

BREEDING

mouse lemurs leap towards sustainability!

By Andrea Katz



mouse lemurs (3 photos)

This past summer, the DLC reached a milestone in the captive breeding of gray mouse lemurs (*Microcebus murinus*) - we now have 50 mouse lemurs! With 20 healthy infants born to 10 mothers this past summer, we can finally be confident that our breeding program for this tiny, nocturnal lemur is sustainable. This program is a critical one for the DLC's research and conservation goals, and is also a major achievement for the species survival plan for mouse lemurs in all of North America.

You might recall that in late 2009, we imported 9 young gray mouse lemurs from a breeding center in France. At that time, the entire U.S. population of this species was down to less than 10 individuals, without a single birth since 2004 - truly a dying captive population. In three short years, the DLC has bred a total of 38 gray mouse lemurs, with 100% infant survival. Our success is due to dedicated animal care and management, and to our technicians' close monitoring of estrous cycles, breeding behavior, pregnancy management and infant development.

We are so grateful to those special donors who have helped support our mouse and dwarf lemur facilities. (Four fat-tailed dwarf lemurs were born this summer too!) Really, we couldn't have done it without you.



EDUCATION

It was a record breaking 2011-12 for the Duke Lemur Center (DLC). The DLC welcomed 14,753 visitors, over 2,000 more than last year! Between the expansion of our tour program and the increase in our volunteer base, we were able to educate more people than ever about lemurs, their plight, and their native island of Madagascar. We are very excited with the direction that our Education Program is heading. This year we

plan to expand again. Tours will now be offered seven days a week, making the Center more convenient and accessible for visitors to see the lemurs on their days off from work and school. The DLC is also scheduled to roll out new pre-school programs this fall, home school programs in the spring, and even offer a new summer camp this upcoming year! We also

plan to partner more with the local community and expand our outreach efforts. It is such an exciting time to be a part of this wonderful team at this world-class facility. If you would like to keep updated about these upcoming programs please subscribe to our e-letter at lemur.duke.edu.

Niki Barnett
Manager of Education Programs

research · conservation · education Annual Report 2012



in this issue

annual report

Sleepless in Tsinjoarivo

thanks for the support

lemur.duke.edu

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the future does not look bright for lemurs

So what on earth do we do with this information? Certainly, hand-wringing and defeatism will do no good, at all. Rather, at the Duke Lemur Center, we have taken this news as yet another call to action. We are redoubling our efforts on the ground in Madagascar, just as we are hunkering down on the home front. In Madagascar, our SAVA initiative is gaining legs, with students and researchers starting to beat a path from Durham to Sambava (the closest Malagasy town to our project area). And at the DLC, we are continuing our efforts to breed and nurture those lemurs in our colony that are most critically endangered, such as the exquisite blue-eyed black lemurs and the ever-charming black & white and red ruffed lemurs (to name only a few). We are working with our Malagasy partners in Madagascar, and with our captive conservation colleagues worldwide. The DLC, together with our many partners and supporters, can and WILL make a difference. We are living for that day when the headlines read "Malagasy lemurs are holding their own; the future looks bright". This headline may be less newsworthy than the one above, but we'll take it, any day.

Anne D. Yoder, Ph.D.
Director

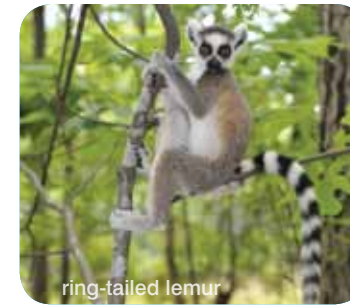
I can't say that I was shocked by the recent news that lemurs are the most threatened mammals on earth. Saddened, sobered? Yes, profoundly. Shocked? Not really.

Any of us who have traveled and worked in Madagascar have seen firsthand the environmental destruction that has resulted from decades of slash and burn agriculture. We have seen the seemingly endless stretches of blackened stubble that often serve as the only remaining sign of what was once a lush forest. We know those smoldering ashes are all that remain of what was once lemur habitat. After seeing these things, one would be a fool to believe that all is well with lemurs in their native land of Madagascar. But, optimists (like me) and tireless field biologists (like so many of my colleagues) press on into the bush until finally, finally we reach the reassuring refuge of the retreating and otherworldly native forests. Once there, one can - at least for a while - believe that all is well, and that lemurs will be with us forever.

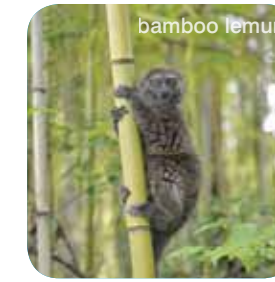
It was therefore an unpleasant wake-up call, a dash of cold water in the face, when the world learned what many of us already knew, much as we wanted to ignore it: "Lemurs are the most endangered mammals on earth". On earth! This was the news that emerged from the meeting of the Primate Specialist Group of the International Union for the Conservation of Nature (IUCN) when they met in Madagascar this past July. After considering their dwindling numbers, and the malevolent coalition of destructive forces that are now acting to threaten the continued survival of lemurs in the wild, the IUCN group concluded that 91% of living lemur species should be considered as "critically endangered", a code red by IUCN standards and the highest possible level of threat. Sobering news, to put it mildly.

year of the vet

By David Haring, DLC Registrar, Photographer



ring-tailed lemur



bamboo lemur



aye-aye

It's been a big year for the Lemur Center's Veterinary Department! In the realm of physical plant improvements, the main Vet office area received a long overdue renovation. This saw the transformation of what was basically one large room, with a small partition separating head Vet Cathy Williams from the masses, into a lovely three room office suite, featuring spacious, mostly private, offices for both Dr Williams and Dr Schopler. In addition the renovation created a brand new Veterinary conference room with ample seating space for weekly case reviews, and other vet related meetings. A large high definition monitor covers an entire wall of the conference room, so that x-rays, medical charts, photographs and other audiovisual aids can now be viewed in grisly detail at Vet conferences.

And speaking of x-rays, a much wished for, but heretofore always looming enticingly on the distant horizon, digital x-ray machine might soon become a reality for the Vet Dept, which is currently mired in the obsolete film based x-ray technology of last century. Please stay tuned!

In the human resources department, the overworked Veterinary Staff welcomed the long overdue hiring of a new Veterinary Technician, Vivian Imamura. This doubled the size of the Vet Tech staff and providing some much needed relief to overworked Vet Tech Julie Taylor, who had been holding down the Veterinary technician fort all by her lonesome for many years!

Both Dr Schopler and Dr Williams did a significant amount of international travel this year. In fact, as of this writing, Dr Williams is in the eastern rainforest of Madagascar for three weeks, serving with Dr. Randy Junge, Veterinarian at the Columbus Zoo, as a consultant working on strategies on how to best preserve lemur populations, by way of maximizing protection of habitat, in an area of the country slated for mining activity.

Last May, Dr. Williams participated in an International conference on the diseases of zoo and wild animals held in Bussolengo Italy. Williams and a veterinarian from the Paris zoo led a one day workshop in lemur medicine featuring lectures in the morning, with hands on demonstrations on how to do lemur physical exams, draw blood and perform other basic lemur medical procedures, in the afternoon. Hands on demonstrations were made possible courtesy of a group of Italian ring-tailed lemur volunteers from the local zoo (Parco Natura viva). Williams reports that the conference was a great success, and led to many valuable contacts and networking opportunities with others in the European lemur veterinary community.

Not to be outdone in the area of international travel, Dr Schopler traveled to Madagascar in July where he worked on the ongoing study on dwarf lemur torpor led by Dr Peter Klopfer (see Dr Schopler's and Dr Blanco's articles in this issue).

Back at the Lemur Center, both Vets slaved away at the usual wide and never ending assortment of lemur health issues, ranging from sore toes in ring-tails and pygmy slows, to chronic jaw infections in our aging aye-aye, to raging diarrhea in a couple of sifaka groups to chronic hair loss in young aye-aye. Along the way, a few jaw dropping advances in lemur medicine were made, including the first ever successful treatment of severe diabetes in a lemur (when 25 year old Chloris, a ring-tailed lemur, was first diagnosed her blood sugar level was 1100, a level which would be fatal for dogs or cats). Chloris has now been trained to present her belly to receive her daily insulin injections, eliminating the need to capture her, and her diabetes seems to be completely under control. Now there is indeed new hope for the legions of diabetic lemurs worldwide! Hooray for the Vets!

RESEARCH

sleepless in tsinjoarivo, madagascar 2012

By Bobby Schopler



PHOTO © CASEY WING

Tom Hanks wasn't there and there were no movie cameras, but a crew of dedicated researchers (including Marina Blanco, Kathrin Dausmann, Sheena Faherty, Peter Klopfer, Andrew Krystal, and Bobby Schopler), with essential support from student assistants and Malagasy guides, spent a month this July in a campsite a mere six hour hike outside of Tsinjoarivo.

The researchers were not getting much sleep, and it could be argued that the lemurs we were studying were not either, even though they were hibernating. Part of the purpose of the study was to see exactly what these exceptional lemurs are doing during their hibernation period. It turns out that even though their metabolism drops to near zero, they actually aren't sleeping much.

In fact, they have almost no REM sleep for vast expanses of time. But occasionally they spontaneously rouse themselves from hibernation and use the increased metabolism to, of all things, sleep

(including REM sleep)! For the rest of the time they achieve something akin to suspended animation.

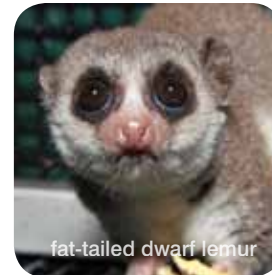
There is a difference between torpor and hibernation. Torpor is a short-term reduction of body temperature on cool days. Hibernation is an extended form of torpor. Whip-poor-wills, hummingbirds and bears are all animals which torpor. While some ground squirrels, reptiles, fish, and amphibians all have the ability to hibernate.

What about in the primate world - does hibernation exist? Well, yes, but only in one unique primate, and of course it is a prosimian: the dwarf lemur. Is this a conserved trait from a common ancestor or a trait reached by dwarf lemurs, ground squirrels and reptiles through many convergent paths? If the former, do we have the ability to "awaken" our ability to hibernate? If so, the implications are great for medicine, space travel and beyond.

We are attempting to answer these and other questions. We won't rest until we get some answers.

research on the most endangered dwarf lemur

By Marina B. Blanco



fat-tailed dwarf lemur



PHOTO © SHEENA FAHERTY



Sibree's dwarf lemur

PHOTO © SHEENA FAHERTY

Fat-tailed dwarf lemurs (*Cheirogaleus medius*), which can be seen at the DLC, are one of the four recognized living species within this genus of small-bodied hibernating lemurs. Another species, *C. sibreei*, has been recently rediscovered at Tsinjoarivo, one of the few remaining high-altitude forests of eastern Madagascar. At this location, Sibree's dwarf lemurs are found in fragmented areas subjected to habitat disturbance, including heavy deforestation. Last July, while I was at Tsinjoarivo conducting field work with a research team from the DLC and Duke University, I traveled to the capital Antananarivo, to participate in the IUCN Lemur Red-Listing and Conservation Planning Workshop. I wanted to share conservation concerns for Sibree's dwarf lemurs and highlight their restricted geographic distribution and continuous evidence of habitat loss in the study area. In the end, it was recommended that the conservation status of Sibree's dwarf lemurs be upgraded from "Data Deficient" to "Critically Endangered", the only dwarf lemur species that, sadly, qualified for this category. My collaborators and I will continue to monitor Sibree's dwarf lemurs at Tsinjoarivo to learn more about their ecology and behavior with the hope that we will raise conservation awareness and better assess the long term survival prospects of this species.

VOLUNTEERING

It is truly a privilege to be part of the Duke Lemur Center! I am thrilled to educate others on how special these lovely prosimians are, how they fit into our ancestry and into our current world. These wonderful prosimian ambassadors have woven themselves so deeply and completely into my heart. I have

always been passionately concerned about the plight of wildlife around the world and my goal is to instill this passion in my daughter. I want her to understand that no matter how small the gesture, it all counts towards a larger effort and goal of environmentalism. Hopefully, by

volunteering as a tour guide, I can also inspire and educate other children to respect, love and understand lemurs, and other wildlife, so they too can work to preserve our diverse and beautiful earth.



janice kalin

VOLUNTEERING

The DLC was a great match for our desire to do volunteer work in the conservation area. We found that there was a critical need to create an analytic view of historical lemur data that had been captured over the last 45 years. We began working with Drs Zehr and Yoder in late 2011 and today have a working analytic database containing all the

thousands of lemurs that have been here over the years. This is already yielding many insights, with many more to come. We look forward to helping DLC continue efforts toward lemur conservation as we enhance the DLC analytic database.



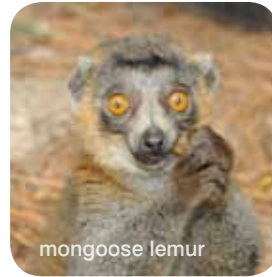
richard roach and freda cameron

most popular natural habitat enclosures

By David Haring, DLC Registrar, Photographer



mongoose lemurs



mongoose lemur



ring-tailed lemur

When VIP's arrive at the Lemur Center, heady with the anticipation of seeing lemurs free ranging in a North Carolina forest, they generally are quickly ushered into Natural Habitat Enclosure 7 (NHE 7) or NHE 9. Why, you might ask, when the Lemur Center has a wealth of eight forested NHEs to choose from, are these two picked? If you thought it was because they are close to Lemur Landing or free of ticks and chiggers you would be wrong (especially about the ticks and chiggers)! If you thought that it was due to NHE7/9's dazzling variety of lemur species, and the fact that both enclosures are chock full of breeding groups, you would be correct! Each enclosure contains groups of three different species of lemur sharing the forest in relative harmony. And each of these six groups (with the exception of the red-bellied lemurs in NHE7) is a breeding group, which means that in most years the groups will contain an adorable infant or juvenile, at the same time as they are displaying the full spectrum of lemur behaviors seen in any breeding group.

NHE 9's groups were introduced to the forest and each other in the spring of 2010, soon after the Aty Ala building (which provides foul weather shelter for NHEs 6, 7, 8 and 9) opened. From day one these lemurs have been exemplary free rangers, entertaining countless tours and giving dozens of students their first taste of lemur behavior. This NHE consists of a large ring-tailed lemur group, led by Sprite (now ten lemurs strong after the addition of three infants this spring), a sifaka group (Drusilla's) and the only breeding group of blue eyed lemurs (Foster's) in North America. These groups were designated to free range at the advice of Curator Andrea Katz when she first drew up a housing chart for the new buildings, and the lemurs could not have been more cooperative, with the three groups melding together seamlessly pretty much from the get go.

In most cases, however, getting groups of three different species of lemur to get along well enough to share the same space (even if it is a multi-acre forest) is no easy task! When a group of animals comes into the building from free ranging in the forest, which they are free to do at any time, opportunities for conflict with other species are abundant. They all share the same main entranceway to the building from the forest, the same hallways, and often the same cages. Although each group is assigned their own cages, it is common to see one species exploring and scent marking the cage of another, although somewhat amazingly, the groups generally sleep in their designated cages.

Sometimes groups designated to share the same forest, just aren't able or willing to get along. Technicians have been trying to introduce a ring-tailed lemur group (seven animals led by Leisl) to a black and white ruffed lemur group, six animals led by Kizzy (see the fall, 2011 newsletter for more information about Kizzy and her mate Amor's group) into NHE 6 for two years. Each species has mastered the art of going from the building out into the forest and back again (not as easy as it sounds if you are a lemur who has spent his entire life in a cage!). In the process, animals have learned where the feeding sites and catch cages are (each free range enclosure has cages, located centrally in the forest, which serve as alternative places, besides the building, where the animals can be locked up in an emergency). Each group is cooperative in allowing technicians to lock them up twice a week (either in the building or their catch cages), a requirement which if not met, would result in loss of free ranging privileges.

But, surprisingly, the groups simply cannot coexist peacefully when they are released together into the

my summer in madagascar

By Jennifer Moore

To collect data for my Duke Nicholas School Master's project, I spent my summer in the rainforest of Marojejy National Park in northeast Madagascar. My goal was to compare two regions of the park in terms of the presence, density, and diversity of lemurs as well as the general forest structure and amount of habitat disturbance. I spent the first five weeks in the central eastern section of the park, which contains the main entrance to the park and the three tourist camps. This area has around 500 visitors a year, so I expected the amount of disturbance to be low and the number of lemur sightings to be relatively high. Using two line transects, one at a low elevation and one at a high elevation, I, along with my survey team, spotted white-fronted brown lemurs, red-bellied lemurs, northern bamboo lemurs, silky sifaka, gray mouse lemurs, greater dwarf lemurs, and Seal's sportive lemurs.

For the second survey site, I spent five weeks in a remote area of the park in the northwest. This site, reached by walking 20 km from the nearest point accessible to vehicles, is rarely, if ever, visited by tourists. Because of its remoteness from the nearest large towns, I expected to find more habitat disturbance and, in effect, less lemurs. This unfortunately proved to be true as we found lemur and carnivore traps, logs, recently cut tree stumps (including rosewood stumps), and even temporary shelters. The numbers of lemur encounters were fewer, but the diversity was actually higher since in this area we also found eastern woolly lemurs. In total, we found five new groups of silky sifakas, one of the rarest lemurs in Madagascar.

In addition to the field work component completed over the summer, for my Master's I will also be analyzing high-resolution imagery of the same regions within Marojejy. I will classify the imagery in terms of land use and land cover.



Coquerels sifaka



PHOTO © ALLAN CHRISMAN

our summer in madagascar

By Allan Chrisman and Polly Van de velde

Our trip started in Antananarivo (Tana) the capital, and then continued up north to Maroantsetra with a day trip to the island preserve of Nosy Mangabe. In Maroantsetra, we went on a night walk where we saw a couple of wild aye-aye - a very unusual and exciting occurrence! We also saw a tomato frog and a hedgehog tenrec (a small mammal with 32 mammary glands!). We returned to Tana for a night and then went to Perinet Reserve where we saw indri and diademed sifaka.

After seeing the sifaka we were of course reminded of our old pal Romeo.

It was nice to see many Malagasy schoolchildren at the reserve, learning about the wildlife. We returned to Tana and then flew south to Fort Dauphin, followed by a four-hour van ride to Berenty Private Reserve where we saw lots of ring-tailed lemurs and Verreaux's sifaka. We went on a night walk and saw white-footed sportive

lemurs and some mouse lemurs. Altogether we saw 16 species of lemurs, a couple species of tortoises, and countless numbers of chameleons! Back in Tana before leaving, we had the bonus surprise of running into DLC Conservation Coordinator Charlie Welch with whom we shared a delightful lunch.

We thought the country was beautiful. The people are very poor but are friendly and welcoming. We would love to return some day!

FIELD WORK

division of fossil primates

By Greg Gunnell

DJP

Director Gregg Gunnell spent most of June and July conducting field work in Sumatra and Australia. Plans to travel to Wyoming were put on hold until next summer because of the upcoming meeting of the Society of Vertebrate Paleontology to be held in Raleigh in October. The DFP and the DLC are both involved in hosting tours for paleontologists during these meetings and many colleagues will come to the DFP both before and after the meetings to study fossils in our collections.

The Sumatran (Indonesia) field work was sponsored by the Waitt Foundation in conjunction with the National Geographic Society and was a resounding success! After three long, hard field seasons by Gregg and colleagues from the University of Iowa and the Institute of Technology in Bandung we finally succeeded in finding fossil mammals from Oligocene (27 million years old) rocks in Sumatra! The entire mammal sample only consists of two teeth and a lower arm bone but it's a start!

Gregg returned from Sumatra for a week in Durham and then headed back across the Pacific to Australia where he spent two weeks in the outback in northern Queensland looking for fossils at the Riversleigh World Heritage site. The work was difficult but rewarding. A typical day consisted of walking across fields strewn with loose limestone cobbles covered by spinafex grass which made the footing treacherous: a fall would almost certainly be onto very hard limestone weathered into razor sharp ridges and points. Fossil hunters work there by scanning the limestone boulders for any signs of protruding bones, then call in the blasting team to blow the rock out of the ground, then bash it into smaller pieces with sledge hammers. The small pieces are transported back to Sydney to be processed in acetic acid. It is remarkable that very delicate skulls and jaws of bats and other small mammals are found in these rocks given the nature of the collecting methods.



Coquerel's sifaka and mongoose lemurs

forest. Based on historical mixed species records, one would think that these two species would cohabitate a forest (or even a large cage) peacefully. Yet over the course of this summer there were numerous scuffles and bite wounds (minor, but still requiring treatment by our vets) to the extent that the most aggressive animal from each group (a juvenile male ruffed lemur and a juvenile female ring-tailed lemur) were removed in hopes that the absence of the hot-blooded youngsters would calm things down. But the groups still fought, and now can only be released on alternate days.

Our newest mix with three species of free ranging groups, inhabit NHE7 and consist of a family group of Coquerel's sifaka (five animals led by Rupillia), a family group of mongoose lemurs (four animals led by Maddie) and a non breeding pair of red-bellied lemurs. Technician Steve Coombs has been working with the mongoose lemurs (a notoriously skittish and shy species) since summer, 2011, using training methods to slowly lure the animals out into the forest and then, gradually over time, help them to gain the confidence to stay out in the forest without panicking and running back into the building at the first falling leaf or bird flying overhead. Last summer was slow going, but when Coombs brought the mongoose lemurs out for the first time this spring, something had changed. It was almost as if the lemurs had spent their winter studying up on free ranging techniques, as they eagerly took to the forest at the first opportunity and never looked back (even when a bird flew overhead!). When they were eventually introduced to the other species, they interacted quite peacefully with the sifaka and red-bellied lemurs. Although not yet allowed to free range 24 hours a day, due to the presence of the young and still quite small, Ernesto, the mongoose lemurs are nonetheless free ranging nearly eight hours a day.

It is really amazing to be in NHE 7 (or 9 for that matter) at feeding time, and see all three species jumping around in close proximity as they follow the food-bearing technician. Somehow (don't ask me how) techs are able to train each species over a period of time, to recognize where they are going to be fed, so when one species is fed first at their designated site, the other species don't try to join in and steal the food, but instead follow the tech to their feeding site. Amazing what they can accomplish, these technicians!

As a side note, in NHE 7, Coombs, after a staggering number of preliminary introductions, has successfully introduced a new male, Theo, to Rupillia the sifaka group's matriarch (and to her daughter Irene as well). Late summer is sifaka breeding season, and reports are in that Theo was seen breeding both Rupi and Irene! If successful, this will be the first ever occurrence at the DLC of two sifaka females in the same group getting pregnant at the same time. And if you have ever met gentle Theo, you would realize he is about the last male you would expect to accomplish such a feat. Go figure, and go Theo! Stay tuned for updates on this very significant happening, and in the meantime just imagine a sifaka group containing two infants!

No matter how you slice it or what your method of scent marking, NHE 7 and NHE 9 are happening places! All free ranging lemur lovers should remember, however, that when scheduling one of our "Walking with the Lemurs" tours that, due to animal management issues or research use, NHE 7 and NHE 9 may not be available for tours. Rest assured, all of our NHEs are special places!

VOLUNTEERING

A while ago, a tour of the Duke Lemur Center coincided with my early retirement. I was instantly enchanted by these beautiful creatures and immediately understood how important this unique colony is to the genetic vigor and long-term survival of many of the species. I inquired about a volunteer position and soon got one working with the center's veterinarians. Six years later, I am still amazed at what a daunting task it is

to keep a colony of 200+ exotic animals healthy and their medical records up to date. I love being close to the animals and learning about them from the world's experts on lemur medicine. Working with the Vets, I have observed routine physical exams, emergency life saving surgeries, pregnancy palpations, newborn weigh-ins and, all too often, heroic efforts to prolong

the life of a greatly loved, sometimes one of a kind species. When those efforts fail, I have observed the grief and sadness that follows. The entire lemur center staff is passionate and dedicated to their furry four-legged charges and I know I am too. I will continue to volunteer at the Duke Lemur Center for as long as they'll have me!



vicki willard

STATEMENT OF OPERATIONS JULY 2011 - JUNE 2012

REVENUE

Annual University Allocation	\$1,442,756
Other University Support	141,675
Endowment Income	148,112
*Annual Giving (donations)	287,703
Tours, Education & Merchandising	242,135
Research & Research Cabin Fees	17,690
Grants	
Government	275,972
Foundations	8,878
Other	24,650
Reserve from prior year	1,210,593

Total Income 3,800,164

EXPENSES

Salary & Fringes	\$1,700,563
Facilities (building & utilities)	438,462
General Operations	134,399
Animal Care & Operations	139,556
Development / Public Relations	87,930
Education & Merchandising	87,016
Conservation	19,323
Undergraduate Research Awards	2,100
Equipment/Acquisitions	80,207
Capital & Renovation Projects	19,310
Reserve for future programming	1,091,300

Total Expense 3,800,164

*includes foundations, alumni, non-alumni, industry, & other donations non grant

2012 intern project symposium

By Meg Dye



PHOTO © MEG DYE

The student intern program at the DLC took a giant step forward this summer! 15 internships were created to engage students in all areas of the DLC (see "An Influx of Interns" in the summer, 2012 newsletter). While each of the internships had a different focus, each student had the same criteria for completion of their internship: create, complete and present a project at a research symposium, advancing our knowledge or management of the DLC colony. The interns had their choice of an oral presentation or a poster presentation. The symposium was held at the DLC on August 4 and was attended by DLC staff, volunteers and researchers with standing room only! All 15 of our interns exceeded our expectations! Congratulations to the following interns for their excellent presentations and making our inaugural Intern Project Symposium a great success!

Marissa Acciani and Hannah Strong (Research Interns):
The Dominance Hierarchy Examined in Lemur Catta

Isabel Bukovnik (Husbandry Intern):
Behavioral Study of Adolescent Aye-Aye

Katie Cassidy and Adam Dugger (Browse Interns):
The Effect of Dietary Browse on Regulating Serum Glucose Levels in Black Lemurs

Elisabeth Cox (Husbandry Intern):
Comparison of Sifaka Behavior with Enrichment

Sarah Dameron (Husbandry Intern):
Aye-Aye Ethogram

Brinkley Dickson (Enrichment Intern):
How Recording Enrichment Can Be Effective and Easy

Caitlynn Filla (Research Intern):
The Effect of Group Size on Social Dynamics in Lemur Catta

Alli Kenlan and Stephen Bernard (Education Interns):
Creation of a Pre-K Program for the DLC

Jason Maher (Research Intern):
They Are What They Eat:
Dietary Analysis and Hebarium Collection of Free Ranging Lemurs

Kelly Mullendore (Research Intern):
Bonding as a Function of Grooming Response in Lemur Catta

Milaan Waters and Joe Sullivan (Research Interns):
Interspecific Association of Free-Ranging Lemur Catta

dlc research - by the numbers

By Erin Ehmke

Our commitment to non-invasive research... student opportunities abound!

Fiscal Year 2011-2012
 Total number of research projects: 94
 Undergraduate Principle Investigators (PIs): 18
 Graduate student PIs: 20
 Undergraduate Research Assistants: 47
 Graduate student Research Assistants: 10
 High school student independent projects: 2
 Animals used in research projects (of course, only non-invasively): 263



red ruffed lemurs



ring-tailed lemurs



crowned lemurs

Research is not simply the fun of data collection and analysis – there is also an approval process, the need for funding, writing, writing, and did I mention writing?! Since we want to give our student researchers a taste of what the future holds if they pursue an academic career, they are subjected to the rigors of submitting project proposals for approval and obtaining funding for their research. There are two sources of funding that are specifically geared toward undergraduates: the Molly Glander Fund (administered by the DLC) and the Duke Office of Undergraduate Research Support. Financial support from these two sources allows our students to learn to consider and describe the significance of their research, design and adhere to a project budget, and gain valuable experience in grant writing. On behalf of our undergraduate researchers, the DLC would like to acknowledge the important roll these funding agencies play in undergraduate education and offer our sincerest gratitude.

A New Addition to our Research Program!

This year we expanded our opportunities for student research through the addition of a DLC Research Intern program. This program provides undergraduates who do not have prior research experience and/or do not have a research faculty mentor the opportunity to learn the research process and apply it in a primate behavioral ecology field setting. Launched in the summer, our inaugural Research Intern team included seven highly-motivated undergraduates who yielded a ton of data for the DLC and completed exceptional independent projects. This program will continue year-round, and in fact, we now have nine Research Interns!

sava conservation initiative - 8 months in

By Charlie Welch

It scarcely seems possible that the DLC's SAVA Conservation Initiative is not even a year old yet! Here is a brief bullet point recap of project activities.

- Project Director Erik Patel's assistant, Lanto Andrianandrasana was hired, and has finished his first year with the project, and proved his worth many times over.
- September will see the third phase of teacher trainings – the most important part, training of school directors, takes place this month.
- A reforestation collaboration agreement with Belgian NGO 'Graine de Vie' has been signed and we are now supporting 3 village nursery operations in the Marojejy NP area.
- Construction has begun on a foot bridge, and school construction cement stockpiled for the school, at the village of Antserabahoaka, near Marojejy. Project funded by Seacology.
- The project has supported 3 comprehensive guided school class visits into Marojejy, and will support more this year.
- English classes for guides and other tourist personnel at Marojejy were sponsored by SAVA Conservation.
- An agreement of collaboration has been signed with Madagascar National Parks (MNP) for our conservation efforts in the SAVA region. Our first collaborative activity was support for reestablishment of Marojejy boundary, with the first phase completed. Our second activity will be reactivating the old village guard program. Raincoats and rubber boots for the new guards have been ordered.
- SAVA Conservation will support fish farming of native fish at strategic village sites around Marojejy, to provide a protein alternative to bushmeat. Initial village meetings took place last month, and are very encouraging.
- SAVA Conservation will collaborate with NGO Charbon Verte to put in place green charcoal manufacture sites and do training in the Marojejy area.
- Our relationship with the Duke Nicholas School for the Environment has been strengthened through providing research opportunities for four student masters projects (see Jennifer Moore's article).



aye aye

As Erik balances all of the above project activities, he is skillfully developing community relations in Sambava and more broadly in the SAVA region. Slowly DLC SAVA Conservation initiative, and our objectives, are becoming more widely known and understood in the region. Unfortunately, to achieve sustainable conservation results is a marathon rather than a sprint, and Madagascar continues to lose forests at an alarmingly rapid rate. We just have to keep doing all we can to turn the situation around, always knowing that we will make some level of conservation difference in Madagascar.

Thanks to all of our donors who have made this new project possible. We simply could not do it without your support.



red ruffed lemurs

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