



Association Vahatra

Annual report for 2015

Photos: © Vahatra



Uroplatus pietschmanni



Lycodryas arcifasciatus



Gephyromantis redimitus

Prepared by

**Steven M. Goodman, Marie Jeanne Raherilalao, Achille Raselimanana,
Voahangy Soarimalala, Malalarisoa Razafimpahanana, and Sabrina Raharinirina**

CONTENTS

A MESSAGE FROM THE PRESIDENT OF VAHATRA, ACHILLE RASELIMANANA, DR. HDR	1
LONG-TERM GOALS	1
VAHATRA – PERMANENT STAFF	2
VAHATRA’S BOARD OF DIRECTORS	3
STUDENTS	4
VAHATRA MEMBERS AS REVIEWERS OF PAPERS SUBMITTED TO SCIENTIFIC JOURNALS.....	8
MALAGASY NATURE	8
THE PUBLISHING HOUSE OF ASSOCIATION VAHATRA	10
SOME ACTIVITIES OF VAHATRA, INCLUDING NEW PROJECTS.....	11
RECENT AND CURRENT GRANTS	16
ASSOCIATION VAHATRA HOSTED 12 TH AFRICAN SMALL MAMMALS SYMPOSIUM.....	16
PEOPLE FROM VAHATRA IN FOCUS	20
NEW SPECIES OF ANIMALS DESCRIBED IN 2015 BY VAHATRA SCIENTISTS	21
ACTIVITIES OF VAHATRA PERMANENT MEMBERS DURING 2015	21
SCIENTIFIC OUTPUTS OF VAHATRA DURING 2015	28

A MESSAGE FROM THE PRESIDENT OF VAHATRA, ACHILLE RASELIMANANA, DR. HDR

On the eve of the 10th year since the creation of Association Vahatra, numerous challenges have been successfully faced. We have completed 2015 with satisfaction, particularly with respect to accomplishing different aspects of our mandate, thanks in part to the encouragement, support, and advice from our colleagues and partners. During the past year, the association, in collaboration with the Department of Animal Biology, Faculty of Science, University of Antananarivo, organized the 12th African Small Mammals Symposium (ASMS), an international meeting held in Mantsoa from 12 to 18 April 2015. This was an occasion for numerous students and researchers, from various countries, studying African and Malagasy mammals to discuss and share different aspects of their work. At the same time, this was an opportunity for Vahatra to demonstrate its capacity to organize an international conference (see 12th ASMS, below).

After the experience in organizing the ASMS, which falls outside the association's principal domain of work, another new challenge has been taken on. With a three-year grant from the Critical Ecosystem Partnership Fund (CEPF), and together with a number of different partners, we have started a large-scale update of a book published in 1989 by Martin Nicoll and Oliver Langrand on the protected areas system of Madagascar. In this new project, which will result in a bilingual book co-published between Association Vahatra and The University of Chicago Press, we will bring together a considerable amount of published and unpublished information on the protected areas of Madagascar and the myriad of organisms they hold. The project will also include an Ebook version of the printed book and a website from which different types of information can be downloaded (see Critical Ecosystem Partnership Fund, below).

All the elements are in place to advance on this project, as well as others. In today's world of globalization, that is to say in the fast lane where things progress and move forward at a rapid pace, Association Vahatra has demonstrated an important level of competence and capacity for advancement. Thanks to a variety of different interactions and collaborations with colleagues and donors, different aspects of the

association's development are evident, including capacity building and projects associated with research and conservation biology.

In late 2015, the Association Vahatra recruited Madame Sabrina Raharinirina as a new addition to its staff, specifically aspects associated with finance. It is with considerable pleasure that we welcome her and we wish the best of success and perseverance in her professional career. Sabrina, welcome aboard and good luck! It is with considerable regret that we announce the retirement in April 2016 of Madame Malalarisoa Razafimpahanana, one of the founding members of Association Vahatra. For nearly decade, she has been a key element in the development of Vahatra and after her retirement will be greatly missed. We wish all the best to Malala for her future projects.



LONG-TERM GOALS

The long-term goals of the Association Vahatra are to advance Malagasy scientists, specifically graduate students within the university system, as well as other members of the national conservation biology community, and make important advances in understanding the island's unique

biota. Our sincere intent is to create an organization with a long-term future. A critical aspect to mention is that we have created this vision largely based on the scientists and students working with the association, and, hence, distinctly Malagasy in prospective. This is in comparison, for example, to large international organizations that might not necessarily have the interests of Madagascar as their principal point of perspective. This aspect is fundamental for the long-term strength of the association, since members are engaged and committed by conviction with regard to the study and conservation of their natural heritage.

The seed was planted for Association Vahatra well over two decades ago in the context of a project organized by WWF-Madagascar and known as The Ecology Training Program (ETP). Steve Goodman and Achille Raselimanana were the coordinators of the project for many years, during which time several generations of Malagasy students finished their higher degrees within the university system in animal and conservation biology. Many of these graduates are amongst the major actors in the current community of Malagasy conservation biologists. These individuals are now responsible for the advancement of new generations of national field biologists in at least three different manners: 1) lecturers and professors within the national university system, 2) active scientific members of the Vahatra staff, and 3) playing important roles and holding key positions in the non-governmental and governmental sectors. Association Vahatra places strong emphasis on capacity building and continues this tradition and the body of well-trained nationals continues to grow.

VAHATRA – PERMANENT STAFF

1. Professor Achille P. Raselimanana – President of Vahatra and Professor, Department of Animal Biology, The University of Antananarivo. Founding member. Achille was one of the first generation of ETP graduates and did his DEA and Ph.D. in the context of this program. In 2011, he presented his “Habilitation à Diriger des Recherches” (HDR) at The University of La Réunion, which is the highest

scientific degree in the French university system. Achille is a herpetologist with considerable experience in domains ranging from field studies, classical taxonomy to molecular systematics. Before the creation of Association Vahatra, he held for nearly a decade the position of Biodiversity Program Officer for WWF-Madagascar.

2. Dr. Marie Jeanne Raherilalao – Editor of the journal *Malagasy Nature* produced by Vahatra and Professor, Department of Animal Biology, The University of Antananarivo. Founding member. Marie Jeanne did her Ph.D. associated with the ETP. She works on bird ecology, biogeography, and systematics.
3. Dr. Voahangy Soarimalala – Scientific Coordinator at Vahatra; Head Curator, Department of Animal Biology, The University of Antananarivo; and Professor, The University of Fianarantsoa.



Founding member. Voahangy did her DEA and Ph.D. in association with the ETP. Voahangy is a mammalogist with a particular interest in rodents and tenrecs.

4. Dr. Steven M. Goodman – Scientific Advisor at Vahatra and Lecturer, Department of Animal Biology, The University of Antananarivo. Founding member. Steve works on both mammals and birds. He holds the post of MacArthur Field Biologist, Field Museum of Natural History, Chicago, and is based in Madagascar most of the year. For his considerable efforts and contributions in the advancement of science and capacity building on Madagascar, The University of Antananarivo awarded him the grade of “Docteur Honoris Causa”.
5. Mrs. Malalarisoa Razafimpahanana – General Secretary of Vahatra. Founding member. Malalarisoa formerly worked at WWF and transferred to Vahatra in October 2007. In April 2016, she will be leaving Association Vahatra.
6. Mrs. Sabrina Raharinirina -- Financial & Administration Manager. Sabrina joined the association in October 2015. During the last months of 2015 and early 2016, she worked closely with Madame Malalarisoa to provide as smooth of a transition as possible concerning aspects associated with financing and running the office.
7. Mr. Rachel Razafindravao called “Ledada” – logistic coordinator. Ledada started working with the ETP some 25 years ago and transferred to Vahatra in October 2007. He has helped organize logistics for something approaching 320 field missions to some of the remotest areas on Madagascar.



8. Mrs. Françoise Ramalalaitiana – domestic help. Françoise has worked with Vahatra since October 2007.
- 9-11. Mr. Elisa Malaimbohitsy, Mr. Mara Avisoa, and Mr. Mbola Marivosoa Alexandre – guardians (see photo).

VAHATRA’S BOARD OF DIRECTORS

In order to provide needed guidance and counseling for the current and future programs associated of Vahatra, a Board of Directors has been named, which includes the following individuals:

Malagasy nationals

- Professor Daniel Rakotondravony – Department of Animal Biology, The University of Antananarivo.
- Mrs. Nanie Ratsifandrihamanana – Country Director, WWF, Madagascar.
- General Guy Ratrimoarivony – Général de Corps d’Armée, Director of Strategy Seminar, Center for Diplomatic and Strategic Studies.
- Mrs. Chantal Andrianarivo – Former Head of Research and Biodiversity, Madagascar National Parks and now Technical Advisor at Western Indian Ocean Coastal Challenge – Islands Project.
- Professor Joelisoa Ratsirarison – Forestry Department of the School of Agronomy, University of Antananarivo and Vice President of the University of Antananarivo in Charge of International Relations.
- Mr. Jean Chrysostome Rakotoary – General Director of the National Office for the Environment (ONE).
- Professor Raelina Andriambololona – Institut National des Sciences et Techniques Nucléaires (INSTN), The University of Antananarivo, General Director of INSTN and Member of the Malagasy Academy.

Foreign members

- Professor Jörg U. Ganzhorn – Professor, Tierökologie und Naturschutz, University of Hamburg.
- Mr. Paul Goodman – Principal, Kingfisher Group.
- Mr. Olivier Langrand – Executive Director, Critical Ecosystem Partnership Fund (CEPF).
- Mr. John McCarter – Former president of the Field Museum.
- Mr. Michael Polsky – President, Invenergy.

STUDENTS

We are currently working directly with different Malagasy students registered within the national university system and conducting either their Master's II, "Professional licence" or "Diplôme d'études supérieures spécialisées" (DESS -- a sort of technical low MSc), or Ph.D. degrees (see section below). Further, the scientific members of Vahatra are also in contact with tens of other Malagasy students as secondary advisors and members of thesis and mémoire committees. We have made a dedicated effort to work with undergraduate and graduate students in universities outside of Antananarivo, including Antsiranana, Toliara, Fianarantsoa, Toamasina, and Mahajanga. In addition, Vahatra staff members advise many other Malagasy students with aspects of their research, access to literature based on the fine library housed by the association, and other forms of mentorship.

Since Vahatra open its doors in late 2007, something approaching 1700 different student and research visitors not registered with the association's program have visited the office to use the library facilities or consult with the scientific staff. (These figures are based on a sign-in notebook.) In 2015 alone, something approaching 350 different student and researcher visits were made to the library and many hundreds of documents (books, reprints, theses, etc.) consulted. Over the past few years the number of people consulting the Association Vahatra library has continued to increase, probably related with this resource becoming better known to young Malagasy scientists and the implementation of Anglophone License-Masters-Doctorate (LMD) system within the national university system.

Malagasy students passing through the Vahatra program have considerable success finding permanent jobs within governmental and non-governmental sectors of Malagasy society. In many cases, these posts are in domains related to biology and conservation, for example, university appointments, working within NGOs, associated with the Madagascar National Parks, etc. Some of them, for example, hold key posts in different managerial capacities and directors with The Ministry of Forestry and Environment. Hence, one of the mandates of the association, to advance science and conservation in Madagascar with focused mentorship of graduate students, is indeed meeting the original

expectations. A good example of this is that numerous Vahatra graduates have obtained university appointments, providing an even greater means to advance capacity building for Malagasy field and conservation biologists.

Below is a list of students that are currently working on «Professional Licence», Master's II memoirs to PhD theses under the direction of Vahatra scientists and in most cases based at the association's office:

1. Andrianiaina, A. – Etude de la variation de la structure d'âge en fonction des méthodes de mesure chez *Rattus rattus* Linné 1758 et prévalence des groupes d'ectoparasites. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
2. Benjamina, G. S. – Impacts des rongeurs introduits sur le milieu agriculture à Mahatsara, Commune Rurale d'Andasibe. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.
3. Faliarivola, M. L. – Distribution verticale des oiseaux du sous-bois de la Péninsule de Masoala. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
4. Lalarivoniaina, S. N. – Analyse de la structure de population *Rousettus madagascariensis* dans le Parc National d'Ankarana. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.
5. Rabarison, H. – Evaluation bio-écologie des chauves-souris de la Réserve Naturelle de Betampona. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
6. Raharinoro, A. N. – Evaluation bio-écologie des petits mammifères de la Réserve Naturelle de Betampona. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
7. Rajemison, F. I. – Etude des mouches de chauves-souris (Nycteribiidae et Streblidae) chez *Rousettus madagascariensis* G. Grandidier, 1928 (Pteropodidae): structure de la population et interactions hôtes-parasites dans le Parc National d'Ankarana, Madagascar. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.
8. Rakotoarivelo, A. R. – Phylogenetics and phylogeography of the *Hipposideros commersoni* (Chiroptera) species complex with special reference to Malagasy populations. University of KwaZulu-Natal, School of Life Sciences, Westville, South Africa.
9. Rakotomanga, G. M. – Etude de la structure des communautés de petits mammifères et aperçus du cycle de vie des *Rattus rattus* dans des habitats forestiers et savanicoles de Moramanga ; Madagascar. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

10. Randriamoria, M. T. – Etude écologique des petits mammifères terrestres du District de Moramanga et de leurs ectoparasites. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.
11. Randrianarisata, M. – Impacts des rongeurs introduits sur le milieu agriculture de la Commune Rurale de Beforona. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.
12. Raoelinjanakolona N. N. – Etude de la distribution spatiale de la communauté herpétofaunique dans la Réserve Spéciale de Mangerivola, Nord-est, Madagascar. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
13. Razakafamantanantsoa, A. – Impacts des rongeurs introduits sur le milieu agriculture dans la Commune Rurale d'Ambatolaona, Manjakandriana, Antananarivo. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Graduate diplomas presented in 2015 and under preparation of students working with Association Vahatra



As can be seen from the following lists, the scientific members of Vahatra are extensively involved in the advancement of Malagasy graduate students. We consider this the hallmark of the association. Further, we encourage students to publish the results of their scientific work, as is the same case with Vahatra scientists (see below, "Scientific outputs of Vahatra during 2015").



DEA diplomas presented by student members of Association Vahatra

Noroalintseho Lalarivo-niaina, O. S. 2015. Analyse de la structure de population *Rousettus madagascariensis* dans le Parc National d'Ankarana. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo. This student will continue with Vahatra on to a Ph.D. following largely the same topic.

Oninjatovo, R. H. 2015. Problèmes causés par les rats dans la Commune Rurale de Ranomafana, District Ifanadiana, Région Vatovavy Fito Vinany. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

UNIVERSITE D'ANTANANARIVO
FACULTE DES SCIENCES
DEPARTEMENT DE BIOLOGIE ANIMALE
DEPARTEMENT DE BIOLOGIE ANIMALE
Latinia chalumnae

MEMOIRE
POUR L'OBTENTION DU
Diplôme d'Etudes Approfondies (D.E.A.)
Formation Doctorale : *Sciences de la vie*
Option : *Biologie, Ecologie et Conservation Animales*

« Etude sur les ectoparasites : tiques (*O. IXODIDA*) et acariens (*O. MESOSTIGMATA* et *O. TROMBIDIFORMES*) et leur répartition spatiale sur le corps des micromammifères non-volants de la Réserve Spéciale d'Ambositantely, Madagascar »

Présenté par :
Madame Malala Nirina RAKOTOMANGA

Devant le JURY composé de :

Président :	Madame Lydia RABETAFIKA Professeur d'ESR
Rapporteur :	Madame Hanta RAZAFINDRAIBE Maître de Conférences
Co-rapporteur :	Monsieur Steven M. GOODMAN PhD, HDR
Examineurs :	Monsieur Sébastien BOYER PhD Monsieur Zafimariy RAKOTOMALALA Maître de Conférences

Soutenu publiquement le : 31 mars 2015

Rajemison, F. I. 2015. Etude des mouches de chauves-souris (Nycteribiidae et Streblidae) chez *Rousettus madagascariensis* G. Grandidier, 1928 (Pteropodidae): structure de la population et interactions hôtes-parasites dans le Parc National d'Ankarana, Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo. This student will continue with Vahatra on to a Ph.D. following largely the same topic.

Rakotomamonjy, A. T. 2015. Etude de la structure de la communauté herpétofaunique de la Presqu'île d'Ampasindava : Composition, distribution spatiale et abondance relative. Mémoire de diplôme d'études, Département de Biologie Animale, Université d'Antananarivo. Just after her Master's II degree, she was hired by a company to conceive, promote, and manage a project dealing with *ex situ* conservation and public education associated with biodiversity and development.

Rakotomanga, M. N. 2015. Etude sur les ectoparasites: tiques (O. IXODIDA) et acariens (O. MESOSTIGMATA et O. TROMBICULIFORMES) et leur répartition spatiale sur le corps des micromammifères non-volants de la Réserve Spéciale d'Ambohitantely, Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo. After the presentation of this mémoire, the student obtained a post in the Medical Entomology Division, Institut Pasteur de Madagascar.

Randrenjarison Andriniaina, R. H. 2015. Préférences écologiques de la faune pulicidienne de la Réserve Spéciale d'Ambohitantely, Madagascar et Biogéographie des puces (Insecta : Siphonaptera) endémiques, ectoparasites de micromammifères terrestres malgaches. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo. After the presentation of this memoir, the student obtained a post in the Medical Entomology Division, Institut Pasteur de Madagascar.

Randriamanana, J. P. 2015. Etude des problèmes causés par la prolifération des rats dans la Commune Rurale Kianjavato, District Mananjary, Région Vatovavy Fitovinany. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Razafindramasy, O. G. 2015. Problèmes causés par les rats dans la Commune Rurale de Mahasoabe, District Vohibato, Région Haute Matsiatra. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Razafindranaivo, S. 2015. Effets de la lisière sur la communauté aviaire de la forêt humide de Bemanevika, Nord-ouest de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo, Antananarivo.

Rakotondramanana, C. F. 2015. Contribution à une base intégrative sur la systématique et l'écologie des *Vespertilionidae* de petite forme (*Pipistrellus*,

Hypsugo et *Neoromicia*) de Madagascar. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.

Professional licence, DEA, and Ph.D. diplomas defended with implication of Vahatra scientific members as a supervisor, member of lecture committee or jury member

Andrianandrianina, L. H. 2015. Comportement d'incubation des trois espèces d'oiseaux limicoles: *Charadrius maginatus*, *C. percuariis* et *C. thoracicus* nichant à Andavadoaka, Sud-ouest de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Bemanjanirinira, G. B. 2015. Etude de la distribution écologique de *Boophis williamsi* (Grenouille Mantellidae), espèce en danger critique, endémique du Massif de l'Ankaratra : application au renforcement de son statut de conservation. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Rakotomamonjy, L. M. 2015. Etudes morphologique, phylogénétique et systématique de trois genres de Cichlidae (Teleostei, Perciformes), Poissons endémiques de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Ranaivoson, T. 2015. Utilisation des bras chez les primates non humains, *Propithecus verreauxi* de la forêt sèche de Kirindy, Morondava. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Randriamanantena, H. J. 2015. Mécanismes de thermorégulation chez *Propithecus verreauxi* (GRANDIDIER, 1867) de la forêt de Kirindy, CNFEREF Morondava, Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Randriamanatsoa, V. M. 2015. Etudes morphologique et bioécologique de l'écrevisse invasive *Procambarus* sp. (Famille des CAMBARIDAE) à Antananarivo Atsimondrano. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Randriamialisoa 2015. Relation Plante-Animale : Cas de la communauté herpétofaunique de la forêt d'Analamay Ambatovy. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Randriamparany, Y. A. 2015. Contribution à la distribution des lémuriens nocturnes dans la forêt d'Analagnambe, Anjamangirana. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Randrianarivony, T. N. 2015. Les plantes utiles de la nouvelle aire protégée d'Analavelona (District de Sakaraha) : inventaire, études ethnobotaniques et écologiques. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.

Randrianasolo, J. P. 2015. Contribution à l'étude du régime et comportement alimentaires du genre *Eulemur* en captivité : cas du Parc Botanique et Zoologique

de Tsimbazaza, Antananarivo. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Rasolomalala, F. C. 2015. Etude de l'écologie de distribution de la communauté des lézards terrestres dans la forêt sèche de Mariarano, Mahajanga, Nord-ouest de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Razafimahatratra, A. 2015. Contribution à l'étude du comportement des lémurien en captivité : cas du Parc Botanique et Zoologique de Tsimbazaza. Mémoire de licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Razafimahatratra, M. P. 2015. Essai de clarification de la taxonomie du petit caméléon *Calumma nasutum* (Duméril & Bibron, 1836), de la forêt de moyenne et de basse altitude de l'est de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Razafindranaivo, E. 2015. Valorisation des ressources naturelles locales dans l'élaboration d'aliments pour le poisson Cichlidae, Tilapinae *Oreochromis niloticus* (Linné, 1758) à la station piscicole de Kianjasoa, Mahasolo-Tsiroanomandidy, Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Razafindrasolo, T. H. D. 2015. Biodiversité des Helminthes parasites d'oiseaux dans les forêts humides de l'Est et les forêts sèches de l'Ouest de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Robson, O. D. 2015. Etude démo-écologique des Chamaeleonidae et structure de la population de *Furcifer oustaleti* dans la forêt d'Anjanjavy au Nord-ouest de Madagascar. Mémoire de diplôme d'études approfondies, Département de Biologie Animale, Université d'Antananarivo.

Professional licence, DEA, and Ph.D. diplomas in preparation in direct collaboration with scientific members of the Associated Vahatra

Andriamiravo, M. F. In preparation. Les effets de la reforestation sur la population des papillons dans la région de Kianjavato, Mananjary. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Andrianantenaina, M. F. In preparation. Diversité et distribution écologique de la communauté des Amphibiens et des reptiles dans la NAP d'Analava, Est de Madagascar. Mémoire de Master 2, Département de Biologie Animale, Université d'Antananarivo.

Andrianasolo, G. T. In preparation. Contribution à l'étude écobioécologique et comportementale du *Mantella cowani* (Boulenger, 1882) dans la savane de

Fohisokina, Hautes Terres centrales. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

Andrianiana, A. In preparation. Etude de la variation de la structure d'âge en fonction des méthodes de mesure chez *Rattus rattus* Linné 1758 et prévalence des groupes d'ectoparasites. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

Andrianjafy, N. P. In preparation. Etude étho-écologique de *Falco concolor*. Mémoire de diplôme d'études, Département de Biologie Animale, Université d'Antananarivo.

Be, J. O. In preparation. Evaluation de la taille de population de *Lophotibis cristata* dans la Nouvelle Aire Protégée de Maromizaha, Centre-est de Madagascar. Mémoire de DESS, Département de Biologie Animale, Université d'Antananarivo.

Benjaminina, G. S. In preparation. Impacts des rongeurs introduits sur le milieu agriculture à Mahatsara, Commune Rurale d'Andasibe. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Faliarivola, M. L. In preparation. Distribution verticale des oiseaux du sous-bois de la Péninsule de Masoala. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

Magnina, T. G. In preparation. Contribution à l'étude de la taille du groupe de population de *Propithecus coquereli* pour l'amélioration de l'écotourisme de la forêt d'Anjamangirana. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Mamialijaona, N. In preparation. Les effets de la reforestation sur la population des lézards dans la région de Kianjavato, Mananjary. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Nomenjanahary, R. O. H. In preparation. Contribution au suivi écologique d'herpétofaune de la forêt d'Analaso, Parc National Tsimanampetsotse. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

Rabarison, H. In preparation. Evaluation bio-écologie des chauves-souris de la Réserve Naturelle de Betampona. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

Rabeniarisoa, Z. M. In preparation. Etude des caractères morphologiques liés à l'adaptation écologique chez les reptiles: Cas de 10 espèces appartenant à la famille des Scincidae malgaches. Mémoire de DEA, Département de Biologie Animale, Université d'Antananarivo.

Raharinoro, A. N. In preparation. Evaluation bio-écologie des petits mammifères de la Réserve Naturelle de Betampona. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.

- Rajaonarivelo, J. A. In preparation. Répartition verticale des vangas dans la forêt sèche de Kirindy CNFEREF, Morondava Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
- Rakotoarivelo, A. R. Submitted. Phylogenetics and phylogeography of the *Hipposideros commersoni* (Chiroptera) species complex with special reference to Malagasy populations. University of KwaZulu-Natal, School of Life Sciences, Westville, South Africa.
- Rakotomanga, G. M. In preparation. Etude de la structure des communautés de petits mammifères et aperçus du cycle de vie des *Rattus rattus* dans des habitats forestiers et savanicoles de Moramanga ; Madagascar. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
- Ralisata, M. In preparation. Ecologie de la chauve-souris à ventouse de Madagascar (*Myzopoda aurita*, Milne-Edwards et Grandidier, 1878). Thèse de Doctorat, Domaine Sciences et Technologies, Université d'Antananarivo.
- Randriamoria, M. T. In preparation. Etude écologique des petits mammifères terrestres du District de Moramanga et de leurs ectoparasites. Thèse de Doctorat, Faculté des Sciences, Université d'Antananarivo.
- Randrianarisata, M. In preparation. Impacts des rongeurs introduits sur le milieu agriculture de la Commune Rurale de Beforona. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.
- Raoelinjanakolona N. N. In preparation. Etude de la distribution spatiale de la communauté herpétofaunique dans la Réserve Spéciale de Mangerivola, Nord-est, Madagascar. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
- Rasoazanokolona, J. In preparation. Les oiseaux de la forêt sèche de la Nouvelle Aire Protégée d'Oronjia, Antsiranana. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
- Razaiarisoa, O. In preparation. Les oiseaux aquatiques de la ville d'Antananarivo. Mémoire de Master's II, Département de Biologie Animale, Université d'Antananarivo.
- Razakafamantanantsoa, A. In preparation. Impacts des rongeurs introduits sur le milieu agriculture dans la Commune Rurale d'Ambatolaona, Manjakandriana, Antananarivo. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.
- Razanajatovo, O. N. In preparation. Contribution à l'étude de la taille du groupe de population d'*Eulemur fulvus* pour l'amélioration de l'écotourisme de la forêt d'Anjamangirana. Mémoire de Licence Professionnelle, Institut des Sciences et Techniques de l'Environnement, Université de Fianarantsoa.

VAHATRA MEMBERS AS REVIEWERS OF PAPERS SUBMITTED TO SCIENTIFIC JOURNALS

As an indication of the role of Association Vahatra scientific members in the realm of published scientific papers, they served in 2015 as reviewers for about 20 papers submitted to the following international journals:

- ◇ *Acta Chiropterologica*,
- ◇ *Biological Journal of the Linnean Society*,
- ◇ *BMC Evolutionary Biology*,
- ◇ *Journal of Mammalogy*,
- ◇ *Madagascar Conservation and Development*
- ◇ *Malagasy Nature*,
- ◇ *Mammalia*,
- ◇ *Molecular Ecology*,
- ◇ *PlosOne*,
- ◇ *Proceedings of the National Academy of Sciences, USA*,
- ◇ *Zoological Society of the Linnean Society*,
- ◇ *Zootaxa*.

MALAGASY NATURE

Our intention with the scientific review *Malagasy Nature* is to publish a peer-reviewed journal with articles of high scientific and technical standards. As the journal has an ISSN number, it is considered an international scientific review that is published in Madagascar. Manuscripts in French or English are passed through an editorial team, including a review process of international standards. We work closely with Malagasy authors, particularly graduate students and young researchers, to help them understand the process of composing, writing, and editing scientific articles. In many cases, the first publication of a researcher poses considerable hurdles and *Malagasy Nature* provides the means for these individuals to negotiate such problems. Based on this approach, this journal plays an important role in regional capacity building, which in turn separates it from other journals of international standards, for which editors are distinctly less tolerant. Further, the journal allows Malagasy scientists to return information to the worldwide scientific world. All of these aspects together, provide

Malagasy Nature

Volume 9 - 2015



professional advancement for the Malagasy scientific community, specifically a certain sense of responsibility and for national authors to understand the importance of invested efforts when producing scientific articles of international standards. *Malagasy Nature* also guarantees the local availability of research results in the fields of ecology and biology conducted on the island, as compared to foreign scientific journals with copies or electronic files not always being repatriated to Madagascar. All recent numbers of the journal are available on line and for free article downloading (<http://www.vahatra.mg/malagasynaturefr.html>).

Marie Jeanne Raherilalao and Steven M. Goodman are the Editors of *Malagasy Nature* and a group of Associated Editors assist in different aspects of submitted manuscripts. At least one volume of the journal is published each year. The editorial board of *Malagasy Nature* is composed of both national and international scientists, from the Anglophone and Francophone worlds, made up of the following individuals:

Editors

Marie Jeanne Raherilalao
Steven M. Goodman

Associated editors

Achille P. Raselimanana
Malalarisoa Razafimpahanana
Voahangy Soarimalala

Editorial committee

Birds

Frank Hawkins
Olivier Langrand

Mammals

Jean-Marc Duplantier
Jörg U. Ganzhorn
Peter J. Taylor
Daniel Rakotoniravony
Manuel Ruedi

Entomology

Henri-Pierre Aberlenc
Brian Fisher
Wilson Lourenço

Reptiles/Amphibians

Franco Andreone
Miguel Vences

Crustaceans/Fish

Jeanne Rasamy
Melanie Stiasny

Parasitology

Vincent Robert

Plants

Christopher Birkinshaw
Roger Edmond
Joelisoa Ratsirarson

History/Archeology

Henry Wright
Chantal Radimilahy

Paleontology

David Burney
John Flynn

Contents of the most recent issue of *Malagasy Nature*

Volume 9 (2015, 116 pp.):

- **Dynamique post-culturelle de la végétation dans la presqu'île d'Ampasindava, Domaine du Sambirano, Nord-ouest de Madagascar** — Nirry S. Rasoanaivo, Jacques A. Tahinarivony, Patrick Ranirison, Edmond Roger & Laurent Gautier
- **Biodiversité de l'entomofaune des rizières de la région de Lac Alaotra (Madagascar)** — Lala S. Rafaraso, Tolotra Ranarilalana, Aina Andrianantoandro & Lala H. Ravaomanarivo Raveloson
- **Puces (Insecta : Siphonaptera) d'Ambohitantely, Madagascar : Spécificité et phénologie** — Jean-Claude Beaucournu, H. Rico Randrenjarison Andriniana & Steven M. Goodman
- **Suivi de la communauté aviaire aquatique dans la Nouvelle Aire Protégée Mandrozo, Ouest de Madagascar** — Gilbert Razafimanjato, Bertrand Razafimahatratra, Donatien Randrianjafiniasa & Tolojanahary Andriamalala
- **Préférence alimentaire des chauves-souris de Kianjavato, région de Vatovavy-Fitovinany, Madagascar** — Mercia Rasoanoro, Beza Ramasindrazana, Balsama Rajemison, Emilienne Razafimahatratra & Steven M. Goodman
- **Comportement alimentaire des communautés de chauves-souris animalivores de Kirindy (CNFEREF) et d'Antsahabe, Madagascar : répartition, partage et disponibilité de niche alimentaire** — Claude Fabienne Rakotondramanana, Balsama Rajemison & Steven M. Goodman
- **The importance of water bodies for insectivorous bats in a Malagasy dry deciduous forest: A case example from Kirindy (CNFEREF)** — Elias Bader, Marta Acácio & Ara Monadjem
- **Terrestrial "forest-dwelling" endemic small mammals captured outside of natural habitats in the Moramanga District, central eastern Madagascar** — Toky M. Randriamoria, Voahangy Soarimalala & Steven M. Goodman

NOTES

- **Remains of an aye-aye (*Daubentonia madagascariensis*) at the edge of the Parc National d'Ankarana, Région Diana** - Steven M. Goodman

- **Documented occurrence of *Taphozous mauritanus* (E. Geoffroy, 1818) in Mayotte (Comoros Archipelago)** - Beza Ramasindrazana, Gildas Le Minter & Erwan Lagadec
- **Third record of pied avocet (*Recurvirostra avosetta*) for Madagascar** - Charlie J. Gardner & Louise D. Jasper

THE PUBLISHING HOUSE OF ASSOCIATION VAHATRA

The year 2011 marked an important advancement for Association Vahatra with the creation of its own publishing house, focusing on a series entitled "Guides sur la diversité biologique de Madagascar" [Guides to the biological diversity of Madagascar].

For individuals that have grown up over the past 40 years in, for example, North America, portions of Latin America or western Europe, information on regional plants and animals are readily available in field guide format. These types of books, generally presented by taxonomic group (e.g. ferns, reptiles, birds, etc.) and region, revolutionized making information on biodiversity available and penetrable for members of different age and social groups in many different regions of the world. Such guides provide the means for individuals to become familiar with different plants and animals found in areas where they live or travel, and, most critically, integrating this familiarity into how they conceive the importance of the natural world. It is not an exaggeration to state that this type of guides have led to the "greening" of different sectors of society in a numerous countries. For Madagascar, which is so rich in biological diversity and being one of the principal conservation priorities in the tropics, the lack of such books is a considerable void that Association Vahatra strongly believes need to be filled.

Since 2011, the following six books were published in the series, which is edited by Marie Jeanne Raherilalao and Steven M. Goodman and designed and typeset by Madame Malalarisoa Razafimpahanana:

1. *Les chauves-souris de Madagascar* [The bats of Madagascar] by Steven M. Goodman, 2011, 129 pp.
2. *Les petits mammifères de Madagascar* [The small mammals of Madagascar] by Voahangy Soarimalala & Steven M. Goodman, 2011, 176 pp.

3. *Histoire naturelle des familles et sous-familles endémiques d'oiseaux de Madagascar* [The natural history of the families and subfamilies of endemic Malagasy birds] by Marie Jeanne Raherilalao & Steven M. Goodman, 2011, 146 pp.
4. *Les Carnivora de Madagascar* [The Carnivora of Madagascar] by Steven M. Goodman, 2012, 158 pp.
5. *Les animaux et écosystèmes de l'Holocène disparus de Madagascar* [The extinct Holocene animals and ecosystems of Madagascar] by Steven M. Goodman & William L. Jungers, 2013, 249 pp.
6. *Les amphibiens des zones arides de l'Ouest et du Sud de Madagascar* [The amphibians of the dry west and southwest of Madagascar] by Franco Andreone, Gonçalo M. Rosa & Achille P. Raselimanana, 2014, 180 pp.

The production of the first three books in the series was financed by a grant from the Critical Ecosystem Partnership Fund (CEPF). A generous grant was received from the Ellis Goodman Family Foundation for additional guides in the series, which include the already published Carnivora, extinct animals, and dry forest amphibian books. The additional volumes to be published in the series over the next few years, graciously subsidized by the Ellis Goodman Family Foundation, include:

1. *The amphibians of northern Madagascar* – by Franco Andreone, Angelica Crottini, Andolalao Rakotoarison, Achille P. Raselimanana, Gonçalo M. Rosa, and Mark D. Scherz
2. *The reptiles of the dry forests of Madagascar* – by Achille Raselimanana and collaborators
3. *The ant genera of Madagascar* – by Brian Fisher, the first draft is anticipated in the first half of 2016.
4. *The osteology and dento-cranial morphology of Malagasy small mammals: Guide to prey identification and analysis* – by Christiane Denys & Steven M. Goodman

To date, other than the free diffusion of Vahatra Press books to Malagasy students and scientists, a notable number of copies have been sold to people coming to the Vahatra office, different fairs in Antananarivo, and through overseas booksellers. We are pleased with the interest these books have generated, which includes seeing young Malagasy students and naturalists carrying and consulting the books on field trips to different protected areas. Further, these books are important

resources for national students and researchers, as well as reference works for different university courses. The University of Chicago Press is now responsible for the distribution of books in this series in North America and Europe, as well as the 2013 *Atlas of selected vertebrates of Madagascar* (see http://www.press.uchicago.edu/ucp/books/publisher/pu3431914_3431915.html).

SOME ACTIVITIES OF VAHATRA, INCLUDING NEW PROJECTS

The association is involved in a number of collaborative projects and below are details on some of these.

1. Wellcome Trust

In the context of a project financed by the Wellcome Trust, in collaboration with Dr. Sandra Telfer, University of Aberdeen, and the Institut Pas-



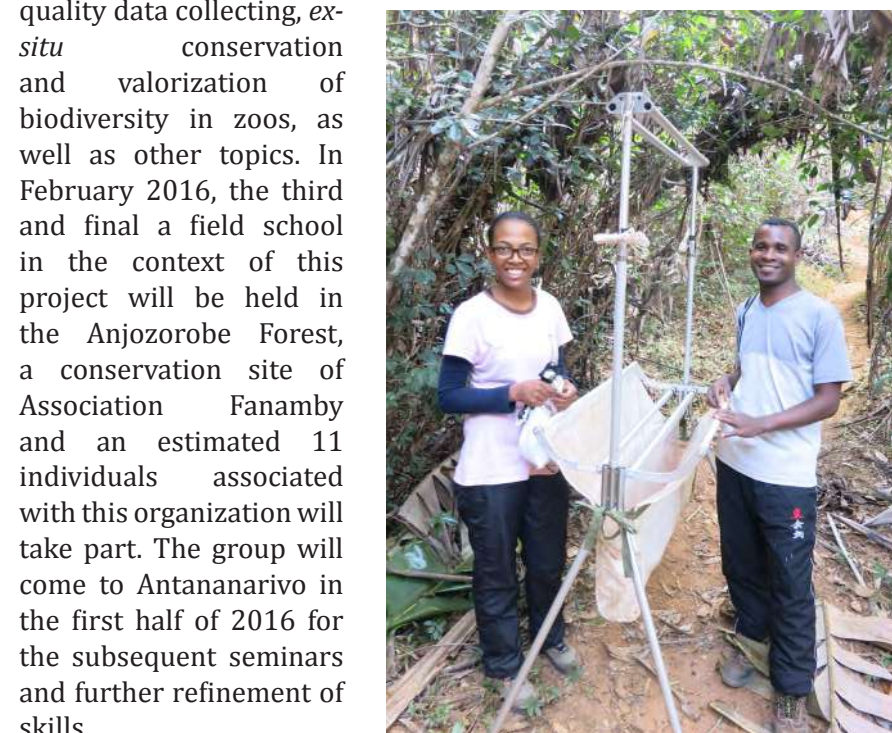


teur de Madagascar, Association Vahatra is directly involved in research on the ecology of endemic and introduced small mammals. The intent is to overlay natural history traits of captured small mammals and their ectoparasites on different aspects of diseases they are in contact with and potentially transmitted to humans. The year 2015 marked the third year of the project and Toky Randriamoria is conducting the fieldwork in the context of his Ph.D. thesis, as well as Angelo Andrianiana and Gael Rakotomanga for their Master's II mémoires. During this course of this project, numerous sites were surveyed in the general vicinity of Moramanga with a variety of habitats: natural forest (sometimes disturbed), agricultural fields and rice paddy, regenerating anthropogenic savanna (*savoka*), and zones surrounding villages.

2. Helmsley Charitable Trust - Capacity Building

This project, entitled, "Capacity building for conservation project field staff and young Malagasy scientists" has a three-prong approach

to augment scientific aptitude for nationals: 1) special field schools for technicians working for different conservation organizations on Madagascar as field agents at the site of their work and subsequent seminar courses in Antananarivo to validate data obtained during the field school; 2) advancement of five Malagasy graduate students conducting their DEA diplomas, in two cases at the same sites as the field schools; and 3) support for Association Vahatra to help with the mentoring of students and conservation biologists. In June 2015, the second phase for conservation agents that assisted a 2014 field school took place in Antananarivo, which included six individuals working for the Peregrine Fund Madagascar in western Madagascar and two conservation agents, working in northern Madagascar for Madagascar National Parks. The June 2015 session consisted of identification of collected specimens and different lectures from Malagasy scientists on the interface between fieldwork and conservation, the importance of the work of these different agents for advancing conservation, importance of high quality data collecting, *ex-situ* conservation and valorization of biodiversity in zoos, as well as other topics. In February 2016, the third and final a field school in the context of this project will be held in the Anjozorobe Forest, a conservation site of Association Fanamby and an estimated 11 individuals associated with this organization will take part. The group will come to Antananarivo in the first half of 2016 for the subsequent seminars and further refinement of skills.



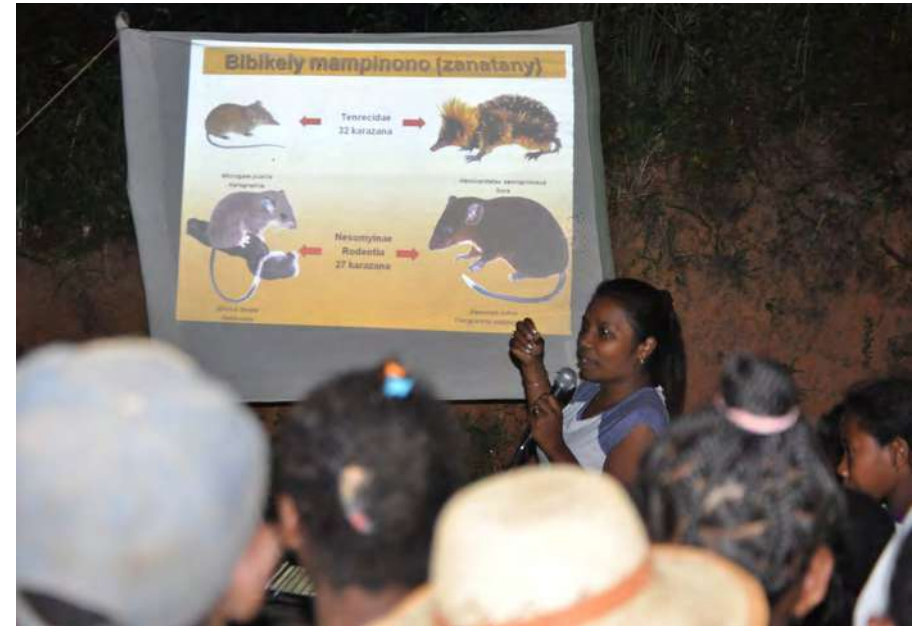


3. Helmsley Charitable Trust - Invasive Species in Collaboration with Island Conservation

In the context of creating new connectivity of organizations currently receiving funding from the Helmsley Charitable Trust, Island Conservation in collaboration with Association Vahatra have received a grant to advance different research projects and public education associated with problems imposed on Madagascar's ecosystems and the Malagasy people associated with invasive species. In 2016 a series of inventories will be conducted on some offshore islands, including one with a large seabird colony, to document potential problems associated with introduced rats, as well as studies of invasive birds and toads, and public education program to disseminate information to the Malagasy people on these organisms.

4. StopRats: Sustainable technology to overcome pest rodents in Africa through science

This multi-partner project, financed by a grant from The Secretariat of the African, Caribbean and Pacific Group of States, includes participating organizations from Namibia, Madagascar, Sierra Leone, South Africa, Swaziland, Tanzania, and United Kingdom, and the central organizing group is The Natural Resources Institute, University of Greenwich. The Association Vahatra is the Madagascar partner. The overall objectives are to strengthen science, technology, and innovation about rodent biology and management and contribute to African-Malagasy sustainable development by enabling institutions to address key indicators of poverty through the impacts of rodents on agricultural production systems and food security. Furthermore, the specific objectives are to build and strengthen Afro-Malagasy science technology and innovation capacity across a range of specialties that will enhance socio-economic development by tackling policy issues, knowledge dissemination, and technical competence to deliver sustainable rodent management. The principal role of Vahatra in this project is capacity building for Afro-Malagasy participants, largely through field schools. Secondly, a number of Malagasy student projects have been launched to understand the impacts of rodents in different areas of the country on agricultural output and other problems these animals cause (destruction of grain stocks and other domestic contexts).





5. Critical Ecosystem Partnership Fund (CEPF)

In late 2015, Association Vahatra received a three-year grant from CEPF to conduct a large-scale review of the protected areas system of Madagascar. This project which will terminate with a bilingual book on the subject co-published between Association Vahatra and The University of Chicago Press, and a website with a large array of documents accessible for free downloading. The first six months of the project include numerous inventories to poorly known protected areas to complete available information, the development of different databases, molecular identification of about 2,000 reptiles and amphibians, taxonomic work by specialists in The University of Antananarivo museum collection, and the development of collaborations with vertebrate and plant systematists for up-to-date and clear taxonomies that will be used in the project.



RECENT AND CURRENT GRANTS

- John D. and Catherine T. MacArthur Foundation – Assessing the impacts of climatic change on high mountain animals and tests of new biogeographic hypotheses to understand biotic diversity on Madagascar, 2009-2012, completed in December 2015.
- John D. and Catherine T. MacArthur Foundation – Science for the people – The dissemination of scientific information to the Malagasy people, 2010-2013, completed in June 2015.
- Ellis Goodman Family Foundation – Financing for the “Guides sur la diversité biologique de Madagascar” series.
- Irene Pritzker Foundation – Financing for two Malagasy Ph.D. projects, one to be present at the University of Antananarivo and the other at the University of Kwa-Zulu Natal, 2012-2015, completed in December 2015
- Critical Ecosystem Partnership Fund -- Madagascar’s protected areas: A bilingual book and associated database reviewing their history, biodiversity and guiding the future, 2015-2018.
- Wellcome Trust – Zoonotic disease risk in Madagascar, 2013-2016.
- Helmsley Charitable Trust -- The interface between applied knowledge, community conservation projects, and capacity building for young Malagasy scientists, 2013-2015.
- The Secretariat of the African, Caribbean and Pacific Group of States – StopRats or Sustainable Technology to Overcome Pest Rodents in Africa through Science, 2014-2017.
- The Volkswagen Foundation - Support for the 12th African Small Mammals Symposium, 2015.
- The Alexander Von Humboldt Foundation - Support for the 12th African Small Mammals Symposium, 2015.
- The Field Museum of Natural History - Support for the 12th African Small Mammals Symposium, 2015.

We wish to acknowledge the kind gifts made by Joyce & Bruce Chelberg, Connie & Dennis Keller, and Tanya & Michael Polsky associated with different on-going projects to advance conservation science on Madagascar.

ASSOCIATION VAHATRA HOSTED 12TH AFRICAN SMALL MAMMALS SYMPOSIUM

In collaboration with the Département de Biologie Animale of the Université d'Antananarivo, Association Vahatra was responsible for hosting an international scientific meeting in Madagascar. The meeting is part of a series known as the African Small Mammals Symposium (ASMS), which occurs at four-year intervals. The previous meeting, 11th ASMS, was held in 2011 at The University of Swaziland. Voahangy Soarimalala and Steve Goodman were present for the Swaziland meeting and Madagascar was proposed for the 2015 venue. On the behalf of Malagasy scientists, specifically mammalogists, the request was graciously accepted. Voahangy and Steve were the two principal co-organizers of the 12th ASMS, with considerable input and help from members of Association Vahatra, and different colleagues and students were actively involved in organizing the meeting.

The 12th African Small Mammals Symposium took place in Madagascar from 12 to 18 April 2015 at the Hotel l'Ermitage, in the countryside and about 2.5 hours from Antananarivo. The principal subjects of the meeting included recent research on African and Malagasy rodents, insectivores, bats, and tenrecs, with a few talks and posters covering small primates and small carnivores. In total, 126 people registered for the meeting from 23 countries (Table 1). For all oral presentations there was simultaneous French-English translation or vice versa by a highly professional Malagasy group via headphone sets.

Table 1. The number of participants from different countries that attended the 12th ASMS.

Belgium	4	Namibia	1	Switzerland	1
Czech Republic	6	Poland	1	Tanzania	1
France	12	Portugal	2	The Netherlands	1
Gabon	1	RD Congo	2	United Kingdom	7
Germany	13	Senegal	2	USA	12
Greece	1	Slovak	1	Zambia	1
Kenya	1	South Africa	18	Zimbabwe	1
Madagascar	34	Swaziland	3		

The five-day meeting involved four plenary talks, 73 oral presentations (27 by students), and 33 posters (11 by students), with an associated printed program and abstracts distributed to each participant. It was a memorable occasion to reunite students, researchers, and university professors from numerous walks of life, to discuss advances in research on Afro-Malagasy small mammals. In total, nine students and four professionals from Africa and Germany were supported by a grant received from The Volkswagen Foundation, which also included miscellaneous expenses for different Malagasy students and professors. The meeting was also supported by grants from the Field Museum of Natural History (Chicago) for the attendance of 22 Malagasy students, professors, and scholars, as well as the Alexander von Humboldt

Foundation for the travel and local accommodations of two plenary speakers and the opening reception.

This was an important week for the participating individuals to interact with a wide range of African, Malagasy, European, and North American colleagues, and, particularly for students and young researchers to be part of an international group of scientists. Such interactions are critical for promoting and advancing future generations of Afro-Malagasy mammalogists. Student prizes were given for the best oral presentation (200 Euros) and another for poster presentation (100 Euros). A grant committee of eight attending professional mammalogists made the final decision on the award winners. In the end, an anonymous gift from one of the attendees provided a second and third prize for the





DÉVELOPPEMENT DURABLE

lehebdo
DE MADAGASCAR

AFFAIRES DE BOIS DE ROSE

L'impuissance des sociétés civiles face aux trafiquants

Les membres de la société civile dénoncent les agissements des gros bonnets qui perpétuent leurs activités au vu et su de tous. Or, les autorités compétentes daignent ne rien savoir.

Farah Randrianasolo

Le trafic en tout genre se poursuit jour et nuit, notamment celui du fameux bois de rose. Les membres de la société civile, dont la coalition Lampona, témoignent qu'ils ne parviennent pas à saisir les autorités locales, les membres des forces de l'ordre ainsi que les émissaires de l'administration forestière en provenance de la capitale. « Tout le monde sait cacher son jeu. Nous ne réussissons pas non plus à persuader les autorités locales qui se plaignent du manque de moyens », relate Clovis Razafimalala, coordonnateur national de la coalition Lampona de Maroantsetra. Ce témoignage ressort du Forum VI organisé par Conservation International et USAID dans le cadre du programme Preserving Madagascar's natural resources qui a eu lieu le jeudi 9 avril. Pour ce responsable chargé de la conservation de capital naturel du district, les missionnaires ignorent le déroulement de tout trafic. Bien avant leur arrivée, les trafiquants effacent les traces et conduisent les émissaires dans les endroits où il ne se passe rien. Quelques jours après, le transport et le débarquement reprennent. « Au Cap Est à 120 kilomètres d'Antananarivo, les émissaires de l'administration forestière le transbordement.



Les stocks de bois de rose attendent l'embarquement

Cet endroit sépare le district d'Antanarivo de celui de Maroantsetra. L'arrestation des trafiquants nécessite le déploiement d'une vedette rapide et une quantité considérable de carburants. Alors, ce n'est pas une raison de s'associer aux braconniers de bois précieux », indique-t-il. Depuis que cette histoire de trafic souille la réputation de Maroantsetra, les membres de la coalition Lampona n'ont jamais eu l'occasion de rencontrer les émissaires d'Antananarivo.

DOPAGE

Jusque là, on ignore les principaux instigateurs qui orchestrent le trafic. Cependant, les hommes transportent le bois du noyau dur

jusqu'aux rivières, ont des visages, ils ne viennent pas de Maroantsetra, mais sont issus des communes lointaines acceptant le travail en échange de plusieurs billets. Clovis Razafimalala fait remarquer que la démission gagne parfois les transporteurs de bois de rose. « Un homme ordinaire ne pourra jamais transporter un rondin entre 500 et 600 kilos. Ils se dopent dans le but de mener à terme leur mission après laquelle ils gagnent 400 000 ariary », renchérit-il.

L'argent rapide et facile influence les plus jeunes qu'ils abandonnent aussitôt les bancs de l'école. Ils trouvent que l'affaire de bois de rose rapporte gros et pensent que nul n'a besoin d'éducation et d'instruction

pour s'enrichir. Le coordinateur de la coalition Lampona rapporte que si toutes les parties prenantes prennent leurs responsabilités respectives, le trafic cessera. Il insiste également sur la conservation qui devrait accompagner d'un réel programme de développement pour que les communautés de base perçoivent les impacts directs de la privation. Pour le moment, se sentent juste comme des gardiens de parc. De la part des habitants de Maroantsetra sollicités à ce titre, ils comprennent la situation locale et le dilemme du district afin d'éviter ce qu'ils appellent la « désantantion » de la gestion

QUESTIONS A...

VOAHANGY SOARIMALALA

« Les petits mammifères à la fois prédateurs et proies »

Les forêts malgaches abritent bon nombre de petits vertébrés. La Dr Voahangy Soarimalala, un des membres fondateurs de l'association Vahatra, explique le rôle de ces espèces dans l'écosystème.

■ Madagascar accueille le XII^e Symposium sur les petits mammifères africains. Pourquoi insister sur ces espèces ?

Les petits mammifères sont négligés parce que la société les considère comme des espèces destructrices. Pourtant, ils font partie de la biodiversité. Ils participent à l'équilibre de l'écosystème et de la vie dans la forêt en étant à la fois des prédateurs et des proies. Ils chassent les insectes, mais les reptiles et les oiseaux rapaces les éliminent. C'est pour échanger des connaissances et des expériences que cent trente scientifiques venus d'une vingtaine de pays participent à ce symposium où l'on prononcera soixante-dix conférences et exposera trente-trois posters en guise de revue scientifique.

■ Quels genres de petits mammifères trouve-t-on à Madagascar ?

Les forêts humides et sèches constituent leurs habitats, mais les espèces et leur nombre varient selon les localités. Nous distinguons deux espèces de rongeurs, ceux importés et ceux endémiques. Les premiers investissent les villes et peuvent être des vecteurs de maladies et les endémiques restent dans les forêts. Quant aux chiroptères, la Grande Ile recense des chauves-souris insectivores et frugivores chargés de la dispersion des graines.

■ Ce colloque international s'appuie sur le thème « La biologie, la conservation et la recherche médicale ». Pour quelles raisons doit-on étudier l'aspect médical des petits mammifères ?

Les rongeurs contractent avec facilité des virus et des bactéries. Leurs études aideront les chercheurs à mieux protéger les personnes qui travaillent dans les forêts. Il est possible que les risques de contamination d'un virus ou d'une bactérie sur les humains augmentent puisque les chiroptères, les rongeurs et les hommes sont tous des mammifères. Nous pouvons citer les allergies provoquées par les chauves-souris qui envahissent les vieux bâtiments administratifs et certaines salles de classe.

■ Comment les scientifiques arrivent-ils à dénombrer les petits mammifères ?

Les scientifiques se concentrent sur les primates et oublient les autres espèces de faune. En 1990, la recherche sur les petits mammifères commence et, à l'heure actuelle, nous en découvrons vingt. Ces cinq dernières années, les chercheurs ont trouvé une ou deux espèces et les études se poursuivent pour étoffer l'inventaire.

Propos recueillis par Farah Randrianasolo



Rapprocher la science et le développement

Recherche d'article



Agriculture Environnement Santé Gouvernance Entreprise Communication

Accueil Biodiversité Actualités



Biodiversité

Les petits mammifères d'Afrique à la croisée des chemins

Crédit image: Flickr/Frank Vassen

Lecture rapide

- Les petits mammifères sont menacés de disparition du fait de l'action de l'homme
- Ils jouent pourtant des rôles très variés dans l'équilibre de notre écosystème
- En revanche ils peuvent aussi transmettre certaines maladies à l'homme.

[ANTANANARIVO] Cent vingt chercheurs et étudiants provenant de 22 pays ont fait le point sur leurs connaissances au cours de la 12^e édition du symposium sur les petits mammifères d'Afrique (ASMS) organisée à Mantasoa, Madagascar, du 12 au 18 avril.

La conférence scientifique intitulée « La biologie, la conservation et la recherche médicale » a amené les spécialistes à partager des informations à jour sur ces vertébrés.

Il en ressort que les petits mammifères restent sensibles aux menaces liées à la destruction de leurs habitats naturels, à la chasse et aux effets du changement climatique...

Gilles Bouff, président du Muséum d'histoire naturelle de Paris, présume même déjà la disparition massive des espèces au cours des prochaines décennies « si nous ne faisons rien ».

Parallèlement, un rapport de l'Union mondiale pour la conservation de la nature (UICN) cite des pays, dont Madagascar en premier en Afrique, où la chance de survie pour beaucoup d'espèces de mammifères s'annule du jour au lendemain.

Andriamanana Rabearivelo, fondateur d'une organisation spécialiste des chauves-souris à Madagascar, a dit à SciDev.Net qu'un plan national de préservation des petits mammifères doit être mis en œuvre pour leur conservation durable et le bien-être des communautés à la fois.

De l'autre côté, les chercheurs ont constaté que les petits mammifères, comme d'autres gros virus, de champignons, de parasites dangereux ou non pour les humains

D'où la question de savoir si les animaux sont aussi présents chez

Car, ils sont susceptibles de déclencher des conséquences sont des fois fatales les rongeurs qui étaient responsables à Madagascar.

Le chercheur réunionnais Yann Go de la leptospirose (une infection bactérienne) des chauves-souris de la Grande Ile.

Or, les habitants sont en contact régulier avec la chasse, l'usage des guano (maisons, écoles, églises, bureau)

Il est dès lors primordial aux yeux de la communauté scientifique d'exister aussi chez d'autres animaux les mécanismes.

Selon les premiers résultats de l'ét

ÉNERGIES RENOUVELABLES

Le solaire garant d'une économie verte

D'ici quarante ans environ, les énergies fossiles s'épuiseront. Les différentes compagnies proposent des solutions innovantes avec l'avènement de l'énergie solaire. « Les ménages qui souhaitent disposer d'électricité peuvent désormais accéder à la solution autonome avec le solaire. La comparaison démontre que la première s'avère éco-

nomique et rentable », déclare Livatiana Randriamboavonjy, directeur général de la Société fournisseur d'énergies renouvelables (SFER) qui fournit de la plaine solaire.

Il suppose que l'énergie solaire serait une solution nationale dans la mesure où le grand soleil brille toujours. Selon les besoins, les consommateurs - investissant dans l'importation de matériel d'activité - peuvent installer des pan-

neaux correspondant à l'environnement. Le gérant d'un atelier couture n'a pas encore installé la faisabilité du système solaire, mais il croit que cette solution pourra résoudre les problèmes fréquents de coupure d'électricité. Les équipements de l'énergie solaire durent longtemps avec une garantie de dix ans pour les batteries et vingt-cinq ans pour les panneaux.

Le gérant d'un atelier couture n'a pas encore installé la faisabilité du système solaire, mais il croit que cette solution pourra résoudre les problèmes fréquents de coupure d'électricité. Les équipements de l'énergie solaire durent longtemps avec une garantie de dix ans pour les batteries et vingt-cinq ans pour les panneaux.

best student oral presentations and made the final decisions of the award committee much easier. National television and newspapers covered the opening ceremony, which included presentations by a number of officials and a plenary talk by Steve Goodman (Alexander von Humboldt Foundation lecture) on Malagasy mammal research. From all of the feedback we have received, the meeting was a grand success and many participants appreciated being in Madagascar, and the special effort that was made to make the meeting something special and memorable.

PEOPLE FROM VAHATRA IN FOCUS

Beza Ramasindrazana – Beza took part in 2007 in a field school held for young Malagasy graduate students and based on his keen interest and passion was engaged to do his DEA diploma with Vahatra on bats of a lowland eastern forest site. This was finished in nearly record time and was successfully presented in 2009. Thereafter, he launched his Ph.D. work, also concerning bats and with Vahatra, which was completed in 2012 and at a very high standard and several associated



publications. Beza then obtained a one-year post-doc position at Le Centre de Recherche et de Veille sur les Maladies Emergentes on La Réunion, where he studied different aspects of parasites and diseases of bats, learning a considerable number of new techniques, particularly associated with molecular biology. This post-doc position was extended by a grant from the Dr. Ralph and Marian Falk Medical Research Trust to the Field Museum of Natural History. Upon returning to Antananarivo in late 2015, he obtained a post at the Institut Pasteur de Madagascar and was also named as a lecturer at The University of Antananarivo. He has published a series of scientific papers in recent years. Hence, the cycle has made the full circle and Beza is now responsible for a research program and the advancement of new generations of national scientists.

William Jungers – Dr. William (Bill) Jungers, a well-known figure in paleontological and morphological studies of Madagascar animals, specifically recently extinct lemurs, has retired from his post of nearly four decades in the Department of Anatomical Studies, Stony Brook University Medical Center. Bill and



his wife (who is from Madagascar) and their three kids, have moved to Diego Suarez in northern Madagascar. He will continue to conduct research on the morphology of living and extinct species of lemurs. For Bill to have an academic affiliation and to advance different collaborative projects, it is a pleasure that Association Vahatra has named him as a Research Associate. He will use the association's office as his base when working in Antananarivo and it is planned that he will help mentor Malagasy graduate students.

NEW SPECIES OF ANIMALS DESCRIBED IN 2015 BY VAHATRA SCIENTISTS

One of the direct results of the biological inventories conducted by Vahatra and associated collected specimens, is the discovery of animal species previously unknown to science. A new family and several new species of bats, as well as a new gecko were named from Madagascar in 2015, and also some new bats from West Africa:

Foley, N. M. Thong, V. D., Soisook, P., **Goodman, S. M.**, Armstrong, K., Jacobs, D., Puechmaille, S. J. & Teeling, E. C. 2015. How and why overcome the impediments to resolution: Lessons from rhinolophid and hipposiderid bats. *Molecular Biology and Evolution*, 32: 313-333.

Goodman, S. M., Rakotondramanana, C. F., Ramasindrazana, B., Kearney, T., Monadjem, A., Schoeman, M. C., Taylor, P. J., Naughton, K. & Appleton, B. 2015. An integrative approach to characterize Malagasy bats of the subfamily Vespertilioninae Gray, 1821, with the description of a new species of *Hypsugo*. *Zoological Journal of the Linnean Society*, 173: 988-1018.

Goodman, S. M., Ramasindrazana, B., Naughton, K. M. & Appleton, B. 2015. Description of a new species of the *Miniopterus aelleni* group (Chiroptera: Miniopteridae) from upland areas of central and northern Madagascar. *Zootaxa*, 3936: 538-558.

Hassanin, A., Khouider, S., Gembu, G.-C., **Goodman, S. M.**, Kadjo, B., Nési, N., Pourrut, X., Nakouné, E. & Bonillo, C. 2015. The comparative phylogeography of fruit bats of the tribe Scotonycterini (Chiroptera, Pteropodidae) reveals cryptic species diversity related to African Pleistocene forest refugia. *Comptes Rendus Biologies*, 338: 197-211.

Ratsoavina, F. M., Ranjanaharisoa, F. A., Glaw, F., **Raselimanana, A.P.**, Miralles, A. & Vences, M. 2015. A new leaf-tailed gecko of the *Uroplatus ebenau* group (*Squamata: Gekkonidae*) from Madagascar's central eastern rainforest. *Zootaxa*, 4006 (1): 143-160.

A number of papers are in press with descriptions of a variety of new animals to science (see section below entitled, "Scientific outputs of Vahatra during 2015").

ACTIVITIES OF VAHATRA PERMANENT MEMBERS DURING 2015

Members of the Vahatra scientific staff were involved in a variety of different actions, which are summarized below.

January

After the interruption of courses at the University of Antananarivo in late 2014 associated with an extended strike, the academic semester continued into early 2015, with Marie Jeanne and Achille being very much occupied with coursework. Marie Jeanne also supervised the final aspects of a DEA mémoire presentation by Simplic Razafindranaivo, a Vahatra student, which was presented at the end of the month -- Achille and Steve were also committee members.

As Marie Jeanne is member of the steering committee of the National Strategies and Action Plans for the conservation of Biodiversity in Madagascar, she was intensively involved in the elaboration of the national report from January to September 2015. Achille took the lead in preparing a project proposal submitted to the "Commission de l'Océan Indien". As co-organizers, Voahangy and Steve were actively involved in putting together numerous aspects of the "12th African Small Mammals Symposium" to be held in Madagascar in April 2015.

February

Marie Jeanne pursued her teaching activities at the university, as well as editing with Steve, Achille, and Voahangy different manuscript submissions to *Malagasy Nature*. Marie Jeanne helped two Master's II degree projects of students from The University of Antananarivo.

Voahangy was at The University of Fianarantsoa to complete some courses and in tandem with Steve, she continued to prepare the 12th ASMS organization.

Besides teaching activities, Achille worked on co-authored manuscripts with different collaborators and was involved in the production of pocket guide to reptiles of the genera *Brookesia* and *Uroplatus*. Achille and Steve took part in the 22nd Global Biodiversity Information Facility meeting held in Antananarivo, where Steve made an invited presentation entitled, "The extraordinary extinct animals and ecosystems of Madagascar". A Master's II student from The University of Antsiranana was in Antananarivo during the month to work with Steve and other collaborators on an analysis associated with fruit bat dietary preferences.

March

Marie Jeanne and a Master's II student, Joséane Rasoazanacolona, conducted field work in the Oranjia protected area, in the far north of the island in the context of a Madagascar Biodiversity Fund project in collaboration with Missouri Botanical Garden and the University of Antananarivo. The student collected data for her research project. She also supervised the final version of a DEA mémoire and presentation of a student working on the biology of a lemur, and served as a jury member for DEA mémoire.

Voahangy and Steve were very involved in the last details associated with the organization of the 12th ASMS meeting and both attended the annual StopRats project meeting in Pretoria, South Africa. Two different DEA mémoires were present of Vahatra students, Malala Rakotomanga and Rico Randrenjarison Andriniaina, associated with on ectoparasites of Malagasy small mammals.

Achille supervised the progress of the DEA mémoire of Tiana Rakotomampianina, a Vahatra student, was involved in the evaluation of several other DEA mémoires, and acted as an internal reporter for a Ph.D. thesis. He participated to the preparation of the International Conference on Biodiversity under the coordination of Centre National de Recherches sur l'Environnement -Global Biodiversity Information Facility.





April

One of the major activities associated with Vahatra scientific members this month was the 12th ASMS, which took place at Mantasoa from 12 to 18 April. Achille and Marie Jeanne also took part, as well as numerous Malagasy graduate students working with Vahatra, and assisted Voahangy and Steve with a multitude of aspects (see section above on the 12th ASMS). The other major activity during the month was the advancement of different graduate students with Achille participating as a jury member in seven and Marie Jeanne in four different DEA presentations. Steve was a jury member for a thesis presented in Hamburg, Germany.

May

Voahangy, Achille and Marie Jeanne prepared different aspects for a field school lead by Association Vahatra in the Tsimanampetsotsa National Park, extreme southwest of Madagascar, associated with the SULAMA (Sustainable Land Management on the Mahafaly Plateau) project. The field school involved 15 students coming from the Animal Biology Department, University of Antananarivo; the Institut des Sciences et





Techniques de l'Environnement (ISTE), University of Fianarantsoa; and the Animal Biology Department, University of Toliara. Fabienne Rakotondramanana, a Vahatra student working on bats, presented her thesis at The University of Antananarivo, which was co-directed by Achille and Steve. Steve also served as a committee member for another thesis presented at the same university. He also made a presentation to a number of students visiting Madagascar from Michigan State University, which was an introduction to the ecosystems of the island. In the latter portion of the month, he conducted fieldwork in central Mozambique.

June

Voahangy, Marie Jeanne, Achille, and Steve organized a workshop in Antananarivo as part of a project funded by the Helmsley Charitable Trust (see section above entitled, "Some project activities of Vahatra") to help with capacity building of individuals working for the Peregrine Fund and Madagascar National Parks as field technical agents. Soon thereafter, Voahangy, Achille and Jeanne, left for the northwest of the island to take part in a "green school" in the Anjiamangirana Forest in the context of the MacArthur -- Science for the People project. This formation involved 45 kids coming from the elementary and secondary schools of the village of Anjiamangirana.

On the academic front, this month marked the start of the new academic year at The University of Antananarivo and Marie Jeanne commenced her courses and spent a considerable amount of time at the university. Achille was involved in a DEA presentation at the Animal Biology Department. Voahangy pursued courses at The University of Fianarantsoa, and also carried out a field school in the Ranomafana National Park for students from the same institution. Two students from Vahatra, Olivà Lalarivoniaina and Faneva Rajemison presented their DEAs, with Steve being a jury member for the two and Marie Jeanne and Achille for Faneva.

Steve was at The University of La Réunion to take part in a regional meeting concerning biodiversity and made an invited plenary presentation on changes in recent geological time of the ecosystems and animals of Madagascar. In the middle of the month, he worked in the Muséum national d'Histoire naturelle, Paris, and was at The University of Toulouse for another presentation. Thereafter he continued on to





the Field Museum of Natural History, Chicago, for his annual northern summer visit.

July

Numerous students from the University of Antananarivo visit the Vahatra office to use the library, specifically for the new cadre of Master's II students, and Marie Jeanne took the lead in helping and advising these students. She also worked on a joint proposal with the Madagascar Biodiversity Fund, The University of Antananarivo, and Asity Madagascar for a project on aquatic birds in the Mahavavy-Kinkony Complex, northwestern Madagascar. The objective of this project was to reinforce the capacity building of young students.

Voahangy was engaged in the fieldwork associated with a study of small mammals and associated diseases in the context of the Wellcome Trust project in Moramanga. She also prepared a stakeholder meeting in Fianarantsoa in the context of StopRats project, as well as a field school for students from The University of Fianarantsoa. Voahangy





also supervised the advancement of seven students working on their “Professional license memoire” at The University of Fianarantsoa.

Achille conducted a detailed reconnaissance trip to the Masoala Peninsula in the far northeast of the island associated with a series of biological inventories at five different sites towards the end of 2015. Steve worked on different research projects in Chicago, and in the early portion of the month was in Paris as a member of an HDR jury at The University d’Orsay.

August

During the month, Marie Jeanne was actively involved with teaching responsibilities at the University of Antananarivo. She also helped two students to develop their Master’s II proposal and assisted them with the preparation of associated fieldwork. In the context of the StopRats project, Voahangy was actively involved in different field surveys in the Moramanga region with three students from the University of

Fianarantsoa. She also supervised the advancement of seven students working on their “Professional license memoire” at The University of Fianarantsoa and research projects at different sites on the island. She was actively involved in a stakeholders’ meeting held in Fianarantsoa in the context of StopRats project.

Achille spent a portion of the month writing his report on the reconnaissance mission to the Masoala Peninsula associated with a large-scale effort later in the year to conduct biological inventories and gave an associated presentation at the office of the Madagascar Biodiversity Foundation. He was also invited to present a short presentation on the current situation at the site associated with illegal forest exploitation at the Ministry of Environment during the evaluation mission of the IUCN and UNESCO-PNUD team in Madagascar. Steve Goodman returned to Madagascar during the latter portion of the month.

September

Marie Jeanne finalized a grant application to the Madagascar Biodiversity Fund for the 2016 ecological monitoring program of the freshwater bird communities in the Kinkony-Mahavavy Complex; this was submitted in collaboration with different partners. Further, together with Malala and Steve, she finalized the editing of volume 9 of *Malagasy Nature* (<http://www.vahatra.mg/volume9.html>).

Voahangy also supervised the advancement of seven students working on their “Professional license memoire” at The University of Fianarantsoa and conducting field research in the Fianarantsoa region. She also supervised the writing of two mémoires of six students associated with different research projects presented at the end of this month at The University of Fianarantsoa as “Professional license mémoires”. Steve conducted fieldwork on bats in Ankarana for 10 days with two different Association Vahatra students conducting their Ph.D. research at the site.

October

During the first portion of the month, Voahangy, Achille, and Marie Jeanne, were actively involved in the preparation of a large-scale field mission to the Masoala National Park, in the far north, in the context of the World Heritage Sites/UNESCO and Madagascar Biodiversity Fund project

focused on biological and ecological assessment after the massive illegal extraction of rosewood. The group left Antananarivo in mid-October for a two-month mission, and consisted of a Vahatra scientific team and four associated students, a primatologist from Biotope Madagascar, and two botanists from the Association Famelona and the Plant Biology Department, University of Antananarivo.

In the first portion of the month, Achille and Steve attended the International Conference on Biodiversity held in Antananarivo associated with the Global Biodiversity Information Facility. They both made presentations during the meeting. During this period, Marie Jeanne was a member of a DEA mémoire jury associated with the topic of bird helminthes parasites.

November

Achille, Marie Jeanne, and Voahangy continued fieldwork in the Masoala National Park. Steve, together with two Master's II students working with Vahatra, as well as a previous DEA student of Vahatra conducted a biological inventory of the Betampona protected area. This work was conducted in the context of a CEPF project associated with a large-scale review of the island's protected areas.



Euryceros prevostii



Microcebus rufus

December

During the first three weeks of the month, Achille, Marie Jeanne, and Voahangy continued fieldwork in the Masoala National Park. Steve traveled to La Réunion for the Ph.D. defenses of two students at The University of La Réunion, as well as a ceremony at the same institution associated with the retirement of a close collaborator of Association Vahatra. He spent a good portion of the month arranging different details to start different projects and collaborations associated with the CEPF review of Madagascar protected areas.

SCIENTIFIC OUTPUTS OF VAHATRA DURING 2015

Publications from 2015, including in press and submitted manuscripts. Names in **bold** are those of scientific members of Vahatra and those in *italics* are current or past Malagasy student members working with Association Vahatra.

- Beaucournu, J.-C., Prie, V., **Ramasindrazana, B.**, **Goodman, S. M.** & Laudisoit, A. 2015. Les puces de Chauve-souris à Madagascar : nouvelles données et clef d'identification illustrée actualisée (Siphonaptera, Ischnopsyllidae). *Bulletin de la Société entomologique de France*, 120: 323-334.
- Beaucournu, J.-C., **Randrenjarison Andriniana, H. R.** & **Goodman, S. M.** 2015. Puces (Insecta : Siphonaptera) d'Ambohitantely, Madagascar : Spécificité et Phénologie. *Malagasy Nature*, 9: 39-48.
- Blair, B., Noonan, B. P., Brown, J. L., **Raselimanana, A. P.**, Vences, M. & Yoder, A. D. 2015. Multilocus phylogenetic and geospatial analyses illuminate diversification patterns and the biogeographic history of Malagasy endemic plated lizards (Gerrhosauridae: Zonosaurinae). *Journal of Evolutionary Biology*, 28: 281-292.
- Block, N. L., **Goodman, S. M.**, Hackett, S. J., Bates, J. & **Raherilalao, M. J.** 2015. Potential merger of ancient lineage in a passerine bird discovered based on evidence from host-specific ectoparasites. *Ecology and Evolution*. doi:10.1002/ece3.1639.
- Dammhahn, M., **Rakotondramanana, C. F.** & **Goodman, S. M.** 2015. Coexistence of morphologically similar bats (Family Vespertilionidae) on Madagascar: stable isotopes reveal fine-grained niche differentiation among cryptic species. *Journal of Tropical Biology*, 31: 153-164.
- Foley, N. M., Thong, V. D., Soisook, P., **Goodman, S. M.**, Armstrong, K., Jacobs, D., Puechmille, S. J. & Teeling, E. C. 2015. How and why overcome the

Ecology and Evolution

Open Access

Potential merger of ancient lineages in a passerine bird discovered based on evidence from host-specific ectoparasites

Nicholas L. Block^{1,2}, Steven M. Goodman^{2,3}, Shannon J. Hackett², John M. Bates² & Marie J. Raherilalao^{3,4}

¹Biology Department, Stonehill College, 320 Washington Street, Easton, Massachusetts 02357

²Field Museum of Natural History, 1400 S. Lake Shore Dr., Chicago, Illinois 60605

³Association Vahatra, BP 3972, Antananarivo (101), Madagascar

⁴Département de Biologie Animale, Université d'Antananarivo, BP 906, Antananarivo (101), Madagascar

Keywords

Birds, despeciation, ectoparasites, Madagascar, microsatellites.

Correspondence

Nicholas L. Block, Biology Department, Stonehill College, 320 Washington Street, Easton, MA, 02357, USA.
Tel: +508 565 1495; Fax: +508 565 1469
E-mail: nblock@stonehill.edu

Funding information

This study was funded by the Field Museum's Council on Africa, the American Ornithologists' Union Research Award, the Frank M. Chapman Memorial Fund, a Sigma Xi Grant-in-Aid of Research, and the University of Chicago's Committee on Evolutionary Biology Hinds Fund. Certain field samples were collected with support to the Association Vahatra from the Field Museum, John D. and Catherine T. MacArthur Foundation, and the Volkswagen Foundation. NLB was supported by a National Science Foundation Graduate Research Fellowship and an NSF GAANN fellowship.

Received: 21 January 2015; Revised: 10 July 2015; Accepted: 13 July 2015

doi: 10.1002/ece3.1639

Introduction

The widespread merger of formerly isolated lineages – sometimes referred to as despeciation or speciation in reverse – is hypothesized to be possible for vertebrates under certain conditions, which often involve human alteration of habitat or introduction of non-native species

Abstract

The merger of formerly isolated lineages is hypothesized to occur in vertebrates under certain conditions. However, despite many demonstrated instances of introgression between taxa in secondary contact, examples of lineage mergers are rare. Preliminary mtDNA sequencing of a Malagasy passerine, *Xanthomixis zosterops* (Passeriformes: Bernieridae), indicated a possible instance of merging lineages. We tested the hypothesis that *X. zosterops* lineages are merging by comparing mtDNA sequence and microsatellite data, as well as mtDNA sequence data from host-specific feather lice in the genus *Myrsidea* (Phthiraptera: Menoponidae). *Xanthomixis zosterops* comprises four deeply divergent, broadly sympatric, cryptic mtDNA clades that likely began diverging approximately 3.6 million years ago. Despite this level of divergence, the microsatellite data indicate that the *X. zosterops* mtDNA clades are virtually panmictic. Three major phylogroups of *Myrsidea* were found, supporting previous allopatry of the *X. zosterops* clades. In combination, the datasets from *X. zosterops* and its *Myrsidea* document a potential merger of previously allopatric lineages that likely date to the Pliocene. This represents the first report of sympatric apparent hybridization among more than two terrestrial vertebrate lineages. Further, the mtDNA phylogeographic pattern of *X. zosterops*, namely the syntopy of more than two deeply divergent cryptic clades, appears to be a novel scenario among vertebrates. We highlight the value of gathering multiple types of data in phylogeographic studies to contribute to the study of vertebrate speciation.

(Rhymer and Simberloff 1996; Seehausen 2006; Seehausen et al. 2008). Despite many documented instances of introgression between vertebrate taxa in secondary contact, examples of complete lineage mergers, as indicated by total genetic mixing, are rare. The only genetically documented examples of complete lineage mergers in vertebrates, to our knowledge, involve recently diverged lake

© 2015 The Authors. *Ecology and Evolution* published by John Wiley & Sons Ltd.
This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

1

- impediments to resolution: Lessons from rhinolophid and hipposiderid bats. *Molecular Biology and Evolution*, 32: 313–333.
- Gardner, C. J., Raxworthy, C. J., Metcalfe, K., **Raselimanana, A. P.**, Smith, R. J. & Davies, Z. G. 2015. Comparing methods for prioritizing protected areas for investment: A case study using Madagascar's dry forest reptiles. *PLoS ONE* 10(7): e0132803. doi:10.1371/journal.pone.0132803.
- Gomard, Y., Dietrich, M., Wieskeke, N., *Ramasindrazana, B.*, Lagadec, E., **Goodman, S. M.**, Dellagi, K. & Tortosa, P. In press. Malagasy bats shelter a considerable diversity of pathogenic *Leptospira* displaying a strong host-specificity pattern. *FEMS Microbiology Ecology*.
- Goodman, S. M.** 2015. Remains of an aye-aye (*Daubentonia madagascariensis*) at the edge of the Parc National d'Ankarana, Région Diana. *Malagasy Nature*, 9: 107–108.
- Goodman, S. M.**, *Rakotoarivelo, A.*, Schoeman, M. C. & Willows-Munro, S. In press. How many species of *Hipposideros* have occurred on Madagascar since the Late Pleistocene? *Zoological Journal of the Linnean Society*.
- Goodman, S. M.**, *Rakotondramanana, C. F.*, *Ramasindrazana, B.*, Kearney, T., Monadjem, A., Schoeman, M. C., Taylor, P. J., Naughton, K. & Appleton, B. 2015. An integrative approach to characterize Malagasy bats of the subfamily Vespertilioninae Gray, 1821, with the description of a new species of *Hypsugo*. *Zoological Journal of the Linnean Society*, 173: 988–1018.
- Goodman, S. M.**, *Ramasindrazana, B.*, Naughton, K. M. & Appleton, B. 2015. Description of a new species of the *Miniopterus aelleni* group (Chiroptera: Miniopteridae) from upland areas of central and northern Madagascar. *Zootaxa*, 3936: 538–558.
- Goodman, S. M.**, *Randrenjarison Andriniaina, H. R.*, *Soarimalala, V.* & Beaucournu, J.-C. 2015. The fleas of endemic and introduced small mammals in Central Highland forests of Madagascar: Faunistics, species diversity, and absence of host specificity. *Journal of Medical Entomology*, 52(5):1135–1143. DOI: 10.1093/jme/tjv113.
- Goodman, S. M.**, Razakaratriho, S. V. J. & René de Roland, L.-A. 2015. An analysis of Bat Hawk *Macheiramphus alcinus* diet in the Melaky Region of lowland western Madagascar. *Ostrich*. DOI: 10.2989/00306525.2015.1104395
- Grbic, D., Saenko, S. V., *Randriamoria, T. M.*, Debry, A., **Raselimanana, A. P.** & Milinkovitch, M. C. 2015. Phylogeography and support vector machine classification of colour variation in panther chameleons. *Molecular Ecology*, 24: 3455–3466. doi: 10.1111/mec.13241.
- Hassanin, A., Khoudier, S., Gembu, G.-C., **Goodman, S. M.**, Kado, B., Nési, N., Pourrut, X., Nakouné, E. & Bonillo, C. 2015. The comparative phylogeography of fruit bats of the tribe Scotonycterini (Chiroptera, Pteropodidae) reveals cryptic

RESEARCH ARTICLE

Primates as Predictors of Mammal Community Diversity in the Forest Ecosystems of Madagascar

Kathleen M. Muldoon^{1*}, Steven M. Goodman^{2,3}

1 Department of Anatomy, Arizona College of Osteopathic Medicine, Midwestern University, Glendale, Arizona, United States of America, **2** Field Museum of Natural History, 1400 South Lake Shore Drive, Chicago, Illinois, United States of America, **3** Association Vahatra, BP 3972, Antananarivo, Madagascar

* kmuldo@midwestern.edu

Abstract

The geographic distribution of species is the typical metric for identifying priority areas for conservation. Since most biodiversity remains poorly studied, a subset of charismatic species, such as primates, often stand as surrogates for total biodiversity. A central question is therefore, how effectively do primates predict the pooled species richness of other mammalian taxa? We used lemurs as indicator species to predict total non-primate mammal community richness in the forest ecosystems of Madagascar. We combine environmental and species occurrence data to ascertain the extent to which primate diversity can predict (1) non-primate mammal α -diversity (species richness), (2) non-primate complementarity, and (3) non-primate β -diversity (species turnover). Our results indicate that primates are effective predictors of non-primate mammal community diversity in the forest ecosystems of Madagascar after controlling for habitat. When individual orders of mammals are considered, lemurs effectively predict the species richness of carnivores and rodents (but not afrosericids), complementarity of rodents (but not carnivores or afrosericids), and all individual components of β -diversity. We conclude that lemurs effectively predict total non-primate community richness. However, surrogate species alone cannot achieve complete representation of biodiversity.

Introduction

Understanding the relationship between patterns of community structure and the measurement and monitoring of biodiversity is a central goal of conservation biogeography [1]. Information on species diversity and distribution is widely used for setting conservation priorities [2–4], prioritizing new reserve sites [5, 6], and conservation management [7]. However, most biodiversity remains undescribed (a knowledge gap known as the “Linnaean shortfall”), and the geographic distribution of most species is poorly understood (the “Wallacean shortfall”) [8]. Thus, the use of incomplete information to indicate how and where conservation efforts should be concentrated is a major obstacle to protecting tropical habitats [9]. One widely



CrossMark

OPEN ACCESS

Citation: Muldoon KM, Goodman SM (2015) Primates as Predictors of Mammal Community Diversity in the Forest Ecosystems of Madagascar. *PLoS ONE* 10(9): e0136787. doi:10.1371/journal.pone.0136787

Editor: Sharon Gursky-Doyen, Texas A&M University, UNITED STATES

Received: May 19, 2015

Accepted: August 6, 2015

Published: September 3, 2015

Copyright: © 2015 Muldoon, Goodman. This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

Funding: This work was supported by Conservation International, John D. and Catherine T. MacArthur Foundation, National Science Foundation (DEB-05-16313), Volkswagen Foundation, and World Wide Fund for Nature.

Competing Interests: The authors have declared that no competing interests exist.

- species diversity related to African Pleistocene forest refugia. *Comptes Rendus Biologies*, 338: 197-211.
- Jacquet, F., Denys, C., Verheyen, E., Bryja, J., Hutterer, R., Kerbis Peterhans, J. C., Stanley, W. T., **Goodman, S. M.**, Couloux, A., Colyn, M. & Nicolas, V. 2015. Phylogeography and evolutionary history of the *Crocidura olivieri* complex (Mammalia, Soricomorpha): From a forest origin to broad ecological expansion across Africa. *BMC Evolutionary Biology*, 15: 71.
- Muldoon, K. & **Goodman, S. M.** 2015. Primates as predictors of mammal community diversity in the forest ecosystems of Madagascar. *PlosOne* 10(9): e0136787. doi:10.1371/journal.pone.0136787.
- Pabijan, M., Brown, J. L., Chan, L. M., *Rakotondravony, H.*, **Raselimanana, A. P.**, Yoder, A. D., Glaw, F. & Vences, M. 2015. Phylogeography of the arid-adapted Malagasy bullfrog, *Laliostoma labrosum*, influenced by past connectivity and habitat stability. *Molecular Phylogenetics and Evolution*, 92: 11-24.
- Rabearivony, J., Brady, L. D., Jenkins, R. K. B., Griffiths, R. A., **Raselimanana, A. P.**, Bisoa, M. & Raminosoa, N. R. 2015. Influence of riparian habitats on the distribution of rainforest chameleons in Parc National de Ranomafana, Madagascar. *African Journal of Herpetology*, 64 (2): 148-159.
- Rabearivony, J., Rasamoelina, M., Raveloson, J., Rakotomanana, H., **Raselimanana, A. P.**, Raminosoa, N. R. & Zaonarivelo, J. R. 2015. Roles of a forest corridor between Marojejy, Anjanaharibe-Sud and Tsaratanana protected areas, northern Madagascar, in maintaining endemic and threatened Malagasy taxa. *Madagascar Conservation & Development*, 10 (2): 85-92.
- Rakotoarivelo, A.*, Willows-Munro, S., Schoeman, M. C., Lamb, J. & **Goodman, S. M.** 2015. Cryptic diversity in *Hipposideros commersoni* sensu stricto (Chiroptera: Hipposideridae) in the western portion of Madagascar. *BMC Evolutionary Biology*, 15: 235.
- Rakotondramanana, C. F.*, Rajemison, B. & **Goodman, S. M.** 2015. Comportement alimentaire des communautés de chauves-souris animalivores de Kirindy (CNFEREF) et d'Antsahabe, Madagascar : Répartition, partage et disponibilité de niche alimentaire. *Malagasy Nature*, 9: 68-87.
- Ramasindrazana, B.*, *Rakotondramanana, C. F.*, Schoeman, M. C. & **Goodman, S. M.** 2015. Evidence of echolocation call divergence in *Hipposideros commersoni* sensu stricto (E. Geoffroy, 1803) from Madagascar and correlation with body size. *Acta Chiropterologica*, 17: 85-94.
- Randriamiharisoa, L. O., Rakotondravony, D., **Raherilalao, M. J.**, Ranirison, A., Wilmé, L. & Ganzhorn, J. U. 2015. Effects of transhumance route on the richness and composition of bird communities in Tsimanampesotse National Park. *Madagascar Conservation & Development*, 10 (S3): 110-115. doi:10.4314/mcd.v10i3s.2.
- Randriamoria, T. M.*, **Soarimalala, V.** & **Goodman, S. M.** 2015. Terrestrial "forest-dwelling" endemic small mammals captured outside of natural habitats in the Moramanga District, central eastern Madagascar. *Malagasy Nature*, 9: 97-106.
- Rasoanoro, M.*, *Ramasindrazana, B.*, Rajemison, B., Razafimahatratra, E. & **Goodman, S. M.** 2015. Préférence alimentaire des chauves-souris de Kianjavato, Région de Vatovavy-Fitovinany, Madagascar. *Malagasy Nature*, 9: 58-67.
- Ratsoavina, F. M., Ranjanaharisoa, F. A., Glaw, F., **Raselimanana, A.P.**, Miralles, A. & Vences, M. 2015. A new leaf-tailed gecko of the *Uroplatus ebenau* group (*Squamata: Gekkonidae*) from Madagascar's central eastern rainforest. *Zootaxa*, 4006 (1): 143-160.
- Razanajatovo, N. H., Nomenjanahary, L. A., Wilkinson, D. A., Razafimanahaka, J. H., **Goodman, S. M.**, Jenkins, R. K. B., Jones, J. P. G. & Heraud, J.-M. 2015. Detection of new genetic variants of betacoronaviruses in endemic frugivorous bats of Madagascar. *Virology Journal*, 12: 42.
- Richards, L., Rambau, R. V., **Goodman, S. M.**, Taylor, P. J., Schoeman, M. C., Yang, F. & Lamb, J. M. In press. Karyotypic evolution in Malagasy flying foxes (Pteropodidae, Chiroptera) and their hipposiderid relatives as determined by comparative chromosome painting. *Cytogenetics and Genome Research*.





Gephyromantis cornutus



Mantella aurantiaca



Parastenophis betsileanus

Photos: © Vahatra

Association Vahatra

B.P. 3972, Antananarivo 101, Madagascar
associatvahatra@moov.mg - www.vahatra.mg - + 261 20 22 277 55