Combining Ecological Research and Local Community involvement to achieve Long-term Conservation of the Critically Endangered Blue-eyed black lemur (*Eulemur flavifrons*)

(Project N° 13927-1)

Final Technical Report of Rufford Small Grants Foundation

August 2014

Prepared by

Mikajy Natiora Association

Project Leader: Dr Sylviane Volampeno (svolampeno@yahoo.fr)

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I. Introduction

The blue-eyed black lemur (*Eulemur flavifrons*) is among the most distinctive lemurs, being the only non-human primate with blue-eyes. The male is completely black (photo 1) while female is reddish-orange (photo 2). This lemur is a forest dweller and mainly frugivorous. They live in groups of 6 to 10 individuals usually with more males than females in a social group and adult females form the core of the groups. The blue-eyed black lemur was discovered and named by Gray in 1867 but no detailed research was done until its “rediscovery” in 1985 thus, it was one of the least-studied diurnal lemurs.

Photo 1 Male blue-eyed back lemur

Photo 2 Female blue-eyed black lemur

The distribution of this lemur is restricted to the north-western part of Madagascar and the Sahamalaza-Iles Radama National Park (SIRNP) is its main habitat. Nowadays, the blue-eyed black lemur is classified as a critically endangered species due to ongoing threats from anthropogenic activities including slash and burn agriculture, hunting, illegal forest exploitation and uncontrolled fires (photo 3,4). In addition, this lemur has been listed among the world's 25 most endangered primates since 2008 until present.

Photo 3 Slash and burn agriculture

Photo 4 Logging

This project contributed to the conservation effort of the species and its habitat by combining ecological research and local community involvement.

The objectives of the project are:
To assess the population of the blue-eyed black lemur
To determine the characteristics of the forest habitat
To train conservation agents (Park Local Committees) conducting forest monitoring
To gain local support for lemur conservation
The project site is the Sahamalaza-Iles Radama National Park. It is located in the northwestern part of Madagascar, within the Sofia Region and province of Majunga This is the main habitat of the blue-eyed black lemur. This protected area is a complex of terrestrial and marine parks. This Park is a peninsula and villages are located along the coast and inside the Park. (see map below). The project site,SIRNP is one of the 30 priority sites for lemur conservation in the IUCN/SCC Lemur Conservation Strategy 2013-2016 and this proposed project helps achieving the objectives of that strategy.

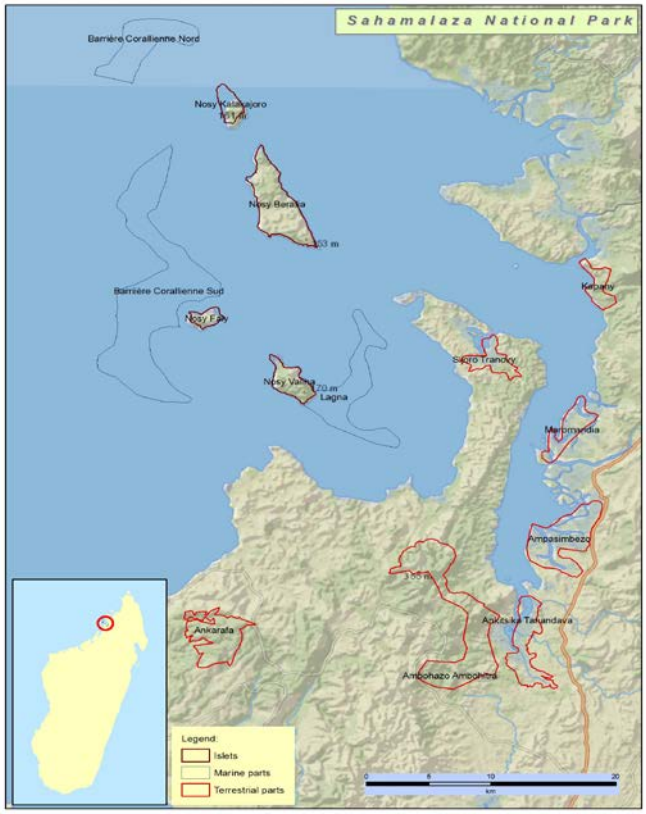

Figure 1 Map of Sahamalaza-Iles Radama National Park (source: WCS 2013)

II. Methodology

The project lasted one year, from 1 August 2013 to July 2014.

1. Lemur population estimate and forest habitat survey

We conducted the survey at the forest of Anabohazo the largest forest habitat of within the SIRNP in October 2013 and March 2014 about 40 days. We used the line transects method to assess the presence of lemur species both diurnal species which

is the blue-eyed black lemur and all nocturnal species. Four (4) transects of 1.5km and 2km were established. The observations took place during the following times: 06h00-11h30 in the morning, 14h00-17h00 in the afternoon and 18h00-22h00 during the night. The observation speed was 1 km per hour with regularly stops for a few minutes to increase the likelihood of species detection. The field work lasted about 15 days.
During the observations we noted time of day, the encountered species; the number of individuals, activity and distance from the transect. Each trail was visited 24 times during the 10 days of observation. We used Sherman trap to capture a nocturnal species. For each captured animal, body measurement was done and afterward they were released at the place where they have been trapped.

Twenty (20) plots of 20m x 20m were established near the forest core and forest core to assess the forest habitat. Trees having DBH> 5 cm were recorded; any anthropogenic present within the plots was also noted recorded. Each plot was spaced approximately 100m apart.

Photo 5 Data collection

2. Education and outreach

Prior the beginning of the project we performed structured questionnaires in order to measure the local community awareness on the blue-eyed black lemur species. Villagers from different villages surrounding the Park were interviewed mainly about the blue-eyed black lemur, pressures within the Park. Questionnaires were written in the local language which is the Sakalava and distributed one month before the start of the project. The questionnaires were conducted during the month of August 2013.

Several activities were conducted during environmental and community events.

a. Handbook for primary school, T-shirt and posters

The first activity was carried out in September 2013 during the lemur festival in the village of Antafiabe. This event is organized by the local conservation "Volamaintso" within the Park every year since 2005. The goal of this festival is to increase the local population's awareness of the biodiversity. During the festival villagers from different villages surrounding the Park participated in devising song (photo 6), dances and in sports contest. During this event we organized environmental quiz to the school children, provided handbook to the primary school teachers, distributed posters and T-shirts with an environmental message which highlighted the blue-eyed black lemur. Handbooks, posters, T-shirts were prepared in Antananarivo (photo 7) Handbooks for primary school are written in official Malagasy language. Both T-shirts and posters are written in Sakalava language. Posters are printed in A3 format. During the distribution of the handbooks, primary schools' teachers were given instruction for use of the environmental handbooks (photo 8).

Photo 6 School children devising dance during the lemur festival

Photo 7 Preparation of the materials

Photo 8 Instruction about the use of the handbook to the teachers

b. Carnival

The second activity was conducted during the official inauguration of a new primary school funded by the NGO AEECL in Ambolobozo village in November 2014. The activity consisted of sensitizing primary school children about the blue-eyed black lemur and doing carnival wearing mask.

c. PowerPoint presentation, film documentary, cleanup and Radio broadcasting

In April 2014 we organized two days of outreach in Antsohihy, a city close to the SIRN. We collaborated with the public high school in Antsohihy for the events. The main objective of the event is to involve youth taking responsibility for the environment protection. During the first day PowerPoint presentation about mangrove was given and 2 film documentaries about environmental pollution and educate biodiversity were broadcasted. In collaboration with a local private Radio Andrea FM 91.4 based in Antsohihy, we did interviews about the climate change and information about the blue-eyed black lemur. At the second day, a cleanup was conducted around the high school and at the city centre of Antsohihy.

d. Environmental quiz

We contributed to the World Environmental Day event at the Commune of Befotaka in June 2014. We organised an environmental quiz and offered prizes for the pupils who provided the answers. The questions were related to the blue-eyed black lemur species and the Sahamalaza-Iles Radama National Park. We also offered t-shirts to the local authorities at the opening ceremony.

3. Workshop training

In collaboration with the MNP (Madagascar National Parks) which is the Park Manager, we organized training to the conservation agents or Park Local Committees (PLC) in November 2013 for 2 days. They were informed in advance and gathered in one place for the workshop training. The workshop was about the Parks regulations and use of research equipments including GPS, data collection during the patrol.

III. Results

1. Lemur population estimate and forest habitat survey

During the field study, five lemur species were recorded during the study: one diurnal species (*E.flavifrons*) and four nocturnal species (*Mirza zaza, Lepilemur sahamalazensis, Cheirogaleus medius* and *Microcebus* spp). Seven *E. flavifrons* groups were recorded in this block. *E. flavifrons* Group sizes ranged from 3-8 individuals (photo 9). Individuals appeared highly stressed by human presence.

Photo 9 A group of blue-eyed black lemur in Anabohazo forest

It is the first time that we found a species of *Microcebus* in the SIRNP. Morphological measurements of the animal were noted and after genetic analysis the species of *Microcebus* spp. was identified as *Microcebus sambiranensis* (photo 10).

Photo 10 *Microcebus sambiranensis* in Anabohazo forest

Around 100 tree species were recorded within these plots. Mean height of tree in the forest edge and core is almost the same 8.5 m, maximum height 20 m and minimum height 4 m. During the vegetation survey, we recorded illegal anthropogenic activities within the Park including selective logging (photo 11) and clearance for slash and burn agriculture. In addition, an old animal trap was found on the ground with hair belonging to a female *E. flavifrons*. We took photo the beams and reported the incident to the Park manager (Madagascar National Parks). Few days later a joint mission with the gendarme organized by the Madagascar National Parks and they arrested 7 people who are involved to the selective logging. These people were jailed afterwards. It is noted that it is forbidden to collect timber within the Park.

Photo 11 Trees cutting down already transformed into a beam

2. Education and outreach

Questionnaires were conducted into 14 villages surrounding the Park during the month of August 2013. A total of 183 villagers composed of 116 males and 67 females ranging between 15 and 60 years old within these villages were interviewed. Seventy five percent (75 %) of the person interviewed reported that they never eat the blue-eyed black lemur and 25% have eaten this species. The villagers reported that environmental awareness had been conducted in the region but this project is the first environmental education undertaken in the Park. Eighty percent (80%) of the interviewed persons mentioned that the presence of the Park is an advantage for the local communities. The main threats of the Park are slash and burn agriculture, wood exploitation and cattle pasture.

During the first environmental education activity held in September 2013, in total 30 handbooks were distributed to the teachers from 18 villages within the Park. During the festival before the distribution of the T-shirts and posters, we organized a session of awareness rising about the need of the protection of the blue-eyed black lemur and the cost of the deforestation. One hundred (100) T-shirts and 100 posters were distributed the festival. This number was insufficient for all villagers, and so they were distributed to the local stakeholders within the Park including head of villages, head of ZAP (Zone Administrative et Pédagogique), local guides, teachers and to the children who participated to the quiz and songs.

Photo 12 Primary school teachers

Photo 13 Children wearing the T-shirts

For the second part of the activity which was held in November 2013 during the official inauguration of a new primary school funded by the AEECL in Ambolobozo village. We sensitized school children about the conservation of the blue-eyed black lemur and engaged them doing carnival around the village. In total 200 masks were distributed to the primary school children of Ambolobozo village, they wear the masks during the carnival (Photos 14,15,16).

Photo 14 School children preparing the mask

Photo 15 Explanation on the blue-eyed black lemur species

Photo 16 Carnival around the Ambolobozo village

During the two days of conservation activities held in Antsohihy in April 2014. More than 100 high school students attended the presentation and film documentaties. The students were interested about the biodiversity and about 20 of them asked several questions related to the topics.The next day, one day cleanup was carried out around the city of Antsohihy. A total of 70 students were involved to the clean-up. We provided materials of the cleanup and t-shirts for the students. To avoid students getting bored during the cleanup we involved scouts to animate the event by singing. The students were very motivated during the cleanup and aware about the necessity of environmental protection. We thanked the students and their teachers by offering them refreshment after the cleanup. Regarding the radio broadcasting, messages were broadcasted through interview, information on the ecology of the lemur; its threats and the need of the protection of forest and the lemur and effect of climate change were discussed during the interview. Some students and teacher were also interviewed about their cleanup action perception. The interview took place during the cleanup day and then broadcasted few hours later (photos 17,18,19,20,21).

Photo 17 Presentation about mangrove

Photo 18 Cleanup in Antsohihy

Photo 19 Animation with the scout during the cleanup

Photo 20 Refreshment after the cleanup

Photo 21 Interview with the high school director about the cleanup

The last conservation activity was conducted during the World Environmental Day event at the Commune of Befotaka in June 2014. We organised an environmental quiz and offered prizes (copybooks, pens) to the school children who provided the answers (photos 22,23).The questions were related to the blue-eyed black lemur species and the Sahamalaza-Iles Radama National Park. We also offered t-shirts to the local authorities at the opening ceremony.

Photo 22 Prizes distributed during the environmental quiz

Photo 23 School chidlren answered the questions

3. Workshop training

In total of 20 Park Local Committees (PLC) were trained during 2 days in November 2013. They were trained about the Parks regulations and use of research equipment including GPS, data collection 6 during the patrol (photos 24,25). The training was conducted with the collaboration of the Park manager (Madagascar National Park).

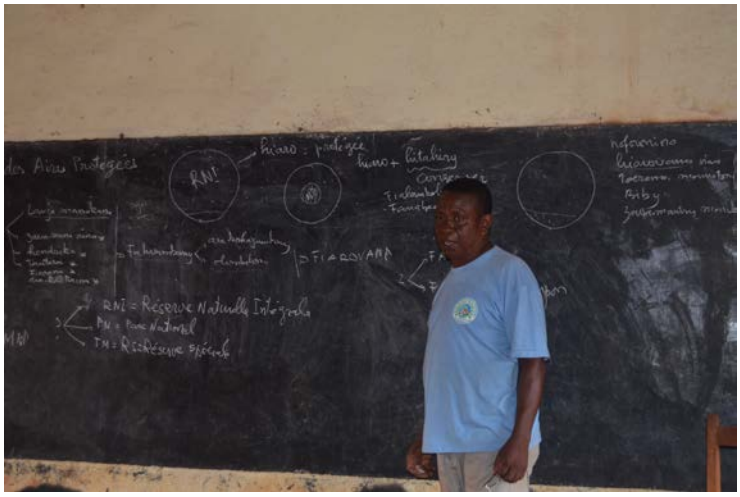

Photo 24 Director of the Park explained the Park regulations

Photo 25 PLC learning how to use GPS

IV. Conclusions and plans for the future

Overall the project went well. Field assistants were well trained to collect data. Regarding the blue-eyed black lemur population survey, the groups were still wild so they flee when seeing a human. Habituation of groups is necessary before data collection; at least 20 days prior the field start date. The unique major difficulty that we encountered was the transport to the field site as the area is located in a remote area.

This study revealed a new distribution of the *Microcebus sambiranensis*, a species classified as an endangered species according to the IUCN Red List. This discovery increased the number of lemur species known within the SIRNP. Further studies on this species are necessary as little is known about the behavioral ecology of this species.

Through this project, we found a better place to establish a research station in Anabohazo forest. Presence of this station will allow the PLC to patrol the forest and

to control the illegal anthropogenic activities within the Park. In addition, the establishment of the research station will also researchers to conduct field work and will allow permanent presence of local field assistants. It is the first time that an education and outreach programme was conducted in the Sahamalaza-Iles Radama National Park. It was a successful project.

Following this project, we have the following actions that are appropriate for a sustainable conservation of the blue-eyed black lemur and for management of its habitat in the long-term.

Implementation of alternative livelihoods project is needed in order to stop unsustainable exploitation of the forest and its natural resources.

Establishment of a research station in Anabohazo forest will allow continuing research and controlling the anthropogenic activities within the Park.

Education and outreach project should be continued and sustainable. The local communities need to learn taking responsibility for conserving and managing the natural resources in their vicinities.

Capacity building of the local stakeholders and PLC will enable them taking responsibility over the conservation of the endemic lemur, its forest habitat and over wildlife.

V. Acknowledgment

We express our gratitude to the Rufford Small Grants Foundation for providing us funding, without their support this project would not have been possible.