# MAROMIZAHA PROJECT

Protecting the singing lemur and its forest

**SECOND INTERIM REPORT – MARCH-AVRIL 2022**

GERP

## General information

### The project

The staff from the NGO U ONLUS (https://www.uonlus.it/), as part of the Ethology and Bioacoustics research group of the University of Turin, Department of Life Sciences and Systems Biology, is currently leading the first and only long-term indri population monitoring. Starting from 2008 we have habituated 12 family groups of *Indri indri* in the Maromizaha NPA. We currently have 4 research guides performing daily surveys on the animals, collecting behavioral and spatial data on each indri group, at individual and group level (no collars, each individual is recognizable thanks to natural marks on its pelage). In addition, a Passive Acoustic Monitoring of the indri population is ongoing, thanks to an array of 2 Wildlife Acoustics SM4 (https://www.wildlifeacoustics.com/) and 10 Audiomoth (https://www.openacousticdevices.info/audiomoth) recorders.

### Threats for the species

The species *Indri indri* is a highly distinctive lemur, endemic to the island of Madagascar where it inhabits the eastern rainforest habitats.

Illegal hunting is a major problem for the indri in certain areas. Although long thought to be protected by local *fadys* (traditional taboos), these do not appear to be universal and the animals are now hunted even in places where such tribal taboos do exist. In 2018, for example, in the Commune of Lakato (Alaotra Mangoro Region), 9 indris were killed by poachers in the Antavolobe forest (Ratsimbazafy, pers. comm.). Recent studies of villages in the Makira Forest indicate that indri have also been hunted in the past for their skins (which were worn as clothing), that indri meat is prized and fetches a premium price, and that current levels of indri hunting are unsustainable (Golden 2005, 2009; Jenkins et al. 2011; R. Dolch pers. comm.). The principal threat to this species is habitat destruction for slash and burn agriculture, logging and fuelwood gathering, all of which take place even within protected areas. Increasing levels of illegal hunting is also a major problem for the indri (Jenkins et al. 2011). Fady against the hunting of indri are becoming less respected, and hunting has thus worryingly increased since the political crisis, now posing a serious threat to this species. The corridors between Mantadia and Zahamena are an important Conservation Site, where wide conservation education and capacity building actions should be implemented, to eliminate hunting, with the indri as the flagship species. This species has never successfully been kept in captivity and thus captive breeding programs are highly doubtful.

In the next years it will be of great importance to support local forest management by improving the existing community-based approach (Randrianarison et al. 2015). Actions should include expansion of protected habitats to increase population connectivity (e.g. the Ankeniheny-Zahamena corridor) and to decrease lemur disturbance by rural communities. Without external support, the last remaining forest habitats will be devastated within a few years resulting in the local extinction of most lemur populations (Schüßler et al. 2018).

Thanks to the collaboration between the WSO, Friend of The Earth, Friend of the Sea, U ONLUS, the University of Turin and GERP, the "Maromizaha 2022 Conservation Project" will carry out conservation activities targeting the population of indri lemurs in Maromizaha during a one-year project, starting from January 1, 2022.

The **"Maromizaha 2022 Conservation Project"** thus aims at protecting the indri lemurs, through two main activities:

1) **Indri population monitoring**

The project will foster conservation by:

i. Implementing the number indri family group under the actual monitoring protocol;
ii. Implementing the Passive Acoustic Monitoring population survey;
iii. Building capacities among the local communities in the domain of biodiversity conservation and education;
iv. Increasing awareness, facilitating and encouraging people's involvement in conservation actions in the area.


2) **Habitat Restoration**

This action supports local forest management by improving the existing community-based approach and by expanding the network of protected habitats in the Ankeniheny-Zahamena corridor.

## Second bimonthly report

For the **"Maromizaha 2022 Conservation Project"** the U ONLUS project team selected a contact person in Madagascar, Dr. Rose Marie RANDRIANARISON, member of the Scientific Board of the Maromizaha Multipurpose Center, who is in charge of coordinating the activities in the Maromizaha NPA. Dr. Randrianarison carried out three missions in Maromizaha, one in March and two in April 2022.

The coordinator's monthly missions aimed at:

1) coordinating the research guides of the Maromizaha project, collecting data from the first bimester of 2022 and transmitting the new research calendar;
2) regulating the residual payment of the salaries of all our staff for the second bimester;
3) assessing the needs of the Anevoka primary school and planning the green classes activities with the Director and the Teachers;
4) planning the restoration activities, by selecting the plant nurseries (pepinières) and formalizing a budget and calendar charts.

## Maromizaha Multipurpose Center (CRPM)

From April 5th, 2022 a team from the University of Turin (UNITO) reached the Maromizaha NPA. In accordance with GERP and with Dr. Randrianarison, minor damages at the infrastructures were fixed (at CRPM, toilets, showers, etc.) and the CRPM (built thanks to Parco Natura Viva and the European BIRD project) is now completely accessible and operational.

### Wood paving

The damage left by Cyclone Ana was mainly concentrated on the roof of the Maromizaha Multipurpose Center (CRPM), that has been repaired. The UNITO team found damages on the wood floor of the main building, that are currently under reparation.

### Showers and toilets

The shower-toilet units faced no particular damage. The walls and doors were painted after the cyclone by the guardian Norbert. The shower trays get rusty and have been replaced.

### First visitors

The CRPM is now hosting the UNITO research team (1 supervisor, 1 academic guest, 2 Italian and 1 Malagasy, PhD students, 5 master students) and 1 Washington University in St. Louis research team (1 supervisor, 4 Malagasy PhD students). The local guides, field assistants, guardians and cookers are supporting the fieldwork of all the team members in the Maromizaha NPA, according to the CRPM Rules.

## Indri monitoring

The “Maromizaha 2022 Conservation Project” has a team of 4 research guides monitoring and collecting data on the population of wild indris in the Maromizaha rainforest.
Two guides, Gilbert KOTOARISOA and Jean RANAIVOMANANA (Figure A), are in charge of the survey of 7 habituated groups of indris. The other two guides, Zafison BOTO and Emile Susy RAKOTOARISOA (Figure B) are in charge of the survey of 5 habituated indri groups, of the passive acoustic monitoring (PAM) and of the habituation of new indri family groups.

A

B

## The indri monitoring

In the Maromizaha NPA the 4 research guides follow and monitor a total of 12 indri family groups, whose composition and structure for 2022 is reported in the annexed table. The research guides are able to identify each individual in each group, thanks to the color of the pelage and to the fur's natural marks. We reported the study protocol in the Attachment 1 and in the first interim report.

| gruppo | individuo |
|---|---|
| 1MZ | Jery; m* |
| | Bevolo; f* |
| | Filo; u |
| | Rio; u |
| 2MZ | Max; m* |
| | Soa; f* |
| 3MZ | Mahagaha; m* |
| | Mena; f* |
| | Nousnous; u |
| 4MZ | Koto; m* |
| | Eva; f* |
| | Willy; u |
| 5MZ | Graham; m* |
| | Bella; f* |
| 6MZ | Hendry; m* |
| | Befotsy; f* |
| | Fanamby; f |
| 8MZ | Jonah; m* |
| | Bemasoandro; f* |
| | Toky; u |
| 9MZ | Emilio; m* |
| | Sissie; f* |
| 10MZ | Tia; m* |
| | Fetra; f |
| | Pedro; u |
| 11MZ | Karenji; m* |
| | Ferana; f* |
| | Colblanc; m |
| | Fetsy; u |
| 12MZ | Roma; m* |
| | Zela; f* |
| | Nisa; u |
| 7MZ | Lova; m* |
| | Gasy; m |
| | Onja; f |
| | Setra; u |

During the first quarter of 2022, the 4 research guides monitored once all the indri groups, except the 5MZ and the 12 MZ (that are planned to be monitored in the following weeks).
The monitoring calendar is reported in the following Table.

| gruppo | guides | week |
|---|---|---|
| 1MZ | Gilbert/Naivo | 28/02 - 04/03 ; 04/04-08/04 |
| 2MZ | Gilbert/Naivo | 07/03 - 11/03 ; 11/04-15/04 |
| 3MZ | Gilbert/Naivo | 14/03 - 18/04 |
| 4MZ | Gilbert/Naivo | 21/03 - 25/03 ; 26/04-29/04 |
| 6MZ | Setra/Zafison | 21/03 - 25/03 |
| 8MZ | Setra/Zafison | 04/04 - 06/04 |
| 9MZ | Setra/Zafison | 11/04 - 15/04 |
| 10MZ | Setra/Zafison | 28/02 - 04/03 ; 14/03 - 18/03; 18/04 - 22/04 |
| 11MZ | Setra/Zafison | 09/03 - 11/03 ; 25/04 - 29/04 |
| 7MZ | Setra/Zafison | 28/03 - 30/03 |

For the PAM we set 2 Wildlife Acoustic Song Meter (SM4) and 2 Wildlife Acoustic Micro recorders to equip 4 listening points in different areas of the NPA (2 sites in the research area, 1 site in the eco-touristic part of the NAP, 1 site in the pristine forest). The recording devices will stay in place for one month at a listening point. Both SM4 and Micro recorders are configured to record for 10 min every 30 min, with 16 bit recordings made at a frequency of 44,100 Hz and stored in .WAV file format.

Starting from May 2022, we will set up also 2 additional Wildlife Acoustic Micro recorders inside the territory of 2 new indri groups. The relative groups will be then habituated to the human presence by the guides Setra and Zafison. Thanks to the WSO/Friend of the Earth funding we will be able to buy 2 additional SM4 Micro recorders to implement the area covered by our passive acoustic monitoring array.
As told in the previous report, the habituation will start after March 2022 because of the difficulties to habituate individuals during the cyclone season and to avoid animal stressing during the breeding season.


All the recorders are placed on the tree canopy, at a height of approximately 2.5-4 meters. This would allow a better detection of the indri calls, that are used to sing from the top of the trees, to spread their loud cries farther.

Hard disks with the PAM recordings have been sent to Italy once full in February 2022 (thanks to the support from Clarissa Puccioni, who brought 2 devices to Italy containing the 2021 PAM recordings). All the recordings from the first bimester of 2022 have been transmitted by the research guides to Dr. Randrianarison at the end of March 2022 and will be successively uploaded by Dr. Torti to the UNITO online repository, for the backup. Prof. Marco Gamba, who is currently in Maromizaha (April 26th – May 3rd) will collect the January-April PAM recordings, by backing up all the files on the same repository, once in Italy.

## Rising awareness

*Training sessions*

On April 29, 2022, the UNITO research team organized the first quarterly training session at the Maromizaha Multipurpose Center. The training session targeted at improving capacities in the research guides (the 4 indri guides, the 2 black and white ruffed lemurs guides and the 2 diademed sifakas guides) of the Association of Local Guides (AGAM). All the local guides are already in the field, collecting behavioral data on the different lemur species. The training session improved the guides capacities around the following topics: data collection and storage (new protocol for field studies), new planning of the PAM array system (see map), how to use new equipment (new GPS models, cameras, handy recorders, etc.).

The aim of this first quarterly training session was to prepare the guides for the new season of data collection. All the guides successfully learned the new techniques and are currently operational in the lemur monitoring. We did not use the allocated budget yet, cause only the 8 research guides participated in the field session. We will allocate more money for the next meeting, that will be focused on PAM techniques and camera trapping and will target all the AGAM research guides.

*Education*

Educational activities on indri conservation issues in local schools and study support will enhance in a short term the involvement and the awareness of the cultural and economic value of lemurs and their habitat by children and their families. In the long term, this enhanced awareness gained at a young age, will facilitate and encourage their involvement in conservation and the search for environmentally sustainable job opportunities. The educational program in the Anevoka EPP started thanks to the collaboration of several international actors, like Fondazione ARCA, LVDI International, Green Teen Team Foundation, Chiesa Valdese, Rotary International and is now in synergy with Our Kids, Our Future Madagascar.

In April, 2022, Dr. RANDRIANARISON had a meeting with the Anevoka primary school's Director and teachers in order to make a plan for the green classes that will be organized on 2-3 different Fridays, starting from May 2022. This was also the occasion to define the primary school needs for the next months, in order to coordinate the efforts to support the local families.

The green classes will involve 110 scholars of different ages, 6 teachers and 11 guide from the EPP Anevoka. The activities will foresee a morning promenade inside the Maromizaha NPA, with the guides showing the different floral and animal species to the schoolchildren. The kids and the staff will have lunch at the CRPM, after which the guides will teach the kinds on how to use the research equipment, how to follow the animals, etc. The green classes will end at around 16:00, for allowing them to come home at the village before sunset. The first green class will be organized, presumably, on Friday 27th, May 2022.

The school Director highlighted the following needs for the Anevoka EPP:

- An additional classroom for preschoolers (7m x 4 m wood building).

- Toys for preschoolers.

- 50 new wood tables and benches proportional to the size of the schoolchildren.

- 10 months of school canteen.

- A pit latrine for schoolchildren.

The UNITO and U ONLUS team will coordinate with the GERP's local education coordinator and the school Director in order to prepare a project proposal for rising the money to support the school.

## Habitat restoration


In order to support local forest management by improving the existing community-based approach and to expand the network of protected habitats in the Ankeniheny-Zahamena corridor the University of Turin supports reforestation actions in the Maromizaha NPA. In collaboration with GERP, the team currently manage 5 bamboo and endemic tree nurseries in the villages around the NPA and support the local population in the ecological restoration of target degraded areas of the forest. The project aims at increasing habitat connectivity for lemur populations and decreasing lemur disturbance by rural communities. The total budget will support the costs for seed collectors, tree nurseries, tree planters and materials to improve the extension of the restored area within the NPA.

The team, supported by Dr. RANDRIANANTENAINA, the GERP's restoration coordinator and by the GERP's local coordinator, Mr. RANDRIAMIALISOA, has assessed the status of the tree nurseries after the passage of the ANA, BATSIRAI and EMNATI cyclones. The coordinators did not report damages for the Anevoka village tree nurseries, but the other ones have been severely impacted by the floods.

The U ONLUS, UNITO and GERP staff have delineated the intervention to be undertaken thanks to the WSO/Friend of the Earth budget, starting by May 2022. The project intervention will be ensured by cultivating endemic plant species within the 3 Anevoka nurseries (the Anevoka showcase, the OTAC and the VOLOHASY projects nurseries). Dr. RANDRIANANTENAINA, the restoration coordinator in Maromizaha, will coordinate the purchase of materials and the hiring of the planters and nursery keepers, according to the budget reported in Annex 2. The intervention will allow the growing and planting of a target of 10.000 plants, in a degraded area that will be selected by the local restoration agents. The UNITO and U ONLUS team already engaged in restoration activities in different previous projects, one funded by the Rotary International (AROALA), by Chiesa Valdese (FIHAVANA) and one from a network of zoos in Italy (VOLOHASY). Thanks to those funded programs, 30.5 ha of degraded land were covered with 33,702 native trees and 3 ha were restored with endemic bamboo species, reaching an engraftment rate of 80%. Starting January 2022, GERP's has already grown and planted 7.000 trees in a restoration area of 62 ha inside the Maromizaha NPA. Thanks to the WSO/Friend of the Earth budget we will be able to contribute to extend the restored area, by enrolling two additional agents who will be in charge of both the tree nursery and the tree planting. The seeds of native species will be directly collected by women in the forest and/or obtained by the ongoing restoration project.