Environmental and Social Impact Assessment
and
Environmental and Social Management Plan

28/06/2024

CEPF Grant 115368

Madagascar National Parks Ranomafana

Conservation of Endangered Palm Species in Ranomafana and Ifanadiana

Ranomafana and Ifanadiana, Madagascar

Grant Summary

1. **Madagascar National Parks**
2. **Conservation of Endangered Palm Species in Ranomafana and Ifanadiana, Madagascar**
3. **115368**
4. **US$ 82,014.52**
5. **July 2024-June 2026**
6. **Madagascar**
7. **Summary of the project**

Palms are incredibly important to Madagascar's natural and human environments; each of the over 200 species endemic to Madagascar plays a critical role in supporting these dimensions. Palms are building blocks for larger ecosystems, and they provide housing material, food, and other products for the populations that live around them. Unfortunately, many of the island's palm species are now endangered (critically endangered, endangered, or vulnerable according to the IUCN) due to ongoing habitat destruction and overharvesting. Insufficient data on the importance of Madagascar's palms, especially in the Ranomafana and Ifanadiana areas, has led to a lack of initiatives and indeed effort in conserving the crucial trees. From Ranomafana National Park to Ifanadiana, palm numbers have seen sharp declines as a result of deforestation for agriculture and overharvesting for human use. The 13 species of palms, and their respective IUCN status, that MNP chooses to work with in this grant for the protection of endangered tree species are as follows: *Chrysalidocarpus basilongus* (formerly *Dypsis basilonga*), Critically Endangered; *Chrysalidocarpus decipien*s (formerly *Dypsis decipiens*), Vulnerable; *Chrysalidocarpus ifanadianae (*formerly *Dypsis ifanadianae), Critically Endangered; Chrysalidocarpus nauseosus* (formerly *Dypsis nauseosa*) *Critically Endangered; Chrysalidocarpus prestonianus (*formerly *Dypsis* prestoniana) Vulnerable; *Chrysalidocarpus robustus* (formerly *Dypsis robusta*), Critically Endangered; *Dypsis sahanofensis,* Critically Endangered*; Masoala kona Endangered; Masoala rasabotsyi*, not currently assessed but likely will be considered Critically Endangered if a population can be found in the wild; *Ravenea nana*, Endangered; *Ravenea dransfieldii*, Endangered; *Ravenea krociana*, Endangered; and *Vonitra utilis* (formerly *Dypsis utilis*), Endangered. These palms are endemic to either Madagascar or even more specifically the Southeast part of the island, and vital to the proper functioning of the regions' ecosystems and forests. These species are slow growing and long living, and provide an undescribed number of essential uses to local populations. Without knowing exactly how these human populations use these palm species, conservation efforts for them lack the ability to tailor incentives to protect them or offer alternatives. Furthermore, the tropical rainforests of Ranomafana and Ifanadiana contribute to Ranomafana National Park being the 4th most visited National Park by tourists in the country, providing an enormous stream of revenue for the populations that live around the forests. Without plans for the protections of critical tree species in the forest, continued deforestation will decrease the appeal of the park to tourists and diminish the economic value of all natural environments further.

The structure of this grant begins with the conduction of baseline research, which can be broken into three main themes: 1) where each of these 13 targeted palm species exist exactly, 2) how exactly they are used by nearby human populations, and 3) what is already known about each of the species. The research goals are broken down in this way to allow for three separate data collection methods, each conducted by certain actors within this grant. The data on where the palms exist and occur in the wild will be collected via field expeditions inside Ranomafana National Park (RNP) and within Ifanadiana area by both the Center ValBio (CVB) and Madagascar National Parks (MNP). Both CVB and MNP regularly conduct field expeditions and are able to easily obtain permits for entering RNP, collecting seeds, and thus make them best situated for collecting this data. Already planned expeditions by CVB will allow for one or two members of MNP staff to join to collect the data and seeds. The data on how palms are used by nearby populations is best collected by MNP, who are able to easily access already identified key communities around RNP as well as in Ifanadiana. Finally, the data to be consolidated and collected on what is already known about these palm species will fall under the purview of the Ranomafana Arboretum. Dan Turk, founder of the Arboretum, and other experts on Madagascar palms at the Arboretum, will participate in this project. Their data collection methodology will include pulling from existing sources information on the target palm species or similar palm species in the region, as well as their own archives of nearly 3 decades of ex-situ palm conservation in Ranomafana.

Following, and in some cases concomitant to, this research, the creation and establishment of three palm nurseries, the in-situ protection of palm populations, and the creation of an ecological monitoring protocol is proposed to begin. The three nurseries will be created to take care of ex-situ palms of the target species, to eventually be planted in the wild. They will be housed by the three main actors of this grant: Madagascar National Parks, Centre ValBio, and the Ranomafana Arboretum. Expertise from all three groups will be called upon in the creation and maintenance of these palm nurseries, and dedicated nurserymen and women will be trained at each site to ensure the rare species are cared for accordingly. Goals for numbers of palms grown and subsequently planted in-situ by these nurseries is 1500, with this number of seeds grown into seedlings within the two years of funding.

The in-situ protection of palm populations will be primarily carried out by MNP, and in particular the Park Rangers of MNP. This protection will take the form of patrols led by Park Rangers of identified key sites for the 13 endangered palms. Patrols are regularly conducted by MNP as part of their conservation strategy, and specialized patrols to monitor the palms and their environment will be led once a month for the duration of the grant, and become part of the normal strategy after the grant's completion.

Finally, the creation of an ecological monitoring protocol -also a collaborative effort from all three actors- will be created to anticipate the eventual planting of palms from the nursery, and to create conservation tools for the future. Data from the

initial data collection phase on where each species is typically found, locations that have been particularly deforested, and how human populations use each species, will be used in both aspects of this protocol. In the first aspect, the data will be used to identify sites for the planting of palms raised in the nurseries, to ensure optimal success of each sapling and greatest environmental and human impact. This will take care to focus on connecting palm habitat fragments. In the second aspect the data will be used to identify incentives for the human populations to look after young palms and to protect adult palms. This will focus on education and awareness of their uses and alternatives to palms for the same purposes.

Two students will receive financial support to carry out research on palm trees, participate in the various project activities and consolidate the project results into research theses.

8. Document Prepared on June 28, 2024

9. **Legal and regulatory framework**:

In order to collect seeds of native trees in protected areas of Madagascar, a permit is needed from the national authorities. The regulation is the same for endangered and non-endangered, as define by the IUCN Redlist, trees. For the collection of seeds in protected areas, Madagascar National Parks has permits to conduct such work that need to be renewed every six months. For seeds that will be collected outside of a protected area, a permit is needed from DREDD Vatovavy –Fitovinany (Regional Directorate for Environment and Sustainable Development), to be renewed every six months as well.

The law regulating the exploitation of forest products, including seeds of tree seeds, is decree n° 98-782 of August 18 1998.

Scans of permits will be included in reports to CEPF.

10. **Status of area to be impacted:**

The project area spreads across three towns, Ranomafana, Kelilalina, and Ifanadiana. The first two are classified as rural communes by the Government of Madagascar, and the last is classified as an urban commune. Between these three towns live roughly 40,000 inhabitants, who populate the towns themselves and then smaller villages off the only paved road (National Route 25) and into the countryside. These towns are part of the Vatovavy Region in the southeast region of the island of Madagascar. The occupation of those living in this project area is primarily farming, with data collected by the UN in 2011 listing the percentage of those involved in the activity at over 90%. Farming in the region is unproductive, and economically, the region is quite impoverished.

The population of the peripheral area is divided as follows: 80% of heads of households are farmers, 3% craftsmen, 17% others (temporary employees, fishermen or collectors of crayfish, pandanus and bamboo). The regional population growth is about 3.4% per year. The household size in the Peripheral Zone is six people. These data tell us that we would need high production to meet the needs of the population

Socio-economic and cultural activities :

The main activity of the local population around Ranomafana National Park is agriculture. However, insufficient technical support, a shortage of seeds, fertilizers, and agricultural equipment are the problems affecting agricultural production in the area. One of the constraints for pig and poultry farming is the lack of veterinary services and products. Currently, in some areas, the establishment of veterinary posts and points of veterinary products is being carried out. Generally, livestock farming remains traditional, especially in the Tanala area, and does not contribute to improving living conditions. In terms of culture, the Ranomafana area is rich in diverse cultural practices such as: Tsangambato, taboos, Famorana, basket weaving, house architecture, Tanala cuisine, braiding, sports (Tolona), traditional dance (Dombolo).

Health condition :

Several villages are far from health centers. The staff is insufficient for these centres (9 doctors, midwives and 7 nurses for 7 municipalities). Villagers have difficulty accessing pharmaceuticals while diseases such as malaria, diarrhoea and bronchitis are common in the area. This leads to a precarious state of health for the majority of the population making it difficult for the efforts required for development work. However, there has been a marked improvement in local health services. Vaccination rates are generally high. Particularly for the municipalities of the Vaovavy region, since the arrival of the NGO PIVOT in 2013, a clear improvement in these situations has been noted. An NGO intervenes in the field of health.

Cultural and economic relationships of humans with the forest

The local population, especially the Tanala, as their name suggests, are dependent on the forest. For centuries, the Tanala population has used the forest as their refuge and burial ground. Traditional ceremonies are still permitted even in the Park, in areas they occupied before its demarcation. In their daily lives, they procure construction materials, furniture, firewood, non-timber forest products, honey, tools, household utensils, and raw materials for crafts from the forest. Some forest products are traded locally and nationally, such as semi-finished wood or bamboo for making "garaba" (a type of basket). Due to increased demand for these products and their scarcity in the peripheral area, illegal logging occurs in the Park. Data on forest product harvests are not available. Some data collected during patrols provide information on this subject, particularly data on rare construction materials in the Peripheral Zone: reforestation of species used by the local population.

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.

MNP chooses to work with in this grant for the protection of endangered tree species, 13 known species of palms to occur in the 43550 ha of Ranomafana National Park to Ifanadiana: *Chrysalidocarpus basilongus* (formerly *Dypsis basilonga*), Critically Endangered; *Chrysalidocarpus decipiens* (formerly *Dypsis decipiens*), Vulnerable; *Chrysalidocarpus ifanadianae* (formerly *Dypsis ifanadianae*), Critically Endangered; *Chrysalidocarpus nauseosus* (formerly *Dypsis nauseosa*) Critically Endangered; *Chrysalidocarpus prestonianus* (formerly *Dypsis prestoniana*) Vulnerable; *Chrysalidocarpus robustus* (formerly *Dypsis robusta*), Critically Endangered; *Dypsis sahanofensis*, Critically Endangered; *Masoala kona* Endangered; *Masoala rasabotsyi*, not currently assessed but likely will be considered Critically Endangered if a population can be found in the wild; *Ravenea nana*, Endangered; *Ravenea dransfieldii*, Endangered; *Ravenea krociana*, Endangered; and *Vonitra utilis* (formerly *Dypsis utilis*), Endangered.

12. **Anticipated impacts and risks:**

Project implementation implies:

- Collecting seeds and vegetal materiel from endangered tree species, with risks:
    - to impact natural regeneration
    - to damage trees to collect seeds
- Setting up nurseries for reproduction of these species prior to reintroduction, with risk:
    - to establish a nursery in close proximity to a forested area that hosts threatened species.

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 below), 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 and from the Regional Directorate for Environment and Sustainable Development.

For the nurseries:
- The nurseries will be set up in dergraded 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.
For safety measures:

The collection of seeds will primarily involve gathering seeds that have naturally fallen to the ground. This method minimizes disturbance to the trees and ensures the preservation of natural regeneration processes. To enhance safety and efficiency, the following precautionary measures will be implemented:

- Ground collection focus: seed collection efforts will prioritize seeds that have naturally fallen to the ground, reducing the need for climbing trees.
- Safety training: people involved in seed collection will receive comprehensive training on safe collection techniques.
- Use of tools: if it is necessary, tools such as long poles or nets will be used to collect seeds from lower branches without the need for climbing.
- Supervision: experienced collectors will oversee the collection process to provide immediate assistance if needed.
- Project staff will train the collectors

15. **Monitoring and evaluation**: This section will outline the steps the applicant will take to monitor and evaluate the impact of the proposed project. It should identify the monitoring objectives and specify the type of monitoring, with linkages to the impacts assessed and the mitigation measures described. This is meant to provide (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to: (i) ensure early detection of conditions that necessitate particular mitigation measures; and (ii) furnish information on the progress and results of mitigation.

16. **Timeline and resources:**

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

17. **Permission of the landowner**:

As noted above, seed collection will take place mostly in public land, where MNP is a manager, and following the regulatory framework. For collection outside of protected areas, MNP will get approval from DREDD Vatovavy –Fitovinany, contact the Fokontany concerned and gather information about land ownership, and ensure prior information and consent before seed collection.

18. **Participatory preparation**:

The project will be led by MNP in partnership with Centre Valbio and the Ranomafana Arboretum. Local communities will be associated in the research phase (specifically re. uses of palm species) and through local employment for all project components.
Madagascar National Parks (MNP) has no external stakeholders and has thus had no relevant consultations or partnership agreements. MNP is an sub-agency within Madagascar's Department of the Environment, however, it operates fully legally independently and annually defines its own objectives and activities.
The Ranomafana Arboretum has no external stakeholders and has thus had no relevant consultations or partnership agreements. It does expect at some point to consult with Mijoro Rakotoarinivo, a palm expert in Antananarivo, however, this does not warrant prior agreement or discussion.
Centre ValBio does not have external stakeholders throught this grant, as they are a subgrantee in this project which allows them to act independently through Patricia Wright and her work. As such, there were no relevant consultations or partnership agreements held.
The University of Fianarantsoa ISTE (Institut des Sciences et Techniques de l'Environnement) will also engage in this project from its inception. The university will ensure the collection of available information on the 13 species and will establish the ecological monitoring protocol for these species. They will participate in the various workshops related to this project.
IUCN Plant Specialist Group: The IUCN plant specialist group will assist in revising the Red List assessments for the target palm species, ensuring that the conservation status of these species is accurately reflected. This will involve organizing workshops and collaborating with project staff to update the Red List entries for species like Masoala rasabotsyi and Chrysalidocarpus robustus.
Local Communities and Fokontany: Local communities, specifically the Fokontany (local administrative units), will play a crucial role in the project. They will be involved in several ways:
Research Participation:
Fokontany members will be engaged in ethnobotanical research to document traditional uses, cultural significance, and local knowledge of the palm species. This data will be

collected through community interviews and surveys conducted by conservation interns.

Employment and Training:

Local community members will be employed in various project activities, including the establishment and maintenance of palm nurseries and participating in patrols for in-situ protection of palm populations.

Awareness and Education:

The project will conduct awareness campaigns in 10 villages, emphasizing the importance of palm conservation. Activities will include poetry, song, and dance competitions centered around conservation themes.

Educational materials such as brochures, banners, and road signs will be developed and distributed to raise awareness about the endangered palm species.

Grievance Mechanism:

Fokontany presidents will be provided with complaint books to record any project-related grievances from community members. These grievances will be reviewed and addressed in collaboration with the COSAP (Protected Area Policy and Support Committee) to ensure transparent and effective resolution.

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.