos de Guatemala's Agronomy Department. BIGU at the Universidad de San Carlos de Guatemala's Biology department Herbarium was established in 1982.

In the early 1990s a major botanical project led by Missouri Botanical Garden (MOBOT), Universidad Autónoma de México, and the Natural History Museum in London was initiated. The purpose of the project is to document the vascular plants of southern Mexico and Central America. It is the first comprehensive, Spanish-language, regional flora, providing detailed, updated descriptions, identification keys, and checklists for thousands of species, available in both print and online. To this day the project continues to publish different plant family treatments. Many botanists from these institutions have visited Guatemala and collected specimens. Prominent collectors include S. Knapp, J. M. MacDougal, T. Croat, M. Sousa S., F. Chiang, R. Dressler, J. Pruski, W. D. Stevens, T. Daniel, A. Munro. M. Peña-Chocaro.

Additionally, during this period Guatemalan based botanists started to do extensive research in areas that have had collecting gaps. Main collectors include E. Pöll, A. L MacVean, M. Dix, T. Parker, L. Schuster, J. Monzón, M. Veliz, J. J. Castillo, D. R. Hodel. E. Archila, H. Hernández, J. Linares, E. Martínez, A. Molina, M. Sousa-Sanchez, J. Viñals and M. Quezada.

## CASE STUDY 1: Cont'd

During the early 21st century the necessity of having well-curated databases and detailed mapping was evident. The first complete database of an herbarium was done by UVAL herbarium (2004) led by A.MacVean in conjunction with G. Davidse from Missouri Botanical Garden. All the data was shared with the Global Biodiversity Information Facility. Due to restructuring and lack of funds that most botanical institutions have faced around the world, the effort was then abandoned for several years. However, now there is a resurgence of this need to have data readily available online and a new effort on having all Guatemalan specimens is back as the Portal de Biodiversidad de Guatemala.

The flora of Guatemala is still not fully known and continues to surprise in the discovery of new species every year. In the 2020s previously unknown endemic species of a legume tree and a hackberry tree were discovered and later published in 2025 and August 2026 respectively. The importance of the conservation of plant biodiversity in this country cannot be overstated. It is our hope we can continue to expand our knowledge and strengthen our efforts in the protection of Guatemalan plant species for future generations.

**For additional information on history of collection in Guatemala**


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Maldonado, J. L., 1996. Flora de Guatemala de José Mociño. Ediciones Doce Calles, Consejo Superior de Investigaciones Científicas. España

# Results

There are 2,002 native tree species in Guatemala, found across 138 families. The most speciose families are Fabaceae (276 species), Rubiaceae (171 species) and Melastomataceae (88 species).

There are 108 endemic trees in Guatemala, found in 37 families. Magnoliaceae is the most biodiverse family with 16 species, followed by Lauraceae (12 species) and Myrtaceae (10 species).

Ninety-seven species were assessed as threatened with extinction (Table 2). The majority of endemic tree species in Guatemala are assessed as Critically Endangered (47 species, 43%), with a further 45 species assessed as Endangered (42%) and 5 species assessed as Vulnerable (5%). Two species are assessed as Near Threatened (2%) and 9 species as Data Deficient (8%) (Figure 2).

Accounting for the uncertainty around the extinction risk to Data Deficient species, the range of potential proportions of threatened species are calculated; the lower bound is 90% (if all the DD species are not threatened), the midpoint value is 98% and the upper bound is 98% (if all the DD species are threatened).

There are 30 families with threatened species. All 16 Magnoliaceae and 10 Myrtaceae species are threatened with extinction and all but one of the 11 Lauraceae are threatened. Twenty-seven of the 36 families have only threatened species.

Almost all of the threatened species (95%, 92 species) are assessed using criterion B, restricted geographic range. Other categories are used for a few species (Criterion A - 1 species, Criterion C - 3 species, Criterion D - 13 species) indicating a lack of population size or reduction data.

| IUCN Red List Category | Number of species |
|---|---|
| Critically Endangered | 47 |
| Endangered | 45 |
| Vulnerable | 5 |
| Near Threatened | 2 |
| Data Deficient | 9 |
| Least Concern | 0 |

Table 2. The number of species in each IUCN Red List category (see Appendix 3).

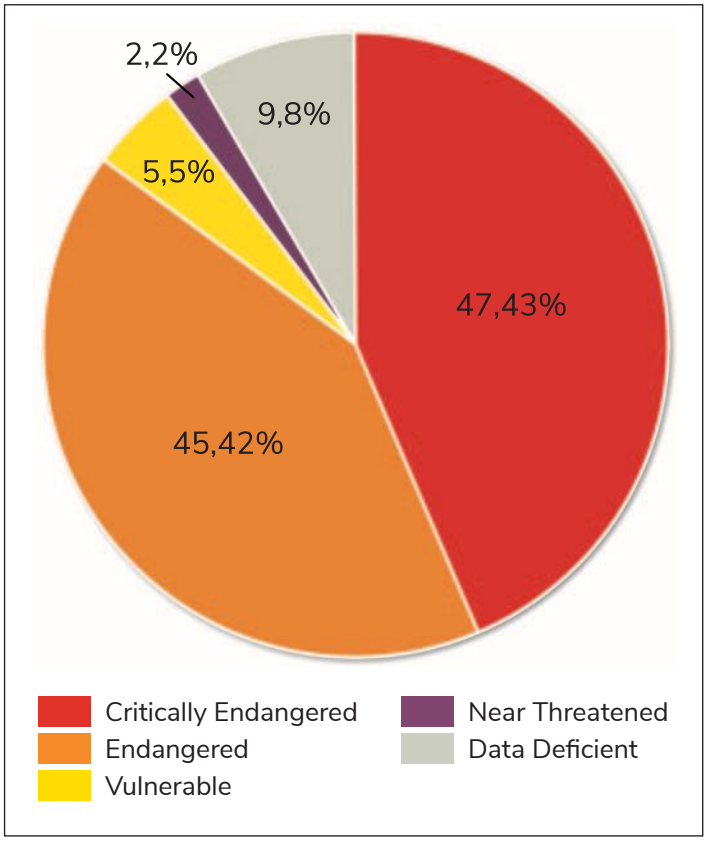



Figure 2. The number and percentage of tree species in each IUCN Red List Category (see Appendix 3).

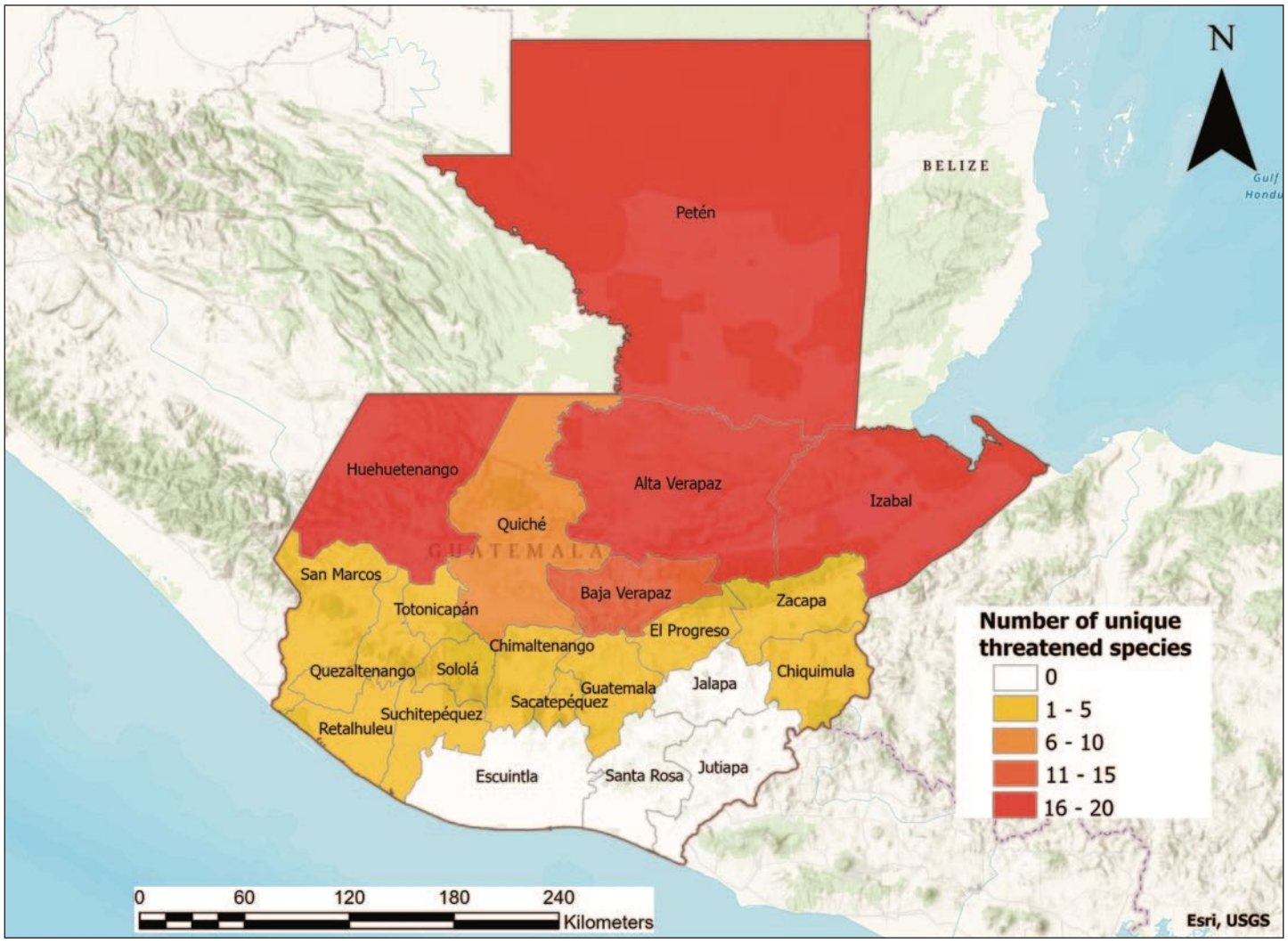



Figure 3. Heat map of threatened endemic species to Guatemala.

Guatemala's threatened endemic tree species are not uniformly distributed across the country, with the majority of threatened species being found in northern departments (Figure 3). The departments with the highest numbers of threatened endemic tree species are Alta Verapaz (20 species), Huehuetenango, Petén and Izabal (16 species).

## Major threats

The most important threat is agriculture (Figure 4) affecting 90% of endemic threatened tree species (87 species), followed by exploitation for timber and firewood (72%, 70 species). Changes in fire regimes (31%, 30 species) and development (25%, 24 species) are the next most important threats.



Deforestation in mountains, Guatemalan Sierra Madre (AnaLu MacVean)

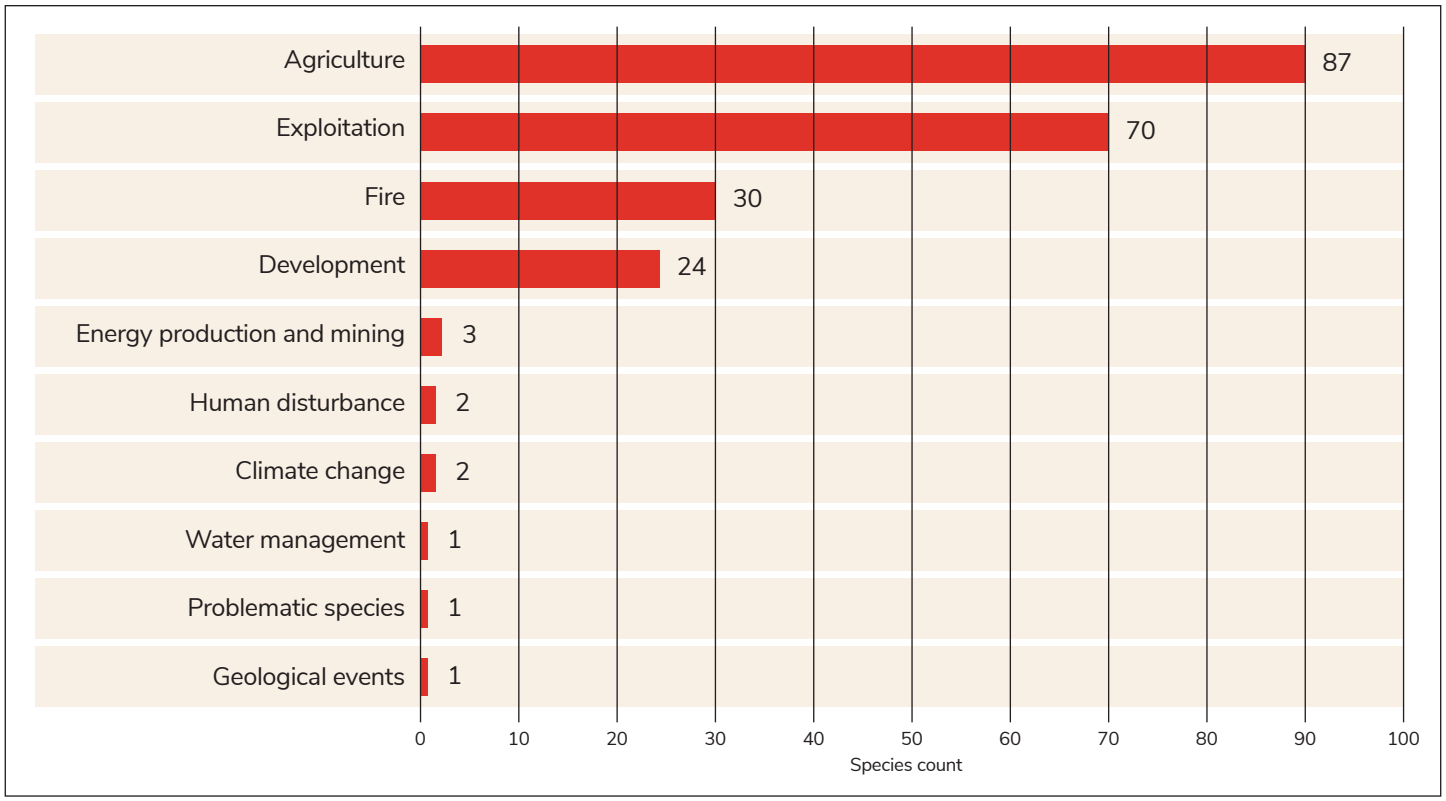



Figure 4. Number of threatened species affected by each threat.



Logging in montane forest, Volcanic Chain Guatemala, (AnaLu MacVean)

## Uses

Only 10 endemic tree species of Guatemala have a use coded in their IUCN Red List assessment. This is likely an underestimate of the true use of endemic tree species in Guatemala.

There are 4 timber species (*Ceiba soluta* (EN), *Magnolia poqomchi* (CR), *Leucaena zacapana* (NT), *Juglans steyermarkii* (EN)), three ornamentals (*Zamia tuerckheimii* (NT), *Erythrina huehuetenangensis* (CR), *Chamaedorea falcifera* (DD)), three species used as fuels (*Ceiba soluta* (EN), *Leucaena zacapana* (NT), *Lonicera guatemalensis* (CR)) and two species used for food (*Myrtillocactus eichlamii* (CR), *Juglans steyermarkii* (EN)). *Erythrostemon guatemalensis* (EN) is recorded as a shade tree, *Leucaena zacapana* (NT) as being used for making handicrafts and *Chamaedorea falcifera* (DD) as for making other household goods.

## Conservation actions

### *Ex situ* conservation

Only 16 endemic tree species of Guatemala (15%) are reported as being held in ex *situ* collections, with the majority being horticultural favorites (palms, magnolias, cacti) (Table 3). Only a few species (4) are found in more than one ex *situ* collection. Single collections are unlikely to hold the full genetic diversity of the wild population of a species, which is key for restoration and recovery actions.

| Family | Taxon Name | Red List Category |
|---|---|---|
| Arecaceae | *Chamaedorea falcifera* | DD |
| Cactaceae | *Myrtillocactus eichlamii* | CR |
| Fabaceae | *Erythrina atitlanensis* | EN |
| Fabaceae | *Erythrina huehuetenangensis* | CR |
| Fabaceae | *Leucaena zacapana* | NT |
| Juglandaceae | *Juglans steyermarkii* | EN |
| Magnoliaceae | *Magnolia harnpariphaniana* | CR |
| Magnoliaceae | *Magnolia javieri* | EN |
| Magnoliaceae | *Magnolia oscarrodrigoi* | CR |
| Magnoliaceae | *Magnolia poqomchi* | CR |
| Magnoliaceae | *Magnolia quichensis* | EN |
| Magnoliaceae | *Magnolia stefaniana* | CR |
| Magnoliaceae | *Magnolia veliziana* | CR |
| Magnoliaceae | *Magnolia weerakitiana* | CR |
| Melastomataceae | *Stanmarkia spectabilis* | EN |
| Zamiaceae | *Zamia tuerckheimii* | NT |

Table 3. Endemic trees of Guatemala reported in ex *situ* collections. (see Box 2 for information on PlantSearch)

### Box 2: PlantSearch

BGCI Plant Search

PlantSearch is BGCI's global database of documented living plant collections, bringing together information from botanic gardens around the world to support conservation, research and collaboration. Together with GardenSearch, it forms part of BGCI's databases for ex *situ* plant conservation, helping institutions share knowledge and work together to safeguard plant diversity. PlantSearch enables botanic gardens to share information about the taxa held in their living collections, making it possible to identify where species are conserved, assess global and regional conservation capacity, locate plant material for research or conservation, and support collaborative initiatives such as metacollections. As more gardens contribute data, PlantSearch becomes an increasingly valuable resource for understanding the collective contribution of botanic gardens to plant conservation.



*Juglans steyermarkii* (AnaLu MacVean)

### *In situ* protection

There are 28 endemic trees that are reported in a protected area, 10 species where it is unknown if they occur in a protected area, and 70 species (65%) that are not found in a protected area. This includes 66 threatened species, highlighting a gap in the protected area network when it comes to threatened endemic trees.

Sixty-two species of endemic trees are found in Key Biodiversity Areas. Three species are now included in the KBA database as trigger species (*Eugenia ursina*, *Erythrina atitlanensis* and *Ocotea euvenosa*). Work continues to add tree trigger species to the KBA database.

There are at least 53 species that could be trigger species for AZE sites. These are sites where over 95% of the population of a Critically Endangered or Endangered species is found within a discrete location.

### Conservation Action Tracker

BGCI's GlobalTree Portal (Box 3) includes the Conservation Action Tracker, detailing information on the conservation actions in progress. There are only 14 endemic species in the conservation action tracker, the majority in the genus *Magnolia*.

There are 68 threatened tree species (Appendix 2) that have no *in situ* or *ex situ* protection. These species are priorities for urgent conservation action.



*Lonicera guatemalensis* (Mario Veliz)

**BOX 3: GlobalTree Portal**

BGCI GlobalTree Portal

BGCI's GlobalTree Portal brings together information from the Global Tree Assessment in one place, giving overviews on a global, national and species level. It is possible to download national checklists of tree species with conservation assessment and action information. On a species level, the GlobalTree Portal includes the Conservation Action Tracker, which monitors conservation actions for each tree species. Contributions from conservation practitioners are welcomed to highlight important work to protect tree species from extinction.

https://www.bgci.org/resources/bgci-databases/globaltree-portal/



*Erythrina huehuetenangensis*
(David Neill, courtesy of Tropicos (https://tropicos.org) and the Missouri Botanical Garden)

## CASE STUDY 2: Magnolias of Guatemala

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The genus *Magnolia* is of great ornamental importance worldwide considering the beauty of its flowers, but at a scientific and biological level these plants have high significance since they are among the oldest living flowering plants on the planet. Recently, the Archila Family Orchid Experimental Station began studying the genus *Magnolia* in Guatemala, working in collaboration with Dr. Antonio Vázquez from the University of Guadalajara. At that time, Guatemala had only one species: *Magnolia guatemalensis*. By analyzing collected materials and comparing them with herbarium specimens, new species began to be named and new records reported, reaching a total of 33 species to date, placing the country third in Latin America in terms of Magnolia diversity, after Colombia and Mexico.



*Magnolia stefaniana* flower (Fredy Archila)

We also realized a grim reality: most species were threatened, some even having only a single population or, in more dramatic cases, just one individual. Therefore, in addition to taxonomic work, we proceeded with the task of obtaining mature fruits, a complex activity considering the enormous distances where the species were found and the requirement that the fruits be ripe. In many cases, daily monitoring was carried out with several field teams, sometimes taking up to five years to obtain a single fruit.

From this work, the National Magnolarium was established in a protected area located in the city of Cobán, where 13 Guatemalan species have currently been planted, with 10 individuals of each species. Plants have been successfully reproduced to provide to local communities so they can have alternative forest crops and also include *Magnolia* species within their forest production systems. This work has been carried out in Quiché and Alta Verapaz, departments with the highest concentration of species.

An example of rescue effort is *Magnolia stefaniana* Archila, Á.J.Pérez & A.Vázquez, a species described from Alta Verapaz of which only one tree remains in the entire world. After five years of monitoring, in 2025 several fruits were obtained, and it is now being propagated at the Archila Family Orchid Experimental Station, with plans to later send plants back to the original forest and establish 10 plants in the Magnolarium. Currently funds are provided by the Experimental Station but hopefully there will be future collaborations that will help us continue with our work.

# Recommendations and Conclusions



*Myrtillocactus eichlamii* (Mario Veliz)

As the first comprehensive assessment of the conservation status of Guatemala's endemic tree flora, these assessments mark an important step in ensuring that none of Guatemala's endemic tree species go extinct.

Further actions are required to protect the threatened species of Guatemala, including:

- **Further botanical explorations and research**
  - Gathering more data on the nine Data Deficient species to determine their conservation status.
  - Many species of endemic trees of Guatemala are known from few collections, many collected over 50 years ago. Up-to-date information is key for planning conservation actions so efforts should be made to survey these threatened tree species.
- **Species monitoring**
  - Recording population sizes and reductions to monitor changes in the species over time, which can be incorporated into future assessments.
  - Reassessing each species a minimum of every 10 years.
- **Conservation Actions**
  - Designing integrated conservation action plans for threatened species to support species recovery.
  - Bringing more threatened species into *ex situ* collections.
  - Maximizing genetic representativeness of *ex situ* collections.
  - Raising the awareness of protected area managers of threatened tree species found within their areas.
- **Local actions**
  - Increasing local capacity in relevant conservation skills (propagation, horticulture etc).
  - Sharing information about threatened species with local communities.
- **Policy**
  - Including threatened tree species in existing policy mechanisms

There are many examples of successful conservation action happening for endemic trees in Guatemala (see Case Studies 2, 3 and 4). The Red List of Endemic Trees of Guatemala gives a baseline for prioritizing further conservation efforts and inspiring action to improve the conservation status of endemic tree species in Guatemala.

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## CASE STUDY 3: *Parathesis* in Purulhá

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*Parathesis travisiae* (Primulaceae) is a small tree endemic to cloud forests of Purulhá and Salamá, both municipalities in the department of Baja Verapaz, Guatemala (Rivas-Romero et *al*., 2025). This plant was first described by Cyrus Lundell in 1972, from a specimen collected by Elías Contreras in the village of Chilascó, Salamá, on July 27, 1971. In addition to its endemism, it stands out because its fruits are consumed by *Pharomachrus mocinno*, the national bird of Guatemala (García, 1998). After its description, there were few records, and some of them were erroneously identified as *P. subulata* (García, 1998). During the project "Conservation of threatened tree species to secure the survival of Guatemala's national bird," the plant's taxonomic identity was verified and its distribution area was updated (estimated at 55 km$^2$). Its conservation status was also evaluated and is considered Endangered (EN). Its main threats are land-use change toward agricultural activities and climate change, which has increased the frequency and intensity of fires (Rivas-Romero et *al*., 2025). To recover its populations, it is important to explore potential distribution areas, mainly in the Sierra de Las Minas Biosphere Reserve, which is adjacent to the distribution area of *P. travisiae*, as well as to evaluate methods of asexual propagation, since sexual propagation is difficult due to low fruit production and many of the seeds are damaged by wasps.



*Pharomachrus mocinno*, Resplendent Quetzal, national bird of Guatemala (Javier Rivas)



*Parathesis travisiae* flowers (Javier Rivas)



*Parathesis travisiae* fruits (Javier Rivas)

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## CASE STUDY 4: From Fragmented Data to Conservation: A Collaborative Checklist of Guatemala's Native Trees

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Guatemala is home to an extraordinary diversity of native tree species, yet much of this botanical knowledge remains scattered across publications, databases, and institutions. The nation's tree flora lacks a comprehensive, open-access checklist developed and validated by Guatemalan experts. A vetted checklist provides an essential foundation for conservation, research, and management, particularly given the historic exploitation of Guatemala's natural resources.

In order to fulfill this need, the Center for Species Survival: Trees (CSS: Trees) at The Morton Arboretum, and the Herbarium at the University of San Carlos Guatemala collaborated to develop a comprehensive checklist of native trees of Guatemala, assessing their diversity, distribution, and conservation status. The project began with a preliminary list of 2,515 potential tree species of Guatemala, compiled from GlobalTreeSearch, the IUCN Red List, and Trees of Guatemala by Tracey Parker. Additional information regarding each species' nomenclature, taxonomy, distribution and conservation status was compiled from a variety of sources:



Participants from the first workshop in November 2025 at the Botanic Garden of Guatemala (The Morton Arboretum)



Post-workshop community dinner with participants in the Botanic Garden of Guatemala (The Morton Arboretum)

Nomenclature
- Expert knowledge
- Plants of the World Online (POWO)
- World Flora Online (WFO)

Taxonomy
- POWO
- WFO
- Tropicos
- Flora Mesoamericana (Davidse et al., 1994–present)

Distribution
- Expert knowledge
- GlobalTreeSearch
- Tropicos
- Biodiversity Portal of Guatemala (Biodiversidad.gt)
- Flora Mesoamericana
- herbarium records
- Trees of Guatemala (Parker, 2008)

Conservation status
- IUCN Red List

## CASE STUDY 4: Cont'd

To validate this preliminary checklist, we organized two two-day workshops at the Guatemala City Botanic Garden, where we invited 22 Guatemalan experts whose backgrounds ranged from botany, agronomy, conservation, and ecology, from universities, NGOs and federal agencies. The objective of both workshops was to review each species and determine whether it should be included in the native checklist according to the following criteria:

- The species meets the IUCN SSC's Global Tree Specialist Group (GTSG) definition (see page 9)
- The species is native to Guatemala according to POWO
- The accepted scientific name follows POWO taxonomy
- The species has been confirmed from Guatemala through at least one herbarium specimen

Participants agreed that arborescent ferns and palms should also be included because of their essential role in cloud forest composition, although they are not included in GlobalTreeSearch or the GTSG definition. Each species was also assigned to a habitat, which were also devised during the workshop, drawing on the biome framework described by Luis Villar Anleu in La Flora Silvestre de Guatemala (2008) and the strategic forest ecosystems outlined by the Instituto Nacional de Bosques (INAB) in its "Guía para la identificación de los Bosques Estratégicos" (2018)

Additionally, workshop participants identified several species that they were confident occur in Guatemala, despite the absence of digitized voucher specimens from our sources. To verify these observations, herbarium specimens were digitized and reviewed from three Guatemalan herbaria (USCG, UVAL, and BIGU) as well as the herbarium at the Field Museum of Natural History (F). This effort confirmed 107 previously undocumented species records for Guatemala, while 27 are found in bordering countries and were identified as priorities for future survey work.

These workshops provided a valuable opportunity to strengthen the network among the small botanical community in Guatemala and establish a



Participants cross-referencing sources to validate the criteria for the inclusion of a tree species on the checklist (The Morton Arboretum)

shared commitment to documenting and conserving the country's tree biodiversity. The checklist will be published in a peer-reviewed journal to demonstrate Guatemala's unique botanical diversity and will serve as the foundation to raise public awareness and propel conservation action. By bringing together experts from across the country from a variety of sectors and encouraging an open exchange of perspectives, these workshops enhanced the connections among the small but mighty team of plant scientists of Guatemala.

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# Appendix 1:
# Endemic Tree Species of Guatemala

For full assessments, see IUCN Red List (2026). Each species includes synonyms if available, common names and abbreviations of IUCN Red List Categories and Criteria (see Appendix 3). AOO = Area of Occupancy and EOO = Extent of Occurrence.

## ANNONACEAE

***Mosannona guatemalensis*** (Lundell) Chatrou
**Synonym:** *Malmea guatemalensis* Lundell
**DD**
This tree species is endemic to Alta Verapaz, Guatemala with the only record on a forest near an edge of the agricultural frontier. A possible threat for this species is habitat loss. It is unknown whether the lack of data is due to the rarity of the species or due to sampling biases. Therefore, this species is Data Deficient.




## ARECACEAE

***Chamaedorea falcifera*** H.E.Moore
**Common names:** Jatatilla, Molinillo, Pacaya, Tepejilotillo
**DD**
This palm is found in Alta Verapaz and Izabal, Guatemala. Some authors include it as *C. pinnatifrons*, although, Hodel (1992) recognized *Chamaedorea falcifera* as a new species. More information about this species is needed to accurately assess its conservation status. It is assessed as Data Deficient.



## ASTERACEAE

***Eremosis angusta*** Gleason
**Synonym:** *Vernonia angusta* (Gleason) Standl.
**CR B2ab(iii)**
This rare Guatemalan endemic tree species endemic to Guatemala, reported as a single collection from Gualán Zacapa in the past 100 years. The species has an AOO of 4 km$^2$. The dry subtropical forest region where this species was reported has experienced declines due to threats such as logging, agriculture, fires and is also threatened by urbanization. This species is Critically Endangered.




***Lepidonia corae*** (Standl. & Steyerm.) H.Rob. & V.A.Funk
**Synonym:** *Vernonia corae* Standl. & Steyerm.
**CR B2ab(iii)**
This endemic species is known from only a single collection in wet thickets on Volcán Tajumulco, San Marcos, Guatemala. 1,200-2,700 m above sea level. It has an AOO of 4 km$^2$. It has experienced severe and ongoing declines in its habitat due to agriculture and fires. This species is Critically Endangered.




***Verbesina calciphila*** Standl. & Steyerm.
**Common name:** Dalia de Monte
**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**
This small tree has been collected at only two localities in damp montane oak-pine forests of Huehuetenango and Totonicapán 2,400-3,700 m above sea level. It has an AOO of 20 km$^2$ and EOO of 128 km$^2$ using known records. The EOO could be up to 600 km$^2$ including Totonicapán. The species is known from two to three locations and has experienced ongoing declines in its habitat due to fires, agriculture and logging. It is Endangered.




## BIGNONIACEAE

***Amphitecna costata*** A.H.Gentry
**EN B2ab(ii,iii)**
This small tree is endemic to lowland forests of Izabal, Guatemala where it is known from just two locations with an AOO of 8 km$^2$. It can be confused with the similar *Amphitecna macrophylla*. It is experiencing ongoing decline in its habitat and AOO due to logging and agriculture. This species is Endangered.



***Amphitecna megalophylla*** (Donn.Sm.) A.H.Gentry
**Synonym:** *Neotuerckheimia megalophylla* Donn.Sm.
**EN B1ab(i,ii,iii)+2ab(i,ii,iii)**
This small pachycaul (disproportionate thick stem) tree endemic to Alta Verapaz can be found in wet forests of the north slope of Sierra de las Minas in Guatemala at elevations between 300-1,400 m above sea level near coffee plantations. Deforestation and construction of new roads have decimated many parts of Alta Verapaz forests. It is known from four locations, all of which are threatened by agricultural expansion and construction of roads. Given the small AOO (16 km$^2$) and EOO (2,058 km$^2$) and the small number of known locations, it is listed as Endangered.




## BORAGINACEAE

***Cordia cardenasiana*** J.S.Mill.
**CR B2ab(ii)**
This tree grows on rocky hillside in seasonal dry subtropical forests of Petén, Guatemala where it has only been collected once. It has an AOO of 4 km$^2$ and has experienced ongoing declines in its habitat due to agriculture, logging and fires. This species is Critically Endangered.




***Cordia skutchii*** I.M.Johnst.
**CR B2ab(iii,iv)**
This species is endemic to lower montane forests of Quetzaltenango, Guatemala 1,000-1,500 m above sea level where it has been collected at only two localities in very close proximity, giving an AOO of just 4 km$^2$. It has experienced ongoing decline in habitat due to logging, fires and agriculture. This species is Critically Endangered.




## BURSERACEAE

***Bursera itzae*** Lundell
**Common name:** Chacaj
**CR B2ab(ii,iii,iv)**
This tall tree can be found in lowland near El Remate, Petén, bordering Lago Peten Itzá on gypsum scarpent along the north shore where it is found in just two localities with an AOO of just 4 km$^2$. The species is experiencing ongoing decline in its habitat due to logging and agriculture. This species is Critically Endangered. This species is closely related to the widely used *Bursera simaruba* and shares the same common name of Chacaj, so it is possible that it is also used in the area. However, there is no evidence to confirm this.



## CACTACEAE

***Myrtillocactus eichlamii*** Britton & Rose
**Common name:** Tuno de Castilla
**CR C2a(i)**
This species of cactus is endemic to the driest area of eastern Guatemala and is found at elevations of 100-500 m above sea level. The fruits of this species are edible. Due to ongoing habitat loss for agriculture, especially plantations of neem, *Aloe vera*, limes and melon. There are around 65 mature individuals of *Myrtillocactus eichlamii* in each of the known subpopulations, and the overall estimate infers no more than 200-300 mature individuals. Populations are extremely threatened and rapidly declining with an estimated loss of 25% hence the species is listed as Critically Endangered. The species is propagated in-vitro and is listed in Appendix II of the CITES Appendices.




## CANNABACEAE

***Celtis guatemalensis*** Eisermann, Zamengo & Chamorro
**DD**
This tree species is endemic to Sacatepéquez and is found in a small area in Antigua Guatemala. It is known from only 9 mature individuals, although it is probable that the species occurs in other areas. Because of the uncertainty around the population size and the full distribution of this species, it is assessed as Data Deficient.




## CAPPARACEAE

***Quadrella steyermarkii*** (Standl.) Iltis & Cornejo
**Synonym:** *Capparis steyermarkii* Standl.
**EN B1ab(ii,iii)+2ab(ii,iii)**
This small tree is endemic to Guatemala where it has been collected in Livingston, Río Dulce, Izabal as well as close to Cadenas on the Belize border. With localities in Livingston and Río Dulce the AOO is estimated at 8 $km^2$ and the EOO is estimated at 100 $km^2$. It is experiencing ongoing declines in its habitat and AOO due to logging and agriculture. This species is Endangered.



## CAPRIFOLIACEAE

***Lonicera guatemalensis*** Véliz & E.Carrillo
**CR D**
This small tree is found in subalpine forests dominated by *Pinus* and *Abies* in Huehuetenango. The AOO is estimated at 28 km$^2$ and the EOO is estimated at 58 km$^2$. This plant is used for firewood, and the habitat where it is found is used for grazing. There are fewer than 50 mature individuals. This species is Critically Endangered.




## CELASTRACEAE

***Monteverdia tikalensis*** (Lundell) Biral
**Synonym:** *Maytenus tikalensis* Lundell
**EN B1ab(iii)+2ab(iii)**
Small tree native to northern Guatemala found in tropical forest 110-300 m above sea level. The current EOO is 50,499 km$^2$. The AOO is calculated as 12 km$^2$. The species has not been collected in the last 58 years, but it appears to be abundant. Therefore, the EOO and AOO are likely to be larger upon greater collection effort respectively. Currently, it is found in 2 locations. The main threat has been deforestation due to land use change for human activities and the possible construction of a dam near Sayaxché. The taxon has a restricted range and is considered to be at great risk due to the small number of subpopulations. This species is Endangered.




## CHRYSOBALLANACEAE

***Moquilea guatemalensis*** (Lundell) Sothers & Prance
**Synonym:** *Licania guatemalensis* Lundell
**CR B2ab(iii,iv,v)**
This tree grows in high forest at the border between Seja and Fronteras on the Petén-Guatemala road in the Izabal department. This species is endemic to Guatemala with an AOO of 4 km$^2$. It has experienced an ongoing decline in habitat. Although there have been no detailed studies on the threats to this species, most of the lowland forests in Izabal are threatened by the expansion of agriculture, ranching and logging. This species is Critically Endangered.



## CLETHRACEAE

***Clethra skutchii*** Standl. & Steyerm.

**EN B2ab(iii)**

This plant species is endemic to Guatemala where it has been recorded from two locations in Quetzaltenango with an AOO of 8 km$^2$. It is experiencing ongoing declines in its habitat due to logging, agriculture and fires. This species is Endangered.




## CLUSIACEAE

***Clusia mayana*** Lundell

**CR B2ab(iii)**

This small tree has been recorded growing in association with zapotales, in Petén, Guatemala. Only three collections of this species exist, all of which lie in close proximity to each other in Petén, although only one has been correctly georeferenced with a minimum AOO of 4 km$^2$. It is experiencing ongoing declines in its habitat due to logging and agriculture. This species is Critically Endangered.




## CLUSIACEAE

***Clusia uniflora*** Lundell

**CR B2ab(iii)**

This species grows in lowland subtropical forests of Petén, Guatemala near La Cumbre. The only record on GBIF (2020) is poorly georeferenced. The AOO is 4 km$^2$. It has experienced ongoing decline in habitat due to logging, agriculture and fires. This species is Critically Endangered.




## EUPHORBIACEAE

***Sebastiania chahalana*** Lundell

**DD**

This endemic tree grows in humid forests near Río Chijú, Chajal, Alta Verapaz, Guatemala. The only record is from the type specimen and the specific location is unknown. It is Data Deficient.



## FABACEAE

### *Calliandra carcerea* Standl. & Steyerm.

**Common name:** Tamarindo de Montaña

**CR B2ab(iii)**

This species is known only from the type locality of mountainous forests of Volcán Siglo at El Progreso in Guatemala 2,000-2,200 m above sea level. It has an AOO of just 4 km$^2$ and is experiencing ongoing declines in its habitat due to logging and agriculture expansion. This species is Critically Endangered.




### *Erythrina atitlanensis* Krukoff & Barneby

**EN B1ab(i,ii,iii)+2ab(i,ii,iii)**

This species is a tree endemic to Sololá, Guatemala between 1,500-1,800 m above sea level. It has an EOO of 238 km$^2$. It has an AOO of only 20 km$^2$. It has experienced an ongoing decline in habitat due to the impacts of logging and agriculture. Its distribution is very limited, occurring in only five locations. This species is Endangered.




### *Erythrina castillejiflora* Krukoff & Barneby

**CR B1ab(iii)+2ab(iii)**

This endemic tree is found in the montane forests of Huehuetenango, Guatemala at elevations between 1,200–1,300 m above sea level. It has an AOO and EOO of 4 km$^2$. The nearby areas have experienced an ongoing decline in habitat due to the impacts of logging, agriculture and mining. Its distribution is very limited, occurring in only one location. This species is Critically Endangered.




### *Erythrina cobanensis* Krukoff & Barneby

**EN B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**

This species is a tree endemic to montane forests of Alta Verapaz, Guatemala at elevations between 1,200-1,500 m above sea level and has an EOO of 140,469 km$^2$. It has an AOO of only 16 km$^2$. It has experienced an ongoing decline in habitat due to the impacts of logging and agriculture. Its distribution is very limited, occurring in only four locations in Alta Verapaz, Guatemala. This species is Endangered.



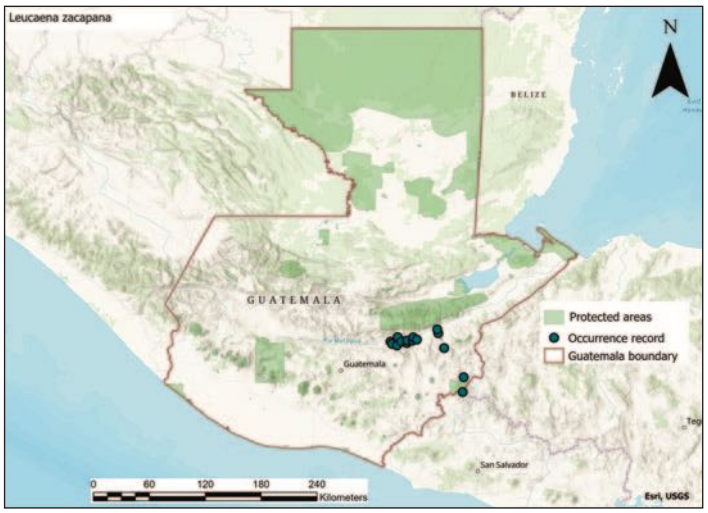
***Erythrina huehuetenangensis*** Krukoff & Barneby
**CR B1ab(iii)+2ab(iii)**
This endemic spiny tree is found in montane forests of Huehuetenango, Guatemala 1,260 m above sea level. It has an AOO and an EOO of only 8 km$^2$. It has experienced an ongoing decline in habitat due to the impacts of logging, agriculture and mining in the nearby areas. Its distribution is very limited, occurring in only one locality, however this species is used as live hedge. This species is Critically Endangered.




***Erythrostemon guatemalensis*** Eisermann & G.P.Lewis
**EN B1ab(iii)+2ab(iii)**
This endemic species of tree is commonly found in seasonally dry forests on hillsides and steep slopes of Antigua Guatemala. Finca El Pilar contains the largest forested area in Antigua Guatemala. The forest where *E. guatemalensis* occurs has a few oak (*Quercus* spp.) and pine (*Pinus* spp.) trees; above 1,800 m elevation this forest changes gradually into more humid pine-oak forest, where *E. guatemalensis* is rare or absent. This endangered endemic species to Guatemala is only found in four localities. It has a small AOO of 28 km$^2$ It is threatened by conversion of forest into agricultural land and settlements.




***Leucaena zacapana*** (C.E.Hughes) R.Govind. & C.E.Hughes
**Synonym:** *Leucaena collinsii* subsp. *zacapana* C.E.Hughes
**NT B1b(i,ii,iii)+2b(i,ii,iii)**
The species is narrowly restricted to the lower dry semiarid thorn scrub near Río Motagua Valley, locally abundant around the flanks of the Motagua Valley in the departments of Chiquimula, Progreso and Zacapa but is uncommon in the Santa Rosa department. It sometimes forms pure monospecific stands which are coppiced. It has an EOO of 2,104 km$^2$. This species is threatened by land use conversion to settlements and agriculture. It is also locally cultivated for timber. The species is Near Threatened.




***Lonchocarpus hydrophilus*** M.Sousa & J.Morales
**CR B2ab(iii)**
This tree is found in Nentón, Huehuetenango, Guatemala at 960 m above sea level where it has been collected from only one locality with an AOO of just 4 km$^2$. It has experienced ongoing decline in habitat due to forest fires. This species is Critically Endangered.



## GARRYACEAE

***Garrya corvorum*** Standl. & Steyerm.
**EN B2ab(iii)**
This endemic tree species grows on rocky soil in *Juniperus* and *Pinus* forests at high elevations in the Sierra de los Cuchumatanes, Guatemala. It is from two localities with an AOO of 12 km$^2$. Its high altitude montane forests are threatened by logging and agriculture. The species is Endangered.




## JUGLANDACEAE

***Juglans steyermarkii*** W.E.Manning
**EN B2ab(ii,iii,iv)**
This is a rare tree species found in moist montane forests of Chimaltenango, Sololá and Huehuetenango in Guatemala at elevations between 1,550–2,200 m asl. The montane forests are under pressure for human growth, fire, and logging. It has a small AOO of 44 km$^2$. This fruit of this tree species is edible and, as with the closely related *Juglans olanchana*, is used for light construction. The species is Endangered.




## LAMIACEAE

***Aegiphila hastingsiana*** Moldenke
**DD**
This is a small tree species collected in Guatemala, with no detailed habitat or altitude information. It had no province level information when collected in 1864. With no data available to indicate the locality of this specimen it is not possible to produce a map or assess the AOO, EOO or number of locations. The exact habitat of this species is unknown, so there is no information on direct threats. However, it is very likely that this species falls into a montane environment that might be threatened by agriculture expansion. This species is Data Deficient.

## LAURACEAE

***Damburneya guatemalensis*** (Lundell) Rohwer
**Synonyms:** *Aniba guatemalensis* Lundell;
*Aiouea guatemalensis* (Lundell) Renner
**VU B1ab(i,ii,iii)+2ab(i,ii,iii)**
This tree species is endemic to Guatemala and is an understory tree in the high forests or 'corozal'. It is experiencing continuing decline in EOO, AOO, habitat extent and quality due to deforestation through conversion to agriculture and plantations. Given this decline, its restricted range and six locations, it is listed as Vulnerable.



***Damburneya parvissima*** (Lundell) Trofimov
**Synonyms:** Aniba parvissima Lundell;
Aiouea parvissima (Lundell) Renner
**EN B1ab(iii)+2ab(iii)**
This tree is known only from five locations in Izabal and Petén, Guatemala in subtropical seasonal forests. It has an EOO and AOO of 8 km$^2$. It is threatened by agricultural expansion and logging. This species is Endangered.




***Ocotea amplifolia*** (Mez & Donn.Sm.) van der Werff
**CR B2ab(iii)**
This species has been recorded at only one location in El Jute, Quiché, Guatemala in high altitude montane forests. It has the minimum AOO of 4 km$^2$. Although there is no specific georeferenced locality data, montane forests throughout Quiché, Guatemala are being threatened by logging, small-scale mining and agriculture. Therefore, the habitat is considered to be experiencing ongoing declines. The species is, therefore, Critically Endangered.




***Ocotea bajapazensis*** Lundell
**Common name:** Laurel
**CR B1ab(ii,iii)**
This species is endemic to Baja Verapaz, Guatemala. It is found in one single location in a very small area with an AOO of 16 km$^2$. The species is threatened by agricultural expansion. This species is considered Critically Endangered.




***Ocotea barbatula*** Lundell
**Common name:** Laurel
**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**
This small tree is known only from humid forests of Baja Verapaz, Guatemala, from only three locations with an AOO of 12 km$^2$. Although there is a lack of exact habitat information, its moist montane forest is threatened by agriculture, logging and fires, which are thought to be causing ongoing declines in its AOO and number of locations. This species is Endangered.



**_Ocotea contrerasii_** Lundell
**Common name:** Laurel
**EN B2ab(ii,iii,iv)**
This tree is found in the high forests of Baja Verapaz. These forests are under threat of deforestation and habitat destruction due to small-scale agriculture and logging. This species has a small AOO and EOO of 8 km$^2$. The AOO is based on three collections only and this species is likely to be under collected. Given that it is only known from two locations that it has a small AOO, and the threats to its habitat causing ongoing declines in its AOO and locations, it is considered as Endangered.




**_Ocotea euvenosa_** Lundell
**CR B2ab(iii)**
This small tree is known only from its type locality in lowland forest near Sebol Alta Verapaz, Guatemala, which gives an AOO of 4 km$^2$. The habitat of this species is inferred to be declining due to agricultural shifts in the region, alongside logging and road building. This species is Critically Endangered.




**_Ocotea nigrita_** (Lundell) Lundell
**Synonym:** *Nectandra nigrita* Lundell
**Common name:** Laurel
**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**
This species is known only from four locations in high forests 200-300 m above sea level in Izabal and Petén, Guatemala. It has an EOO of 895 km$^2$ and AOO of 16 km$^2$. Its lowland forest habitats are being converted to small-scale agriculture and are threatened by logging, which are thought to be causing continuing declines in its AOO, habitat and number of locations. This species is Endangered.




**_Ocotea oblongifolia_** van der Werff
**CR B2ab(iii)**
This species has only been found from the type collection in Quetzaltenango, Guatemala at 1,400-1,600 m above sea level. Additional records near the Mexican border which have not been verified and are therefore excluded. It has an AOO of 4 km$^2$ and is found in one location threatened by logging, agriculture, firewood collection and fire, causing continuing declines in its habitat. This species is Critically Endangered.



## *Ocotea racemiflora* Lundell

**CR B2ab(iii)**

This small tree is only known from the type collection near the high moist tropical forests (100-300 m above sea level) at Chapel airport in Alta Verapaz, Guatemala, with an EOO of 4 km$^2$. The area where this species is known is threatened by the advance of palm oil plantations and also an increase in logging. This species is Critically Endangered.




## *Ocotea verapazensis* Standl. & Steyerm.

**DD**

This small tree is found in three locations: mixed montane forests of Tactic, Alta Verapaz, San Marcos and Izabal. Very few georeferenced specimens exist so more information is needed. The montane forest habitats are threatened by logging and agriculture. It is Data Deficient.




## *Pleurothyrium westphaliae* van der Werff

**EN B2ab(ii,iv)**

This tree grows in dense humid montane forest of Alta Verapaz, Guatemala, the northernmost distribution of the genus. It has an AOO of 8 km$^2$. Its forest habitat is threatened by logging and agriculture, which are thought to be causing continuing declines in its AOO and locations. It is therefore Endangered.




# MAGNOLIACEAE

## *Magnolia alfredo-mironii* Archila, Tribouill. & A.Vázquez

**CR B1ab(iii)+2ab(iii); D**

This species is endemic to one locality in cloud forests of Alta Verapaz. The forests in the region are threatened by avocado plantations and export vegetable plantations. This species has been threatened by caterpillars, which have defoliated 60% of the only tree. It is therefore Critically Endangered.



***Magnolia archilana*** A.Vázquez, Tribouill. & Véliz

**EN B1ab(iii)+2ab(iii); D**

This small tree species is endemic to Guatemala and is known only from the type locality, in the municipality of Tactic, Alta Verapaz, and in the Sierra de Las Minas, in the municipality of Teculután, Zacapa. It grows within the cloud forest of the Sierra de Las Minas Biosphere Reserve, in two private reserves and possibly in the Ram Tzul reserve in Baja Verapaz. It has an EOO of 209 km$^2$ and an AOO of 12 km$^2$ plus predicted declines in the area and quality of habitat due to forest clearing for leather-leaf fern cultivation. There are also estimated to be fewer than 250 individuals of this species. This species is Endangered.




***Magnolia emilceana*** Archila, Tribouill. & A.Vázquez

**CR B1ab(iii)+2ab(iii); D**

This small tree is endemic to Purulhá, Baja Verapaz in cloud forests. The AOO is less than 4 km$^2$. Due to its reduced population (less than 50 individuals) and a reduction of forests in the region this species is Critically Endangered.




***Magnolia harnpariphaniana*** A.Vázquez, Tribouill. & Véliz

**CR D**

This small tree is endemic to Purulhá, Baja Verapaz and Tactic, Alta Verapaz. It has an AOO of 12 km$^2$ in a region of fragmented cloud forests and only 15 individuals. This species is Critically Endangered.




***Magnolia izabalensis*** Archila, Tribouill. & A.Vázquez

**CR B1ab(iii)+2ab(iii)**

This species is known only from the type specimen collected in 1971. Today the region is totally deforested and in place there are extensive plantations of oil palm and cattle. For this reason the species is Critically Endangered and possibly extinct.



***Magnolia javieri*** A.Vázquez, Tribouill. & Archila
**EN B1ab(iii)+2ab(iii)**
This tree is known from Tactic, Alta Verapaz and Uspantán, Quiché. The EOO and AOO are restricted to 8 km$^2$ These two locations are under threat by deforestation and agriculture. This species is Endangered.




***Magnolia oscarrodrigoi*** A.Vázquez, Tribouill. & Archila
**CR B1ab(iii)+2ab(iii); D**
This tree is endemic to the Maya Highlands, Verapaces region (Cobán and San Pedro Carchá) Alta Verapaz. It is found in a forest fragmented by urban expansion and has an EOO and AOO of 4 km$^2$. This species is considered Critically Endangered.




***Magnolia juliana*** Archila, Tribouill. & O.E.Alvarado
**VU D2**
This endemic species is found in ChiOnk, Cobán, Alta Verapaz in private property that has 30 ha of cloud forest. After extensive explorations, no new trees have been found elsewhere. Most of the forests around this location are being converted into agricultural land. Therefore, this species is considered Vulnerable. If the protection of this species changes in the future it may be then considered Critically Endangered.




***Magnolia ottoi*** A.Vázquez, Tribouill. & Archila
**CR B2ab(iii,v); C2a(i,ii); D**
This large species is endemic to Purulhá, Baja Verapaz, Guatemala. This is the only known location of this species and only one known subpopulation. A population decline has been inferred based on the knowledge that most of the cloud forests have been cleared to cultivate the leather leaf fern *Rumohra adiantiformis*. The loss of habitat is a major threat to this species. It is Critically Endangered (CR) due to its geographic range, small population size and decline, and a very small or restricted population.



***Magnolia poqomchi*** M.J.Serrano & A.Vázquez
**Common name:** Coj
**CR B1ab(iii,v)**
This tree is native to the highlands of San Cristóbal Alta Verapaz. This species is restricted in its EOO and AOO and is known from a single location. It is known from an area of less than 50 km$^2$. The species has been declining from abundant to rare. Unregulated, selective extraction of timber resulted in habitat decline. Therefore, this species is Critically Endangered.




***Magnolia quichensis*** Tribouill., A.Vázquez & Archila
**EN B1ab(iii)+2ab(iii)**
This tree is found in Chajul, Quiché in three different localities. The EOO is 24.9 km$^2$, and the AOO is 12 km$^2$. It is found in cloud forest remnants near a small town. The surrounding forests are fragmented due to deforestation and the conversion of land to agricultural practices. This species is Endangered.




***Magnolia stefaniana*** Archila, Á.J.Pérez & A.Vázquez
**CR B1ab(iii)+2ab(iii); D**
This species is found near a river in the cloud forest of Carchá, Alta Verapaz. The remnant forest where this species is found is affected by conversion of land and urban growth. The only individual grows in a small forest remnant. Therefore this species is considered Critically Endangered.




***Magnolia steyermarkii*** A.Vázquez
**Common name:** Palo de Peña
**CR B1ab(iii)**
This large tree is known from the type locality of Sierra de los Cuchumatanes, Huehuetenango. The tree has not been collected ever since and it is possible that it is extinct. The area where this species is found is highly fragmented due to agricultural expansion. Therefore this species is considered Critically Endangered.



**_Magnolia tribouillieriana_** A.Vázquez, Archila & Véliz
**Common name:** Coj Macho
**CR B1ab(iii)+2ab(iii); D**
This species is found in Cobán, Alta Verapaz and is narrowly restricted. Only five individuals have been observed, they are fragmented, and they are threatened by rapid urban expansion. Therefore this species is considered Critically Endangered.




**_Magnolia veliziana_** A.Vásquez, Tribouill. & Archila
**CR B1ab(iii)+2ab(iii); D**
This small tree is found in cloud forest in Chajul, Quiché. The EOO and AOO are 4 km$^2$, and there is only one location. This species is Critically Endangered due to the very small number of known mature individuals in an area experiencing ongoing threat from land clearance and conversion for pasture and agriculture.




**_Magnolia weerakitiana_** Archila, A.Vázquez & Tribouill.
**CR B1ab(iii,v)+2ab(iii,v); D**
This tree is found in one locality in the center of the city of Cobán, Alta Verapaz. It is threatened by rapid urbanization in the area. It is Critically Endangered.




## MALVACEAE

**_Ceiba soluta_** (Donn.Sm.) Ravenna
**Synonym:** *Chorisia soluta* Donn. Sm.
**EN B2ab(ii,iii,iv)**
This tall tree is an endemic found in dry forests of Guatemala, with an AOO of 12 km$^2$. Its dry forest habitat is threatened by logging, firewood collection and the expansion of human settlements, which are thought to be causing ongoing declines in its AOO and locations. This species is Endangered.



***Mortoniodendron guatemalense*** (Standl.) Steyerm.
**EN B1ab(iii)+2ab(iii)**
This species is endemic to Petén and Izabal, Guatemala. It is only known from four locations with a small EOO less than 5,000 km$^2$ and AOO of 16 km$^2$. It is threatened by habitat loss due to agricultural expansion, tourist development and wood harvesting. It is Endangered.




***Mortoniodendron pentagonum*** (Donn.Sm.) Miranda
**Synonyms:** *Sloanea pentagona* Donn.Sm.; *Westphalina macrocarpa* A.Robyns & Bamps
**EN B1ab(iii)+2ab(iii)**
This is an endemic tree from Alta Verapaz, Guatemala. Other localities have been suggested (México and Costa Rica) but are a different species. It is threatened by urban and agricultural expansion in the area. It is known from three localities with an EOO of less than 100 km$^2$ and less than 12 km$^2$ of AOO. It is Endangered.




## MELASTOMATACEAE

***Blakea standleyi*** (L.O.Williams) Penneys & Almeda
**Synonym:** *Topobea standleyi* L.O.Williams
**CR B2ab(iii)**
This endemic tree is found in Baja Verapaz, Guatemala in pine oak forests. It has an AOO of 4 km$^2$. Its habitat is threatened by logging, firewood extraction and fires. It is Critically Endangered.




***Miconia contrerasii*** Wurdack
**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**
This endemic tree is found only in two locations in the forests of Baja Verapaz, Guatemala, with an EOO of 23.641 km$^2$ and AOO of 20 km$^2$. Its habitat is threatened by logging, conversion to agriculture and fires, which are thought to be causing continuing declines in its AOO, habitat and number of locations. It is therefore Endangered.



***Miconia hanstuerckheimii*** Michelang.

**CR B2ab(iii)**

This rare endemic tree is found in Alta Verapaz, Guatemala, an important region for local endemism in Mesoamerica. It has an AOO of 4 km$^2$, and one location that is threatened by growing towns, logging, firewood extraction and fires. These threats are thought to be causing continuing declines in the habitat of this species. It is, therefore, Critically Endangered.




***Mouriri steyermarkii*** Standl.

**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**

This species is known only from lowland forests of Izabal and Petén in Guatemala, in three locations with an AOO of 16 km$^2$ and an EOO of 388,850 km$^2$. The threats of agriculture and logging are thought to be causing continuing declines in its AOO, habitat and number of locations, and it is therefore Endangered.




***Stanmarkia spectabilis*** Almeda

**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**

This endemic tree species is found in montane and cloud forests in the highlands of Quetzaltenango, Guatemala in two locations. It has an AOO of 12 km$^2$ and EOO of 12 km$^2$. Its habitat is threatened by logging and agriculture, which are thought to be causing continuing declines in its AOO, habitat and locations and there is a projected decline in its habitat extent and quality. It is, therefore, Endangered.




## MONIMIACEAE

***Mollinedia angustata*** Lundell

**EN B1ab(iii)+2ab(iii)**

This small tree is found in high forests of Sierra de las Minas and Cerro Verde protected areas of Baja Verapaz. It has an AOO of 12 km$^2$ and EOO of 12 km$^2$. It is threatened by agricultural expansion and urbanization. It is, therefore, Endangered.



## MYRTACEAE

### *Eugenia bajaverapazana* Lundell

**Common name:** Guayabillo

**CR B2ab(iii)**

This tree is endemic to Union Barrios, Baja Verapaz, Guatemala. It has been collected in only one locality and has an AOO of 4 km$^2$. It is threatened by agriculture, logging and fires. It is Critically Endangered.

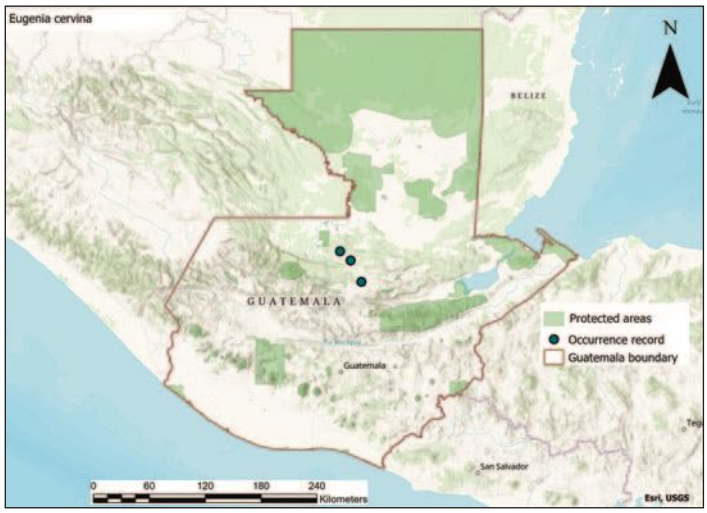



### *Eugenia cervina* Standl. & Steyerm.

**Common name:** Cacho de Venado

**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**

This small endemic tree is found near Río Icvolay occurs in Alta Verapaz, Guatemala, where it has been recorded from three locations with an EOO of 66 km$^2$ and an AOO of 12 km$^2$. The whole area where this endemic tree is distributed is threatened by road construction (Franja Transversal del Norte), logging, agriculture and fires, which are thought to be causing continuing declines in its AOO, habitat and locations. It is, therefore, Endangered.




### *Eugenia eliasii* Lundell

**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**

This small endemic tree has been found in only three locations in lowland forests of Petén and Huehuetenango, Guatemala, with an AOO of 12 km$^2$ and an EOO of 3,152 km$^2$. Its habitat is threatened by logging and agriculture, which are thought to be causing continuing declines in its habitat extent and quality, AOO and number of locations. It is, therefore, Endangered.




### *Eugenia gigas* Lundell

**Synonym:** *Eugenia brihondurensis* Lundell

**Common name:** Guayabillo

**EN B1ab(ii,iii)+2ab(ii,iii)**

This big tree is endemic to Guatemala where it is known from three locations in lowland forests of Alta Verapaz, Izabal and Petén, with an AOO of 12 km$^2$ and an EOO of 1,564 km$^2$. These locations are threatened by logging and agriculture, which are thought to be causing continuing declines in its AOO and habitat quality and extent. This species is Endangered.



***Eugenia magoana*** Lundell

**CR B2ab(iii)**

This species is endemic to Alta Verapaz, Guatemala where it has been found in two localities with an AOO of 8 km$^2$. It is threatened by the construction of a major highway and by shifting agriculture and logging, which are thought to be causing ongoing declines in habitat extent and quality. This species is therefore Critically Endangered.

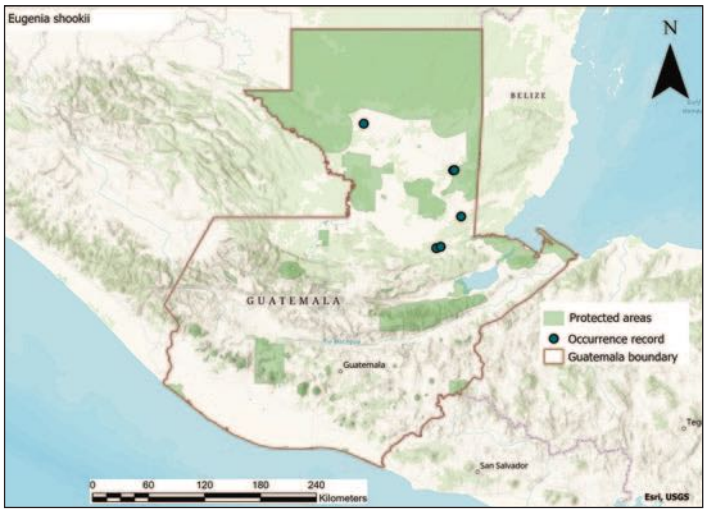



***Eugenia shookii*** Lundell

**Common name:** Guayabillo

**EN B2ab(ii,iii,iv)**

This endemic tree is endemic to high and pine forests of Petén and Alta Verapaz, Guatemala, where it has been recorded from five locations with an AOO of 24 km$^2$. It is experiencing ongoing declines in its habitat, AOO and number of locations due to road construction, logging and shifting agriculture. This species is Endangered.




***Eugenia papalensis*** Standl. & Steyerm.

**Common name:** Guayabillo

**CR B2ab(iii)**

This small tree is endemic to one location in high altitude forests of Huehuetenango, Guatemala, with an AOO of 4 km$^2$. Its habitat is threatened by logging and agriculture, which are thought to be causing continuing declines in its habitat extent and quality. It is Critically Endangered.




***Eugenia ursina*** Lundell

**Common name:** Guayabillo

**CR B2ab(iii)**

This endemic tree is found only in Alta Verapaz, Guatemala at its type locality, with an AOO of 4 km$^2$. This species is threatened by expansion of agriculture. There is no specific data on the habitat of the type locality of where this plant has been collected. It is Critically Endangered.



***Myrcia contrerasii*** (Lundell) A.R.Lourenço & Sánchez-Cháv.
**Synonym:** *Calyptranthes contrerasii* Lundell
**Common name:** Guayabillo
**EN B1ab(ii,iii)+2ab(ii,iii)**
This species is endemic to Petén, Guatemala with an EOO of 863 km$^2$ and AOO of 20 km$^2$. It has experienced an ongoing decline in AOO and habitat due to logging, agriculture and recurrent fires. It has been collected from five very close locations. This species is Endangered.




***Myrcia salamensis*** (Lundell) A.R.Lourenço & Sánchez-Cháv.
**Synonym:** *Calyptranthes salamensis* Lundell
**Common name:** Guayabillo
**CR B1ab(iii)**
This small tree is endemic to a small area of La Unión Barrios, Alta Verapaz, Guatemala. Its EOO has been calculated as 25 km$^2$, falling below the Critically Endangered threshold and it is known from one single location. The main threat to this species is habitat loss as a consequence of subsistence agriculture.




## NYCTAGINACEAE

***Guapira acuminata*** Lundell
**DD**
This small endemic tree is found in humid forests of Petén, Guatemala. There is only one locality from the type specimen and the exact location is unknown. It is Data Deficient.




***Neeopsis flavifolia*** (Lundell) Lundell
**Synonym:** *Neea flavifolia* Lundell
**DD**
This small tree is found in areas near La Cumbre, Petén, Guatemala. There are very few collections with no georeferenced locations and the last collection was done in 1976. The estimated AOO and EOO are 8 km$^2$. The area where this tree is found has been totally transformed but there are still some remnants of forests. It is therefore Data Deficient.



## PHYLLANTHACEAE

***Astrocasia austinii*** (Standl.) G. L. Webster
**Synonym:** *Phyllanthus austinii* Standl.
**EN B1ab(ii,iii,iv)+2ab(ii,iii,iv)**
This small tree is endemic to Izabal, Guatemala, in two locations with an AOO of 8 km$^2$. The main threat to this species is habitat loss as a consequence of agriculture and logging, which are thought to be causing continuing declines in its AOO, number of locations and habitat extent and quality. This species is Endangered.




## PHYLLONOMACEAE

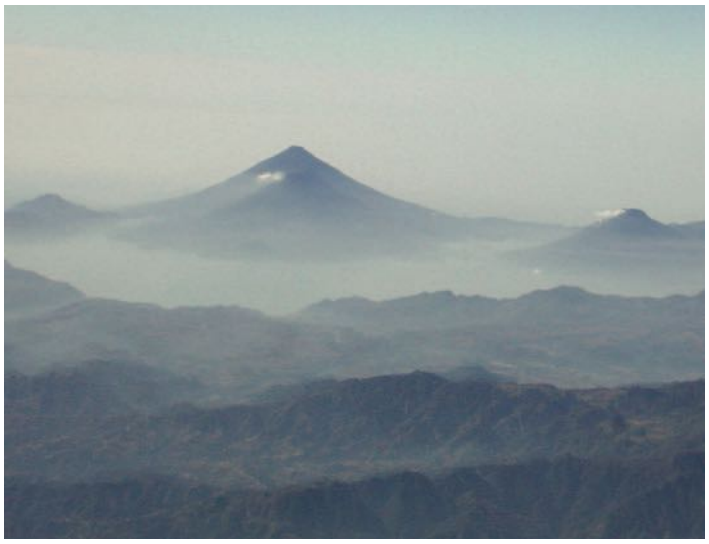
***Phyllonoma cacuminis*** Standl. & Steyerm.
**CR B2ab(iii)**
This species is a tree endemic to Sierra de las Minas, Zacapa, Guatemala and has an AOO of only 4 km$^2$. Sierra de las Minas forests have been threatened by illegal logging and fires. The distribution of this species is very limited, occurring in only the type locality. This species is Critically Endangered.




## PRIMULACEAE

***Ardisia apoda*** Standl. & Steyerm.
**Synonyms:** *Icacorea apoda* (Standl. & Steyerm.) Lundell; *Auriculardisia apoda* (Standl. & Steyerm.) Lundell
**CR B2ab(ii,iii,iv)**
This tree species is endemic to Cerro San Gil, Izabal, Guatemala where it is known only from its type locality, with an AOO of just 4 km$^2$. It has experienced ongoing declines in its habitat, AOO and locations due to the impacts of logging, agriculture and illegal land use. Its distribution is severely limited and it is known from only one collection made in 1941, which suggests it might be extinct. However, surveys need to be done to confirm whether or not the population is intact. This species is Critically Endangered.





Volcanic chain Sololá, Guatemala (AnaLu MacVean)

## *Parathesis skutchii* Lundell

**EN B1ab(i,ii,iii)+2ab(i,ii,iii)**

This tree species is endemic to Alta Verapaz, Huehuetenango and Quiché, Guatemala, where it has a limited distribution in only four locations in montane cloud forest, with an EOO of 2,937 km$^2$ and an AOO of 20 km$^2$. It has experienced an ongoing decline in its habitat, AOO and EOO due to the impacts of small-scale agriculture and illegal logging, especially for firewood. This species is Endangered.

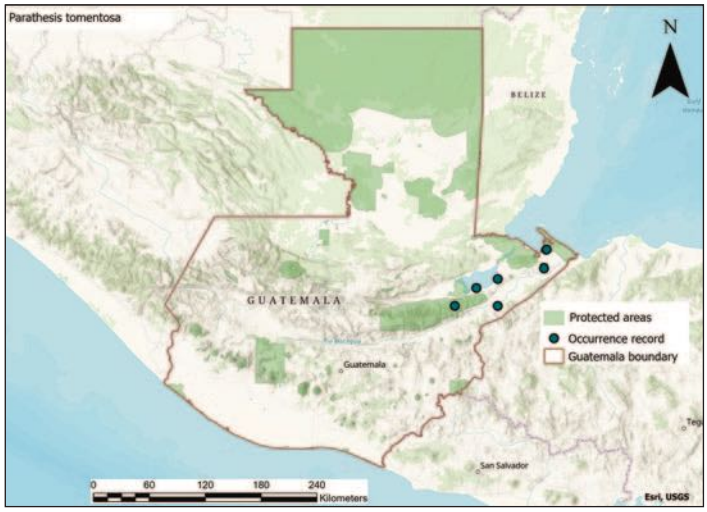



## *Parathesis tomentosa* Lundell

**Common name:** Chimiche

**VU B1ab(ii,iii,iv)+2ab(ii,iii,iv)**

This small tree species is endemic to Izabal, Guatemala, where it has a limited distribution in six locations with an EOO of 1,934 km$^2$ and an AOO of 24 km$^2$. It has experienced ongoing declines in its AOO, habitat and locations primarily due to the impacts of logging and agriculture. This species is Vulnerable.




## *Parathesis travisiae* Lundell

**Common name:** Guatitú Rojo

**EN A4c; C2a(i); D**

This small tree is endemic to Salamá and Purulhá, Baja Verapaz, Guatemala. It has an EOO of 55 km$^2$ and an AOO of 40 km$^2$. In the past 90 years populations of this species have been threatened and diminished by conversion of land to cultivate ornamentals and vegetables. This species is Endangered.




## *Parathesis williamsii* Lundell

**CR B2ab(iii)**

This tree species is endemic to Alta Verapaz, Guatemala where it has been recorded from a very limited distribution in two locations, with an AOO of 8 km$^2$. It has experienced ongoing declines in its habitat due to the impacts of agriculture and logging. This species is Critically Endangered.



## RHAMNACEAE

***Reynosia barbatula*** M.C.Johnst. & Lundell
**EN B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**
This species is a tree endemic to the tropical forests of Petén, Guatemala and has an EOO of 26 km$^2$. It has an AOO of only 12 km$^2$. The number of locations is less than five. It has experienced an ongoing decline in habitat, AOO, EOO and locations due to the impacts of logging and agriculture. This species is Endangered.




## ROSACEAE

***Prunus compacta*** L.O.Williams
**EN B2ab(ii,iii,iv)**
This tree species is endemic to high forests in the Sierra de los Cuchumatanes, Huehuetenango, Guatemala, where it has a limited distribution in only two locations with an AOO of 8 km$^2$. It has experienced ongoing decline in habitat, AOO and the number of locations due to the impacts of logging, firewood collecting, and livestock ranching. This species is Endangered.




## RUBIACAEAE

***Arachnothryx myriantha*** (Standl. & Steyerm.) Borhidi
**Synonym:** *Rondeletia myriantha* Standl. & Steyerm.
**EN B1ab(i,ii,iii)+2ab(i,ii,iii)**
This small tree species is endemic to Suchitepéquez and Quiché, Guatemala, where it is found in only three locations with an EOO of 335 km$^2$ and an AOO of 12 km$^2$. It has experienced an ongoing decline in habitat, EOO and AOO due to the impacts of logging and agriculture. This species is Endangered.




***Arachnothryx rubens*** (L.O.Williams) Borhidi
**Synonym:** *Rondeletia rubens* L.O.Williams
**EN B2ab(ii,iii,iv)**
This small tree species is endemic to Quiché and Huehuetenango, Guatemala, where it has a severely limited distribution in only two locations with AOO of 8 km$^2$. It has experienced an ongoing decline in habitat, AOO and locations due to the impacts of logging, agriculture and fires. This species is Endangered.



***Arachnothryx skutchii*** (Standl. & Steyerm.) Borhidi
**Synonym:** *Rondeletia skutchii* Standl. & Steyerm.
**EN B2ab(ii,iii,iv)**
This small tree species is endemic to montane forests of Sololá and Suchitepéquez, Guatemala where it is known from three records. It has an AOO of 12 km$^2$. The major threats for the montane forests of the area are fires and logging. It is Endangered.




***Faramea standleyana*** L.O.Williams
**EN B1ab(i,ii,iii)+2ab(i,ii,iii)**
This small tree species is endemic to Izabal, Guatemala where it has a severely limited distribution in only three locations with an EOO of 238 km$^2$ and an AOO of 12 km$^2$. It is experiencing ongoing declines in its habitat, AOO and EOO due to the impacts of logging and agriculture. This species is Endangered.




***Palicourea mediocris*** L.O.Williams
**VU B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**
This species is a tree endemic to lowland and premontane forests of Baja Verapaz, Izabal and Huehuetenango, Guatemala and has an EOO of 11,163 km$^2$ and an AOO of 24 km$^2$. It has experienced an ongoing decline in habitat, AOO, EOO and locations due to the impacts of logging, fires, urban developments, and agriculture. Its distribution is limited, occurring in six localities. This species is Vulnerable.




***Rondeletia chinajensis*** L.O.Williams
**Synonym:** *Arachnothrynax chinajensis* (L.O.Williams)
**EN B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**
This small endemic tree is from karstic limestone formations of Sierra Chinajá and Rubelsalto, Alta Verapaz, Guatemala, and has an EOO and AOO of 8 km$^2$. It has experienced ongoing decline in habitat due to road construction of a major highway (Franja Transversal del Norte). Threats also include logging and agriculture. Its distribution is limited, occurring in only two locations. This species is Endangered.

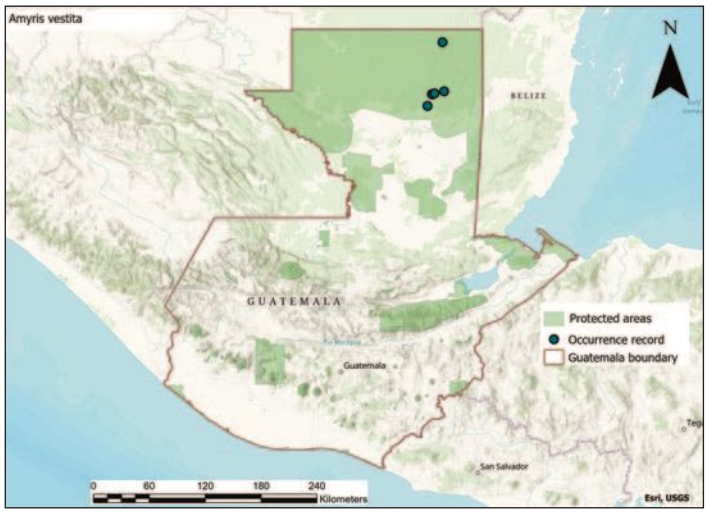


## RUTACEAE

### *Amyris vestita* Lundell

**EN B1ab(iii)+2ab(iii)**

This small tree is native to Petén, Guatemala. It occurs in the Biotopo Protegido "San Miguel La Palotada El Zotz" and in Biotopo "Naanchtún-Dos Lagunas". The EOO is measured as 445,338 km$^2$. It is unlikely this area will be larger. The AOO is calculated as 24 km$^2$. Although sustainable forest management has been widely adopted as a policy and management goal, high rates of forest loss and degradation are still occurring across the range. This species is Endangered.




### *Esenbeckia echinoidea* Standl. & Steyerm.

**EN B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**

This endemic tree is found in dry lowland and premontane forests of El Progreso, Zacapa and Chiquimula, Guatemala and has an EOO of 2,346 km$^2$. It has an AOO of 12 km$^2$. It has experienced an ongoing decline in habitat, AOO, EOO and locations due to the impacts of urban development, fire, logging and agriculture. Its distribution is very limited, occurring in only three locations. This species is Endangered.




## SAPOTACEAE

### *Pouteria areolatifolia* Lundell

**CR B1ab(iii)+2ab(iii)**

This tree is endemic to lowland forests of Petén, Guatemala and has an EOO and an AOO of only 4 km$^2$. It has experienced an ongoing decline in habitat due to the impacts of logging and agriculture. Its distribution is very limited, occurring in only one locality. This species is Critically Endangered.




### *Pouteria briocheoides* Lundell

**CR B1ab(i,ii,iii)+2ab(i,ii,iii)**

This is a small endemic tree only known from La Cumbre in Petén, Guatemala. The EOO and AOO are 8 km$^2$. The taxon has one location. There are threats to individuals from significant pressure of human settlement expansion, agriculture, and forest fires. The species is seriously threatened because it has a very small and restricted geographical distribution, and its habitat is being rapidly altered or destroyed. It is Critically Endangered.



***Pouteria quicheana*** Cronquist

**CR B2ab(iii)**

This tree is endemic to Quiché, Guatemala and has an AOO of only 4 km$^2$. The habitat of the species is unknown but based on the localities we can assume that it is montane forests that have an ongoing decline in habitat due to the impacts of logging and agriculture. Its distribution is very limited, occurring in only one location. This species is Critically Endangered.




***Sideroxylon eucuneifolium*** (Lundell) T.D.Penn.

**Synonym:** *Mastichodendron eucuneifolium* Lundell

**EN B2ab(iii)**

This large tree is distributed in Baja Verapaz and Petén, Guatemala. The AOO is 8 km$^2$, it is likely the AOO is larger upon greater collection effort, maintained below 50 km$^2$. The EOO could not be calculated. The taxon has two points of occurrence, and there are no more records. The species' occurrence requires further investigation. The main threat for this species has been the change of land use for urban expansion and associated human activities. Future studies may well show this plant to be more abundant than presently believed. This species is Endangered.




***Sideroxylon hirtiantherum*** T.D.Penn.

**Synonym:** *Bumelia parviflora* (Lundell) Lundell

**CR B1ab(iii)+2ab(iii)**

This species is a tree endemic to the lowland forests of Petén, Guatemala and has an AOO and EOO of only 8 km$^2$. Lowland forests in Guatemala have experienced an ongoing decline in habitat due to the impacts mainly of logging, fires and agriculture. Its distribution is very limited, occurring in only one locality with several collections. This species is Critically Endangered.




***Sideroxylon ibarrae*** (Lundell) T.D.Penn.

**Synonym:** *Bumelia ibarrae* Lundell

**CR B1ab(iii)**

This tree is endemic to wet forests of Baja Verapaz, Guatemala. It has an EOO and an AOO of only 12 km$^2$. The habitat where it is distributed has seen an ongoing decline in habitat due to the impacts of agriculture. Its distribution is very limited. This species is Critically Endangered.



## SYMPLOCACEAE

***Symplocos abietorum*** Standl. & Steyerm.
**CR B1ab(iii)+2ab(iii)**
This species is a tree endemic to cloud cool mixed forests of Huehuetenango, Guatemala, associated with *Pinus ayacahuite* and *Abies guatemalensis*. It has an AOO of only 4 km$^2$. It has experienced an ongoing decline in habitat due to the impacts of logging. Its distribution is very limited, occurring in only one locality. This species is Critically Endangered.




***Symplocos vatteri*** Standl. & Steyerm.
**VU B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)**
This species is a tree endemic to cool montane forests of Sierra de los Cuchumatanes, Guatemala and has an EOO of 2,134 km$^2$. It has an AOO of only 24 km$^2$. The mountains where this species is found have been threatened by logging and agriculture. This species is Vulnerable.




## VIBURNACEAE

***Viburnum euryphyllum*** Standl. & Steyerm.
**EN B2ab(iii)**
This small tree is endemic to the montane forests of Huehuetenango and Sololá, Guatemala. It has an AOO of 8 km$^2$. Its range includes protected areas, however montane forests in general are threatened by logging and fire. This species is Endangered.






*Viburnum euryphyllum* (AnaLu MacVean)



*Zamia tuerckheimii* (David J.Stang) https://creativecommons.org/licenses/by-sa/4.0/deed.en

***Viburnum mortonianum*** Standl. & Steyerm.

**DD**

This species is known from a single record from cloud forest of Chiquimula north of Jocotán at Cerro Tixixi, but without an exact location. The habitat the species is found in is threatened by logging however, there is no information about the impact on the species, as the precise locality is not known and it has not been recollected. In the previous Red List assessment there was a mention of a then-recent El Salvador collection apparently based on unpublished data and no specimen could be relocated. For the purposes of this publication it is not considered to occur in El Salvador. It is assessed as Data Deficient.




## ZAMIACEAE

***Zamia tuerckheimii*** Donn.Sm.

**NT B1b(v)**

This cycad is endemic to wet forest slopes and limestone ridges of Alta Verapaz, Guatemala and is regarded as relatively abundant throughout its range. Its EOO is only 1,622 km$^2$, and the population is estimated to be in decline, but the number of locations is not known to be less than 10, and it is not severely fragmented. As with most species of cycads, it is susceptible to overcollecting for ornamental purposes. This plant is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This species is Near Threatened.



# Appendix 2:
# List of Endemic Tree Species of Guatemala

| Family | Taxon name | Author | Red List Category | Red List Criteria | Ex Situ collections | Presence in a protected area | Potential AZE trigger species |
|---|---|---|---|---|---|---|---|
| Annonaceae | *Mosannona guatemalensis* | (Lundell) Chatrou | DD | | 0 | No | |
| Arecaceae | *Chamaedorea falcifera* | H.E.Moore | DD | | 11 | No | |
| Asteraceae | *Eremosis angusta* | Gleason | CR | B2ab(iii) | 0 | No | Yes |
| Asteraceae | *Lepidonia corae* | (Standl. & Steyerm.) H.Rob. & V.A.Funk | CR | B2ab(iii) | 0 | Yes | Yes |
| Asteraceae | *Verbesina calciphila* | Standl. & Steyerm. | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | Yes | |
| Bignoniaceae | *Amphitecna costata* | A.H.Gentry | EN | B2ab(ii,iii) | 0 | Yes | |
| Bignoniaceae | *Amphitecna megalophylla* | (Donn.Sm.) A.H.Gentry | EN | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | No | |
| Boraginaceae | *Cordia cardenasiana* | J.S.Mill. | CR | B2ab(ii) | 0 | No | Yes |
| Boraginaceae | *Cordia skutchii* | I.M.Johnst. | CR | B2ab(iii,iv) | 0 | No | Yes |
| Burseraceae | *Bursera itzae* | Lundell | CR | B2ab(ii,iii,iv) | 0 | Yes | Yes |
| Cactaceae | *Myrtillocactus eichlamii* | Britton & Rose | CR | C2a(i) | 7 | No | Yes |
| Cannabaceae | *Celtis guatemalensis* | Eisermann, Zamengo & Chamorro | DD | | 0 | No | |
| Capparaceae | *Quadrella steyermarkii* | (Standl.) Iltis & Cornejo | EN | B1ab(ii,iii)+2ab(ii,iii) | 0 | Yes | Yes |
| Caprifoliaceae | *Lonicera guatemalensis* | Véliz & E.Carrillo | CR | D | 0 | Yes | |
| Celastraceae | *Monteverdia tikalensis* | (Lundell) Biral | EN | B1ab(iii)+2ab(iii) | 0 | Yes | |
| Chrysobalanaceae | *Moquilea guatemalensis* | (Lundell) Sothers & Prance | CR | B2ab(iii,iv,v) | 0 | No | |
| Clethraceae | *Clethra skutchii* | Standl. & Steyerm. | EN | B2ab(iii) | 0 | No | Yes |
| Clusiaceae | *Clusia mayana* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Clusiaceae | *Clusia uniflora* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Euphorbiaceae | *Sebastiania chahalana* | Lundell | DD | | 0 | Unknown | |
| Fabaceae | *Calliandra carcerea* | Standl. & Steyerm. | CR | B2ab(iii) | 0 | No | Yes |
| Fabaceae | *Erythrina atitlanensis* | Krukoff & Barneby | EN | B1ab(i,ii,iii)+2ab(i,ii,iii) | 5 | Yes | Yes |
| Fabaceae | *Erythrina castillejiflora* | Krukoff & Barneby | CR | B1ab(iii)+2ab(iii) | 0 | No | Yes |
| Fabaceae | *Erythrina cobanensis* | Krukoff & Barneby | EN | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | No | |
| Fabaceae | *Erythrina huehuetenangensis* | Krukoff & Barneby | CR | B1ab(iii)+2ab(iii) | 1 | No | Yes |

| Family | Taxon name | Author | Red List Category | Red List Criteria | Ex Situ collections | Presence in a protected area | Potential AZE trigger species |
|---|---|---|---|---|---|---|---|
| Fabaceae | *Erythrostemon guatemalensis* | Eisermann & G.P.Lewis | EN | B1ab(iii)+2ab(iii) | 0 | No | |
| Fabaceae | *Leucaena zacapana* | (C.E.Hughes) R.Govind. & C.E.Hughes | NT | B1b(i,ii,iii)+2b(i,ii,iii) | 1 | Yes | |
| Fabaceae | *Lonchocarpus hydrophilus* | M.Sousa & J.Morales | CR | B2ab(iii) | 0 | No | Yes |
| Garryaceae | *Garrya corvorum* | Standl. & Steyerm. | EN | B2ab(iii) | 0 | No | |
| Juglandaceae | *Juglans steyermarkii* | W.E. Manning | EN | B2ab(ii,iii,iv) | 1 | Yes | |
| Lamiaceae | *Aegiphila hastingsiana* | Moldenke | DD | | 0 | Unknown | |
| Lauraceae | *Damburneya guatemalensis* | (Lundell) Rohwer | VU | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | No | |
| Lauraceae | *Damburneya parvissima* | (Lundell) Trofimov | EN | B1ab(iii)+2ab(iii) | 0 | No | Yes |
| Lauraceae | *Ocotea amplifolia* | (Mez & Donn. Sm.) van der Werff | CR | B2ab(iii) | 0 | No | |
| Lauraceae | *Ocotea bajapazensis* | Lundell | CR | B1ab(ii,iii) | 0 | No | Yes |
| Lauraceae | *Ocotea barbatula* | Lundell | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | No | Yes |
| Lauraceae | *Ocotea contrerasii* | Lundell | EN | B2ab(ii,iii,iv) | 0 | No | Yes |
| Lauraceae | *Ocotea euvenosa* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Lauraceae | *Ocotea nigrita* | (Lundell) Lundell | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | No | |
| Lauraceae | *Ocotea oblongifolia* | van der Werff | CR | B2ab(iii) | 0 | Yes | Yes |
| Lauraceae | *Ocotea racemiflora* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Lauraceae | *Ocotea verapazensis* | Standl. & Steyerm. | DD | | 0 | Yes | |
| Lauraceae | *Pleurothyrium westphaliae* | van der Werff | EN | B2ab(ii,iv) | 0 | No | |
| Magnoliaceae | *Magnolia alfredo-mironii* | Archila, Tribouill. & A.Vázquez | CR | B1ab(iii)+2ab(iii); D | 0 | No | |
| Magnoliaceae | *Magnolia archilana* | A.Vázquez, Tribouill. & Véliz | EN | B1ab(iii)+2ab(iii); D | 0 | Yes | |
| Magnoliaceae | *Magnolia emilceana* | Archila, Tribouill. & A.Vázquez | CR | B1ab(iii)+2ab(iii); D | 0 | No | |
| Magnoliaceae | *Magnolia harnpariphaniana* | Archila, Tribouill. & A.Vázquez | CR | D | 1 | No | |
| Magnoliaceae | *Magnolia izabalensis* | Archila, Tribouill. & A.Vázquez | CR | B1ab(iii)+2ab(iii) | 0 | No | |
| Magnoliaceae | *Magnolia javieri* | A.Vázquez, Tribouill. & Archila | EN | B1ab(iii)+2ab(iii) | 1 | No | Yes |
| Magnoliaceae | *Magnolia juliana* | Archila, Tribouill. & O.E.Alvarado | VU | D2 | 0 | No | |
| Magnoliaceae | *Magnolia oscarrodrigoi* | A.Vázquez, Tribouill. & Archila | CR | B1ab(iii)+2ab(iii); D | 1 | No | Yes |
| Magnoliaceae | *Magnolia ottoi* | A.Vázquez, Tribouill. & Archila | CR | B2ab(iii,v); C2a(i,ii); D | 0 | No | Yes |
| Magnoliaceae | *Magnolia poqomchi* | M.J.Serrano & A.Vázquez | CR | B1ab(iii,v) | 1 | Yes | Yes |
| Magnoliaceae | *Magnolia quichensis* | Tribouill., A.Vázquez & Archila | EN | B1ab(iii)+2ab(iii) | 1 | No | |
| Magnoliaceae | *Magnolia stefaniana* | Archila, Á.J.Pérez & A.Vázquez | CR | B1ab(iii,v)+2ab(iii,v); D | 1 | Unknown | |
| Magnoliaceae | *Magnolia steyermarkii* | A.Vázquez | CR | B1ab(iii) | 0 | Unknown | |
| Magnoliaceae | *Magnolia tribouillieriana* | A.Vázquez, Archila & Véliz | CR | B1ab(iii)+2ab(iii); D | 0 | No | Yes |

| Family | Taxon name | Author | Red List Category | Red List Criteria | Ex Situ collections | Presence in a protected area | Potential AZE trigger species |
|---|---|---|---|---|---|---|---|
| Magnoliaceae | *Magnolia veliziana* | A.Vázquez, Tribouill. & Archila | CR | B1ab(iii)+2ab(iii); D | 1 | No | Yes |
| Magnoliaceae | *Magnolia weerakitiana* | Archila, A.Vázquez & Tribouill. | CR | B1ab(iii,v)+2ab(iii,v); D | 1 | No | |
| Malvaceae | *Ceiba soluta* | (Donn.Sm.) Ravenna | EN | B2ab(ii,iii,iv) | 0 | No | |
| Malvaceae | *Mortoniodendron guatemalense* | Standl. & Steyerm. | EN | B1ab(iii)+2ab(iii) | 0 | Unknown | |
| Malvaceae | *Mortoniodendron pentagonum* | (Donn.Sm.) Miranda | EN | B1ab(iii)+2ab(iii) | 0 | No | |
| Melastomataceae | *Blakea standleyi* | (L.O.Williams) Penneys & Almeda | CR | B2ab(iii) | 0 | No | Yes |
| Melastomataceae | *Miconia contrerasii* | Wurdack | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | Yes | Yes |
| Melastomataceae | *Miconia hanstuerckheimii* | Michelang. | CR | B2ab(iii) | 0 | No | Yes |
| Melastomataceae | *Mouriri steyermarkii* | Standl. | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | Yes | |
| Melastomataceae | *Stanmarkia spectabilis* | Almeda | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 1 | Yes | Yes |
| Monimiaceae | *Mollinedia angustata* | Lundell | EN | B1ab(iii)+2ab(iii) | 0 | Yes | |
| Myrtaceae | *Eugenia bajaverapazana* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Myrtaceae | *Eugenia cervina* | Standl. & Steyerm. | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | No | Yes |
| Myrtaceae | *Eugenia eliasii* | Lundell | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | No | |
| Myrtaceae | *Eugenia gigas* | Lundell | EN | B1ab(ii,iii)+2ab(ii,iii) | 0 | No | |
| Myrtaceae | *Eugenia magoana* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Myrtaceae | *Eugenia papalensis* | Standl. & Steyerm. | CR | B2ab(iii) | 0 | No | Yes |
| Myrtaceae | *Eugenia shookii* | Lundell | EN | B2ab(ii,iii,iv) | 0 | Yes | |
| Myrtaceae | *Eugenia ursina* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Myrtaceae | *Myrcia contrerasii* | (Lundell) A.R.Lourenço & Sánchez-Cháv. | EN | B1ab(ii,iii)+2ab(ii,iii) | 0 | No | |
| Myrtaceae | *Myrcia salamensis* | (Lundell) A.R.Lourenço & Sánchez-Cháv. | CR | B1ab(iii) | 0 | Yes | Yes |
| Nyctaginaceae | *Guapira acuminata* | Lundell | DD | | 0 | Unknown | |
| Nyctaginaceae | *Neeopsis flavifolia* | (Lundell) Lundell | DD | | 0 | No | |
| Phyllanthaceae | *Astrocasia austinii* | (Standl.) G.L.Webster | EN | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | Yes | Yes |
| Phyllonomaceae | *Phyllonoma cacuminis* | Standl. & Steyerm. | CR | B2ab(iii) | 0 | No | Yes |
| Primulaceae | *Ardisia apoda* | Standl. & Steyerm. | CR | B2ab(ii,iii,iv) | 0 | Yes | Yes |
| Primulaceae | *Parathesis skutchii* | Lundell | EN | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | No | |
| Primulaceae | *Parathesis tomentosa* | Lundell | VU | B1ab(ii,iii,iv)+2ab(ii,iii,iv) | 0 | Yes | |
| Primulaceae | *Parathesis travisiae* | Lundell | EN | A4c; C2a(i); D | 0 | Unknown | |
| Primulaceae | *Parathesis williamsii* | Lundell | CR | B2ab(iii) | 0 | No | Yes |
| Rhamnaceae | *Reynosia barbatula* | M.C.Johnst. & Lundell | EN | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | No | Yes |
| Rosaceae | *Prunus compacta* | L.O.Williams | EN | B2ab(ii,iii,iv) | 0 | Yes | Yes |

| Family | Taxon name | Author | Red List Category | Red List Criteria | Ex Situ collections | Presence in a protected area | Potential AZE trigger species |
|---|---|---|---|---|---|---|---|
| Rubiaceae | *Arachnothryx myriantha* | (Standl. & Steyerm.) Borhidi | EN | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | No | |
| Rubiaceae | *Arachnothryx rubens* | (L.O.Williams) Borhidi | EN | B2ab(ii,iii,iv) | 0 | No | |
| Rubiaceae | *Arachnothryx skutchii* | (Standl. & Steyerm.) Borhidi | EN | B2ab(ii,iii,iv) | 0 | Yes | |
| Rubiaceae | *Faramea standleyana* | L.O.Williams | EN | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | No | Yes |
| Rubiaceae | *Palicourea mediocris* | (Standl. & Steyerm.) Lorence | VU | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | Yes | |
| Rubiaceae | *Rondeletia chinajensis* | Standl. & Steyerm. | EN | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | No | Yes |
| Rutaceae | *Amyris vestita* | Lundell | EN | B1ab(iii)+2ab(iii) | 0 | Yes | Yes |
| Rutaceae | *Esenbeckia echinoidea* | Standl. & Steyerm. | EN | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | No | |
| Sapotaceae | *Pouteria areolatifolia* | Lundell | CR | B1ab(iii)+2ab(iii) | 0 | No | Yes |
| Sapotaceae | *Pouteria briocheoides* | Lundell | CR | B1ab(i,ii,iii)+2ab(i,ii,iii) | 0 | Unknown | Yes |
| Sapotaceae | *Pouteria quicheana* | Cronquist | CR | B2ab(iii) | 0 | No | Yes |
| Sapotaceae | *Sideroxylon eucuneifolium* | (Lundell) T.D.Penn. | EN | B2ab(iii) | 0 | No | |
| Sapotaceae | *Sideroxylon hirtiantherum* | T.D.Penn. | CR | B1ab(iii)+2ab(iii) | 0 | No | Yes |
| Sapotaceae | *Sideroxylon ibarrae* | (Lundell) T.D.Penn. | CR | B1ab(iii) | 0 | No | Yes |
| Symplocaceae | *Symplocos abietorum* | Standl. & Steyerm. | CR | B1ab(iii)+2ab(iii) | 0 | No | Yes |
| Symplocaceae | *Symplocos vatteri* | Standl. & Steyerm. | VU | B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) | 0 | No | |
| Viburnaceae | *Viburnum euryphyllum* | Standl. & Steyerm. | EN | B2ab(iii) | 0 | Yes | |
| Viburnaceae | *Viburnum mortonianum* | Standl. & Steyerm. | DD | | 0 | Unknown | |
| Zamiaceae | *Zamia tuerckheimii* | Donn.Sm. | NT | B1b(v) | 9 | Unknown | |

# Appendix 3:
# 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 (see Section V), 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 (see Section V), 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 (see Section V), 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. Data Deficient 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% 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% 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%, 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% 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 km$^2$, 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 km$^2$, and estimate 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% 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% of mature individuals in one subpopulation.
b. Extreme fluctuations in the 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% 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% 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% 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%, 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% 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 5,000 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 2,500 mature individuals and either:

1. An estimated continuing decline of at least 20% 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% of mature individuals in one subpopulation.
b. Extreme fluctuations in the 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% 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% 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% 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% 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% 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 2,000 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.

C. Population size estimated to number fewer than 10,000 mature individuals and either:

1. An estimated continuing decline of at least 10% 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 1,000 mature individuals, OR
   (ii) all mature individuals in one subpopulation.
b. Extreme fluctuations in the 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 1,000 mature individuals.

2. Population with a very restricted area of occupancy (typically less than 20 $km^2$) 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% within 100 years.



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