The Red List of Dry Forest Trees of Madagascar

Emily Beech, Malin Rivers, Sylvie Andriambololonera, Faranirina Lantoarisoa, Helene Ralimanana, Solofo Rakotoarisoa, Aro Vonjy Ramarosandratana, Megan Barstow, Katharine Davies, Ryan Hills, Kate Marfleet & Vololoniaina Jeannoda

BOTANIC GARDENS CONSERVATION INTERNATIONAL
GTA GLOBAL TREE ASSESSMENT
GTSG GLOBAL TREE SPECIALIST GROUP
IUCN
SSC Species Survival Commission
Kew Royal Botanic Gardens
Missouri Botanical Garden
CRITICAL ECOSYSTEM PARTNERSHIP FUND

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BOTANIC GARDENS CONSERVATION INTERNATIONAL

BOTANIC GARDENS CONSERVATION INTERNATIONAL (BGCI) is the world's largest plant conservation network, comprising more than 500 botanic gardens in over 100 countries, and provides the secretariat to the IUCN/SSC Global Tree Specialist Group. BGCI was established in 1987 and is a registered charity with offices in the UK, US, China and Kenya.

IUCN SSC Species Survival Commission

THE IUCN/SSC GLOBAL TREE SPECIALIST GROUP (GTSG) forms part of the Species Survival Commission's network of over 7,000 volunteers working to stop the loss of plants, animals and their habitats. SSC is the largest of the six Commissions of IUCN – The International Union for Conservation of Nature. It serves as the main source of advice to the Union and its members on the technical aspects of species conservation. The aims of the IUCN/SSC Global Tree Specialist Group are to promote and implement global red listing for trees and to act in an advisory capacity to the Global Trees Campaign.

CRITICAL ECOSYSTEM PARTNERSHIP FUND

THE CRITICAL ECOSYSTEM PARTNERSHIP FUND is a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation.

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April 2020

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Southwest Madagascar *(Malin Rivers)*

Jatropha mahafalensis *(©MBGMP, Peter Phillipson)*

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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

List of acronyms

BGCI	Botanic Gardens Conservation International
CBD	Convention on Biological Diversity
CEPF	Critical Ecosystem Partnership Fund
GSPC	Global Strategy for Plant Conservation
GTA	Global Tree Assessment
GTSG	Global Tree Specialist Group
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KMCC	Kew Madagascar Conservation Center
MBGMP	Missouri Botanical Garden Madagascar Program
MPSG	Madagascar Plant Specialist Group
SSC	Species Survival Commission

Dry Spiny Forest South of Toilary (Malin Rivers)

Introduction

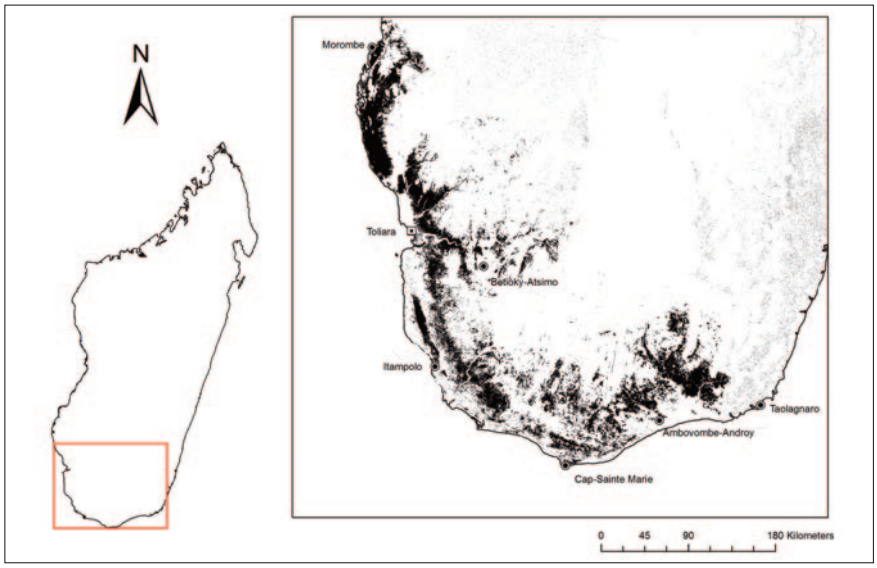

Figure 1: Distribution of Dry Spiny Forest (Moat and Smith, 2007)

Madagascar has a wealth of habitat types and climatic conditions, explaining its status as a biodiversity hotspot. Madagascar is home to over 3,000 tree species, making it the tenth most tree diverse country in the world. Moreover, it has the highest percentage of endemic trees of anywhere in the world. Despite being home to 3,068 tree species found nowhere else on the planet, until relatively recently there was limited data available about the conservation status of these unique trees.

The dry forests (including the dry spiny forest of the southern coastal regions) of Madagascar cover more than a fifth of the country (Moat and Smith, 2007). These forests are found predominately on the west and south coast of the country at altitudes between 0 and 800 m and represent a unique ecosystem with high levels of diversity in relation to both flora and fauna. These forests are home to over 900 tree species.

Dry forest tree species in Madagascar have long been used by local people. The trees have been used for firewood, construction, food, medicines and other purposes. However, the pressure on the tree species has increased significantly in the last 50 years as more land is converted to plantations, exploited for mining, cleared for urban areas or burnt for slash-and-burn agriculture. The status of the Malagasy ecosystems "Dry Forest of the West" (Figure 2) and "Dry Spiny Forest" (Figure 1) were assessed as part of the Red List of Ecosystems, and considered Endangered (IUCN, 2019a).

Despite the unique composition of the species and the increasing threat to this region, in 2017 there were only 379 Malagasy tree assessments published on the IUCN Red List (version 2017.2) (IUCN, 2017). This highlighted a large gap in tree conservation information and gave an incomplete picture of the conservation status of Madagascar's tree species. For that reason, Botanic Gardens Conservation International (BGCI), along with the IUCN Species Survival Commission (IUCN SSC), Madagascar Plant Specialist Group (MPSG), Global Tree Specialist Group (GTSG), Kew Madagascar Conservation Centre (KMCC), Missouri Botanical Garden Madagascar Program (MBGMP) and the University of Antananarivo (Plant Biology and Ecology Department), initiated a project funded by the Critical Ecosystem Partnership Fund (CEPF), entitled "Assessing the Conservation Status of Madagascar's Trees for Effective Conservation of Key Biodiversity Areas and Protected Areas". This two-year project (2018-2019) aimed to assess the conservation status of all the trees in the Madagascar dry forest. This project also contributed to the Global Tree Assessment, an initiative to have conservation assessments for all the world's tree species by 2020 (Newton *et al*., 2015).

The Critical Ecosystem Partnership Fund project also included a training and field element, with Key Biodiversity Area (KBA) staff and Master's students from the University of Antananarivo being trained in field survey and inventory techniques and producing species action plans for key dry forest species found in KBAs across the country (Case Study 1).

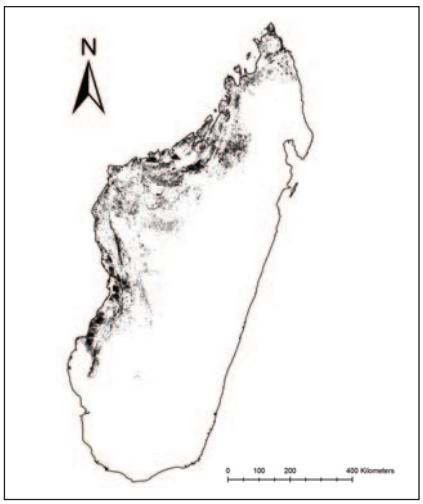

Figure 2: Distribution of the Dry Forest of Western Madagascar (Moat and Smith, 2007)

Methods

Delonix regia *(Malin Rivers)*

A list of Malagasy dry forest trees (982 species) was created using the Catalogue of the Plants of Madagascar (Madagascar Catalogue, 2019) and BGCI's GlobalTreeSearch database (BGCI, 2019a). Of these species, if a taxon had no assessment or did not have a recent IUCN Red List assessment (pre-2010), it was prioritised for assessment by KMCC and MBGMP. Data was gathered on distribution, habitat and ecology, population, use and trade, threats and conservation actions. Distribution maps (using predominantly georeferenced herbarium records) were also produced following the IUCN Red List Mapping guidelines (IUCN Red List Technical Working Group, 2019). Assessors then evaluated this information against the IUCN Red List Categories and Criteria (IUCN, 2012). If the data met the IUCN Red List Criteria the species was assigned one of three threatened categories (Critically Endangered, Endangered and Vulnerable) or if the thresholds are almost met the species was assessed as Near Threatened. Any species not reaching the thresholds are Least Concern and those species with insufficient information to complete an assessment were assessed as Data Deficient. A species can also be assessed as Extinct or Extinct in the Wild, if the species no longer persists in the wild. For full IUCN Red List methodology please see the IUCN guidelines (IUCN Standards and Petitions Subcommittee, 2019).

The assessments were reviewed during three workshops hosted in Antananarivo, Madagascar by MPSG to finalise the assessments. The purpose of the assessment review was to ensure the data used in the assessments were correct and that the IUCN Categories and Criteria had been applied accurately, giving a true reflection of threat faced by the species. Following the review process the assessments and maps were submitted to the IUCN Red List Unit for processing and publishing online. These assessments are available online, with supporting information and maps, at the IUCN Red List website (www.iucnredlist.org).

Alluaudia comosa *(©KMCC, Rakotoarisoa)*

Results

IUCN Red List categories

The results of this project have revealed high levels of extinction risk facing the dry forest tree species of Madagascar. Of the 982 dry forest tree species, 578 (59%) are threatened with extinction (Critically Endangered, Endangered, Vulnerable) (Table 1, Figure 3). Of the remaining species, 398 (40%) are assessed as not threatened (Near Threatened and Least Concern) and six species (1%) are assessed as Data Deficient (Table 1). Ninety percent of all Malagasy dry forest trees (884 species) are experiencing a decreasing population trend.

IUCN Red List category	Number of species
Extinct	0
Extinct in the Wild	0
Critically Endangered	76
Endangered	273
Vulnerable	229
Near Threatened	53
Least Concern	345
Data Deficient	6
Total	**982**

Table 1: The number of Madagascar dry forest tree species assessed in each IUCN Red List category.

IUCN Red List Criteria	Number of species
Criterion A	21 (12%)
Criterion B	601 (95%)
Criterion C	13 (2%)
Criterion D	18 (3%)
Criterion E	0

Table 2: The number of threatened and Near Threatened Madagascar dry forest tree species assessed using the five different Red List criteria.

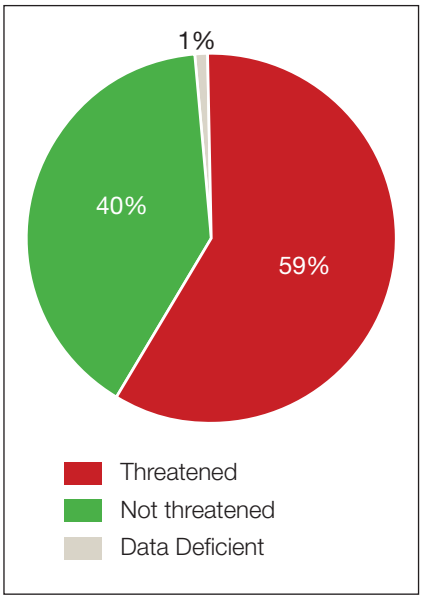

Figure 3: Summary of threat status for Madagascar dry forest tree species.

Criteria used in the Red List

The vast majority (95%) of threatened and Near Threatened species were assessed under Criterion B (Table 2), indicating that many of Madagascar's dry forest trees have a restricted distribution and are found in only small areas. Few species were assessed under Criterion C (small population size and decline), (2%) and D (very small or restricted population) (3%) reflecting the lack of accurate data on population numbers available. Only a small number of species (12%) were assessed under Criterion A (population size reduction), indicating that population data are not readily available on the rate of decline over time. It also highlights the lack of knowledge of the generation length for these species, required for this criterion, as it is difficult to estimate for many tree species.

Avenue of the Baobabs (Malin Rivers)

Uses

Tree species in the dry forests of Madagascar have been recorded as having a range of uses (Figure 4). The most common use of tree species in this habitat is as timber for construction (211 species), and fuel (133 species) which includes charcoal production and fuelwood. Many trees are used for medicinal purposes (73 species) and other uses include household goods (42 species), food (37 species), horticulture (35 species), handicrafts (34 species) and fibre (13 species).

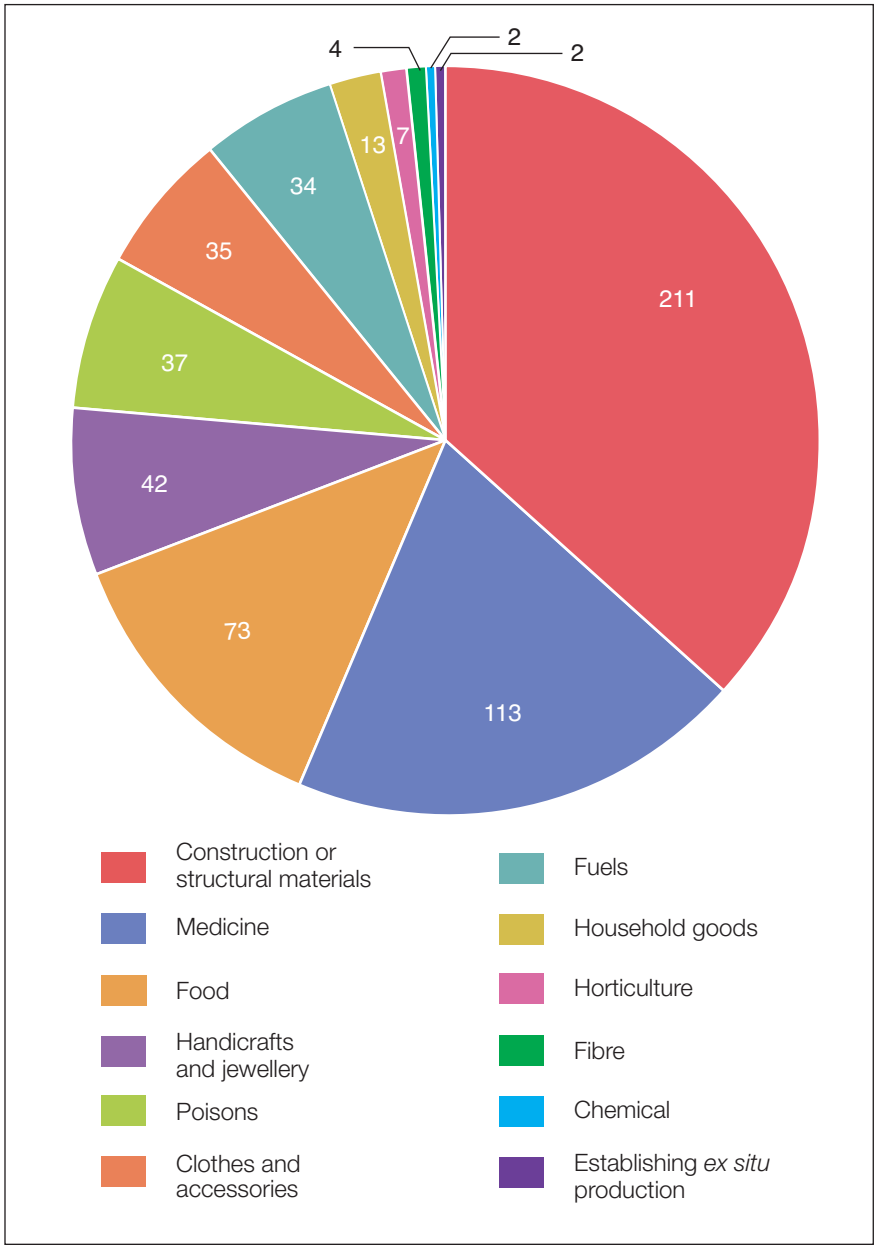

Figure 4: The recorded uses of Madagascar dry forest tree species.

Commiphora laxecymigera
(©MBGMP, Peter Phillipson)

Alluaudia montagnacii *(©KMCC, Rakotoarisoa)*

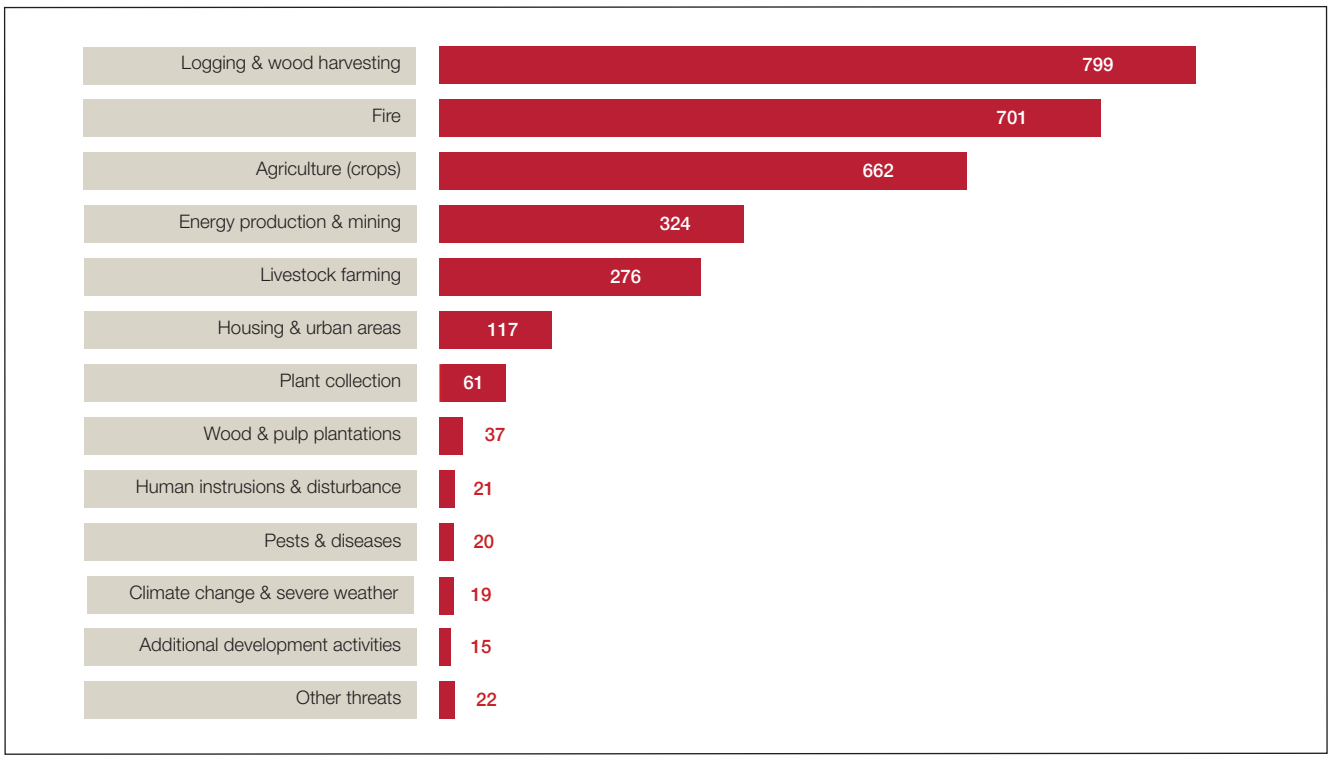

Figure 5: Threats to Madagascar dry forest tree species.

THREATS

The major threats to dry forest trees in Madagascar are logging and wood harvesting (779 species), the increased occurrence of fire (701 species) and the development of agriculture (662 trees) (Figure 5). All these major threats lead to destruction of the dry forest habitat and ultimately its conversion to a less biodiverse landscape. It is clear from both the threats and the uses that local communities depend on the forests as an economic and livelihood resource that needs protection for social as well as environmental reasons. Dry forests are further threatened by encroachment from energy production and mining (324 species), livestock farming (276 species) and the development of settlements and urban areas (117 species). The identification of these threats shows the need for *in situ* conservation efforts, and development of enforced logging quotas and controlled activities.

EX SITU SURVEY

Ex situ surveys identify the number of *ex situ* collections of a specific species found in botanic gardens, arboreta and seed banks worldwide. *Ex situ* collections provide a vital conservation method to prevent extinction of threatened species. BGCI's PlantSearch database (BGCI, 2019b) holds records of plant collections held in botanic gardens, arboreta and seedbanks across the world. Of the 982 Malagasy tree species in dry forests, 391 (40%) are found in *ex situ* collections. Target 8 of the Global Strategy for Plant Conservation (GSPC) suggests that at least 75% of threatened plant species in *ex situ* collections, preferably in the country of origin (CBD, 2012). However, of the 348 Critically Endangered and Endangered tree species in this study, only 77 (22%) are conserved *ex situ* (Figure 6). This is much lower than figures in a global *ex situ* survey of tree species, which found that 26% of Critically Endangered and Endangered trees are found in *ex situ* collections (Rivers *et al.*, 2015). The threatened species not held in *ex situ* collections should be a priority to bring into collections, to ensure these species are safeguarded for the future and can be used for restoration or reintroduction efforts.

Furthermore, 129 of these threatened Madagascar dry forest tree species held in *ex situ* collections are only found in 1–5 collections. Small collection numbers are unlikely to capture sufficient genetic diversity to be used in restoration or reintroduction programmes. The diversity of the collections is not taken into account in this study, but genetic diversity is key if these collections are to have use in the future.

Some species are found in a large number of collections (Table 3). These are often charismatic species (often succulents or palms) that are attractive plants in gardens worldwide. Most of the species in multiple collections are assessed as Least Concern. However, *Kalanchoe beharensis* (Crassulaceae), assessed as Vulnerable, is the species in the most number of collections (149).

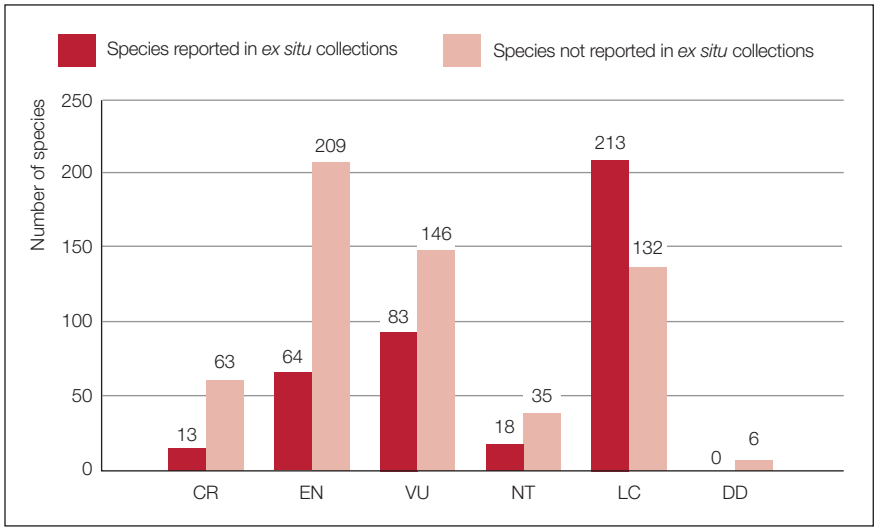

Figure 6: Presence and absence of Madagascar dry forest tree species in ex situ *collections per IUCN Red List Category.*

Species	*Ex situ* collections	Red List Category
Kalanchoe beharensis	149	VU
Pachypodium lamerei	136	LC
Delonix regia	126	LC
Alluaudia procera	116	LC
Pachypodium geayi	88	LC
Bismarckia nobilis	76	LC
Dypsis decaryi	71	VU
Alluaudia dumosa	62	LC
Alluaudia ascendens	60	VU
Didierea trollii	59	VU

Table 3: Ten species with the largest numbers of ex situ *collections.*

Seeds of more than 1,500 Malagasy tree species are found in the Silo National de Graines Forestières in Madagascar, with collections also sent to the Millennium Seed Bank in the United Kingdom.

Didierea madagascariensis *(Malin Rivers)*

Pachypodium mikea *(©KMCC, Rakotoarisoa)*

Recommendations and conclusions

Recommendations

The following recommendations are made for the protection of Madagascar dry forest tree species and ecosystems in the future.

Research:

- Increased survey effort to establish population data and indications of decline rate over time.
- Monitoring of populations to ascertain population size and generation length which are required for assessing species under Criterion A and C.

***Ex situ* protections:**

- Threatened species not held in *ex situ* collections should be bought into collections as a priority.
- Species should be found in more than one *ex situ* institution and locality if possible.
- Genetic diversity should be considered when curating *ex situ* collections.
- *Ex situ* collections in country should be expanded.

***In situ* protections:**

- Key Biodiversity Areas (KBAs) should receive increased protection.
- Monitoring of effectiveness of protected areas should be carried out.
- Further integrated conservation action plans should be created for the most threatened species.

Raise awareness, build local capacity and mobilise action:

- Local communities should be informed about the importance of threatened dry forest tree species in their vicinity.
- Capacity should be built in conservation, propagation and horticulture techniques to empower local partners and communities.

Conclusions

The trees of the dry forests of Madagascar are highly threatened and require immediate action to prevent their extinction. The major threats to the Malagasy dry forest are logging, increased fires and clearing for agriculture. The dry forests of Madagascar represent a unique ecosystem, but protections are required to ensure their continuing survival.

During the two years of the Critical Ecosystem Partnership Fund project, over 1,500 assessments for trees across Madagascar's ecosystems were compiled and submitted to IUCN. These assessments contribute to the Global Tree Assessment, a joint initiative between BGCI and the GTSG to assess the conservation status of the world's tree by 2020. The remaining unassessed tree species of Madagascar will be completed in 2020, giving us the full picture of the status of the trees of Madagascar. The Red List of the Trees of Madagascar will be released as a report in November 2020.

Delonix pumila ex situ *collection* *(Malin Rivers)*

Southwest Madagascar *(Malin Rivers)*

Delonix floribunda *(Malin Rivers)*

Case studies

Case study 1: KBA field studies and students work

A component of the Critical Ecosystem Partnership Fund project was working in KBAs with students from the University of Antananarivo to learn field techniques and conduct field surveys of dry forest tree species. The seven students each went to a dry forest KBA in order to conduct their research (Figure 7).

The Mahavavy Kinkony Complex (302,000 ha) Protected Area (PA) is one of Madagascar's key biodiversity sites. The PA is rich in ecosystems: marine, mangroves and dry deciduous forests, with several endemic species including *Erythrophleum couminga*. This tree can reach 30 m height with very hard wood, used in house building and fencing. The species is selectively logged and its habitat is severely degraded by bushfires. The population is declining; *Erythrophleum couminga* is classified as Endangered.

The Oronjia Protected Area (1,642 ha) is located in Northern Madagascar with a vegetation consisting of a dry forest and savannah. *Delonix velutina* is an endemic tree up to 15 m tall, used in canoe making. *Phylloxylon arenicola* is a deciduous shrub or small tree up to 4 m, extensively harvested for charcoal production and for medicinal purposes. Both species were assessed as Endangered due to intense pressure on their habitat including logging, mining, agriculture and human settlements.

The harmonious protected landscape of Menabe-Antimena (63,501 ha) consists of a dense dry forest. *Hazomalania voyronii* is a tree with a wide distribution but rare in the forest, because it is intensely overexploited for its soft and durable wood. *Hazomalania voyronii* is assessed as Critically Endangered because its reproductive functions are declining and it is continuously threatened by climate change and human destruction of its habitat. *Thespesia gummiflua* is an endemic tree in northern Madagascar. It is the target of illegal logging because of the dark colour of its heartwood, which resembles that of precious woods. Its distribution area, consisting of the Ambohitr'Antsingy Protected Area (50,000 ha) and fragments of surrounding forests, is subject to illegal logging, charcoal making and mining activities. Clearing activities favouring invasive plants are also found in unprotected areas. The species is classified as Endangered.

Sarah Ramilina

The Itremo Protected Area (24,200 ha) includes a sclerophyll forest and a grassy formation. *Beilschmiedia microphylla* is an endemic tree from Madagascar, used by traditional practitioners in the treatment of malaria. Its fruits are consumed as a condiment. *Beilschmiedia microphylla* is Endangered because its population faces a high risk of extinction due to poor regeneration and degradation of its habitat caused by fires and mining operations.

The Ranobe Protected Area PK32 (283,500 ha) is a transition zone between the dry forests of the North and the xerophytic thickets of the South littoral. The target species *Givotia madagascariensis* is a tree that can reach 20 m in height. Its habitat is threatened by human activities such as fires, logging for charcoal production, and shifting agriculture. The species is widely used to manufacture canoes. The population of *Givotia madagascariensis* is in continuous decline and the species is classified as Vulnerable.

The Amoron'i Onilahy Protected Area (100,480 ha) is dominated by a thorny thicket rich in euphorbs, and a riparian forest along the Onilahy River. *Dicraeopetalum mahafaliense* and *Baudouinia rouxevillei* are two hardwood trees that are endemic to southwestern Madagascar. They are widely used in house construction. Habitat is degraded due to logging and slash-and-burn agriculture. *Dicraeopetalum mahafaliense*, due to its wide distribution, is currently not threatened and assessed as Near Threatened while *Baudouinia rouxevillei* is considered Vulnerable.

Liantsoa Rakotoarimino

Besoa Ramananirina

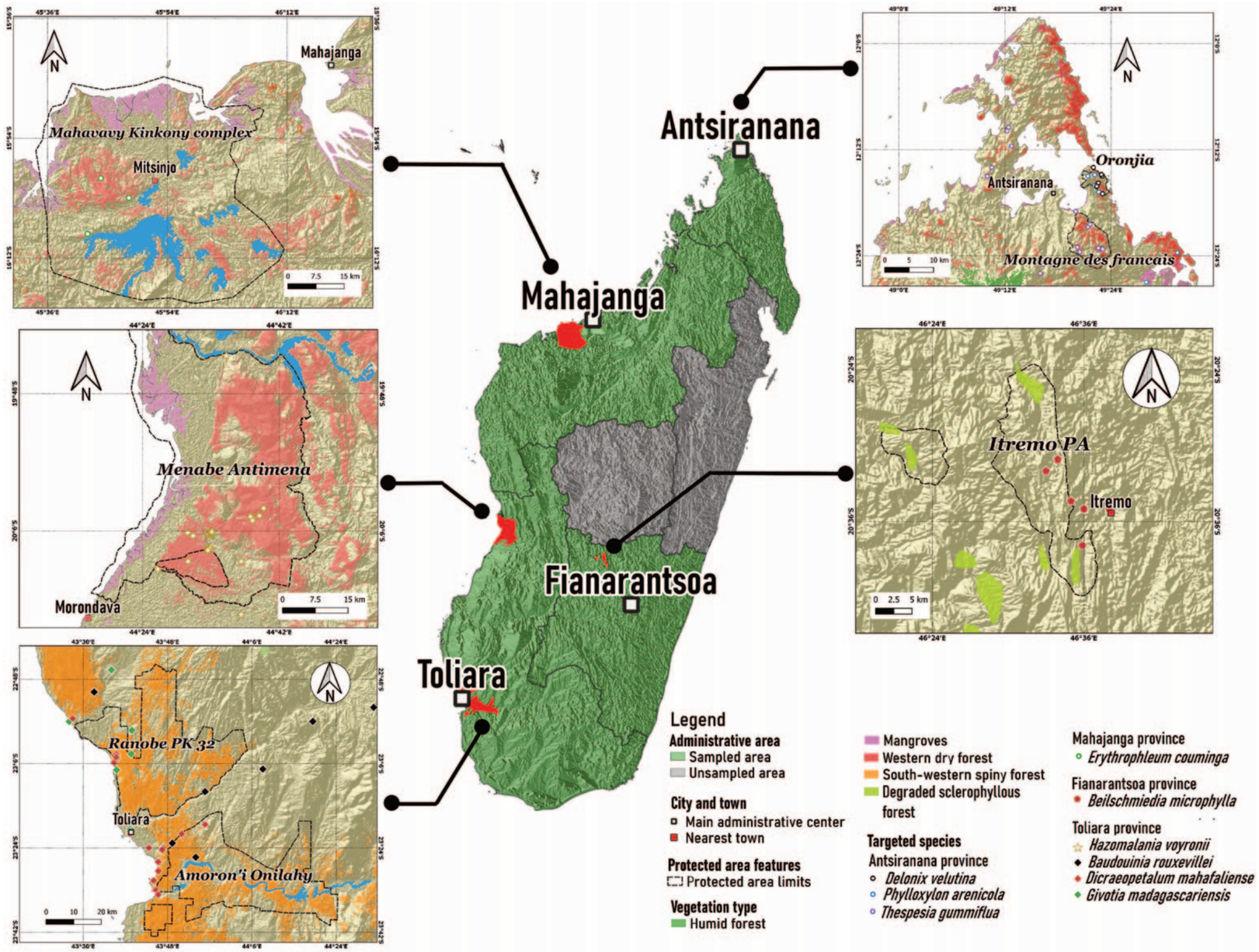

Figure 7. Map of KBAs visited for the project *(Besoa Ramananirina)*

Santianna Rakotoarimanana

Misa Andry Ny Aina

Michael Randriamamory

Case study 2: Madagascar Plant Specialist Group

The Madagascar Plant Specialist Group (MPSG) is a voluntary IUCN Species Survival Commission group. It is chaired by Professor Vololonianina Jeannoda and has 50 members from various botanical institutions within Madagascar. The MPSG had a key role in this Critical Ecosystem Partnership Fund project to assess the conservation status of Madagascar's tree species. They organised three review workshops to validate the assessments prepared by MBGMP and KMCC, attended by Red List staff from both institutions as well as MSc students and other MPSG members.

Western Dry Forest of Madagascar *(Malin Rivers)*

Madagascar Training *(Emily Beech)*

The Critical Ecosystem Partnership Fund project provided an opportunity for capacity building of MPSG members on the application of the IUCN Red List Categories and Criteria. A training was run for members of MPSG in April 2018 and the three review workshops have increased capacity of the Specialist Group.

Although the Critical Ecosystem Partnership Fund project had an initial focus on tree species from the western dry forests of Madagascar, some tree species from the eastern rainforests were processed to meet the target of 2,000 species.

For MPSG and its members, and above all for the country, this project is timely because there is a new focus on “covering Madagascar with forests to turn the red island into the green island of yesteryear” and native and, especially, endemic forest tree species have an important place in this national initiative. “Recovery” and “Reforestation” are not incompatible with threatened tree species which can be considered as important candidates for reforestation and forest enrichment.

This year, MPSG is 20 years old. With almost 3,000 species plant assessments published on the IUCN Red List (IUCN 2019b), including the 982 western dry forest tree species, MPSG has been effective in increasing the available knowledge about the plants of Madagascar. To complete the IUCN Species Conservation Cycle, MPSG must pass or catalyse the next phases of “PLAN” and “ACT”.

Certainly, MPSG and some of its member institutions have already been active on the ground for plant conservation (*in situ* and *ex situ*), but more action is needed. For example, the current project led by MPSG in the Vohibola coastal forest in the east, entitled “Traditional Knowledge, Valorisation and Restoration of Heritage Species”, could be replicated in the Eastern KBAs for threatened tree species. Furthermore, MPSG will be the most appropriate entity to catalyse action at the national level towards the development of a Conservation Plan for Madagascar’s threatened tree species and this could be proposed for a SSC Internal Grant.

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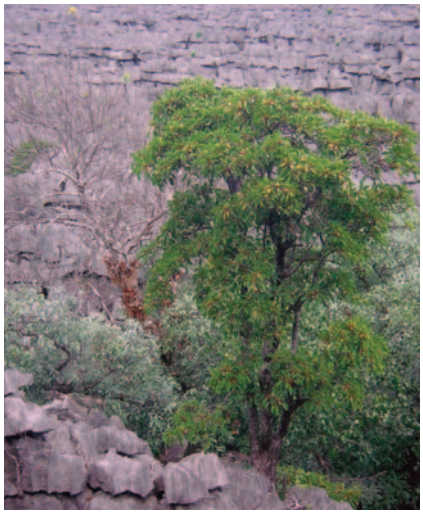

Hymenodictyon leandrii
(©MBGMP, Charles Rakotovao)

Acridocarpus humbertii *(©MBGMP, Peter Phillipson)*

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APPENDIX 1

Dry Forest Tree Species of Madagascar, their IUCN Red List Categories and *ex situ* collections

Family	Taxon	IUCN Category	*Ex situ* Collections
Anacardiaceae	*Abrahamia deflexa*	Vulnerable	1
Anacardiaceae	*Abrahamia ditimena*	Least Concern	0
Anacardiaceae	*Abrahamia grandidieri*	Least Concern	0
Anacardiaceae	*Abrahamia humbertii*	Vulnerable	0
Anacardiaceae	*Abrahamia oblongifolia*	Endangered	0
Fabaceae	*Acacia bellula*	Least Concern	1
Fabaceae	*Acacia myrmecophila*	Endangered	0
Fabaceae	*Acacia viguieri*	Vulnerable	0
Malpighiaceae	*Acridocarpus humbertii*	Endangered	0
Malvaceae	*Adansonia grandidieri*	Endangered	36
Malvaceae	*Adansonia madagascariensis*	Near Threatened	23
Malvaceae	*Adansonia perrieri*	Critically Endangered	9
Malvaceae	*Adansonia rubrostipa*	Least Concern	22
Malvaceae	*Adansonia suarezensis*	Endangered	9
Malvaceae	*Adansonia za*	Least Concern	35
Fabaceae	*Albizia androyensis*	Least Concern	1
Fabaceae	*Albizia arenicola*	Least Concern	2
Fabaceae	*Albizia aurisparsa*	Least Concern	1
Fabaceae	*Albizia balabaka*	Endangered	1
Fabaceae	*Albizia bernieri*	Least Concern	3
Fabaceae	*Albizia boinensis*	Least Concern	2
Fabaceae	*Albizia boivinii*	Least Concern	1
Fabaceae	*Albizia greveana*	Least Concern	1
Fabaceae	*Albizia jaubertiana*	Least Concern	0
Fabaceae	*Albizia mahalao*	Least Concern	1
Fabaceae	*Albizia mainaea*	Least Concern	1
Fabaceae	*Albizia morombensis*	Endangered	0
Fabaceae	*Albizia numidarum*	Endangered	0
Fabaceae	*Albizia polyphylla*	Least Concern	3
Fabaceae	*Albizia sahafariensis*	Endangered	0
Fabaceae	*Albizia tulearensis*	Least Concern	2
Fabaceae	*Albizia verrucosa*	Critically Endangered	0
Euphorbiaceae	*Alchornea humbertii*	Vulnerable	1
Euphorbiaceae	*Alchornea perrieri*	Vulnerable	1
Didiereaceae	*Alluaudia ascendens*	Vulnerable	60
Didiereaceae	*Alluaudia comosa*	Vulnerable	42
Didiereaceae	*Alluaudia dumosa*	Least Concern	62
Didiereaceae	*Alluaudia montagnacii*	Endangered	44
Didiereaceae	*Alluaudia procera*	Least Concern	116
Didiereaceae	*Alluaudiopsis fiherenensis*	Vulnerable	9
Asphodelaceae	*Aloe antonii*	Least Concern	0
Asphodelaceae	*Aloe helenae*	Endangered	19
Asphodelaceae	*Aloe peyrierasii*	Vulnerable	2
Asphodelaceae	*Aloe suzannae*	Endangered	0
Asphodelaceae	*Aloe vaombe*	Least Concern	49
Asphodelaceae	*Aloe vaotsanda*	Vulnerable	25
Burseraceae	*Ambilobea madagascariensis*	Vulnerable	0
Euphorbiaceae	*Amyrea grandifolia*	Endangered	0
Olacaceae	*Anacolosa pervilleana*	Least Concern	1
Scrophulariaceae	*Androya decaryi*	Near Threatened	1
Gentianaceae	*Anthocleista madagascariensis*	Least Concern	1
Cannabaceae	*Aphananthe sakalava*	Least Concern	0
Passifloraceae	*Arboa antsingyae*	Critically Endangered	0
Passifloraceae	*Arboa integrifolia*	Least Concern	0
Primulaceae	*Ardisia didymopora*	Endangered	0
Euphorbiaceae	*Argomuellera bilocularis*	Endangered	0
Euphorbiaceae	*Argomuellera integra*	Vulnerable	0
Euphorbiaceae	*Argomuellera oblanceolata*	Vulnerable	0
Euphorbiaceae	*Argomuellera perrieri*	Vulnerable	0
Euphorbiaceae	*Argomuellera stenophylla*	Vulnerable	0
Picrodendraceae	*Aristogeitonia lophirifolia*	Endangered	0
Picrodendraceae	*Aristogeitonia perrieri*	Endangered	0
Lauraceae	*Aspidostemon lucens*	Endangered	0
Lauraceae	*Aspidostemon occultus*	Critically Endangered	0
Lauraceae	*Aspidostemon parvifolius*	Endangered	0
Lauraceae	*Aspidostemon trichandra*	Critically Endangered	0
Asteropeiaceae	*Asteropeia amblyocarpa*	Least Concern	0
Asteropeiaceae	*Asteropeia labatii*	Vulnerable	0
Asteropeiaceae	*Asteropeia rhopaloides*	Least Concern	0
Meliaceae	*Astrotrichilia asterotricha*	Least Concern	1
Meliaceae	*Astrotrichilia diegoensis*	Endangered	0
Meliaceae	*Astrotrichilia valiandra*	Endangered	1
Meliaceae	*Astrotrichilia zombitsyensis*	Endangered	0
Rhamnaceae	*Bathiorhamnus capuronii*	Vulnerable	0
Rhamnaceae	*Bathiorhamnus cryptophorus*	Vulnerable	0
Rhamnaceae	*Bathiorhamnus dentatus*	Vulnerable	0
Rhamnaceae	*Bathiorhamnus louvelii*	Least Concern	0
Rhamnaceae	*Bathiorhamnus reticulatus*	Least Concern	1
Fabaceae	*Baudouinia capuronii*	Critically Endangered	0
Fabaceae	*Baudouinia fluggeiformis*	Least Concern	2
Fabaceae	*Baudouinia rouxevillei*	Vulnerable	0
Fabaceae	*Baudouinia sollyaeformis*	Vulnerable	1
Fabaceae	*Bauhinia aurantiaca*	Vulnerable	1
Fabaceae	*Bauhinia brevicalyx*	Endangered	0
Fabaceae	*Bauhinia decandra*	Endangered	0
Fabaceae	*Bauhinia grevei*	Least Concern	3
Fabaceae	*Bauhinia madagascariensis*	Least Concern	4
Fabaceae	*Bauhinia morondavensis*	Least Concern	1

Family	Taxon	IUCN Category	*Ex situ* Collections
Fabaceae	*Bauhinia podopetala*	Least Concern	0
Sapindaceae	*Beguea borealis*	Critically Endangered	0
Lauraceae	*Beilschmiedia obovata*	Endangered	0
Lauraceae	*Beilschmiedia velutina*	Least Concern	0
Salicaceae	*Bembicia axillaris*	Least Concern	0
Euphorbiaceae	*Benoistia perrieri*	Near Threatened	0
Rubiaceae	*Bertiera longithyrsa*	Least Concern	1
Arecaceae	*Bismarckia nobilis*	Least Concern	76
Arecaceae	*Borassus madagascariensis*	Endangered	3
Capparaceae	*Boscia longifolia*	Least Concern	2
Capparaceae	*Boscia madagascariensis*	Least Concern	2
Boraginaceae	*Bourreria angustifolia*	Critically Endangered	0
Boraginaceae	*Bourreria apetala*	Vulnerable	0
Boraginaceae	*Bourreria bosseri*	Least Concern	0
Boraginaceae	*Bourreria capuronii*	Vulnerable	0
Boraginaceae	*Bourreria croatii*	Endangered	0
Boraginaceae	*Bourreria darcyana*	Endangered	0
Boraginaceae	*Bourreria labatii*	Vulnerable	0
Boraginaceae	*Bourreria leslieae*	Endangered	0
Boraginaceae	*Bourreria lowryana*	Vulnerable	0
Boraginaceae	*Bourreria moratiana*	Endangered	0
Boraginaceae	*Bourreria randrianasoloana*	Endangered	0
Asteraceae	*Brachylaena merana*	Least Concern	1
Asteraceae	*Brachylaena microphylla*	Least Concern	0
Asteraceae	*Brachylaena perrieri*	Least Concern	1
Asteraceae	*Brachylaena stellulifera*	Endangered	0
Fabaceae	*Brandzeia filicifolia*	Least Concern	1
Rubiaceae	*Bremeria pervillei*	Least Concern	1
Fabaceae	*Brenierea insignis*	Least Concern	5
Rubiaceae	*Breonia cuspidata*	Data Deficient	0
Rubiaceae	*Breonia fragifera*	Least Concern	0
Rubiaceae	*Breonia perrieri*	Least Concern	2
Rubiaceae	*Breonia sphaerantha*	Least Concern	0
Rubiaceae	*Breonia stipulata*	Endangered	0
Celastraceae	*Brexia australis*	Endangered	0
Escalloniaceae	*Brexia humbertii*	Least Concern	0
Phyllanthaceae	*Bridelia pervilleana*	Least Concern	2
Menispermaceae	*Burasaia madagascariensis*	Least Concern	1
Fabaceae	*Bussea perrieri*	Endangered	1
Fabaceae	*Bussea sakalava*	Least Concern	1
Buxaceae	*Buxus calcarea*	Endangered	0
Buxaceae	*Buxus capuronii*	Critically Endangered	0
Buxaceae	*Buxus humbertii*	Endangered	0
Capparaceae	*Cadaba virgata*	Least Concern	2
Fabaceae	*Caesalpinia madagascariensis*	Vulnerable	0
Salicaceae	*Calantica biseriata*	Least Concern	0
Salicaceae	*Calantica cerasifolia*	Least Concern	0
Salicaceae	*Calantica decaryana*	Vulnerable	0
Salicaceae	*Calantica lucida*	Endangered	0
Salicaceae	*Calantica olivacea*	Least Concern	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Calophyllaceae	*Calophyllum paniculatum*	Vulnerable	0
Calophyllaceae	*Calophyllum recedens*	Vulnerable	0
Calophyllaceae	*Calophyllum vernicosum*	Endangered	1
Sapindaceae	*Camptolepis hygrophila*	Endangered	0
Burseraceae	*Canarium multiflorum*	Least Concern	0
Lamiaceae	*Capitanopsis angustifolia*	Vulnerable	1
Lamiaceae	*Capitanopsis cloiselii*	Least Concern	0
Capparaceae	*Capparis grandidieri*	Critically Endangered	0
Sapotaceae	*Capurodendron androyense*	Least Concern	1
Sapotaceae	*Capurodendron ankaranense*	Vulnerable	0
Sapotaceae	*Capurodendron costatum*	Critically Endangered	0
Sapotaceae	*Capurodendron gracilifolium*	Near Threatened	1
Sapotaceae	*Capurodendron greveanum*	Least Concern	0
Sapotaceae	*Capurodendron ludiifolium*	Vulnerable	0
Sapotaceae	*Capurodendron madagascariense*	Endangered	0
Sapotaceae	*Capurodendron mandrarense*	Data Deficient	0
Sapotaceae	*Capurodendron nodosum*	Vulnerable	0
Sapotaceae	*Capurodendron perrieri*	Near Threatened	0
Sapotaceae	*Capurodendron pervillei*	Near Threatened	0
Sapotaceae	*Capurodendron rubrocostatum*	Least Concern	0
Sapotaceae	*Capurodendron sakalavum*	Vulnerable	0
Sapotaceae	*Capurodendron suarezense*	Endangered	0
Lythraceae	*Capuronia benoistii*	Least Concern	3
Meliaceae	*Capuronianthus mahafalensis*	Endangered	1
Meliaceae	*Capuronianthus vohemarensis*	Endangered	0
Apocynaceae	*Carissa boiviniana*	Least Concern	1
Rubiaceae	*Carphalea cloiselii*	Endangered	1
Rubiaceae	*Carphalea madagascariensis*	Vulnerable	2
Salicaceae	*Casearia nigrescens*	Least Concern	1
Salicaceae	*Casearia tulasneana*	Vulnerable	0
Fabaceae	*Cassia hippophallus*	Least Concern	1
Rhizophoraceae	*Cassipourea leptoclada*	Endangered	0
Rutaceae	*Cedrelopsis ambanjensis*	Endangered	0
Rutaceae	*Cedrelopsis grevei*	Least Concern	2
Rutaceae	*Cedrelopsis microfoliolata*	Least Concern	1
Rutaceae	*Cedrelopsis trivalvis*	Least Concern	0
Cannabaceae	*Celtis bifida*	Least Concern	1
Cannabaceae	*Celtis madagascariensis*	Least Concern	1
Fabaceae	*Chadsia flammea*	Least Concern	0
Fabaceae	*Chadsia magnifica*	Vulnerable	0
Fabaceae	*Chadsia salicina*	Least Concern	0
Rutaceae	*Chloroxylon falcatum*	Endangered	0
Sapindaceae	*Chouxia borealis*	Near Threatened	0
Canellaceae	*Cinnamosma fragrans*	Least Concern	1
Euphorbiaceae	*Cleidion capuronii*	Critically Endangered	0
Phyllanthaceae	*Cleistanthus boivinianus*	Least Concern	1
Phyllanthaceae	*Cleistanthus occidentalis*	Vulnerable	0
Lamiaceae	*Clerodendrum eucalycinum*	Endangered	0
Lamiaceae	*Clerodendrum involucratum*	Least Concern	1
Lamiaceae	*Clerodendrum kauderni*	Endangered	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Asteraceae	*Cloiselia carbonaria*	Least Concern	0
Asteraceae	*Cloiselia madagascariensis*	Endangered	0
Connaraceae	*Cnestis lurida*	Vulnerable	0
Rubiaceae	*Coffea ambongensis*	Endangered	1
Rubiaceae	*Coffea ankaranensis*	Endangered	0
Rubiaceae	*Coffea bissetiae*	Vulnerable	0
Rubiaceae	*Coffea boinensis*	Endangered	0
Rubiaceae	*Coffea boiviniana*	Near Threatened	0
Rubiaceae	*Coffea bonnieri*	Endangered	0
Rubiaceae	*Coffea grevei*	Least Concern	0
Rubiaceae	*Coffea jumellei*	Endangered	0
Rubiaceae	*Coffea labatii*	Vulnerable	0
Rubiaceae	*Coffea mcphersonii*	Endangered	0
Rubiaceae	*Coffea moratii*	Vulnerable	0
Rubiaceae	*Coffea namorokensis*	Endangered	0
Rubiaceae	*Coffea pterocarpa*	Endangered	0
Rubiaceae	*Coffea ratsimamangae*	Vulnerable	0
Rubiaceae	*Coffea sakarahae*	Least Concern	0
Rubiaceae	*Coffea tsirananae*	Vulnerable	0
Bignoniaceae	*Colea darainensis*	Endangered	0
Bignoniaceae	*Colea ratovosonii*	Endangered	0
Fabaceae	*Colvillea racemosa*	Least Concern	34
Burseraceae	*Commiphora andranovoryensis*	Endangered	0
Burseraceae	*Commiphora brevicalyx*	Least Concern	2
Burseraceae	*Commiphora capuronii*	Vulnerable	0
Burseraceae	*Commiphora elliptica*	Vulnerable	0
Burseraceae	*Commiphora falcata*	Vulnerable	1
Burseraceae	*Commiphora grandifolia*	Least Concern	2
Burseraceae	*Commiphora guillauminii*	Vulnerable	2
Burseraceae	*Commiphora lamii*	Near Threatened	3
Burseraceae	*Commiphora lasiodisca*	Near Threatened	1
Burseraceae	*Commiphora laxecymigera*	Endangered	0
Burseraceae	*Commiphora mafaidoha*	Endangered	4
Burseraceae	*Commiphora morondavensis*	Vulnerable	0
Burseraceae	*Commiphora pterocarpa*	Vulnerable	1
Burseraceae	*Commiphora razakamalalae*	Endangered	0
Burseraceae	*Commiphora stellulata*	Endangered	0
Oleaceae	*Comoranthus minor*	Least Concern	1
Rubiaceae	*Coptosperma pachyphyllum*	Least Concern	0
Rubiaceae	*Coptosperma sessiliflorum*	Data Deficient	0
Boraginaceae	*Cordia lowryana*	Least Concern	0
Boraginaceae	*Cordia mairei*	Least Concern	1
Boraginaceae	*Cordia schatziana*	Endangered	0
Apocynaceae	*Craspidospermum verticillatum*	Least Concern	0
Capparaceae	*Crateva greveana*	Least Concern	1
Euphorbiaceae	*Croton argyrodaphne*	Least Concern	0
Euphorbiaceae	*Croton crossolepis*	Endangered	0
Euphorbiaceae	*Croton cupreolepis*	Near Threatened	0
Lauraceae	*Cryptocarya krameri*	Vulnerable	1
Lauraceae	*Cryptocarya occidentalis*	Least Concern	1

Family	Taxon	IUCN Category	*Ex situ* Collections
Fabaceae	*Cynometra abrahamii*	Least Concern	0
Fabaceae	*Cynometra ankaranensis*	Endangered	0
Fabaceae	*Cynometra aurita*	Near Threatened	0
Fabaceae	*Cynometra lyallii*	Vulnerable	0
Fabaceae	*Cynometra sakalava*	Least Concern	1
Vitaceae	*Cyphostemma darainense*	Endangered	0
Thymelaeaceae	*Dais glaucescens*	Least Concern	0
Fabaceae	*Dalbergia abrahamii*	Endangered	2
Fabaceae	*Dalbergia chlorocarpa*	Vulnerable	1
Fabaceae	*Dalbergia davidii*	Critically Endangered	0
Fabaceae	*Dalbergia emirnensis*	Vulnerable	1
Fabaceae	*Dalbergia glaberrima*	Vulnerable	1
Fabaceae	*Dalbergia glaucocarpa*	Vulnerable	1
Fabaceae	*Dalbergia greveana*	Vulnerable	2
Fabaceae	*Dalbergia hildebrandtii*	Vulnerable	0
Fabaceae	*Dalbergia humbertii*	Vulnerable	1
Fabaceae	*Dalbergia lemurica*	Vulnerable	1
Fabaceae	*Dalbergia madagascariensis*	Vulnerable	0
Fabaceae	*Dalbergia mollis*	Vulnerable	2
Fabaceae	*Dalbergia neoperrieri*	Vulnerable	0
Fabaceae	*Dalbergia peltieri*	Vulnerable	1
Fabaceae	*Dalbergia pervillei*	Vulnerable	1
Fabaceae	*Dalbergia pseudobaronii*	Vulnerable	0
Fabaceae	*Dalbergia purpurascens*	Vulnerable	4
Fabaceae	*Dalbergia suaresensis*	Endangered	1
Fabaceae	*Dalbergia trichocarpa*	Least Concern	1
Fabaceae	*Dalbergia tricolor*	Vulnerable	0
Fabaceae	*Dalbergia tsiandalana*	Endangered	1
Fabaceae	*Dalbergia urschii*	Endangered	0
Fabaceae	*Dalbergia viguieri*	Vulnerable	0
Fabaceae	*Dalbergia xerophila*	Endangered	1
Didiereaceae	*Decarya madagascariensis*	Near Threatened	20
Sapindaceae	*Deinbollia boinensis*	Endangered	1
Sapindaceae	*Deinbollia pervillei*	Least Concern	1
Fabaceae	*Delonix boiviniana*	Least Concern	8
Fabaceae	*Delonix brachycarpa*	Least Concern	0
Fabaceae	*Delonix decaryi*	Vulnerable	16
Fabaceae	*Delonix floribunda*	Least Concern	19
Fabaceae	*Delonix leucantha*	Near Threatened	2
Fabaceae	*Delonix pumila*	Endangered	22
Fabaceae	*Delonix regia*	Least Concern	126
Fabaceae	*Delonix tomentosa*	Critically Endangered	0
Fabaceae	*Delonix velutina*	Endangered	4
Fabaceae	*Dialium occidentale*	Least Concern	1
Melastomataceae	*Dichaetanthera altissima*	Endangered	0
Melastomataceae	*Dichaetanthera bifida*	Vulnerable	0
Melastomataceae	*Dichaetanthera oblongifolia*	Least Concern	0
Melastomataceae	*Dichaetanthera tsaratananensis*	Endangered	0
Fabaceae	*Dichrostachys myriophylla*	Vulnerable	0
Fabaceae	*Dichrostachys unijuga*	Least Concern	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Asteraceae	*Dicoma incana*	Least Concern	1
Fabaceae	*Dicraeopetalum capuronianum*	Near Threatened	1
Fabaceae	*Dicraeopetalum mahafaliense*	Least Concern	1
Didiereaceae	*Didierea madagascariensis*	Least Concern	51
Didiereaceae	*Didierea trollii*	Vulnerable	59
Bixaceae	*Diegodendron humbertii*	Vulnerable	1
Ebenaceae	*Diospyros aculeata*	Least Concern	1
Ebenaceae	*Diospyros bemarivensis*	Vulnerable	0
Ebenaceae	*Diospyros bezofensis*	Endangered	0
Ebenaceae	*Diospyros boinensis*	Near Threatened	0
Ebenaceae	*Diospyros calophylla*	Least Concern	1
Ebenaceae	*Diospyros cinnamomoides*	Least Concern	1
Ebenaceae	*Diospyros clusiifolia*	Near Threatened	0
Ebenaceae	*Diospyros cupulifera*	Least Concern	1
Ebenaceae	*Diospyros danguyana*	Least Concern	1
Ebenaceae	*Diospyros erythrosperma*	Least Concern	1
Ebenaceae	*Diospyros greveana*	Vulnerable	0
Ebenaceae	*Diospyros haplostylis*	Least Concern	1
Ebenaceae	*Diospyros humbertiana*	Least Concern	1
Ebenaceae	*Diospyros implexicalyx*	Vulnerable	0
Ebenaceae	*Diospyros lanceolata*	Near Threatened	0
Ebenaceae	*Diospyros latispathulata*	Least Concern	1
Ebenaceae	*Diospyros manampetsae*	Least Concern	1
Ebenaceae	*Diospyros myriophylla*	Least Concern	1
Ebenaceae	*Diospyros myrtifolia*	Least Concern	0
Ebenaceae	*Diospyros nidiformis*	Endangered	1
Ebenaceae	*Diospyros olacinoides*	Least Concern	1
Ebenaceae	*Diospyros parifolia*	Near Threatened	0
Ebenaceae	*Diospyros perglauca*	Endangered	0
Ebenaceae	*Diospyros perreticulata*	Least Concern	0
Ebenaceae	*Diospyros perrieri*	Near Threatened	0
Ebenaceae	*Diospyros pervilleana*	Least Concern	0
Ebenaceae	*Diospyros pervillei*	Endangered	1
Ebenaceae	*Diospyros pruinosa*	Least Concern	1
Ebenaceae	*Diospyros quercina*	Vulnerable	1
Ebenaceae	*Diospyros sakalavarum*	Least Concern	1
Ebenaceae	*Diospyros squamosa*	Least Concern	0
Ebenaceae	*Diospyros subfalciformis*	Endangered	0
Ebenaceae	*Diospyros tetraceros*	Endangered	0
Ebenaceae	*Diospyros tropophylla*	Least Concern	1
Ebenaceae	*Diospyros urschii*	Near Threatened	0
Ebenaceae	*Diospyros vescoi*	Least Concern	1
Malvaceae	*Dombeya ambohitrensis*	Critically Endangered	0
Malvaceae	*Dombeya anakaensis*	Endangered	1
Malvaceae	*Dombeya andrahomanensis*	Endangered	1
Malvaceae	*Dombeya digyna*	Endangered	0
Malvaceae	*Dombeya lecomtei*	Endangered	1
Malvaceae	*Dombeya lecomteopsis*	Critically Endangered	0
Malvaceae	*Dombeya longipedicellata*	Critically Endangered	0
Malvaceae	*Dombeya milleri*	Critically Endangered	0
Malvaceae	*Dombeya parvipetala*	Endangered	0
Malvaceae	*Dombeya pauciflora*	Critically Endangered	0
Malvaceae	*Dombeya ranofotsyensis*	Endangered	0
Malvaceae	*Dombeya rariflora*	Endangered	0
Malvaceae	*Dombeya ratovosonii*	Critically Endangered	0
Malvaceae	*Dombeya rosacea*	Critically Endangered	0
Malvaceae	*Dombeya sakamaliensis*	Critically Endangered	0
Malvaceae	*Dombeya selinala*	Endangered	0
Malvaceae	*Dombeya sely*	Critically Endangered	0
Malvaceae	*Dombeya seyrigiana*	Critically Endangered	0
Malvaceae	*Dombeya subviscosa*	Vulnerable	1
Malvaceae	*Dombeya tavia*	Critically Endangered	0
Malvaceae	*Dombeya tsiandrensis*	Critically Endangered	0
Malvaceae	*Dombeya tulearensis*	Endangered	0
Malvaceae	*Dombeya vohemarensis*	Endangered	0
Sapotaceae	*Donella analalavensis*	Endangered	0
Sapotaceae	*Donella guereliana*	Endangered	0
Sapindaceae	*Doratoxylon alatum*	Endangered	0
Myristicaceae	*Doyleanthus arillata*	Endangered	0
Asparagaceae	*Dracaena xiphophylla*	Least Concern	0
Putranjivaceae	*Drypetes capuronii*	Least Concern	0
Putranjivaceae	*Drypetes madagascariensis*	Least Concern	1
Fabaceae	*Dupuya haraka*	Least Concern	0
Fabaceae	*Dupuya madagascariensis*	Least Concern	1
Arecaceae	*Dypsis baronii*	Least Concern	13
Arecaceae	*Dypsis crinita*	Near Threatened	6
Arecaceae	*Dypsis decaryi*	Vulnerable	71
Arecaceae	*Dypsis leptocheilos*	Critically Endangered	32
Arecaceae	*Dypsis madagascariensis*	Least Concern	25
Arecaceae	*Dypsis onilahensis*	Vulnerable	12
Arecaceae	*Dypsis tsaravoasira*	Vulnerable	3
Boraginaceae	*Ehretia decaryi*	Endangered	1
Boraginaceae	*Ehretia meyersii*	Endangered	1
Boraginaceae	*Ehretia phillipsonii*	Vulnerable	0
Boraginaceae	*Ehretia seyrigii*	Least Concern	0
Fabaceae	*Eligmocarpus cynometroides*	Critically Endangered	1
Connaraceae	*Ellipanthus madagascariensis*	Least Concern	0
Primulaceae	*Embelia tropophylla*	Endangered	2
Fabaceae	*Entada pervillei*	Vulnerable	2
Sarcolaenaceae	*Eremolaena darainensis*	Endangered	0
Fabaceae	*Erythrina ankaranensis*	Endangered	0
Fabaceae	*Erythrina perrieri*	Endangered	6
Fabaceae	*Erythrophleum couminga*	Endangered	1
Sapindaceae	*Erythrophysa aesculina*	Vulnerable	4
Sapindaceae	*Erythrophysa belinii*	Endangered	0
Sapindaceae	*Erythrophysa humbertii*	Vulnerable	1
Sapindaceae	*Erythrophysa lapiazicola*	Endangered	0
Sapindaceae	*Erythrophysa paniculata*	Critically Endangered	0
Sapindaceae	*Erythrophysa sakalava*	Endangered	0
Erythroxylaceae	*Erythroxylum sphaeranthum*	Least Concern	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Myrtaceae	*Eugenia analamerensis*	Endangered	0
Myrtaceae	*Eugenia calciscopulorum*	Critically Endangered	0
Myrtaceae	*Eugenia vanwykiana*	Critically Endangered	0
Euphorbiaceae	*Euphorbia adenopoda*	Least Concern	2
Euphorbiaceae	*Euphorbia alluaudii*	Least Concern	10
Euphorbiaceae	*Euphorbia analamerae*	Critically Endangered	0
Euphorbiaceae	*Euphorbia ankaranae*	Endangered	2
Euphorbiaceae	*Euphorbia arahaka*	Least Concern	3
Euphorbiaceae	*Euphorbia boinensis*	Critically Endangered	0
Euphorbiaceae	*Euphorbia bongolavensis*	Endangered	17
Euphorbiaceae	*Euphorbia decorsei*	Endangered	0
Euphorbiaceae	*Euphorbia elastica*	Critically Endangered	0
Euphorbiaceae	*Euphorbia haevermansii*	Endangered	0
Euphorbiaceae	*Euphorbia intisy*	Near Threatened	15
Euphorbiaceae	*Euphorbia kamponii*	Critically Endangered	12
Euphorbiaceae	*Euphorbia mainty*	Least Concern	1
Euphorbiaceae	*Euphorbia mananarensis*	Endangered	0
Euphorbiaceae	*Euphorbia mandravioky*	Vulnerable	1
Euphorbiaceae	*Euphorbia nusbaumeri*	Endangered	0
Euphorbiaceae	*Euphorbia pervilleana*	Least Concern	2
Euphorbiaceae	*Euphorbia plagiantha*	Least Concern	4
Euphorbiaceae	*Euphorbia ramofraga*	Critically Endangered	0
Euphorbiaceae	*Euphorbia tetraptera*	Least Concern	1
Celastraceae	*Evonymopsis humbertii*	Endangered	0
Rutaceae	*Fagaropsis glabra*	Endangered	0
Sapotaceae	*Faucherea ambrensis*	Data Deficient	0
Bignoniaceae	*Fernandoa macrantha*	Vulnerable	0
Bignoniaceae	*Fernandoa madagascariensis*	Least Concern	12
Moraceae	*Ficus botryoides*	Least Concern	1
Moraceae	*Ficus brachyclada*	Least Concern	1
Moraceae	*Ficus grevei*	Least Concern	1
Moraceae	*Ficus humbertii*	Endangered	1
Moraceae	*Ficus madagascariensis*	Least Concern	0
Moraceae	*Ficus marmorata*	Least Concern	2
Moraceae	*Ficus menabeensis*	Least Concern	5
Moraceae	*Ficus pachyclada*	Least Concern	1
Moraceae	*Ficus politoria*	Least Concern	1
Moraceae	*Ficus polyphlebia*	Least Concern	0
Moraceae	*Ficus sakalavarum*	Least Concern	1
Lecythidaceae	*Foetidia asymetrica*	Least Concern	1
Lecythidaceae	*Foetidia dracaenoides*	Endangered	0
Lecythidaceae	*Foetidia macrocarpa*	Vulnerable	1
Lecythidaceae	*Foetidia retusa*	Least Concern	1
Lecythidaceae	*Foetidia rubescens*	Critically Endangered	0
Lecythidaceae	*Foetidia vohemarensis*	Vulnerable	1
Fabaceae	*Gagnebina bakoliae*	Critically Endangered	0
Clusiaceae	*Garcinia ambrensis*	Endangered	0
Clusiaceae	*Garcinia arenicola*	Vulnerable	1
Clusiaceae	*Garcinia calcicola*	Least Concern	1
Clusiaceae	*Garcinia crassiflora*	Endangered	0
Clusiaceae	*Garcinia evonymoides*	Vulnerable	0
Clusiaceae	*Garcinia lowryi*	Least Concern	0
Clusiaceae	*Garcinia pervillei*	Near Threatened	0
Rubiaceae	*Gardenia brevicalyx*	Vulnerable	1
Rubiaceae	*Gardenia rutenbergiana*	Least Concern	2
Rubiaceae	*Gardenia sambiranensis*	Vulnerable	0
Euphorbiaceae	*Givotia madagascariensis*	Vulnerable	2
Euphorbiaceae	*Givotia stipularis*	Near Threatened	1
Thymelaeaceae	*Gnidia daphnifolia*	Least Concern	1
Thymelaeaceae	*Gnidia gilbertae*	Vulnerable	0
Apocynaceae	*Gonioma malagasy*	Vulnerable	0
Chrysobalanaceae	*Grangeria porosa*	Least Concern	1
Malvaceae	*Grewia ambongoensis*	Endangered	0
Malvaceae	*Grewia amplifolia*	Endangered	1
Malvaceae	*Grewia andramparo*	Least Concern	1
Malvaceae	*Grewia androyensis*	Least Concern	1
Malvaceae	*Grewia apetala*	Least Concern	1
Malvaceae	*Grewia baillonii*	Vulnerable	1
Malvaceae	*Grewia cyclea*	Least Concern	2
Malvaceae	*Grewia diversipes*	Endangered	1
Malvaceae	*Grewia gautieri*	Vulnerable	0
Malvaceae	*Grewia glyphaeoides*	Endangered	1
Malvaceae	*Grewia grandidieri*	Least Concern	1
Malvaceae	*Grewia grevei*	Vulnerable	1
Malvaceae	*Grewia lapiazicola*	Vulnerable	1
Malvaceae	*Grewia lavanalensis*	Least Concern	2
Malvaceae	*Grewia leucophylla*	Least Concern	1
Malvaceae	*Grewia luteiflora*	Endangered	1
Malvaceae	*Grewia mahafaliensis*	Endangered	1
Malvaceae	*Grewia meridionalis*	Least Concern	2
Malvaceae	*Grewia microcyclea*	Least Concern	1
Malvaceae	*Grewia monantha*	Critically Endangered	1
Malvaceae	*Grewia perrieri*	Critically Endangered	0
Malvaceae	*Grewia pervillei*	Endangered	1
Malvaceae	*Grewia sahafariensis*	Endangered	0
Malvaceae	*Grewia sambiranensis*	Least Concern	1
Malvaceae	*Grewia suarezensis*	Vulnerable	1
Malvaceae	*Grewia subaequalis*	Endangered	1
Malvaceae	*Grewia tannifera*	Vulnerable	0
Malvaceae	*Grewia thouvenotii*	Least Concern	0
Malvaceae	*Grewia tsiandrensis*	Critically Endangered	0
Malvaceae	*Grewia tulearensis*	Endangered	2
Euphorbiaceae	*Grossera perrieri*	Least Concern	0
Hernandiaceae	*Hazomalania voyronii*	Critically Endangered	1
Malvaceae	*Helmiopsiella ctenostegia*	Endangered	2
Malvaceae	*Helmiopsiella leandrii*	Endangered	0
Malvaceae	*Helmiopsiella madagascariensis*	Least Concern	3
Malvaceae	*Helmiopsiella poissonii*	Endangered	0
Malvaceae	*Helmiopsis bernieri*	Endangered	0
Malvaceae	*Helmiopsis boivinii*	Vulnerable	1

Family	Taxon	IUCN Category	*Ex situ* Collections
Malvaceae	*Helmiopsis glaberrima*	Critically Endangered	0
Malvaceae	*Helmiopsis hily*	Endangered	2
Malvaceae	*Helmiopsis linearifolia*	Endangered	1
Malvaceae	*Helmiopsis polyandra*	Endangered	0
Malvaceae	*Helmiopsis pseudopopulus*	Endangered	1
Malvaceae	*Helmiopsis richardii*	Endangered	0
Malvaceae	*Helmiopsis rigida*	Vulnerable	0
Malvaceae	*Helmiopsis sphaerocarpa*	Endangered	0
Amaranthaceae	*Henonia scoparia*	Endangered	2
Malvaceae	*Hibiscus diplocrater*	Least Concern	3
Malvaceae	*Hibiscus megistanthus*	Endangered	0
Malvaceae	*Hibiscus thespesianus*	Near Threatened	1
Malvaceae	*Hildegardia ankaranensis*	Endangered	1
Malvaceae	*Hildegardia erythrosiphon*	Least Concern	2
Salicaceae	*Homalium albiflorum*	Least Concern	0
Salicaceae	*Homalium boinense*	Endangered	0
Salicaceae	*Homalium brachyrhachis*	Critically Endangered	0
Salicaceae	*Homalium brachystylum*	Least Concern	0
Salicaceae	*Homalium capuronii*	Vulnerable	0
Salicaceae	*Homalium erianthum*	Vulnerable	0
Salicaceae	*Homalium intercedens*	Critically Endangered	0
Salicaceae	*Homalium longistaminum*	Endangered	0
Salicaceae	*Homalium oppositifolium*	Least Concern	0
Salicaceae	*Homalium trigynum*	Least Concern	0
Annonaceae	*Huberantha henrici*	Least Concern	0
Annonaceae	*Huberantha perrieri*	Vulnerable	0
Malvaceae	*Humbertiella decaryi*	Vulnerable	1
Malvaceae	*Humbertiella henricii*	Endangered	0
Malvaceae	*Humbertiella sakamaliensis*	Endangered	0
Meliaceae	*Humbertioturraea grandidieri*	Vulnerable	0
Meliaceae	*Humbertioturraea maculata*	Endangered	1
Rubiaceae	*Hymenodictyon antakaranensis*	Endangered	0
Rubiaceae	*Hymenodictyon berivotrense*	Least Concern	1
Rubiaceae	*Hymenodictyon decaryi*	Least Concern	1
Rubiaceae	*Hymenodictyon glabrum*	Vulnerable	0
Rubiaceae	*Hymenodictyon leandrii*	Vulnerable	0
Rubiaceae	*Hymenodictyon louhavate*	Least Concern	1
Rubiaceae	*Hymenodictyon occidentale*	Least Concern	2
Rubiaceae	*Hymenodictyon perrieri*	Least Concern	0
Rubiaceae	*Hyperacanthus ambovombensis*	Least Concern	1
Rubiaceae	*Hyperacanthus grevei*	Least Concern	1
Rubiaceae	*Hyperacanthus perrieri*	Least Concern	0
Fabaceae	*Indigofera cloiselii*	Least Concern	1
Fabaceae	*Indigofera depauperata*	Least Concern	2
Fabaceae	*Indigofera mahafalensis*	Vulnerable	0
Fabaceae	*Indigofera perrieri*	Least Concern	1
Annonaceae	*Isolona humbertiana*	Endangered	0
Annonaceae	*Isolona madagascariensis*	Near Threatened	0
Rubiaceae	*Ixora ripicola*	Near Threatened	0
Rubiaceae	*Ixora siphonantha*	Least Concern	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Euphorbiaceae	*Jatropha mahafalensis*	Near Threatened	14
Crassulaceae	*Kalanchoe beharensis*	Vulnerable	149
Montiniaceae	*Kaliphora madagascariensis*	Least Concern	2
Lamiaceae	*Karomia humbertii*	Vulnerable	0
Lamiaceae	*Karomia macrocalyx*	Vulnerable	1
Lamiaceae	*Karomia madagascariensis*	Endangered	0
Lamiaceae	*Karomia microphylla*	Least Concern	2
Lamiaceae	*Karomia mira*	Least Concern	1
Kirkiaceae	*Kirkia leandrii*	Endangered	0
Malvaceae	*Kosteletzkya retrobracteata*	Endangered	0
Sapotaceae	*Labramia ankaranaensis*	Least Concern	0
Sapotaceae	*Labramia platanoides*	Near Threatened	0
Meliaceae	*Lepidotrichilia ambrensis*	Vulnerable	0
Meliaceae	*Lepidotrichilia convallariiodora*	Vulnerable	0
Sapindaceae	*Lepisanthes chrysotricha*	Endangered	0
Sapindaceae	*Lepisanthes perrieri*	Least Concern	0
Sarcolaenaceae	*Leptolaena cuspidata*	Least Concern	2
Sarcolaenaceae	*Leptolaena gautieri*	Least Concern	1
Melastomataceae	*Lijndenia darainensis*	Critically Endangered	0
Phyllanthaceae	*Lingelsheimia fiherenensis*	Endangered	0
Salicaceae	*Ludia ankaranensis*	Endangered	0
Salicaceae	*Ludia boinensis*	Least Concern	0
Salicaceae	*Ludia craggiana*	Endangered	0
Salicaceae	*Ludia dracaenoides*	Vulnerable	0
Salicaceae	*Ludia imontiensis*	Critically Endangered	0
Salicaceae	*Ludia leandriana*	Endangered	0
Salicaceae	*Ludia ludiifolia*	Least Concern	1
Salicaceae	*Ludia madagascariensis*	Least Concern	0
Salicaceae	*Ludia myrtoides*	Critically Endangered	0
Salicaceae	*Ludia suarezensis*	Endangered	0
Salicaceae	*Ludia wikstroemiifolia*	Endangered	0
Euphorbiaceae	*Macaranga alnifolia*	Least Concern	1
Euphorbiaceae	*Macaranga cuspidata*	Least Concern	1
Euphorbiaceae	*Macaranga echinocarpa*	Least Concern	0
Euphorbiaceae	*Macaranga ferruginea*	Least Concern	1
Euphorbiaceae	*Macaranga macropoda*	Least Concern	0
Lamiaceae	*Madlabium magenteum*	Vulnerable	0
Capparaceae	*Maerua filiformis*	Least Concern	2
Meliaceae	*Malleastrum antsingyense*	Least Concern	0
Meliaceae	*Malleastrum letouzeyanum*	Endangered	0
Sapotaceae	*Manilkara sahafarensis*	Critically Endangered	0
Sapotaceae	*Manilkara suarezensis*	Critically Endangered	0
Rubiaceae	*Mantalania sambiranensis*	Least Concern	0
Phyllanthaceae	*Margaritaria decaryana*	Least Concern	1
Phyllanthaceae	*Margaritaria hispidula*	Critically Endangered	0
Phyllanthaceae	*Margaritaria rhomboidalis*	Least Concern	1
Pandanaceae	*Martellidendron androcephalanthos*	Vulnerable	0
Pandanaceae	*Martellidendron cruciatum*	Least Concern	0
Apocynaceae	*Mascarenhasia lanceolata*	Least Concern	1
Apocynaceae	*Mascarenhasia lisianthiflora*	Least Concern	3

Family	Taxon	IUCN Category	*Ex situ* Collections
Arecaceae	*Masoala madagascariensis*	Critically Endangered	6
Sarcolaenaceae	*Mediusella arenaria*	Near Threatened	0
Sarcolaenaceae	*Mediusella bernieri*	Endangered	1
Malvaceae	*Megistostegium nodulosum*	Least Concern	0
Phyllanthaceae	*Meineckia pubiflora*	Endangered	0
Rubiaceae	*Melanoxerus suavissimus*	Least Concern	0
Melastomataceae	*Memecylon antseranense*	Endangered	0
Melastomataceae	*Memecylon auratifolium*	Endangered	0
Melastomataceae	*Memecylon boinense*	Endangered	1
Melastomataceae	*Memecylon cotinifolioides*	Vulnerable	0
Melastomataceae	*Memecylon isaloense*	Critically Endangered	0
Melastomataceae	*Memecylon louvelianum*	Least Concern	0
Melastomataceae	*Memecylon utericarpum*	Endangered	0
Anacardiaceae	*Micronychia minutiflora*	Least Concern	0
Fabaceae	*Millettia aurea*	Vulnerable	1
Fabaceae	*Millettia lenneoides*	Least Concern	1
Fabaceae	*Millettia nathaliae*	Vulnerable	0
Fabaceae	*Millettia richardiana*	Least Concern	1
Fabaceae	*Millettia taolanaroensis*	Vulnerable	2
Fabaceae	*Mimosa haavoa*	Endangered	0
Fabaceae	*Mimosa lingvatouana*	Endangered	0
Sapotaceae	*Mimusops antsiranensis*	Endangered	1
Sapotaceae	*Mimusops boeniensis*	Vulnerable	0
Sapotaceae	*Mimusops capuronii*	Least Concern	1
Sapotaceae	*Mimusops occidentalis*	Vulnerable	0
Sapotaceae	*Mimusops sambiranensis*	Endangered	0
Dipterocarpaceae	*Monotes madagascariensis*	Endangered	1
Moringaceae	*Moringa drouhardii*	Least Concern	30
Moringaceae	*Moringa hildebrandtii*	Critically Endangered	20
Fabaceae	*Mundulea antanossarum*	Least Concern	1
Fabaceae	*Mundulea menabeensis*	Near Threatened	1
Fabaceae	*Mundulea micrantha*	Least Concern	1
Fabaceae	*Neoapaloxylon madagascariense*	Least Concern	2
Fabaceae	*Neoapaloxylon tuberosum*	Least Concern	1
Meliaceae	*Neobeguea ankaranensis*	Vulnerable	0
Meliaceae	*Neobeguea leandriana*	Vulnerable	0
Meliaceae	*Neobeguea mahafaliensis*	Least Concern	1
Fabaceae	*Neoharmsia baronii*	Endangered	1
Fabaceae	*Neoharmsia madagascariensis*	Endangered	0
Malvaceae	*Nesogordonia ambalabeensis*	Least Concern	1
Malvaceae	*Nesogordonia chrysocarpa*	Endangered	0
Malvaceae	*Nesogordonia fertilis*	Endangered	0
Malvaceae	*Nesogordonia humbertii*	Vulnerable	0
Malvaceae	*Nesogordonia micrantha*	Endangered	0
Malvaceae	*Nesogordonia monantha*	Endangered	0
Malvaceae	*Nesogordonia pachyneura*	Vulnerable	0
Malvaceae	*Nesogordonia stylosa*	Vulnerable	1
Oleaceae	*Noronhia alleizettei*	Least Concern	0
Oleaceae	*Noronhia aminae*	Near Threatened	0
Oleaceae	*Noronhia ankaranensis*	Near Threatened	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Oleaceae	*Noronhia boinensis*	Vulnerable	0
Oleaceae	*Noronhia buxifolia*	Least Concern	0
Oleaceae	*Noronhia candicans*	Vulnerable	0
Oleaceae	*Noronhia capuronii*	Vulnerable	0
Oleaceae	*Noronhia christenseniana*	Endangered	0
Oleaceae	*Noronhia crassinodis*	Vulnerable	0
Oleaceae	*Noronhia divaricata*	Vulnerable	0
Oleaceae	*Noronhia grandifolia*	Least Concern	0
Oleaceae	*Noronhia greeniana*	Endangered	0
Oleaceae	*Noronhia humbertiana*	Near Threatened	0
Oleaceae	*Noronhia humblotiana*	Near Threatened	0
Oleaceae	*Noronhia incurvifolia*	Endangered	0
Oleaceae	*Noronhia lanceolata*	Least Concern	0
Oleaceae	*Noronhia leandriana*	Vulnerable	0
Oleaceae	*Noronhia linearifolia*	Vulnerable	0
Oleaceae	*Noronhia linocerioides*	Least Concern	0
Oleaceae	*Noronhia longipedicellata*	Vulnerable	0
Oleaceae	*Noronhia louvelii*	Least Concern	0
Oleaceae	*Noronhia maculata*	Endangered	0
Oleaceae	*Noronhia myrtoides*	Least Concern	0
Oleaceae	*Noronhia oblanceolata*	Vulnerable	0
Oleaceae	*Noronhia olearia*	Endangered	0
Oleaceae	*Noronhia pervilleana*	Least Concern	0
Oleaceae	*Noronhia planifolia*	Endangered	0
Oleaceae	*Noronhia populifolia*	Critically Endangered	0
Oleaceae	*Noronhia rostrata*	Endangered	0
Oleaceae	*Noronhia sambiranensis*	Near Threatened	0
Oleaceae	*Noronhia seyrigii*	Least Concern	0
Oleaceae	*Noronhia tefyana*	Endangered	0
Oleaceae	*Noronhia tetrandra*	Near Threatened	0
Oleaceae	*Noronhia tropophylla*	Least Concern	0
Oleaceae	*Noronhia tubulosa*	Endangered	0
Oleaceae	*Noronhia urceolata*	Vulnerable	0
Oleaceae	*Noronhia variabilis*	Vulnerable	0
Oleaceae	*Noronhia verticillata*	Least Concern	0
Stilbaceae	*Nuxia sphaerocephala*	Least Concern	1
Urticaceae	*Obetia madagascariensis*	Vulnerable	1
Ochnaceae	*Ochna baronii*	Endangered	0
Ochnaceae	*Ochna emarginata*	Endangered	0
Ochnaceae	*Ochna macrantha*	Vulnerable	0
Lauraceae	*Ocotea longipes*	Vulnerable	0
Lauraceae	*Ocotea spanantha*	Endangered	0
Olacaceae	*Olax antsiranensis*	Vulnerable	0
Olacaceae	*Olax capuronii*	Vulnerable	0
Olacaceae	*Olax lanceolata*	Least Concern	1
Olacaceae	*Olax madagascariensis*	Least Concern	0
Euphorbiaceae	*Omphalea ankaranensis*	Endangered	0
Euphorbiaceae	*Omphalea palmata*	Vulnerable	1
Anacardiaceae	*Operculicarya borealis*	Endangered	0
Anacardiaceae	*Operculicarya calcicola*	Endangered	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Anacardiaceae	*Operculicarya capuronii*	Critically Endangered	0
Anacardiaceae	*Operculicarya decaryi*	Least Concern	40
Anacardiaceae	*Operculicarya hyphaenoides*	Endangered	0
Anacardiaceae	*Operculicarya multijuga*	Endangered	0
Arecaceae	*Orania longisquama*	Least Concern	2
Fabaceae	*Ormocarpopsis aspera*	Least Concern	0
Fabaceae	*Ormocarpopsis calcicola*	Vulnerable	0
Fabaceae	*Ormocarpopsis mandrarensis*	Endangered	0
Fabaceae	*Ormocarpopsis tulearensis*	Vulnerable	0
Apocynaceae	*Pachypodium geayi*	Least Concern	88
Apocynaceae	*Pachypodium lamerei*	Least Concern	136
Apocynaceae	*Pachypodium meridionale*	Vulnerable	11
Apocynaceae	*Pachypodium mikea*	Endangered	10
Apocynaceae	*Pachypodium rutenbergianum*	Least Concern	40
Apocynaceae	*Pachypodium sofiense*	Vulnerable	12
Pandanaceae	*Pandanus ambongensis*	Vulnerable	0
Pandanaceae	*Pandanus ankaranensis*	Endangered	0
Pandanaceae	*Pandanus aridus*	Near Threatened	0
Pandanaceae	*Pandanus bakeri*	Endangered	1
Pandanaceae	*Pandanus barbellatus*	Endangered	0
Pandanaceae	*Pandanus connatus*	Endangered	0
Pandanaceae	*Pandanus coriaceus*	Vulnerable	0
Pandanaceae	*Pandanus flagellibracteatus*	Vulnerable	0
Pandanaceae	*Pandanus mammillaris*	Endangered	0
Pandanaceae	*Pandanus myriocarpus*	Vulnerable	0
Pandanaceae	*Pandanus namakiensis*	Vulnerable	0
Pandanaceae	*Pandanus perrieri*	Endangered	0
Pandanaceae	*Pandanus tolanarensis*	Endangered	0
Pandanaceae	*Pandanus tsingycola*	Endangered	0
Pandanaceae	*Pandanus variabilis*	Vulnerable	0
Rubiaceae	*Paracarphalea angulata*	Least Concern	0
Rubiaceae	*Paracarphalea kirondron*	Least Concern	0
Rubiaceae	*Paracarphalea pervilleana*	Least Concern	0
Rubiaceae	*Paracephaelis cinerea*	Least Concern	3
Rubiaceae	*Paracephaelis saxatilis*	Vulnerable	1
Rubiaceae	*Paracorynanthe antankarana*	Vulnerable	0
Rubiaceae	*Paracorynanthe uropetala*	Endangered	0
Fabaceae	*Parkia madagascariensis*	Vulnerable	0
Passifloraceae	*Paropsia grandiflora*	Vulnerable	0
Passifloraceae	*Paropsia perrieri*	Endangered	0
Rubiaceae	*Peponidium flavum*	Vulnerable	0
Rubiaceae	*Peponidium humbertii*	Vulnerable	0
Simaroubaceae	*Perriera madagascariensis*	Least Concern	1
Sarcolaenaceae	*Perrierodendron boinense*	Vulnerable	0
Sarcolaenaceae	*Perrierodendron occidentale*	Vulnerable	0
Sarcolaenaceae	*Perrierodendron rodoense*	Critically Endangered	0
Apocynaceae	*Petchia cryptophlebia*	Least Concern	0
Olacaceae	*Phanerodiscus diospyroidea*	Vulnerable	0
Olacaceae	*Phanerodiscus perrieri*	Vulnerable	1
Phyllanthaceae	*Phyllanthus analamerae*	Endangered	0
Phyllanthaceae	*Phyllanthus fuscoluridus*	Least Concern	1
Phyllanthaceae	*Phyllanthus oreichtitus*	Least Concern	0
Bignoniaceae	*Phyllarthron articulatum*	Vulnerable	0
Bignoniaceae	*Phyllarthron bilabiatum*	Endangered	0
Fabaceae	*Phylloxylon arenicola*	Endangered	0
Fabaceae	*Phylloxylon decipiens*	Endangered	0
Fabaceae	*Phylloxylon perrieri*	Least Concern	0
Fabaceae	*Phylloxylon phillipsonii*	Endangered	0
Fabaceae	*Phylloxylon spinosa*	Vulnerable	0
Fabaceae	*Phylloxylon xylophylloides*	Near Threatened	0
Physenaceae	*Physena madagascariensis*	Least Concern	1
Physenaceae	*Physena sessiliflora*	Least Concern	1
Santalaceae	*Pilgerina madagascariensis*	Near Threatened	0
Sapindaceae	*Plagioscyphus calciphilus*	Vulnerable	0
Sapindaceae	*Plagioscyphus humbertii*	Endangered	0
Sapindaceae	*Plagioscyphus jumellei*	Least Concern	1
Sapindaceae	*Plagioscyphus meridionalis*	Endangered	0
Celastraceae	*Polycardia aquifolium*	Near Threatened	0
Celastraceae	*Polycardia libera*	Least Concern	0
Celastraceae	*Polycardia phyllanthoides*	Near Threatened	0
Araliaceae	*Polyscias baehniana*	Vulnerable	0
Araliaceae	*Polyscias boivinii*	Least Concern	0
Araliaceae	*Polyscias briquetiana*	Least Concern	0
Araliaceae	*Polyscias confertifolia*	Vulnerable	0
Araliaceae	*Polyscias floccosa*	Near Threatened	1
Rubiaceae	*Polysphaeria acuminata*	Least Concern	0
Rubiaceae	*Polysphaeria lepidocarpa*	Least Concern	0
Fabaceae	*Pongamiopsis amygdalina*	Vulnerable	0
Fabaceae	*Pongamiopsis pervilleana*	Least Concern	1
Fabaceae	*Pongamiopsis viguieri*	Vulnerable	0
Lauraceae	*Potameia thouarsii*	Least Concern	0
Anacardiaceae	*Poupartia minor*	Least Concern	3
Anacardiaceae	*Poupartia silvatica*	Least Concern	2
Urticaceae	*Pouzolzia mandrarensis*	Critically Endangered	1
Lamiaceae	*Premna aureolepidota*	Critically Endangered	0
Lamiaceae	*Premna humbertii*	Least Concern	0
Lamiaceae	*Premna lepidella*	Endangered	0
Lamiaceae	*Premna longiacuminata*	Endangered	1
Lamiaceae	*Premna longipetiolata*	Vulnerable	1
Lamiaceae	*Premna madagascariensis*	Critically Endangered	0
Lamiaceae	*Premna perplexans*	Least Concern	0
Achariaceae	*Prockiopsis hildebrandtii*	Near Threatened	0
Sapindaceae	*Pseudopteris ankaranensis*	Near Threatened	0
Asteraceae	*Psiadia altissima*	Least Concern	2
Rubiaceae	*Psydrax esirensis*	Endangered	0
Rubiaceae	*Psydrax sambiranensis*	Critically Endangered	0
Fabaceae	*Pyranthus alasoa*	Vulnerable	0
Fabaceae	*Pyranthus tullearensis*	Vulnerable	0
Rubiaceae	*Pyrostria alaotrensis*	Endangered	0
Rubiaceae	*Pyrostria isomonensis*	Endangered	0

Family	Taxon	IUCN Category	*Ex situ* Collections
Rubiaceae	*Pyrostria urschii*	Vulnerable	0
Rubiaceae	*Pyrostria verdcourtii*	Endangered	0
Meliaceae	*Quivisianthe papinae*	Least Concern	0
Euphorbiaceae	*Radcliffea smithii*	Critically Endangered	0
Apocynaceae	*Rauvolfia capuronii*	Endangered	0
Apocynaceae	*Rauvolfia obtusiflora*	Least Concern	0
Arecaceae	*Ravenea rivularis*	Vulnerable	59
Arecaceae	*Ravenea sambiranensis*	Least Concern	6
Arecaceae	*Ravenea xerophila*	Vulnerable	18
Bignoniaceae	*Rhigozum madagascariense*	Least Concern	3
Bignoniaceae	*Rhodocolea ranirisonii*	Endangered	0
Sphaerosepalaceae	*Rhopalocarpus alternifolius*	Least Concern	0
Sphaerosepalaceae	*Rhopalocarpus louvelii*	Least Concern	0
Sphaerosepalaceae	*Rhopalocarpus lucidus*	Least Concern	3
Sphaerosepalaceae	*Rhopalocarpus similis*	Least Concern	1
Sphaerosepalaceae	*Rhopalocarpus suarezensis*	Vulnerable	0
Sphaerosepalaceae	*Rhopalocarpus triplinervius*	Vulnerable	1
Sphaerosepalaceae	*Rhopalocarpus undulatus*	Vulnerable	0
Anacardiaceae	*Rhus perrieri*	Least Concern	0
Anacardiaceae	*Rhus thouarsii*	Least Concern	0
Violaceae	*Rinorea greveana*	Least Concern	1
Violaceae	*Rinorea pugionifera*	Least Concern	0
Fabaceae	*Sakoanala villosa*	Vulnerable	0
Celastraceae	*Salvadoropsis arenicola*	Endangered	2
Sarcolaenaceae	*Sarcolaena codonochlamys*	Near Threatened	1
Sarcolaenaceae	*Sarcolaena isaloensis*	Critically Endangered	0
Rubiaceae	*Schizenterospermum analamerense*	Critically Endangered	0
Rubiaceae	*Schizenterospermum rotundifolium*	Vulnerable	0
Sarcolaenaceae	*Schizolaena parviflora*	Vulnerable	1
Sarcolaenaceae	*Schizolaena viscosa*	Vulnerable	0
Oleaceae	*Schrebera capuronii*	Vulnerable	0
Euphorbiaceae	*Sclerocroton melanostictus*	Least Concern	1
Salicaceae	*Scolopia inappendiculata*	Endangered	0
Salicaceae	*Scolopia septentrionalis*	Critically Endangered	0
Phyllanthaceae	*Securinega capuronii*	Least Concern	0
Phyllanthaceae	*Securinega perrieri*	Least Concern	0
Phyllanthaceae	*Securinega seyrigii*	Least Concern	0
Fabaceae	*Senna ankaranensis*	Endangered	0
Fabaceae	*Senna anthoxantha*	Least Concern	2
Fabaceae	*Senna bosseri*	Endangered	0
Fabaceae	*Senna lactea*	Least Concern	1
Fabaceae	*Senna leandrii*	Least Concern	1
Fabaceae	*Senna meridionalis*	Vulnerable	8
Fabaceae	*Senna perrieri*	Endangered	0
Fabaceae	*Senna suarezensis*	Critically Endangered	0
Fabaceae	*Senna viguierella*	Least Concern	2
Sapotaceae	*Sideroxylon saxorum*	Vulnerable	2
Solanaceae	*Solanum bumeliifolium*	Vulnerable	0
Solanaceae	*Solanum croatii*	Vulnerable	1
Solanaceae	*Solanum heinianum*	Least Concern	1
Picrodendraceae	*Stachyandra imberbis*	Critically Endangered	0
Picrodendraceae	*Stachyandra merana*	Endangered	0
Picrodendraceae	*Stachyandra rufibarbis*	Endangered	0
Picrodendraceae	*Stachyandra viticifolia*	Endangered	0
Sapindaceae	*Stadmania leandrii*	Endangered	0
Santalaceae	*Staufferia capuronii*	Vulnerable	0
Thymelaeaceae	*Stephanodaphne geminata*	Least Concern	0
Apocynaceae	*Stephanostegia hildebrandtii*	Least Concern	1
Bignoniaceae	*Stereospermum arcuatum*	Vulnerable	1
Bignoniaceae	*Stereospermum boivini*	Endangered	0
Bignoniaceae	*Stereospermum euphorioides*	Least Concern	7
Bignoniaceae	*Stereospermum hildebrandtii*	Vulnerable	0
Bignoniaceae	*Stereospermum longiflorum*	Vulnerable	0
Bignoniaceae	*Stereospermum nematocarpum*	Least Concern	3
Bignoniaceae	*Stereospermum randrianaivoi*	Endangered	0
Bignoniaceae	*Stereospermum tomentosum*	Endangered	0
Bignoniaceae	*Stereospermum undatum*	Least Concern	0
Bignoniaceae	*Stereospermum variabile*	Least Concern	3
Apocynaceae	*Strophanthus boivinii*	Least Concern	10
Menispermaceae	*Strychnopsis thouarsii*	Least Concern	0
Euphorbiaceae	*Suregada boiviniana*	Least Concern	1
Euphorbiaceae	*Suregada capuronii*	Vulnerable	1
Euphorbiaceae	*Suregada decidua*	Least Concern	1
Euphorbiaceae	*Suregada eucleoides*	Vulnerable	0
Clusiaceae	*Symphonia gymnoclada*	Least Concern	0
Clusiaceae	*Symphonia oligantha*	Endangered	0
Myrtaceae	*Syzygium sakalavarum*	Least Concern	0
Myrtaceae	*Syzygium tapiaka*	Critically Endangered	0
Apocynaceae	*Tabernaemontana calcarea*	Least Concern	0
Apocynaceae	*Tabernaemontana ciliata*	Least Concern	0
Apocynaceae	*Tabernaemontana stellata*	Vulnerable	0
Arecaceae	*Tahina spectabilis*	Critically Endangered	23
Monimiaceae	*Tambourissa bathiei*	Data Deficient	0
Monimiaceae	*Tambourissa hildebrandtii*	Least Concern	0
Monimiaceae	*Tambourissa mandrarensis*	Data Deficient	0
Monimiaceae	*Tambourissa perrieri*	Endangered	0
Euphorbiaceae	*Tannodia grandiflora*	Endangered	0
Rubiaceae	*Tarenna capuroniana*	Least Concern	0
Fabaceae	*Tephrosia phylloxylon*	Endangered	0
Fabaceae	*Tephrosia pungens*	Near Threatened	1
Combretaceae	*Terminalia ankaranensis*	Vulnerable	1
Combretaceae	*Terminalia belini*	Endangered	0
Combretaceae	*Terminalia calcicola*	Least Concern	2
Combretaceae	*Terminalia crenata*	Vulnerable	0
Combretaceae	*Terminalia cyanocarpa*	Least Concern	1
Combretaceae	*Terminalia disjuncta*	Least Concern	1
Combretaceae	*Terminalia diversipilosa*	Vulnerable	0
Combretaceae	*Terminalia exelliana*	Critically Endangered	0
Combretaceae	*Terminalia exsculpta*	Endangered	0
Combretaceae	*Terminalia gracilipes*	Vulnerable	2

Family	Taxon	IUCN Category	*Ex situ* Collections
Combretaceae	*Terminalia leandriana*	Least Concern	0
Combretaceae	*Terminalia mantaliopsis*	Least Concern	1
Combretaceae	*Terminalia mantaly*	Least Concern	11
Combretaceae	*Terminalia monoceros*	Vulnerable	1
Combretaceae	*Terminalia namorokensis*	Vulnerable	0
Combretaceae	*Terminalia neotaliala*	Vulnerable	7
Combretaceae	*Terminalia pauciflora*	Endangered	0
Combretaceae	*Terminalia perrieri*	Vulnerable	1
Combretaceae	*Terminalia rhopalophora*	Endangered	1
Combretaceae	*Terminalia septentrionalis*	Near Threatened	0
Combretaceae	*Terminalia seyrigii*	Least Concern	1
Combretaceae	*Terminalia subserrata*	Vulnerable	1
Combretaceae	*Terminalia sulcata*	Vulnerable	1
Combretaceae	*Terminalia tricristata*	Least Concern	1
Combretaceae	*Terminalia tropophylla*	Least Concern	1
Combretaceae	*Terminalia urschii*	Endangered	0
Fabaceae	*Tetrapterocarpon geayi*	Least Concern	2
Fabaceae	*Tetrapterocarpon septentrionalis*	Endangered	1
Malvaceae	*Thespesia gummiflua*	Endangered	0
Capparaceae	*Thilachium laurifolium*	Least Concern	0
Capparaceae	*Thilachium monophyllum*	Least Concern	0
Capparaceae	*Thilachium pouponii*	Least Concern	1
Capparaceae	*Thilachium seyrigii*	Least Concern	1
Sapindaceae	*Tina dissitiflora*	Least Concern	0
Sapindaceae	*Tina isaloensis*	Least Concern	0
Sapindaceae	*Tina suarezensis*	Endangered	0
Salicaceae	*Tisonia capuronii*	Endangered	0
Salicaceae	*Tisonia humbertii*	Vulnerable	0
Salicaceae	*Tisonia keraudrenae*	Endangered	0
Salicaceae	*Tisonia leandriana*	Endangered	0
Rubiaceae	*Tricalysia boiviniana*	Least Concern	1
Rubiaceae	*Tricalysia cryptocalyx*	Least Concern	2
Rubiaceae	*Tricalysia humbertii*	Endangered	0
Rubiaceae	*Tricalysia madagascariensis*	Vulnerable	0
Rubiaceae	*Tricalysia majungensis*	Least Concern	1
Rubiaceae	*Tricalysia perrieri*	Least Concern	0
Sapindaceae	*Tsingya bemarana*	Endangered	0
Solanaceae	*Tsoala tubiflora*	Near Threatened	0
Meliaceae	*Turraea anomala*	Critically Endangered	0
Meliaceae	*Turraea fockei*	Least Concern	0
Meliaceae	*Turraea richardii*	Endangered	0
Meliaceae	*Turraea venulosa*	Vulnerable	0
Phyllanthaceae	*Uapaca ambanjensis*	Vulnerable	1
Phyllanthaceae	*Uapaca amplifolia*	Vulnerable	1
Phyllanthaceae	*Uapaca bojeri*	Least Concern	1
Phyllanthaceae	*Uapaca densifolia*	Least Concern	1
Pedaliaceae	*Uncarina abbreviata*	Least Concern	13
Pedaliaceae	*Uncarina ankaranensis*	Critically Endangered	5
Pedaliaceae	*Uncarina decaryi*	Least Concern	33
Pedaliaceae	*Uncarina platycarpa*	Critically Endangered	8
Pedaliaceae	*Uncarina stellulifera*	Near Threatened	19
Pedaliaceae	*Uncarina turicana*	Critically Endangered	5
Annonaceae	*Uvaria ambongoensis*	Endangered	0
Annonaceae	*Uvaria amplexicaulis*	Endangered	0
Annonaceae	*Uvaria antsiranensis*	Vulnerable	0
Annonaceae	*Uvaria bathiei*	Vulnerable	0
Annonaceae	*Uvaria combretifolia*	Vulnerable	0
Annonaceae	*Uvaria diplocampta*	Critically Endangered	0
Annonaceae	*Uvaria manjensis*	Critically Endangered	0
Rutaceae	*Vepris arenicola*	Vulnerable	0
Rutaceae	*Vepris decaryana*	Endangered	0
Rutaceae	*Vepris humbertii*	Endangered	0
Rutaceae	*Vepris lepidota*	Endangered	1
Rutaceae	*Vepris madagascarica*	Vulnerable	0
Rutaceae	*Vepris peraperta*	Vulnerable	0
Rutaceae	*Vepris sclerophylla*	Endangered	0
Asteraceae	*Vernonia latisquamata*	Vulnerable	1
Asteraceae	*Vernonia leandrii*	Endangered	0
Asteraceae	*Vernonia mecistophylla*	Endangered	2
Fabaceae	*Viguieranthus densinervus*	Least Concern	0
Fabaceae	*Viguieranthus pervillei*	Least Concern	0
Lamiaceae	*Vitex elakelakensis*	Endangered	0
Lamiaceae	*Vitex perrieri*	Endangered	1
Lamiaceae	*Vitex stellata*	Endangered	0
Picrodendraceae	*Voatamalo capuronii*	Endangered	0
Phyllanthaceae	*Wielandia bemarensis*	Least Concern	0
Fabaceae	*Xanthocercis madagascariensis*	Least Concern	1
Sarcolaenaceae	*Xerochlamys tampoketsensis*	Vulnerable	0
Sarcolaenaceae	*Xerochlamys undulata*	Endangered	0
Sarcolaenaceae	*Xerochlamys villosa*	Endangered	0
Olacaceae	*Ximenia perrieri*	Least Concern	2
Fabaceae	*Xylia fraterna*	Vulnerable	0
Fabaceae	*Xylia hoffmannii*	Least Concern	0
Sarcolaenaceae	*Xyloolaena humbertii*	Endangered	0
Sarcolaenaceae	*Xyloolaena perrieri*	Vulnerable	1
Sarcolaenaceae	*Xyloolaena richardii*	Least Concern	2
Sarcolaenaceae	*Xyloolaena sambiranensis*	Vulnerable	1
Sarcolaenaceae	*Xyloolaena speciosa*	Vulnerable	0
Annonaceae	*Xylopia bemarivensis*	Near Threatened	0
Annonaceae	*Xylopia sahafariensis*	Endangered	0
Annonaceae	*Xylopia sericolampra*	Endangered	0
Sapindaceae	*Zanha suaveolens*	Endangered	1
Rutaceae	*Zanthoxylum decaryi*	Least Concern	2
Rutaceae	*Zanthoxylum tsihanimposa*	Near Threatened	0

APPENDIX 2
Botanic Gardens with Madagascar Dry Forest Tree Species

Agodi Gardens; Agricultural University of Nitra Botanic Garden; Andromeda Botanic Gardens; Arboretum at the University of California, Santa Cruz; Arborétum Borová hora; Arboretum de la Universidad Autónoma de Campeche; Arizona-Sonora Desert Museum; Association for Biodiversity and its Conservation; Atlanta Botanical Garden; Auckland Botanic Gardens; Bangladesh Agricultural University Botanic Garden; Beijing (southern) Botanical Garden - Living Plants; Bergen Botanical Garden; Bergius Botanic Garden; Bhagalpur University Botanical Garden; Birmingham Botanical Gardens and Glasshouses; Bishop Museum - Checklist of Cultivated Plants of Hawai'i; Bogor Botanic Gardens (Center for Plant Conservation); Botanic Garden of Rostock University; Botanic Garden of Smith College, The, Botanic Garden, Delft University of Technology; Botanic Gardens at Kona Kai, The; Botanic Gardens of South Australia; Botanical Garden - Institute of the Volga State Technological University; Botanical Garden Gorky State University; Botanical Garden of St. Petersburg State University; Botanical Garden of Tartu University; Botanical Garden of the Carinthian Botanic Center (Landesmuseum Kärnten); Botanical Garden of the Faculty of Science Zagreb; Botanical Garden of the Southern Federal University; Botanical Garden of the University of Bern; Botanical Garden of Vilnius University; Botanical Garden University of Duesseldorf; Botanical Garden, Natural History Museum of Denmark; Botanical Garden,All-Russian Research Institute of Medicinal and Aromatic Plants (VILAR); Botanische Gärten der Universität Bonn; Botanischer Garten der Carl von Ossietzky-Universitat Oldenburg; Botanischer Garten der Friedrich-Schiller-Universitaet; Botanischer Garten der Johannes Gutenberg-Universität Mainz; Botanischer Garten der Justus-Liebig Universität Giessen; Botanischer Garten der Ruhr-Universität Bochum; Botanischer Garten der Technischen Universitaet Darmstadt; Botanischer Garten der Technischen Universitaet Dresden; Botanischer Garten der Universitaet des Saarlandes; Botanischer Garten der Universitaet Zurich; Botanischer Garten der Universitat Gottingen; Botanischer Garten der Universität Heidelberg; Botanischer Garten der Universitat Kiel; Botanischer Garten der Universitat Osnabruck; Botanischer Garten der Universität Ulm; Botanischer Garten Frankfurt am Main; Botanischer Garten Innsbruck und Aplengarten Patscherkofel; Botanischer Garten und Botanisches Museum Berlin; Botanischer Versuchs- und Lehrgarten; Boyce Thompson Arboretum; Boyce Thompson Arboretum Desert Legume Program - Seed Bank; Brisbane Botanic Gardens; Brooklyn Botanic Garden; Bundaberg Botanic Gardens; Cambridge University Botanic Garden; Central Botanic Garden; Chicago Botanic Garden; Cibodas Botanic Gardens; City of Liverpool Botanic Gardens; Cleveland Botanical Garden; Conservatoire Botanique National du Brest; Conservatoire Botanique Pierre Fabre; Conservatoire et Jardin botaniques de la Ville de Genève; Cooktown Botanic Gardens; Denver Botanic Gardens; Denver Zoological Gardens; Desert Botanical Garden; Desert Botanical Garden - Seed Bank; Die Flora, der Botanische Garten Köln; Dixon Gallery and Gardens, The; Dr Cecilia Koo Botanic Conservation Center; Duke Biology Plant Teaching and Research Facility; Dunedin Botanic Garden; Dushanbe Botanic Garden; Eden Project, The; Eötvös Loránd University Botanic Garden; EW Heier Teaching and Research Greenhouses; Fairchild Tropical Botanic Garden; Fairy Lake Botanical Garden, Shenzhen & Chinese Academy of Sciences; FES Iztacala Banco de Semillas; Finnish Museum of Natural History / Helsinki University Botanic Garden; Florida Botanical Gardens; Foellinger-Freimann Botanical Conservatory; Forest Research Institute of Nigeria (FRIN) - Medicinal Garden; Franklin Park Conservatory; Frederik Meijer Gardens & Sculpture Park; Fullerton Arboretum; Fundacion Jardín Botánico Nacional Viña del Mar; Ganna Walska Lotusland; Germplasm Bank of Wild Species; Ghent University Botanic Garden; Gibraltar Botanic Gardens; Glasgow Botanic Gardens; Gordon Rowley Succulent Collection; Gothenburg Botanical Garden; Government College University, Lahore Botanic Garden (BGGC); Grugapark und Botanischer Garten der Stadt Essen; Hawaii Tropical Botanical Garden; Honolulu Botanical Gardens; Hortus Botanicus Amsterdam; Huay Kaew Arboretum; Hungarian Academy of Sciences - Botanic Garden; Hunter Region Botanic Gardens; Huntington Botanical Gardens; Huntington Botanical Gardens - Seed Bank; Incheon Arboretum; Instituto de Botanica 'Gonçalo Sampaio'; Jardí Botànic de la Universitat de València; Jardí Botànic Marimurtra; Jardim Botanico da Madeira; Jardim Botânico da Universidade de Coimbra; Jardim Botânico da Universidade de Lisboa; Jardim Botânico de Jundiaí - Valmor de Souza; Jardim Botânico do Rio de Janeiro; Jardim Botanico Nacional 'L. Grandvaux Barbosa'; Jardim Botânico Tropical; Jardín Botánico "Carlos Thays"; Jardín Botánico "Lucien Hauman"; Jardin Botanico Benjamin F. Johnston; Jardín Botánico CECON-USAC; Jardin Botanico Culiacán; Jardín Botánico de Acapulco; Jardín Botánico de Cartagena "Guillermo Piñeres"; Jardin Botanico de Hampolol; Jardin Botanico del Instituto de Biologia (UNAM); Jardin Botanico del Parque de Las Leyendas; Jardin Botanico Dr. Faustino Miranda; Jardin Botanico Facultad de Estudios Superiores Cuautitlan UNAM; Jardín Botánico Francisco Javier Clavijero; Jardin Botanico Nacional de Cuba; Jardín Botánico Nacional Simón Bolívar - seed bank; Jardin Botanico Regional Carmen; Jardin Botanico Universitario BUAP; Jardin Botanico-Historico "La Concepcion" de Malaga; Jardin Botanique de Kisantu; Jardin Botanique de la Ville de Caen; Jardin Botanique de la Ville de Lyon; Jardin Botanique de la Ville de Nice; Jardin Botanique de l'Université de Strasbourg; Jardin botanique de Neuchâtel; Jardin botanique de Paris; Jardin Botanique et Arboretum Henri Gaussen; Jardin Botanique Exotique " Val Rahmeh "; Jardin Botanique Yves Rocher; Jardin de Aclimatacion de la Orotava; Jardin des Plantes de Paris et

Arboretum de Chevreloup; Jardin d'Experimentation des Plantes Utiles (J.E.P.U.); Jardin d'Oiseaux Tropicaux; Jardin Etnobotanico y Museo de Medicina Tradicional y Herbolaria; Jardins botaniques du Grand Nancy et de l'Université de Lorraine; Jardins des Plantes de l'Université; Jeju Botanical Garden, Yeomiji; Jerusalem Botanical Gardens; John C. Gifford Arboretum; Keum Kang Arboretum; Key West Tropical Forest & Botanical Garden; Kings Park and Botanic Garden; LaBarque Creek Gardens; Lakes Park Botanic Garden; Lauritzen Gardens; Leaning Pine Arboretum; Les Jardins Suspendus; Leuven Botanic Garden; Lewis Ginter Botanical Garden; Limbe Botanic Garden; Lincoln Park Zoo; Living Desert Zoo and Gardens; Longwood Gardens; Los Angeles County Arboretum and Botanic Garden; M.M. Gryshko National Botanical Garden; Mackay Regional Botanic Gardens; Main Botanical Garden, Russian Academy of Sciences; Manie van der Schijff Botanical Garden; Marie Selby Botanical Gardens; Masaryk University Faculty of Science Botanical Garden; Meise Botanic Garden; Mercer Botanic Gardens; Mesa Community College Arboretum; Millennium Seed Bank; Missouri Botanical Garden; Montgomery Botanical Center; Montreal Botanical Garden / Jardin botanique de Montréal; Musee et Jardins Botaniques Cantonaux; Museo Orto Botanico di Roma; NACGRAB Field Genebank; Nanjing Botanical Garden Mem. Sun Yat-sen; Naples Botanical Garden; National Botanic Garden of Latvia; National Botanic Garden of Wales; National Botanic Gardens Foundation; National Herbarium & Botanic Gardens of Malawi; National Institute for Pharmaceutical Research and Development (NIPRD); National Kandawgyi Botanical Gardens (Maymyo Botanical Garden); National Plant Germplasm System - USDA-ARS-NGRL; National Tropical Botanical Garden; Neuer Botanischer Garten der Universität Göttingen; New York Botanical Garden, The; Niagara Parks Botanical Gardens and School of Horticulture, The; Nong Nooch Tropical Botanical Garden; Noosa Botanic Gardens; Northwestern University Ecological Park and Botanic Gardens; Novosibirsk Dendropark; Oak Park Conservatory; Oekologisch-Botanischer Garten Universitaet Bayreuth; Oklahoma City Zoo and Botanical Garden; Orto Botanico - Università degli Studi di Catania; Orto Botanico dell'Università degli Studi di Padova; Orto Botanico dell'Università degli Studi di Siena; Orto Botanico dell'Universita di Pavia; Orto Botanico di Perugia; Oxford University Botanic Garden & Arboretum; Paignton Zoo Environmental Park; Parc Botanique et Zoologique de Tsimbazaza; Parque Botânico da Tapada da Ajuda; Parques de Sintra - Monte da Lua S.A.; Peter the Great Botanical Garden of the V.L. Komarov Botanical Institute; Pha Tad Ke Botanical Garden; Prague Botanic Garden / Botanicka Zahrada Praha; Pretoria National Botanical Garden; Pukekura Park; Real Jardín Botánico Juan Carlos I; Red Butte Garden and Arboretum; Reiman Gardens; Rimba Ilmu Botanic Garden; Rio Grande Botanic Garden; Rotterdam Zoological and Botanical Gardens; Royal Botanic Garden Edinburgh; Royal Botanic Gardens Kew

South coast Madagascar (Malin Rivers)

(Wakehurst); Royal Botanic Gardens Sydney; Royal Botanic Gardens, Kew; Royal Botanic Gardens, Victoria - Melbourne Gardens; Royal Botanical Gardens, Ontario; Royal Burgers' Zoo; Royal Horticultural Society's Garden, Hyde Hall; Royal Horticultural Society's Garden, Wisley; Royal Tasmanian Botanical Gardens; San Diego Botanic Garden; San Diego Zoo Safari Park; San Francisco Botanical Garden; Sanctuaire des Singes de Drabo Gbo; Sarius Palmetum and Botanical Garden; Sea World San Diego; Shanghai Chenshan Botanical Garden; Sherwood Arboretum; Shodex Botanic Garden; Siit Arboretum Botanical Garden; Singapore Botanic Gardens; South China Botanical Garden, CAS; St. Andrews Botanic Garden; State Botanical Garden of Georgia, The; Stellenbosch University Botanical Garden; Stichting Botanische Tuin Kerkrade; Stichting Botanische Tuin van Steyl Jochum-Hof; Sukhumi Botanical Garden; Sukkulenten-Sammlung Zurich; Tallinn Botanic Garden; The B.M. Kozo-Polyansky Botanical Garden of Voronezh State University; The Botanical Gardens of the Universtiy of the South Pacific; The Cairns Botanic Gardens; The Harris Garden; The Linnaean Gardens of Uppsala (Uppsala University); The Living Rainforest; Timaru Botanic Garden; Toronto Zoo; Townsville Botanic Gardens; Tresco Abbey Garden; Trompenburg Gardens & Arboretum; UConn Plant Biodiversity Conservatory and Research Center; United States Botanic Garden; United States National Arboretum; University Botanic Gardens Ljubljana; University of Aarhus Botanical Institute; University of Ibadan Botanical Garden; University of Lagos; University of Melbourne Grounds and Gardens; University of Oslo Botanical Garden; University of Turku - Botanic Garden; Utrecht University Botanic Gardens; Vallarta Botanical Gardens, A.C.; W. J. Beal Botanical Garden; Waimea Valley Arboretum and Botanical Garden; Warsaw University Botanic Garden; Wuhan Botanic Garden; Xiamen Botanical Garden Xishuangbanna Tropical Botanical Garden, CAS.

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 is 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 estimates indicating at least two of a-c:
      a. Severely fragmented or known to exist at only a single location.
      b. Continuing decline, observed, inferred or projected, in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) area, extent and/or quality of habitat
         (iv) number of locations or subpopulations
         (v) number of mature individuals.
      c. Extreme fluctuations in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) number of locations or subpopulations
         (iv) number of mature individuals.

C. Population size estimated to number fewer than 250 mature individuals and either:
   1. An estimated continuing decline of at least 25% 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 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 5000 km^2, 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 km^2, and estimates indicating at least two of a-c:

      a. Severely fragmented or known to exist at no more than five locations.
      b. Continuing decline, observed, inferred or projected, in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) area, extent and/or quality of habitat
         (iv) number of locations or subpopulations
         (v) number of mature individuals.
      c. Extreme fluctuations in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) number of locations or subpopulations
         (iv) number of mature individuals.

C. Population size estimated to number fewer than 2500 mature individuals and either:
   1. An estimated continuing decline of at least 20% 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 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 km^2, and estimates indicating at least two of a-c:
      a. Severely fragmented or known to exist at no more than 10 locations.
      b. Continuing decline, observed, inferred or projected, in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) area, extent and/or quality of habitat
         (iv) number of locations or subpopulations
         (v) number of mature individuals.
      c. Extreme fluctuations in any of the following:
         (i) extent of occurrence
         (ii) area of occupancy
         (iii) number of locations or subpopulations
         (iv) number of mature individuals.

   2. Area of occupancy estimated to be less than 2000 km^2, 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 1000 mature individuals, OR
         (ii) all mature individuals are in one subpopulation.
      (b) Extreme fluctuations in number of mature individuals.

D. Population very small or restricted in the form of either of the following:
   1. Population size estimated to number fewer than 1000 mature individuals.

   2. Population with a very restricted area of occupancy (typically less than 20 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.

Source: IUCN (2001)

The Red List of

the Dry Forest Trees of Madagascar

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