

**Environmental and Social Impact Assessment
and
Environmental and Social Management Plan**

27 August 2024

CEPF Grant 115425

Planet Madagascar Association

Preserving the Threatened Trees of Ankarafantsika, Madagascar

Ankarafantsika, Madagascar

Grant Summary

- 1. Planet Madagascar Association**
- 2. Preserving the Threatened Trees of Ankarafantsika, Madagascar**
- 3. 115425**
- 4. US\$ 79,665.58**
- 5. October 2024-September 2026**
- 6. Madagascar**
- 7. Summary of the project**

Madagascar is one of the world's most important biodiversity hotspots. Between 1953 and 2014, it is estimated that Madagascar has lost 46% of its forest cover and since 2005, the annual deforestation rate has increased by 1.1% per year (Vielledent et al., 2018). According to the IUCN's Red List of Trees of Madagascar, there are 3,118 tree species found in Madagascar and 93% are endemic to the country. Based on the IUCN's 2021 assessment, 1,828 (63%) of the tree species found in Madagascar are threatened with extinction due to small ranges, few locations, and declines. Madagascar's trees face threats because of logging, agricultural expansion, and increased fires. If the current rate of forest loss continues in Madagascar, all of Madagascar's forests could be lost within the next 25 years (Vielledent et al., 2020). Madagascar's endemic tree species are critical to the health of ecosystems on the island, providing habitat for endemic and endangered biodiversity (e.g., lemurs, birds) as well as providing resources for local people.

Some of the world's richest tropical dry deciduous forests are found in Western Madagascar, covering an area of approximately 31,800 km² today (which has been reduced since the 1970s by about 40%; Waeber et al. 2015). Malagasy Western deciduous dry forests are considered one of the world's most threatened biomes (Pons et al. 2003), with only five blocks larger than 50,000 ha remaining, including Ankarafantsika National Park (ANP), where this proposed project will take place. Comparing the difference in total forest cover between years, Ankarafantsika lost 8.2% of forest cover between 2011 and 2020, an estimated loss of 109.57 km² (Schubler et al. 2023).

Fire is near-ubiquitous across all of Madagascar, but recent data has shown that it is most prevalent in the Western tropical dry deciduous forests, like ANP (Frappier-Brinton and Lehman 2022). Although ANP is a protected national park, it experiences activities threatening forests, including slash-and-burn agriculture, charcoal production, and fire (Garci and Goodman, 2003; Bloesch, 1999). Although fire can be a typical part of the seasonal cycle of deciduous dry forests, uncontrolled fire can be devastating for the forest, which could be unable to recover from severe damage (Gautier et al. 2018). Additionally, there is recent evidence that parts of Ankarafantsika National Park are not fire adapted (Percival et al. 2024). Suggesting urgent action is needed considering the increase in fire activity in and around the park.

The conservation problem is complex in ANP as landuse practices differ throughout the park (Aymoz, 2013; Steffens et al 2021), people live a subsistence lifestyle, they struggle to feed their families day-to-day and face preventable health issues. Thus, conservation projects must consider the needs of both the communities and the protected areas. For example, although restricting fire use is needed to help protect forests and trees within, complete bans of fire have limited effectiveness because they do not consider the livelihoods of local communities (Frappier-Brinton and Lehman 2022). Poverty-driven environmental degradation is a key threat and solutions must address this root cause of environmental degradation.

Planet Madagascar has been working in ANP since 2015, and we have implemented multiple community conservation projects, funded by the Critical Ecosystem Partnership Fund, the Save Our Species Fund, World Land Trust, the Whitley Fund for Nature, the Rufford Foundation, and Global Affairs Canada. Based on an assessment by Madagascar National Parks, there are 850 tree species found in ANP, with 2 listed as Critically Endangered (*Dalbergia davidii* and *Syzygium tapiaka*), 26 as Endangered and 28 as Vulnerable by the IUCN. With this proposed project, we will work to improve the conservation status of threatened tree species in Ankarafantsika National Park by 1) protecting and monitoring the forest from human disturbance, with a particular focus on fire, and 2) expanding the forest by planting new trees in a forest corridor, including 120,000 trees on the IUCN Red List of Endangered Trees of Madagascar.

Our project is based within the Ambanjabe, an 8,000 ha management zone in the Western section of ANP in Northwest Madagascar. ANP, located between 16°01'-16°24'S and between 46°35'-47°08'E, consists of extensive tropical dry deciduous forests, with some riparian forests, anthropogenic grasslands, canyons, and wetlands over a surface of 135,000 ha (Gautier et al., 2018). Ambanjabe management zone includes 4,000 ha of continuous forest, 357 ha of forest fragments, approximately 3,500 ha of anthropogenic grasslands (resulting from frequent burning of the tropical dry deciduous forest), and three human communities with approximately 600 people. Despite being a protected area since 1927, and an official National Park since 2003, ANP suffers from forest loss due to fire, charcoal production, construction, slash and burn agriculture, and domestic livestock grazing. Uncontrolled fire is the key driver of habitat loss in ANP, necessitating a comprehensive fire management and forest restoration program.

Our project is designed based on four of the recommended conservation approaches outlined in the IUCN's Red List of Endangered Trees of Madagascar, including 1) Research, 2) In situ protection, 3) Restoration, and 4) Raise awareness, build local capacity and mobilise action.

Background

For this project, we will build on our existing and successful fire management program that has been operating since 2015 to include an emphasis on endangered tree species in ANP. Our community-based fire management program, which has been previously funded by CEPF, involves fire management patrol teams who monitor the region and create firebreaks to buffer forest from uncontrolled fire. Our team consists of 18 Malagasy residents from three communities: Ambarindahy, Maevatanimbary, and Andronohobaka. Using GPS and phone-based data collection, our three teams conduct 15 total weekly patrols within our 8000 ha management zone. They note evidence of human disturbance and document lemur sightings. To date, we have created 15-kilometers of fire breaks to buffer existing forest—important habitat for lemurs and other wildlife—from uncontrolled fire. 1.

1. In situ Protection

Our three fire management teams will be tasked with continuous monitoring of our management zone, conducting 15 weekly patrols. During those patrols, they will continue to note evidence of human disturbance (e.g., burn marks, fire, cut trees) and will mark the location and tag any target tree species found. They will continue to monitor the survival of target tree species.

In addition to patrols, our patrol teams are responsible for maintaining 17 km of 10-meter-wide firebreaks to buffer the forest from uncontrolled fire. Along firebreaks, we have installed six educational signs that inform residents about Planet Madagascar's projects and what the firebreaks are there for. We will continue to maintain signs along firebreaks in our management zone.

2. Research

Based on an assessment by Madagascar National Parks, there are 850 tree species found in ANP, with 2 listed as Critically Endangered, 26 as Endangered and 28 as Vulnerable by the IUCN. This project will focus on the species that are found on the IUCN Red List and includes the below:

Species; IUCN Status; Family

Dalbergia davidii; CR; FABACEAE
Syzygium tapiaka; CR; MYRTACEAE
Uvaria ambongensis; EN; ANNONACEAE
Xylopia sericolampra; EN; ANNONACEAE
Commiphora stellulata; EN; BURSERACEAE
Diospyros aff pervillei Hiern; EN; EBENACEAE
Drypetes bathiei; EN; EUPHORBIACEAE
Bussea perrieri; EN; FABACEAE
Casearia lucida; EN; FLACOURTIACEAE
Scolopia inappendiculata; EN; FLACOURTIACEAE
Hibiscus macrogonus; EN; MALVACEAE
Memecylon boinense; EN; MELASTOMACEAE
Malleastrum letouzeyanum; EN; MELIACEAE
Tambourissa perrieri; EN; MONIMIACEAE
Embelia tropophylla; EN; MYRSINACEAE
Eugenia tropophylla; EN; MYRTACEAE
Cassipourea leptoclada; EN; RHIZOPHORACEAE
Coffea ambongensis; EN; RUBIACEAE
Deinbollia boinensis; EN; SAPINDACEAE
Grewia madagascariensis; EN; TILIACEAE
Premna longiacuminata; EN; VERBENACEAE
Vitex perrieri; EN; VERBENACEAE
Gluta tourtour; VU; ANACARDIACEAE
Poupartia caffra; VU; ANACARDIACEAE
Uvaria combretifolia; VU; ANNONACEAE
Fernandoa macrantha; VU; BIGNONIACEAE
Commiphora guillaumini; VU; BURSERACEAE
Commiphora tetramera; VU; BURSERACEAE
Alchornea perrieri; VU; EUPHORBIACEAE
Drypetes thouarsii; VU; EUPHORBIACEAE
Albizia odorata; VU; FABACEAE
Dalbergia chlorocarpa; VU; FABACEAE
Dalbergia greveana; VU; FABACEAE
Dalbergia madagascariensis; VU; FABACEAE
Dalbergia peltieri; VU; FABACEAE
Dalbergia purpurescens; VU; FABACEAE
Hibiscus bojeranus; VU; MALVACEAE
Noronhia boinensis; VU; OLEACEAE
Paracorynanthe antakarana; VU; RUBIACEAE
Vepris arenicola; VU; RUTACEAE
Allophylus cobbe salignus; VU; SAPINDACEAE (=Allophylus salignus)
Capurodendron cf ankaranense; VU; SAPOTACEAE

Perrierodendron boinense; VU; SARCOLAENACEAE
Xyloolaena perrieri; VU; SARCOLAENACEAE
Dombeya subviscosa; VU; MALVACEAE
Nesogordonia stylosa; VU; STERCULIACEAE
Grewia baillonii; VU ;TILIACEAE

At the outset of this project, PMA staff will review the list of tree species provided by Madagascar National Parks and collect voucher specimens of all the species that are listed as vulnerable, endangered, and critically endangered by the IUCN within our management zone. We will bring these voucher specimens to Missouri Botanical Garden (MBG) in Madagascar for identification. Once up to 56 target species are identified, PMA teams will compile ecological information for each species, including taxonomy, known distribution, habitat type, preferred climate, phenology, and modes of reproduction.

Next, we will hold stakeholder meetings (including representatives from the communities and Madagascar National Parks) to assess the Ambanjabe management zone and determine the best locations to conduct vegetation surveys (via creating a series of vegetation transects). The purpose of these surveys is to determine the presence, distribution, and abundance of the IUCN Red Listed species in our management zone.

Currently, our teams are trained to monitor the forest for human disturbance and lemurs, using GPS and smartphone-based technology. For this project, we will expand the capacity of our patrol teams by training them on how to identify tree species and on vegetation survey techniques. We will draw on guidance from Botanic Gardens Conservation International and our team's experience conducting phenological research in ANP.

We will plan survey routes based on areas of high-potential habitat for target species and teams will conduct surveys of high-potential habitats by walking across them and making complete tree counts of target species. They will also collect basic data on each tree recorded, including its DBH and reproductive condition. Annually, the teams will revisit our vegetation survey areas and re-assess the abundance of target species and their survival.

3. Tree Planting Tests

Planet Madagascar also has an existing forest restoration program, that has been previously funded by World Land Trust and SOS Save Our Species grants. This ongoing restoration program has planted approximately 200,000 trees (up to ~60,000 per year) belonging to 19 species (including 1 VU species; *Dalbergia greveana*), restoring a 150-ha corridor of forest that connects 4 forest fragments to continuous forest. We employ 34 permanent staff from the local communities, working as nursery managers and project assistants. We also commission up to 20,000 seedlings per year from a women's cooperative who operate 3 nurseries. Also, more than 150 other community members are supported by our activities as planters and transporters.

For this project, we will test plant 10 threatened species (species that are listed as Vulnerable, Endangered, or Critically Endangered by the IUCN), via a women's cooperative we have previously trained on seed processing, germination, and plantation. This women's cooperative operates 3 tree nurseries that we routinely commission up to 20,000 seedlings from but they have capacity to produce up to 30,000 seedlings per year. We provide additional training on processing the 10 new seedlings. 1 of the women's cooperative's 3 nurseries will be dedicated to producing 1,000 seedlings of each species (10,000 total). We will then plant these trees within similar conditions as we find during surveys (#2 above) and compare the mortality of these trees to those species we already plant.

8. Document prepared on August 21, 2024

9. Legal and regulatory framework:

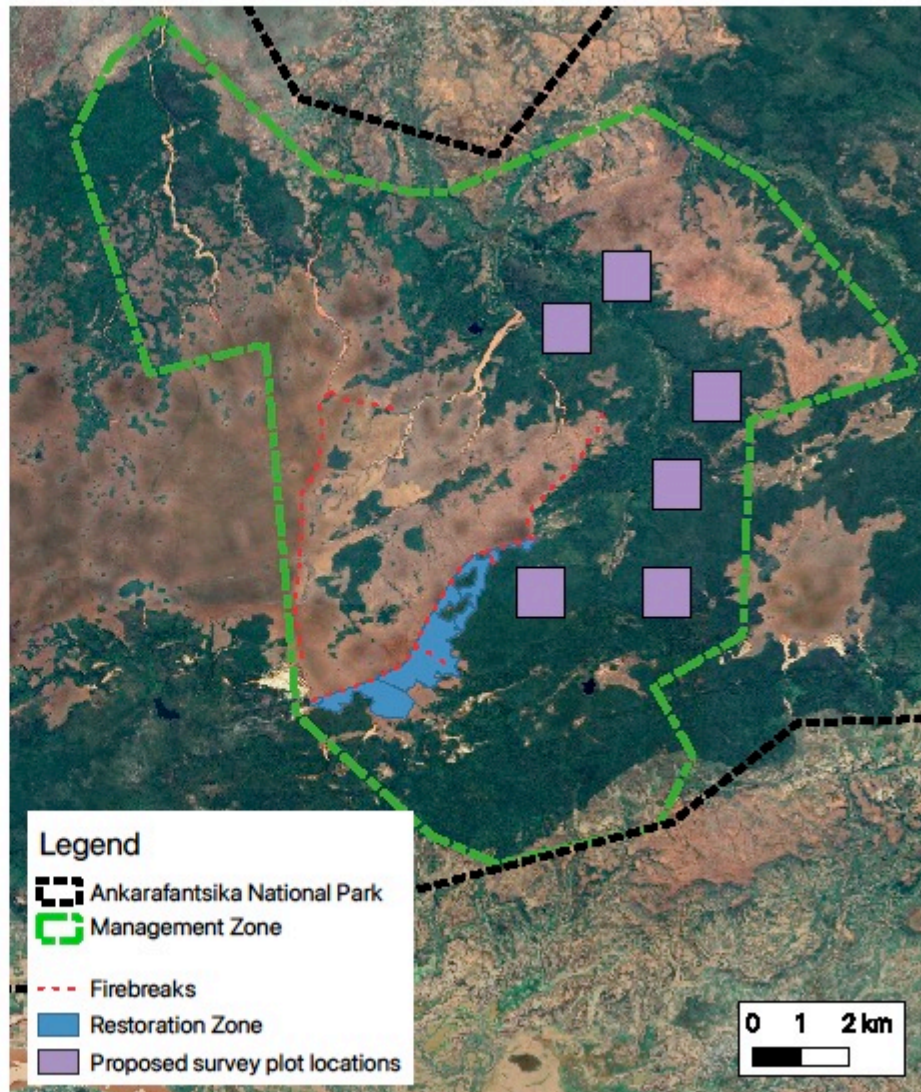
It's forbidden to collect seeds, replantation of endangered species out of the protected area according to the COAP (Code des Aires Protegees Article 14). However collection and replantation within protected area are allow for researchers or conservationist that have written and clear permit from Madagascar National Parks. Planet Madagascar have secured a permanent permit and will work closely with MNP, as a project partner.

10. Status of area to be impacted:

The main portion of this project will take place within three communities in Ankarafantsika National Park, consisting of approximately 600 people: Maevatanimbary, Andranohobaka, and Ambarindahy forming a single Fokontany. The Fokontany has a President and each community is led by a Village Cheif. Members of the communities typically follow traditional gender norms with men engaging in physical labour and women typically staying close to the villages. In the past, because of these social norms and expectations, we were unable to employ many females in our projects, which also limited the number of people available to work (42% of the population from the communities are women). As part of a separate forest restoration project, we have had the opportunity to engage more with the women in the communities through a women's cooperative, Tontolo Maitso. Thus, we have also increased our organizational capacity and the pool of workers by engaging with women in the communities. The park has a mandate to create co-managed areas within the park. Like many remote communities in Madagascar, members of these communities have a subsistence lifestyle. Typically, the communities struggle to feed their families day-to-day and face health issues that are very preventable. Because the people in our communities are living in extreme poverty, we have to take an approach that considers their needs, along with the needs of forested habitats (shared with people) including threatened trees. We work to combine a community-based conservation approach with practical on-the-ground conservation activities and education.

Our project will provide steady jobs and income supplementation to members of the three communities. Our program aims to improve the livelihood of people living in the communities by providing employment, income supplementation through sustainable ventures, and to increase a sense of ownership of and pride for protecting forest and lemurs. Community members are involved at all stages of our projects from planning to execution to evaluation. Our team members have worked in the area since 2011 and so we have strong ties with community leaders. Working with community members has the added benefit of building capacity and gives us opportunities to train employees for other and future projects. For example, we provide technical training to our fire management team on how to use GPS technology, and we will be expanding the technical capacity of our team with new training on data collection using smartphones. We also train community members on simple skills, such as how to tell time and how to write and record information. There are many research scientists who work in the national park, and so having these types of skills will make community members employable beyond just our projects. It is important that we also consider the context of people who are not from our three core communities. While our community members are actively engaged in our projects and understand what we are there to do, we have to be aware that people from outside our communities may not understand our aims or have different interests. It is often the people from outside the communities who set fires or engage in illegal activities, for example. We have already

created signage in the area to provide information about our firebreaks, and we have also broadcast on the radio to explain who we are and what we are doing.



11. **Baseline data:**

This EIA focuses on the risk that could result to endangered tree species during the phase of collecting seed and vegetal material.

This project will focus on up to 56 target species, that will be reviewed and identified, from list above-mentioned under section 2.

12. **Anticipated impacts and risks:**

Project implementation implies:

- Collecting seeds and vegetal material from endangered tree species
- Setting up nurseries for reproduction of these species prior to reintroduction.

Precautionary measures should be taken to prevent any impact on the wild population of endangered species. Measures should also be taken to ensure safety of staff and employees of the project during the implementation.

13. **Mitigation measures:**

For collection of seeds from endangered species:

- Each mature endangered species tree is labeled or has a unique identifier (ID). All phenological and ecological data for each tree are stored in a database, including information on the seeds collected. Seeds are collected from healthy specimens from large populations, distributed across different types of habitats.
- Fruit or seed collection activities are accompanied by an information sheet (Table), making it possible to trace the origin of the seeds, the date of collection, the location and the quantity collected. Seeds are stored separately for each tree, to preserve quality and genetic diversity.
- Rational collection is also put in place to ensure the natural regeneration of species and the maintenance of their population in their natural habitat. For a fertile tree, the quantity of seeds collected does not exceed 60% of its total production, unless the plant and/or its habitat is strongly threatened by fire or logging.
- All precautionary measures are taken not to damage the trees – collection of seeds will mostly happen with seeds fallen on the ground.
- The collection will take place on parcels of public land, with all authorizations from the protected area management.

For the nurseries:

- The nurseries will be set up in degraded land (agriculture land) with no impact on natural ecosystem.
- No pesticides will be used for the nurseries.

14. **Actions to ensure health and safety:** This section will describe actions that will be taken to ensure the health and safety of workers.

Project staff will train the collectors ; collection of seeds will mostly happen with seeds fallen on the ground. Precautionary measures will be taken to avoid any incidents with people climbing trees

15. **Monitoring and evaluation:**

The data gathered for collections of seed and replantation, as part of the precautionary measures, will allow for monitoring. Regular update of the implementation of these measures will be provided as part of semestrial reports to CEPF.

16. **Timeline and resources:**

The precautionary measures will be taken all along project, as necessary. No specific financial resources are needed for implementation.

17. Permission of the landowner:

We have a permanent "Convention de Collaboration" with the Madagascar National Park to undertake and implement our conservation project within Ankarafantsika National Park. Also, we will have a buy in meeting with the local communities that works with us.

18. Participatory preparation:

We work closely with several stakeholders to plan, implement, and evaluate our ongoing conservation projects. We hold approximately four meetings each year with the stakeholders listed below to discuss Planet Madagascar's projects

Tontolo Maitso

We work closely with the Tontolo Maitso cooperative that we helped establish with funds from the Canada Fund for Local Initiatives (CFLI). During the project funded by CFLI we provided consultation on business strategies, financial management, and governance for the cooperative. The business strategist suggested the cooperative engage in business ventures to bring in sustainable revenue. We have hired members of the cooperative directly for other projects and have engaged the cooperative to produce seedlings for a forest restoration project funded by the IUCN Save Our Species fund and funding from other donors. We meet with representatives of the cooperative on a monthly basis. During these meetings we discuss the status of current projects as well as what types of projects the cooperative members are interested in.

Madagascar National Parks

Our project takes place within the borders of a protected National Park. It is therefore essential that we work very closely with Madagascar National Parks. Because we run a large program that consists of multiple small projects, we created an accord of collaboration with Madagascar National Parks that is permanent and only requires renewal to address any changes. This accord has strengthened our long-term relationship with the national park, which will help us successfully complete this and future projects. Madagascar National Parks also works with us directly by providing us with staff support. For example, once a month park staff visits our project and offers assistance and advice. We have made strong connections with park wardens and have verbally agreed to work on collaborative projects in the future.

Non-project partners

Durrell Wildlife Conservation Trust

Although not a direct partner for this particular project, Durrell Wildlife Conservation Trust also has a strong conservation presence in Ankarafantsika, operating a breeding center for ploughshare tortoises and a conservation program for rare turtles. The breeding center is located in the main site in Ankarafantsika, Ampijoroa Forest Station, about 10-kilometers away from Planet Madagascar's focus. While their conservation efforts on rare turtles take place in multiple lakes within the park including one within our management zone. Our projects are centered on issues of poverty, lemurs, and forest and theirs are centered on turtles and watersheds. In the past, we have worked closely with Durrell—they have provided in-kind support to our projects through transportation to and from our

communities, and conservation methods training for our in-country Director, Mamy Razafitsalama.

Research groups (University of Toronto and The Institute of Zoology at the University of Veterinary Medicine Hannover)

It is also important to consider two active research groups that work in Ankarafantsika National Park. Researchers from both the University of Toronto and The Institute of Zoology at the University of Veterinary Medicine Hannover currently conduct research programs in Ankarafantsika, as well as in the forest fragments that our projects center around. We have a memorandum of understanding with the University of Toronto researchers and plan to establish an MOU with The Institute of Zoology at the University of Veterinary Medicine Hannover.

19. Disclosure:

The impact assessment will be part of the document available on the CEPF web, and will be communicated through presentation to local stakeholders, at same time as presentation of the Grievance mechanism, explicated in the main proposal.