



MFG

Annual Report 2014

Conserving biodiversity in eastern Madagascar for over 25 years



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<i>Chief Editors</i> Maya Moore Laure Richalet		
<i>Graphic Designers</i> Alain Rasolo Jana Grabner		
<i>Photographers</i> MFG Staff Jana Grabner James Reardon		



Collaboration. Cooperation. Conservation. These are the three principles that have guided the Madagascar Fauna and Flora Group's (MFG) mission over its 27 year history of working to protect Madagascar's rich, but critically endangered, biological heritage.

Collaboration is evident in the 28 members on 5 continents that make up MFG today. Our consortium includes world-renowned zoos, an American university and a botanical garden that are working together to produce a much larger impact than any individual action alone. Collaboration is weaving contributions by MFG members, into a larger, richer fabric that is a holistic approach to conservation. In this way, the effect of each contribution is expanded far beyond its simple monetary value.

Cooperation is evident by the number of other organizations coming together to assist in the MFG's efforts. It is evident when Zoo Zurich brings Swiss Foundations to support with the MFG. Cooperation is evident in our many research partners, including Drs. Franco Andreone and Goncalo Rosa who are identifying the incredible biodiversity of amphibians at Betampona Natural Reserve and

Fidisoa Rasambainarivo, DVM, who is pursuing his PhD in disease ecology at the University of Missouri St Louis. Cooperation is evident when we work closely with the Ministry of Environment, Ecology, Oceans and Forests to host the first ever animal husbandry training for private parks in Madagascar.

Conservation is evident in the four "pillars" of MFG's actions: Conservation Action, Capacity Building, Environmental Education and Conservation Research which together form a multi-faceted "One Plan" approach to conservation. It is evident when we work with local communities, not as part of the conservation challenge, but as part of the solution. To quote Dr. Emile Tsizaraina, former Governor of Toamasina Province, "For biodiversity to win, poverty must lose."

Collaboration. Cooperation. Conservation. These principles are critical to addressing the many difficult conservation concerns we face now and in the future. As some institutions seek sole "ownership" in individual programs, we believe that the MFG is a better approach, a model of how teamwork can most effectively advance conservation. We hope that all of our members utilize these principles, not only by taking credit for specific portions of the MFG's efforts, but also by taking ownership of the entire MFG program. For when collaboration and cooperation drive our actions, then every institution, and most importantly, conservation are the winners.

A handwritten signature in black ink, appearing to read "Eric Miller".

R. Eric Miller, DVM
MFG Chair





Madagascar is many things to many people. To conservationists, it is one of the world's highest priorities. It is also home to the Malagasy people from whom we can learn so much. To international development workers, Madagascar is among the poorest countries in the world.

With the myriad of challenges on the island, from poverty and a high population growth to an invasive toad species and emerging infectious diseases threatening endemic amphibian populations, one thing is certain: Biodiversity conservation in Madagascar has never been so urgently needed as today.

To the MFG, Madagascar is not only our favorite place, but a place that holds much promise. We believe that together we can make a difference.

In solidarity,



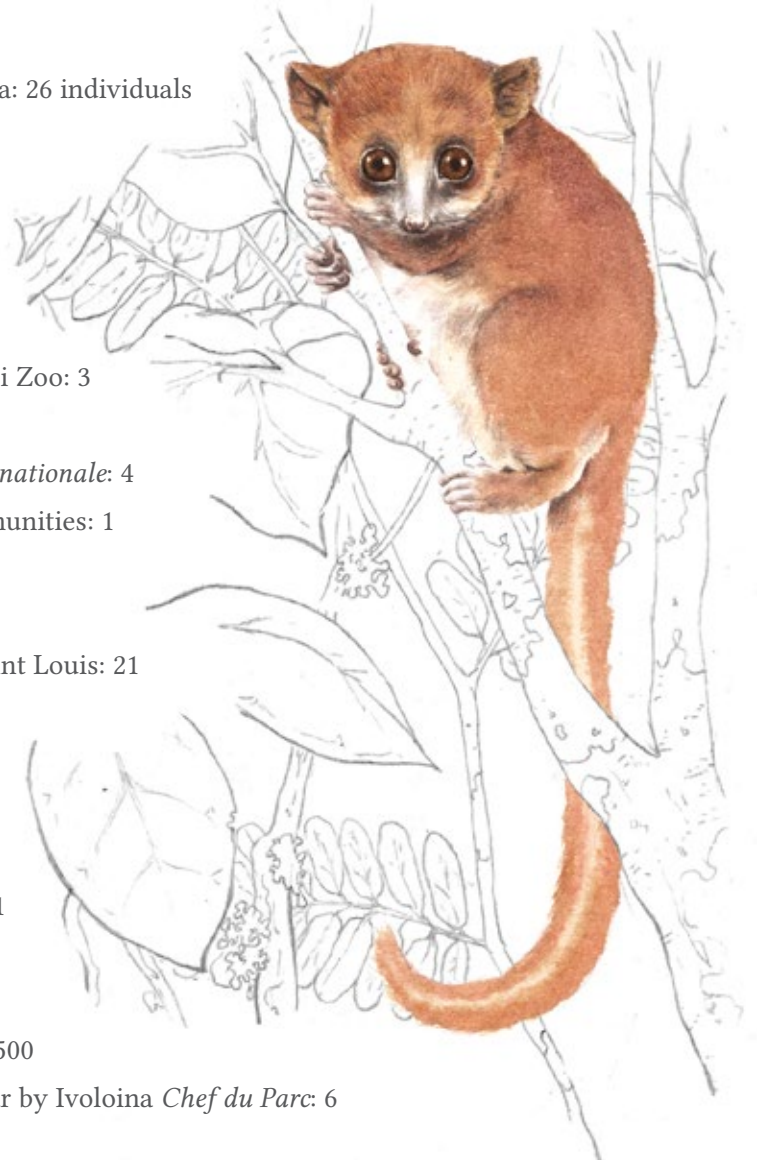
A handwritten signature in black ink, appearing to read 'Maya Moore'.

Maya Moore
MFG Program Director



Year in numbers

- Critically endangered lemurs at Parc Ivoloina: 26 individuals
- Radiated & spider tortoises: 56
- Lemurs donated or confiscated: 6
- Staff: 52 (50 Malagasy)
- New Managing Members: 1 (Taipei Zoo)
- New friends of MFG: 1 (Wellington Zoo)
- MFG board and staff members visiting Taipei Zoo: 3
- Age of Taipei Zoo in 2014: 100
- Volunteers from *Institut de Cooperation Internationale*: 4
- Dugout canoe donated to neighboring communities: 1
- Likes on MFG Facebook page: 1951
- Followers on Twitter: 191
- Presentations at the Research Meeting in Saint Louis: 21
- New zoo signs: 25
- Roads repaired: 1
- Bridges built: 1
- First aid trainings for MFG staff: 1
- Overnight camps for children of MFG staff: 1
- New boots donated for Betampona: 14 pairs
- Puppet theaters constructed: 1
- Trees planted during ISSEDD “Green Day”: 500
- Exchange visits to other parks in Madagascar by Ivoloina *Chef du Parc*: 6



New and Improved Websites
<http://www.madagascarfaunaflora.org>
<http://www.parcivoloina.org>





Our 2014 Visitors

Parc Ivoloina

18,591 visitors, of which 40% were Malagasy children as part of school groups.

92% of satisfaction survey respondents had guided tours of the zoo and all said that they were satisfied with our guides.

Sixty-two activities, encompassing 1,435 visitors, took place at and utilized the infrastructure at the **Ivoloina Conservation Training Center (ICTC)**.

866 visitors (481 females and 385 males) passed through the **laboratory**. 73% used the lab for practical lessons.

The majority of our visits continue to be made by ISSEDD (*Institut Supérieur de Sciences, Environnement et Développement Durable*) university students.

A total of 1,133 people visited the **model agricultural station**. The majority of these visitors were children as part of school groups, many of which were organized by the MFG.

Betampona

23 visitors at Rendrirendry research station, 56% researchers.

From our Parc Ivoloina guestbook

“A lovely park, beautiful setting. The walks around the lake were especially very enjoyable. The park is doing a lot of valuable conservation work.”

Review from Tripadvisor website

“My local guide had a deep knowledge about fauna and flora and took his time to show me a few tricks on how to survive if stranded in the jungle.”





CONSERVATION ACTION

Linking ex situ and in situ conservation to preserve Malagasy biodiversity





Main Programs

- > Captive breeding of critically endangered lemur species
- > Amphibian conservation work
- > Forest restoration

Numbers

129 Lemur individuals of 12 species at Parc Ivoloina

~50 Free-ranging lemurs

7 Births from 4 lemur species

23,000 Trees planted

Captive breeding of critically endangered lemur species

Prolemur simus conservation breeding program

For the third year in a row, Parc Ivoloina's *P. simus* couple gave birth. We now have five individuals in our collection (out of 27 in captivity in the world).

Aye-aye confiscation and emergency funding

In March, MFG received five aye-aye confiscated by the Government of Madagascar, represented by Mr. Eric Robsomani-trandrasana, MEEMF-DVRN (*Ministère de l'Environnement, de l'Ecologie, de la Mer et des Forêts/Wildlife Division*). The aye-aye were discovered in the village of Ambalarondra to the east of Brickaville in eastern Madagascar during a joint mission by Aspinall Foundation and Association Mitsinjo.

Additional cages were needed to properly house the aye-aye following quarantine. Thanks to funding from the San Diego Zoo, a new enclosure was built. Construction was completed in early November, and the aye-aye were moved into their new home shortly thereafter.

Julie McKinney and Cathy Williams from Duke Lemur Center conducted thorough health checks on all of the animals. Julie also worked closely with Bernard, Head of Ivoloina Zoo, and Georges, Head Zookeeper, and gave trainings in general captive aye-aye husbandry, handling, enrichment, cage design, behavior and reproduction, etc.



Amphibian Conservation Work

2014 was a critically important year for amphibian conservation in Madagascar. From the confirmation of the presence of chytrid, the disease devastating amphibian populations worldwide, at several sites in Madagascar, to the arrival of an invasive toad (*Duttaphrynus melanostictus*) in the Toamasina area and the drafting of a second strategy for the conservation of Malagasy amphibians during the ACSAM conference in Ranomafana, a lot of collaboration was undertaken to save the frogs of Madagascar.

Duttaphrynus melanostictus

Not only does this species pose a threat to biodiversity, but it also poses a public health risk as its poison could potentially make humans sick. The mode of introduction of this toad to Madagascar is thought to have been aboard a freight ship, as Toamasina is home to the largest port in the country. This toad has the potential to wreak severe ecological problems in Madagascar: poisoning of predators, competition with burrow-nesting birds, disruption of nutrient pools and parasite dynamics. It is highly fecund, laying about 40,000 eggs in one clutch.

Invasive toads: toad distribution survey and feasibility study

Immediate concerns were raised about the invasive nature of a newly introduced toad and its environmental impact should it spread throughout the island. A group of national and international experts on amphibians and invasive species worked together to assess the chances of a successful toad eradication. As a first step, the group was divided into Working Groups to deal with different aspects of the project. As the local partner on the ground, MFG was charged by the Amphibian Specialist Group (ASG) and the Malagasy government with coordinating efforts to map the distribution of this species in order to better inform subsequent eradication strategy.

*“We have worked in close collaboration with MFG for many years. MFG is a regional anchor for the conservation of biodiversity. We particularly appreciate MFG’s willingness to always respond positively to requests from the Ministry. For example, after the discovery of the invasive toad (*Duttathynus melanostictus*) in the Toamasina region, MFG acted quickly to undertake a study on its distribution. We also worked together to organize a week-long training to reinforce animal husbandry standards among the principal public and private zoological parks here in Madagascar.”*

Eric ROBSOMANITRANDRASANA,
MEEMF Representative





We conducted 516 interviews and 120 visual encounter surveys over 37 nights between April and November 2014; and found the toad to be widespread to the south and west of city center and estimate its minimum zone of occupation to be at least 108 km². It is highly likely that the toad was introduced prior to 2010, with the site of its incursion likely south of Toamasina around the Ambatovy nickel processing plant. A team of experts from New Zealand came in November and spent one week assessing the possibility of eradication.

Thanks to funds from Amphibian Ark and Durrell, MFG was able to continue to develop and expand its captive breeding facility. Improvements included installation of an outgoing water treatment system as part of enhanced biosecurity measures, the addition of a “coat room” and a quarantine room.

In 2014, MFG joined the Amphibian Survival Alliance (ASA). ASA is the world’s largest partnership for amphibian conservation, formed in response to the decline of frogs, salamanders and caecilians worldwide. It draws on cutting-edge research to protect amphibians and key habitats worldwide, in addition to educating and inspiring a global community to become part of amphibian conservation .

Amphibian husbandry exchange program

Thanks to financial support from Durrell Wildlife Conservation Trust (Durrell), MFG worked closely with Association Mitsinjo to receive additional trainings on amphibian husbandry and rearing live insects for their food.

Mitsinjo made an initial visit to Ivoloina at the beginning of May 2014. Following this trip, a plan for the coming months was drafted and then training exchanges took place whereby staff from Parc Ivoloina worked alongside Mitsinjo in Andasibe and vice versa. An improved version of the curriculum used to train Mitsinjo technicians during their first six month period in 2010-2011 was used with Ivoloina staff.

A Conservation Strategy for the Amphibians of Madagascar (ACSAM) 2

A delegation of MFG staff attended the second ACSAM conference in November. Our staff presented papers on the efforts to map the distribution of the invasive toad in Toamasina, our amphibian work at Betampona, as well as improvements to the new husbandry unit in Ivoloina. MFG was held up as an example of good practice in terms of our amphibian work at Betampona, as well as improvements to the new husbandry unit at Ivoloina.



Phase VI (April 2014 - April 2015)
145 villagers
41 new participants
8,000 trees planted
95 kg beans seeds distributed
Over 50% of landowners in
Betampona's "Zone of Protection"
are or have been participants in
the project.

Forest Restoration

Ex situ plant conservation

At Ivoloina, MFG works to restore the secondary forest at the Forestry Station with native species. In 2014, 2560 native trees were planted.

Forest Restoration Project

2014 was the end of the 5th phase of the Forest Restoration Project around Betampona and launch of Phase VI.

In April, the MFG team and a representative from Madagascar National Parks (MNP) made a five-day village tour to the four MFG tree nursery centers around the reserve to distribute prizes to the participants of Phase V. A ceremony was organized in each of the four villages, which included speeches made by local officials and awareness-raising by MFG on Betampona's biodiversity, the ecosystem services that the forest provides to communities, and sustainable cultivation techniques to reduce slash-and-burn.

In total, 228 awards were distributed to villagers and associations for their involvement. Everyone present also received a t-shirt with the project slogan, "*Betampona voaaro, Mponina mandroso*", which means "Protect Betampona, Develop Local Communities".

"I have been participating in the restoration project from the very beginning. I feel that it is necessary to protect our environment and I think that everyone should be involved and work for our children's future. MFG's support in this project through the donation of trees and prizes, is very important to succeed."

Monique VAVISOLO,

Participant in Betampona Forest Restoration Project





Restoring burnt land at Ivoloina

In November of 2013 a neighboring charcoal maker's fire got out of control. Not only did the resulting forest-fire burn all of his land, but it also burned 10 Ha of the Ivoloina Forestry Station.

Matt Hill, from the NGO "Green Again Madagascar", decided to raise funds to implement a project to begin the reforestation process. He and his team are working to establish a canopy layer of native trees over the course of the next five years.

In order to ensure the protection of Betampona Reserve and Ivoloina Forestry Station, MFG conducted 70 patrols (53 in Betampona and 17 in Ivoloina) in 2014.

Thirty two infractions were detected (22 in Betampona, 10 in Ivoloina), the majority of which were illegal timber harvesting.



"I've been involved in the project recently, I work on data collection. To date 12,483 have been planted. This job gives me new knowledge on tree species and helps me to improve my computer skills. I feel like developing my own tree nursery in the future."

Marie Sylvia RAZAFINDRAPARY,
Data collector from "Green Again Madagascar"





CONSERVATION RESEARCH

Supporting research to inform conservation





Distribution data and team missions

Main Programs

- > Distribution data and team missions
- > Fauna and flora monitoring
- > Visiting researchers
- > New MFG publications

Numbers

21 Missions of distribution mapping

49 Fauna transects

8 Visiting researchers

5 New publications

In 2014, MFG adopted a new research strategy using twice monthly “missions” by our full-time conservation agents and research assistants at Betampona in order to map the distributions of all vertebrate fauna and rare flora across the entire reserve (in past years, the majority of MFG’s research had been concentrated in the southwest and southern parts of the reserve near Rendriendry research station). The distribution data collected will feed directly into the MFG’s geodatabase, created and managed by Dr. Wasit Wulamu of Saint Louis University. The species distributions can then be overlaid on maps of the reserve showing elevation, hydrology, forest quality and the extent of key invasive plant species. We hope to eventually be able to identify habitat preferences and population trends in relation to habitat disturbance (through illegal poaching, logging and *tavy*; cyclone damage; and the spread of invasive plants and animals) and also with climate change.

In 2014, **10** missions totaling 40 days in the field were carried out covering all sectors of the reserve to map fauna and rare flora distributions during the hotter months (when animals are more active) and **11** missions totaling 44 days in the field were carried out in the cooler winter months to map the extent of invasive plants.

Two of our agents also spent two weeks in Antananarivo identifying herbarium specimens collected from within Betampona Reserve.



Fauna and flora monitoring

General fauna transects

In 2014, a total of 29 diurnal and 20 nocturnal general fauna transects were completed documenting all vertebrate fauna on 5 different transects (3 in primary forest and 2 in secondary forest). This continues data collection on the same transects for a total now of 7 years. The long term data set has begun to be analysed by a statistician and some very interesting trends have been noted already, both in terms of the daily meteorological data and population trends of certain species. Most notably is the drastic decline in the once commonly sighted endemic Eastern red forest rat (*Nesomys rufus*), which has all but disappeared in the reserve in recent years. We suspect that the *Nesomys*' decline may be correlated to the spread of an invasive rat (*Rattus rattus*) in the reserve.

Herpetological transects

In addition to general fauna transects, the MFG team also carried out 85 surveys dedicated purely to the study of reptiles and amphibians at two herpetologically rich sites within Betampona. The data collected on these transects is now being analyzed and is showing significant differences in species occurrence, temporal activity and population densities between the two sites.

Ongoing activities

Our agents and research assistants continue to collect daily meteorological data; maintain and monitor our long term botanical plots, our invasive plant management plots and forest restoration plots; and carry out phenology monitoring of Betampona endemic plant species and key *Varecia*-feeding tree species.

MFG Research Meeting

A three day research working meeting was held at Saint Louis Zoo in August of 2014. The aim of the meeting was to take stock of our current base of knowledge, work out what the major gaps are and prioritize those gaps according to their importance as far as conservation impact goes. Past and present research partners and MFG Board members were invited from an impressive array of disciplines and together we compiled a list of future research goals for MFG. The results from the meeting will form the basis of MFG's five year research plan, to be released in 2015.



Visiting researchers



"I am a wildlife veterinarian interested in the ecological approaches of health, and particularly the "One Health" concept and "Conservation Medicine" to study the multiple interactions between human, domestic animal and wildlife health in Madagascar. My research interests focus on the potential impacts of humans and domestic animals on wildlife health in various ecosystems in Madagascar, looking at, for example the transmission of zoonotic parasites between humans, domestic animals and lemurs."

Fidisoa RASAMBAINARIVO,
DVM

Delaïd Rasimisoa from ISSEDD has been carrying out a survey of the short-legged ground roller, *Brachypteracias leptosomus*, in Betampona. This species is currently classified as vulnerable but in view of its dependence on high quality primary forest and the rapid loss of habitat, this classification may need to be revised upwards.

Fidisoa Rasambainiarivo went to Betampona to begin his PhD field research looking at the potential impacts of invasive and domestic mammals such as rats, cats and dogs on native carnivore populations. He was accompanied by Hertz Andri-analizah, a veterinary student from the Veterinary College in Antananarivo.

Giovanni Rakotonarina, a Master's II student from ISSEDD, assessed the growing conditions of native orchids at two sites, with the goal of using his findings to establish a new trail on which to display native orchid species.

Justine Cefalu, an undergraduate student at Yale University, visited Betampona with her counterpart student, Tsito Aina, to carry out a feeding and germination trial of ramy tree (*Canarium spp.*) seeds passing through the gut of black and white ruffed lemurs (*Varecia variegata*) as part of Sarah Federman's PhD research project. The aim of the research is to better understand seed dispersal mechanisms and the importance of *Canarium* in wild lemur diets.

Robert Rasolofomanana, a Master's II student from ISSEDD, carried out experiments to identify conditions for effective propagation of rosewood species (*Dalbergia spp.*) using air layering. The project has important ramifications for rosewood conservation, as seed is difficult to source and vegetative propagation may prove to be a reliable method of preserving it.

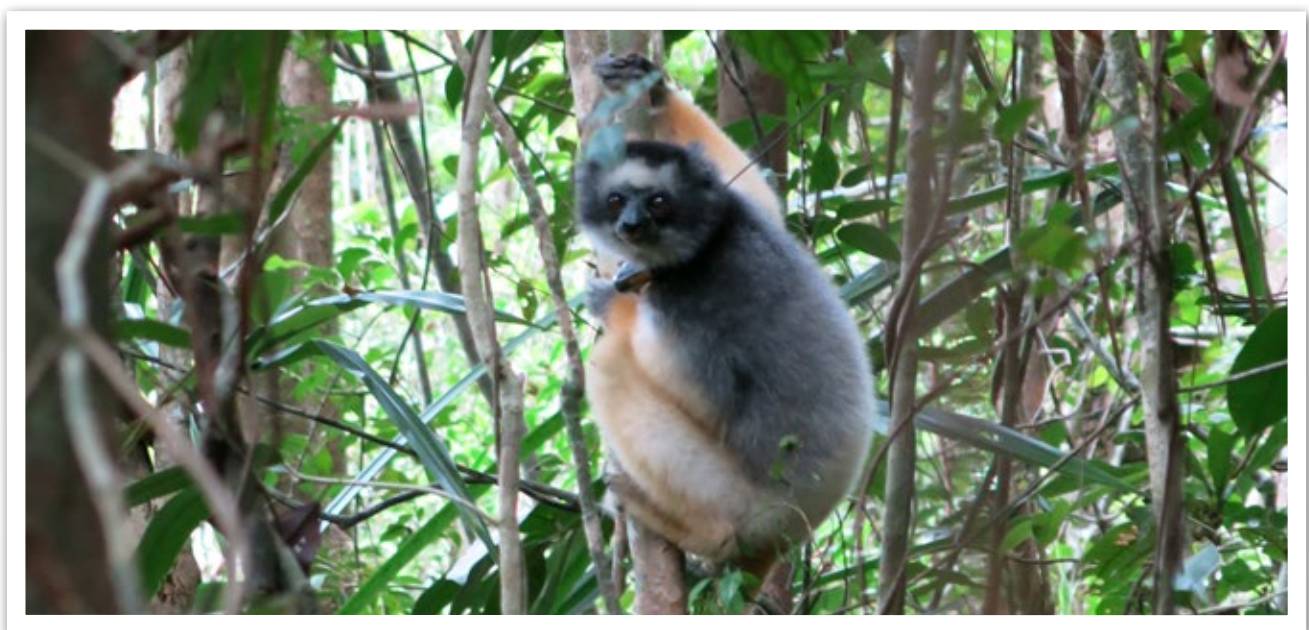


Lala Randriatavy based at the Department of Vegetal Biology and Ecology (DBEV), University of Antananarivo, continued his doctoral research into the most effective methods to manage the highly invasive guava plant (*Psidium cattleianum*) in Betampona Reserve. Lala completed his field work in 2014 and aims to submit his thesis by June of 2015.

Njara Razakaniana, DEA student based at DBEV, University of Antananarivo, is completing his thesis write up on the best methods of control of the invasive Molucca raspberry (*Rubus moluccanus*) at Betampona.

Lana Kerker, PhD student, Washington University, Saint Louis, completed her fieldwork studying the feeding, breeding and ranging behavior of the indriid lemur species in Betampona (*Indri indri* and *Propithecus diadema diadema*).

Former Head Conservation Agent at Betampona, Jean Noel was promoted to Research Coordinator this year. Jean Noel is an accomplished herpetologist in his own right and has several publications in testimony of his achievements. We wish him all the very best in his new role and appreciate the huge contribution that he has already made to MFG's research program.





New MFG publications

Golden, C.D.; Rabehatonina, J.G.C.; Rakotosoa, A.; Moore, M. (2014). Socio-ecological analysis of natural resource use in Betampona Strict Natural Reserve. *Madagascar Conservation & Development* 9 (2): 83-89.

Ghulam, A.; Porton, I.; Freeman, K. (2014). Detecting subcanopy invasive plant species in tropical rainforest by integrating optical and microwave (InSAR/PolInSAR) remote sensing data, and decision tree algorithm. *ISPRS Journal of Photogrammetry and Remote Sensing* 88. 174-192.

Freeman, K.L.M.; Bollen, A.; Solofoniaina, F.J.; Andriamiarino, H.; Porton, I., Birkinshaw, C.R. (2014). The Madagascar Fauna and Flora Group as an example of how a consortium is enabling diverse zoological and botanical gardens to contribute to biodiversity conservation in Madagascar. *Plant Biosystems* 148 (3): 570-580. DOI: 10.1080/11263504.2014.900125.

Ghulam, A. (2014). Monitoring tropical forest degradation in Betampona Nature Reserve, Madagascar using multi-source remote sensing data fusion. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. DOI: 10.1109/JSTARS.2014.2319314.

Rosa, G.M.; Sabino-Pinto, J.; Noel, J.; Andreone, F. (2014). Predation on the treefrog *Boophis rufioculis* (Anura, Mantellidae) by the freshwater crab *Hydrothelphusa* sp. (Decapoda, Potamonautidae) in Madagascar. *Crustaceana* 87 (7) 890-894.

New frog species

A new arboreal and diminutive species of the genus *Platypelis* from Betampona Reserve was recently described by Goncalo Rosa et al. *Platypelis karenae* was named after MFG Research Director Karen Freeman. It can be found living among leaves of *Pandanus* spp. and those of a herbaceous plant of the genus *Crinum*. Phylogenetically, *P. karenae* is sister to *P. tuberifera* yet differentiated by a high level of genetic divergence, its distinctly smaller size, acoustic repertoire, and color pattern. Mitochondrial, nuclear, bioacoustic, and morphological data were used to support the validity of this new species.



ENVIRONMENTAL EDUCATION

Raising awareness of young people, educators and the general public on issues related to the environment and to encourage ecologically friendly behavior





Saturday School

Main Programs

- > Saturday School
- > Youth leadership camps
- > Teacher trainings
- > Outreach events

Numbers

330 Saturday School pupils

1 New Saturday School site

88% CEPE pass rate

49 Participants in teacher trainings

The Saturday School supplemental classes (in French, mathematics and the environment) are organized every Saturday for children in their last year of primary school in the Toamasina, Ivoloïna and Betampona areas. These classes help to prepare students for the national CEPE exams which must be passed in order to advance into secondary school.

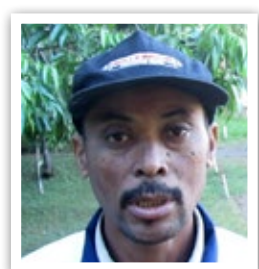
In 2014, MFG ran 29 sessions and reached 330 pupils (52% girls) from 25 different primary schools (EPP) from five school districts. One new site, Analamangahazo, was added in 2014. The CEPE success rate of 88% (vs the 74% global result in each ZAP, school district supervision, concerned) confirmed the success of the program despite the addition of the new site. The drop-out rate was a bit higher than last year, likely due to the discontinuation of the school lunch program: 12%.

As a part of our Saturday School Program, five field trips to Parc Ivoloïna were organized for 230 pupils and eight teachers. These visits were a good way to widen the pupils' minds. Some of them come from very isolated areas and had never been in a car before.

"We arrived at Parc Ivoloïna with children from two Saturday School sites, Ambodiriana and Analamangahazo. This visit was really useful for all of the participants for many reasons. The children come from far away and live in the village and never had the opportunity to visit such a site."

Léon DODA,

Saturday School Teacher in Analamangahazo





Youth leadership camps

In 2014, MFG held two week-long environmental education camps at Parc Ivoloina targeting local area secondary school students in the Betampona and Ivoloina landscapes. The objective of this activity is to foster the development of young Malagasy leaders, or “Green Ambassadors”, in their schools, homes and communities.

For each session, 30 students (15 girls and 15 boys) were invited to participate. Over the course of five days, the students had the chance to visit the lemurs at the zoo, learn about sustainable agriculture techniques at the Model Farm, choreograph dances, learn songs about the environment, and express themselves through poetry. A new activity of this year’s camp focused on building fuel-saving cook stoves from locally available materials, like clay and ash. They also learned to make origami frogs.

MFG recognizes the importance of women and development in conservation. To this end, for the second year in a row, MFG celebrated International Women’s Day (March 8th) by holding a two-day camp for 22 women and girls at Parc Ivoloina. Events included a conference and training on women’s rights and activities such as sustainable fuel sources in place of firewood, and tree planting. A questionnaire was given at both the beginning and end of the event in order to evaluate the participants’ level of knowledge on women’s rights. Results showed a significant increase in understanding, with 86.5% of women knowing their rights (vs. 10% before the training).



“We are currently 54 “Green Ambassadors” in our high school. Besides our role in awareness-raising on environmental issues, we have taken the initiative to supervise the school’s soccer field. We maintain the grass and we also planted coconut trees around our high school, and make sure that the plants are watered regularly. We also take responsibility to make sure that the toilets are always kept clean, which isn’t always easy!”

Marcel FELIX,
Toamasina II High School



Teacher trainings

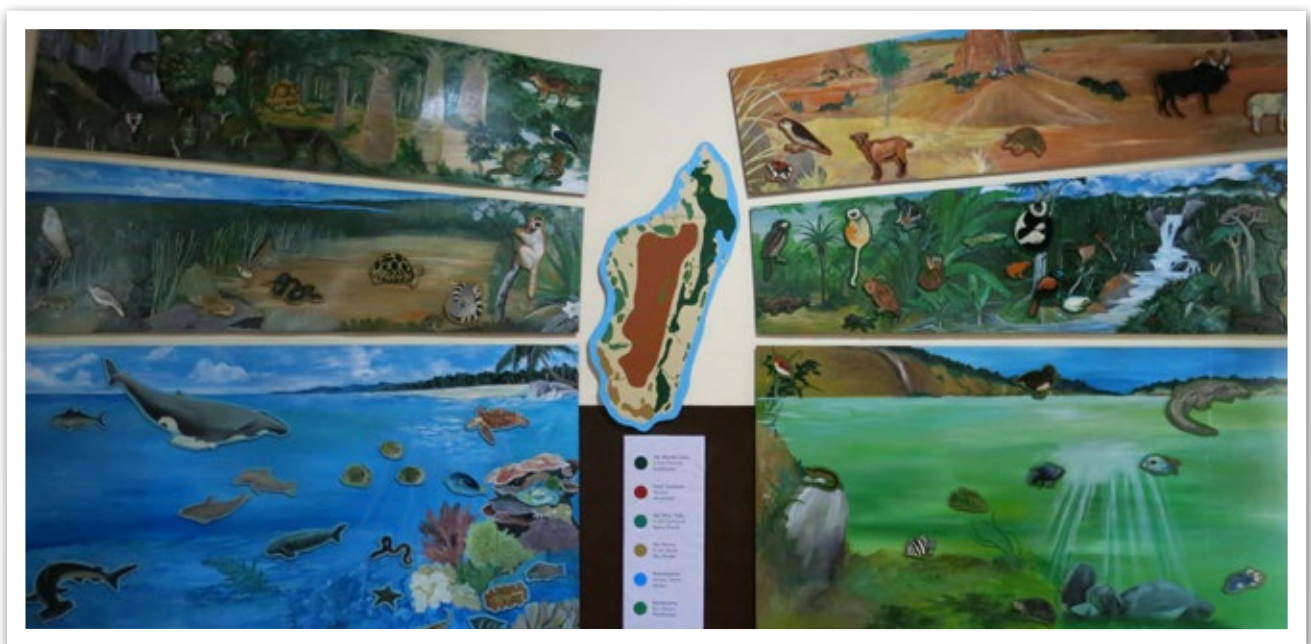
Two four-day training sessions were organized for nine teachers and four school district supervisors.

In addition, a special five-day training was given to partner conservation organizations in July. Six participants representing three eastern Madagascar organizations (Association Mitsinjo, Duke SAVA Conservation, and Macolline in Antalaha) were trained on how to design and implement an environmental education program. The participants expressed 100% satisfaction with this training.

A five-day training session for the Green Ambassador's Supervisors was also organized in May. Thirty participants from four different schools were trained on how to coach the Green Ambassadors.



On July 24th, the re-opening of the newly renovated Environmental Education Center at Ivoloina was celebrated, with a "Wall of Biodiversity" new information panels and posters, bamboo structures to better design the space, as well as displays on sustainable practices.





Outreach events

World Environment Day

Every year, MFG holds World Environment Day celebrations at three sites: Parc Ivoloina, in a village around Betampona Reserve, and in the city of Toamasina itself.

At Parc Ivoloina, over 1200 people attended this year's celebration. A face painting booth was manned by Jana Grabner and Alain Rasolo, a soccer tournament was held, and entrance to the zoo was free. We counted 7 foreign visitors, 165 Malagasy adults and 295 Malagasy school children visiting the zoo.

Sahambala was chosen as the site around Betampona, and festivities were organized by MFG, local government officials, and Madagascar National Parks, with around 600 people attending. An environmental film screening was organized and lemur mask wearing students marched in a parade through the village.

First Annual World Lemur Day

To celebrate World Lemur Festival, MFG hosted an activity fair for children at Parc Ivoloina. The fair included activities that aimed to teach children about lemurs and the Madagascar environment in a fun, easily accessible way. The day started with music and dancing from local groups in the community and a performance by Malagasy musicians. The children were then split into groups and sent to different stations which included

Rainforest run

This year's big event was the 11.5 km "Rainforest Run" whose objective was to connect the city of Toamasina with Parc Ivoloina. 19 runners participated in the first ever race which started at the Town Hall and ended at Antsapanana, the turnoff to Parc Ivoloina. First place went to Charlie, one of the members of the guides association who works at the park, who came in with a time of just under 45 minutes.

"Lemurs are our heritage in Madagascar. Each Malagasy has to feel proud and concerned about their protection. MFG's conservation work gives us a real example of biodiversity and free ranging animals protection. World Lemur Day is a good opportunity to remind people how our national fauna biodiversity is precious."

Jonah RATSIMBAZAFY,
Vice-Chair for Madagascar, IUCN SSC Primate Specialist Group





games, crafts, and tours through the park. To teach about the differences between species, one station drew pictures of bamboo lemurs with bamboo pens and then hung the drawings on bamboo plants next to the *Hapalemur* exhibit in the zoo. Another activity was to read a book about *Indri* lemurs. Still another activity had the participants walk through the zoo and use observation skills to pick out the differences between the species they saw. Each event had an activity leader, as well as high school students from the Green Ambassador program.

During the lunch break, students from a local youth development organization read stories that they had created about why lemurs are important to Madagascar. Overall, the event was a huge success.

SEAZA Conference 2014

Dr. Eric Miller and Maya Moore were invited to Taiwan and the Taipei Zoo at the end of October to present on MFG's conservation work at the annual SEAZA Conference. More than 200 participants from 21 different countries attended the meeting, whose theme was the "One Plan Approach".

IZEA Conference 2014

Educators from 159 zoos and aquariums from around the world attended the 22nd International Zoo Educators Association (IZEA) Conference in Hong Kong. More than 30 countries and 105 zoological institutions were represented, providing an incredible mix of insights and experiences. EEC's manager was able to attend this event thanks to a travel grant from IZEA.

Newsletter and Radio

3,000 copies of our Malagasy language newsletter *Bitsik'Ivoloina* were distributed to the local population living around Parc Ivoloina and Betampona Reserve. The latest edition of the eight-page newsletter gave information on the problems with invasive species in Madagascar, such as the invasive toad in Toamasina, as well as MFG's amphibian conservation work, etc. Games related to the environment were also included.

MFG also presents a weekly radio show, "Whisper of the Eastern Rainforests". Topics include biodiversity protection, sustainable agriculture techniques, and other conservation actions.

"I like MFG's broadcast because they give information on environmental protection, sustainable techniques and endangered animals species. I particularly like the quiz and personally I won twice."

Angeline BAO,
Radio listener





CAPACITY BUILDING

Strengthening local partners for sustainable development





Support and training of partners

Main Programs

- > Support and training of partners
- > Laboratory activities
- > Model Agricultural Station and Eco-agriculture Program
- > Conservation library

Numbers

- 35** Participants at animal husbandry workshop
- 9** ISSEDD students mentored
- 16** Participants in conservation veterinarian training
- 10** New leader farmers

Animal husbandry workshop in conjunction with the MEEMF
While there are two officially recognized zoos in Madagascar (Parc Ivoloina and Tsimbazaza), there are a number of privately run tourist attractions that house animal collections (just 13 are currently approved by the government although many more exist), notably lemurs but other endemic and endangered taxa as well. MFG was very proud to host a one week training workshop organized by the Ministry of Ecology, Environment, Ocean and Forests (MEEMF) for these institutions, the first of its kind in Madagascar.

Thirty-five participants from 16 private animal parks across Madagascar, including Lemuria Land in Nosy Be and Kimony Resort in Morondava, attended the training, as well as the Dean and six students from the vet school in Antananarivo.

The objectives of the training were to improve captive animal care across all institutions. This will allow MEEMF to better enforce regulations ensuring that parks meet standards set by the state. The training also highlighted the role that zoos can play in the conservation of endangered species, and the potential for exchanges amongst populations if “Best Practices” are met.

While the emphasis was on lemur husbandry, partner organizations also presented on tortoises and birds (Durrell), reptiles (Lemury SARL/Croc Farm), and amphibians (Association Mitsinjo). Topics included: enclosure conception and enrichment, evolution of zoos and their involvement in conservation, hygiene, animal health in general, diet, the importance of good record keeping and animal collection plans and biosecurity.



Partnership with ISSEDD

The Institute for the Environment and Sustainable Development (ISSEDD) at the University of Toamasina, works to train future Malagasy environmentalists and researchers. In 2014, MFG mentored nine ISSEDD students for their License or DEA, equivalent to bachelor's degree or post graduate degree, respectively.

In April, that partnership became even stronger with the official ceremony to inaugurate ISSEDD's own parcel of land to carry out long-term research at Ivoloina's Forestry Station. Many people attended the event, including the President and Vice President of the University of Toamasina, ISSEDD's Director, the mayor, ISSEDD students and MFG staff.

A study trip was organized around the forest station of Ivoloina, the town of Foulpointe, the *Reserve Naturelle Communautaire d'Analalava*, the village of Ambodimanga and the littoral forest of Pointe à Laree. This trip allowed students to get hands-on experience in addition to their regular academic courses.

Conservation medicine training for Malagasy veterinary students

In 2013, MFG renewed its Memorandum of Understanding (MOU) with the Department of Veterinary Sciences and Medicine of the University of Antananarivo (DESMV). Through this agreement, both institutions recognize the importance of training Malagasy veterinary students in conservation medicine (the multiple two-way interaction between human health, animal health, and ecosystem health) for the preservation of Madagascar's biodiversity as well as domestic animal health and human livelihoods. As such, Dr Fidisoa Rasambainarivo (aka Fidy) held a three-day training in wildlife health and conservation medicine at Parc Ivoloina from May 24th to 29th, 2014.

"MFG and ISSEDD have been close partners since 2006. The technical and financial support MFG gives to us and our students is really precious. It offers some students the opportunity to realize and to be mentored for their research theses. The access to the infrastructures, and especially the laboratory, add a real value to our lecturing."

Eustache MIASA,
ISSEDD Director





Sixteen students in their fifth and sixth years and one professor from the veterinary school participated. Various subjects such as the “One Health” concept, conservation medicine, hematology, parasitology, reproduction, and contraception applied to Malagasy wildlife were covered. Students also had the chance to practice performing physical examinations of lemurs and basic laboratory work. Additionally, Lea Giraud from the Association Reniala (and former MFG M.S. student) presented the activities of her institution which operates a ring-tailed lemur (*Lemur catta*) rescue center outside of Tulear in the South West of Madagascar.

Our program with the 18 members of Analambo Community Association aims to protect the remaining part of a primary forest north of Ivoloina. In 2014, the association planted 1500 native trees, conducted patrols and participated in sustainable agriculture and compost techniques.

“We want to continue the training with MFG in the future, so that we can get better at the techniques and be able to encourage other people to use them as well.”
COCO Bertrand,
President of the Analambo community association



Laboratory activities

Ivoloina’s laboratory was visited by 866 people in 2014. Twelve different sessions of 338 students at the secondary level and 309 students (24 different sessions) at the university level visited and received trainings in how to use a microscope, how to conduct soil and water tests, creating an herbarium collection, color-staining gram bacteria, and fish classification and dissection. In addition, 44 students did comparisons on different agriculture techniques (traditional versus improved).

As word spreads about the presence of the laboratory and the offered activities, more and more schools are visiting each year. Thirteen establishments, both private and public, visited the laboratory in 2014, four of which were first time clients.

“Practical activities at the lab help us a lot to make lessons more concrete and facilitate student learning”.

Fidinirina ANDRIANARIJAONA,
Teacher of natural and life sciences at
Stella Maris Private High School,
Toamasina





Model Agricultural Station and Eco-agriculture program

In an effort to diffuse eco-agricultural techniques to surrounding communities, MFG organized several visits for farmers living in our main target areas in 2014. Thirteen farmers from the five *fokontany* surrounding Parc Ivoloïna participated in an organized visit to the Model Station. Another 24 farmers from the villages that MFG works in around Betampona Reserve spent several days learning about the agricultural techniques being tried and tested at the station.

MFG also focused on its “*leader farmer*” program in 2014. It was necessary to select new farmers for the program, and criteria was set to work closely with each of the *Chef Fokontany* to choose one woman and one man from each of the five *fokontany*, for a total of 10 new leader farmers. After the selection, a training was held at Ivoloïna, in which 9 of the 10 leader farmers were able to attend. Following the training, two follow-ups were conducted by the Model Agricultural Station manager at each of the sites.

In addition, for the first time, MFG staff from Parc Ivoloïna all participated in transplanting rice in the model SRI rice paddy. This contributed to team spirit, and since most of the employees are also rice farmers, was a great way to spread the technique.

Model Station production in 2014

Compost: 37.54 m³

Fruit: 2306 kg (value: 1,772,850 Ar)

Vegetables (lettuces, cucumbers, green beans, carrots): 432 kg (value: 734,600 Ar)

Spices: 500 g of cloves (value: 10,000 Ar)

Medicinal plants: 11 species planted in a new and better exposed garden

Rice: the yield from our SRI paddy was 4.33 tons per hectare, less than expected due to a pest affecting the plants.

“I was very impressed by the composting process and the possibilities we have to improve soil fertility with organic materials. I learned that the use of organic materials can really make a difference.”

Jean Freddy LAZA,
Farmer from Sahambala





A new traditional medicinal plant garden was also installed. Its placement is closer to the park ticket booth, making it much more visible than the previous location. A bridge was constructed to connect this new garden to the vegetable garden, enabling a more fluid visit to the station.

A volunteer from the *Institut National de Recherche Agronomique* (INRA) in France also spent three weeks with the Model Station team to identify plant diseases and pests, and to find ecological methods to fight them.

MFG is also working to contribute to local community-based tourism initiatives. For example, this past year we have been helping the new eco-tourism outfit, Bamboo Adventure, get off the ground. They invite visitors to have a bamboo rafting experience on the Ivoloina River.



“From working at the park’s ticket booth, I learned a lot about tourism and how to communicate with many types of visitors. My experience also gave me the skills needed to run a small business. While working at the park I learned some thing about gardening and took care of the plants and I still do that at Bamboo Adventure.”

Josephine,
Co-owner of Bamboo Adventure





Conservation library

The MFG library saw 123 visits to consult books and 201 visits to access the internet in 2014. Sixty-nine new members joined the library. Most of the library users were ISSEDD students.

Additions to the library included the donation of “Primate Ecology and Conservation” as part of a free conservation book donation program to non-profit conservation organizations operating in developing countries, and the new French version of the “Lemurs of Madagascar” guide.

2014 Team building

To improve visitor accommodations a two-day housekeeping training was organized for the ICTC staff. Capacity building focused on cooking, hygiene and care of materials. All ten participants expressed that the training was useful and interesting. They are even using the new knowledge gained in their own homes.

On April 2nd and 3rd, MFG’s annual team building took place at partner organization Missouri Botanical Garden’s (MBG) site, the Analalava Forest near Foulpointe. It began with a visit to Manda Fort to learn a bit about the human history of Madagascar, and ended with a stop at Foulpointe beach.

In between, the team enjoyed taking day and night hikes in the forest. Each department organized activities to foster team coordination and creative problem solving. One specific moment was dedicated to sharing personal experiences during their time with MFG. Another activity focused on the theme: What does MFG represent for you? and participants worked in teams to make a drawing of this representation.

“This year’s team building was the first time that it was held outside of our two sites. It was really important because it gave everyone the chance to work together in a new setting and reflect more deeply on our mission and personal goals. Seeing another project and forest was also very eye opening.”

Claude TSATSA,
MFG Human Resources Manager





FINANCIAL SUMMARY

MFG income in 2014 was \$319,470, which came from:

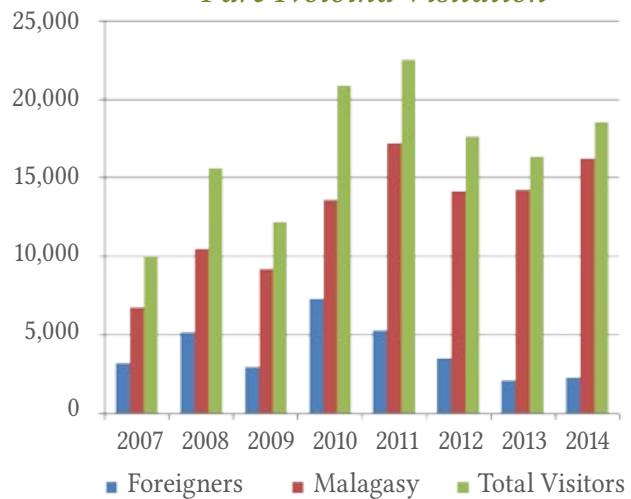
Membership dues: \$161,109

Grants: \$123,000

Donations: \$11,960

Income generation in Madagascar: \$23,409

Parc Ivoloina Visitation

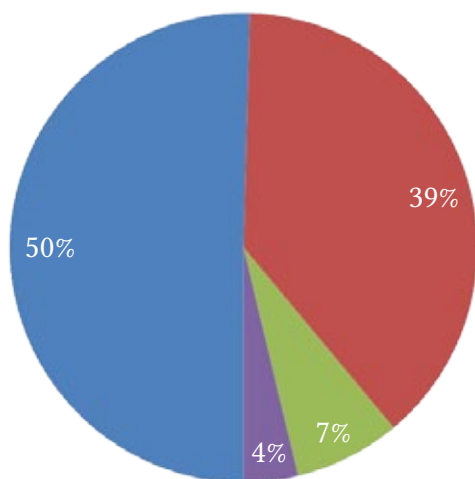


Income generation in Madagascar

MFG generated \$16,470 in Parc Ivoloina entrance fees (which was \$2,307 more than in 2013), as well as nearly \$2,000 in sale of merchandise at the gift shop. This increase was due to higher visitation from foreign visitors, in large part owing to the presence of the Africa Mercy Ship stationed in the Port of Toamasina from October 2014 to June 2015, as well as two other cruise ships which passed by in 2014. This number is expected to rise considerably in 2015, at least four more cruise ships are scheduled to visit Toamasina and the Mercy Ship will extend its service for another year.

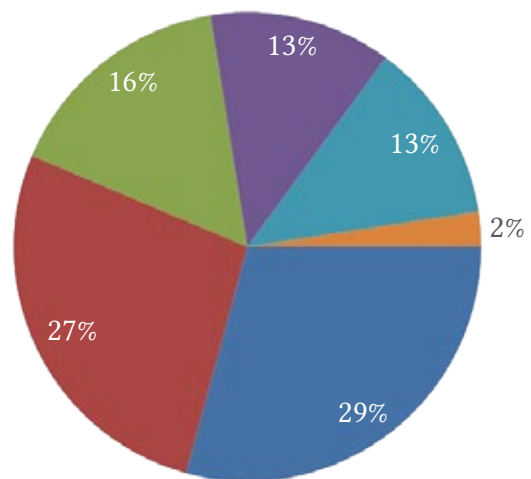
Income generated in Madagascar constituted 7% of MFG's total income in 2014.

Income 2014



- Membership dues
- Grants
- Donations
- Income generated in Madagascar

Expenses 2014 Per Program



- Environmental Education
- Conservation
- Capacity Building
- Administration
- Fundraising
- Research



Looking ahead to 2015

While 2014 was about taking an in-depth look at the MFG Research Program, 2015 will be about unpacking what we know about environmental education and exploring current thinking to improve our programs.

To this end, an environmental education workshop with stakeholders is to be held in Toamasina in February, and a further workshop will take place at Isle of Wight directly following the 2015 Steering Committee meeting in June. Plans are also underway to coordinate with partners and host an environmental education network meeting in November.

Special events

Each year, MFG organizes several festivals in celebration of World Environment Day. For the second year in a row, we will hold the Rainforest Run. We also have a jam-packed month of activities planned for World Lemur Month in October.

The 2015 park theme will be “Parc Ivoloinsika” (Our Parc Ivoloina), with the goal of attracting more Toamasina residents to the park. Organized events include a celebration for Chinese New Year and the “Zoo-mba” dance party.

Conservation

There will be continued and increased focus on amphibian conservation and research on the potential for the eradication of invasive toad species in 2015.

We will continue to work on making improvements at the zoo. With new zoo signs up, our creative design team is now working on designing large information panels. We are also placing increased emphasis on enrichment for our lemurs, as well as renovating the quarantine enclosure and installing a water pump.

After joining the Madagascar PHE (Population Health Environment) Network, we are working closely with the nonprofit organization, Marie Stopes, to provide family planning services to communities around Betampona Reserve as part of our new PHE Program.

Capacity Building

Bernard, Head of the Ivoloina Zoo, and Maya, MFG Director, will travel with Mr. Eric Robsomantdrasana from DVRN-MEEMF to Duke Lemur Center in North Carolina and the AZA Prosimian Tag Meeting in Florida. Bernard will then travel to Jersey to learn more about amphibian and lemur husbandry from the team at Durrell.

Research

A number of international and Malagasy researchers are expected to conduct research in and around Betampona Reserve. Zach Farris will initiate a multi-year lemur survey, and Alisha Farris will be conducting a nutritional study of women and children around Betampona. Melissa Chieffe from Duke University will examine plant germination post lemur feeding, and Fidy will return to continue his research on carnivores.



ACKNOWLEDGMENTS

The following institutions pay annual dues which contribute to the operating costs of the MFG's many efforts in Madagascar. If you would like to learn more about becoming a member, please contact MFG Chair Dr. Eric Miller at REMiller@stlzoo.org.

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Cologne Zoo
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**Madagascar Fauna and
Flora Group**
BP: 442 Morafeno,
Toamasina (501)
Madagascar

Tel: (+261) 20 53 308 42
Email: mfgmad@moov.mg

MFG c/o Saint Louis Zoo
1 Government Drive
St. Louis MO 63110 USA

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