



EST.  
1966

# DUKE LEMUR CENTER

MAGAZINE | 2019

37 YEARS OF  
LEMUR PHOTOGRAPHY

A CONVERSATION  
WITH *ZOBOOMAFOO*  
CREATOR MARTIN KRATT

JOHN CLEESE-DLC  
VIDEO COLLABORATION

ON THE TRAIL OF  
ANCIENT PRIMATES

# CONTENTS

4

**About the Duke Lemur Center**

6

**My Life with Lemurs**

A 37-year photo retrospective

18

**Giving Opportunities**

20

**On the Trail of Ancient Primates**

Digging into lemur history

24

**Meet Melisandre**

The DLC's newest baby aye-aye

26

**The Relationships**

**Behind Animal Care**

New partnerships between Madagascar and Durham improve the well-being of lemurs around the world

30

**A Conversation with Martin Kratt**

The creator of *Zoboomafoo* and *Wild Kratts* on his time at Duke and DLC, and the origin of his love for lemurs

34

**A Kid's Guide to Helping Lemurs**

36

**How Much Is That Lemur in the Window?**

That lemur on Craigslist? Don't befooled—it makes a terrible pet

39

**Staff Spotlight:**

Meet Bobby Schopler, the DLC's senior veterinarian

40

**53 Years of Lemur Data Available Online**

43

**Research Spotlight:**

The fat-tailed dwarf lemur

44

**How the Indri Lost His Tail:**

A Malagasy folktale

46

**Lemur Center Names**

**Greg Dye New Executive Director**

**BACK COVER**

**New Adopt a Lemur Commercial Featuring John Cleese**



For more articles, photos, and special features, please visit our online edition: [LEMUR.DUKE.EDU/MAGAZINE](http://LEMUR.DUKE.EDU/MAGAZINE)



Chart of lemur genera by Katy Tanis of [daughterearth.com](http://daughterearth.com).

## ATTENTION ARTISTS:

We'd love to feature your work in our next magazine! To submit your painting, drawing, or photograph for consideration, please email a high-resolution jpg and your contact information to [sara.clark@duke.edu](mailto:sara.clark@duke.edu). We'll select our favorites for inclusion in our next edition (Fall 2020).

## EDITORS:

Sara Clark, David Haring, Will Goodwin

Comments, feedback, or something you'd like to see in our next edition? Email [sara.clark@duke.edu](mailto:sara.clark@duke.edu). We'd love to hear from you!

*Printed on eco-friendly FSC-certified paper*

## ON THE COVER:

Tulia, a female golden crowned sifaka (*Propithecus tattersalli*), feeds on maple flowers. (1991) *Photo by David Haring.*

## LETTER FROM THE DIRECTOR

AS THIS ISSUE of the Duke Lemur Center's Magazine prepares to go to print, a fifth lemur species has been added to the list of the 25 most endangered primates in the world by the International Union for the Conservation Nature (IUCN). The largest of the nocturnal lemur species, the aye-aye, sadly joins this list of primates in peril. This announcement serves as a reminder that there remains much work to do to protect lemurs and their native Malagasy forests.

While the reality that 25% of the world's 25 most endangered primates are lemurs is sobering, I remain hopeful that this trend will reverse. My optimism comes from the Lemur Center's unwavering commitment to Madagascar and protecting its unique flora and fauna. This year we successfully added two new programs to our conservation arsenal, the Malagasy veterinary internship and our animal care technical advisor program. These programs benefit lemur conservation by increasing the capacity of Malagasy professionals by enabling our animal care and veterinary staff to work side-by-side with them and share our knowledge and expertise of lemur care and medicine. Our senior veterinarian, Bobby Schopler, also featured in this issue, and Curator of Conservation Initiatives, Andrea Katz, are to be commended for their help in making these programs operational – in addition to several of our very generous donors.

Finally, I'd like to recognize David Haring who is in the process of putting the finishing touches on a brilliant 37-year career with the Duke Lemur Center. David started his career as a research technician, then worked his way up to colony manager before taking on the dual role of registrar and photographer. David is a shining example of what one person can do to change the world. Many of his lemur images have been featured in premiere publications like National Geographic, and in documentaries all around the world to help tell the story of lemurs and to raise the public's awareness of them. As you will see in the following pages, David has an incredible talent: his images evoke strong emotions and create critical connections with our lemurs. As David heads into a well-earned retirement, I, like all of the Lemur Center team, am truly grateful to have had the opportunity to work with him and will cherish the pictures and sense of humor he shared with us all. Thank you, David!

GREG DYE



# ABOUT THE DLC

## PROTECTING AND CARING FOR EARTH'S MOST ENDANGERED MAMMALS



FOUNDED IN  
**1966**

MORE THAN  
**3,285**  
BIRTHS

**35**  
YEARS WORKING  
IN MADAGASCAR

### LEMUR CARE

With more than 200 animals across 14 species, the DLC cares for **the world's largest and most diverse population of lemurs** outside their native Madagascar.

The DLC is one-of-a-kind in its expert care of lemurs. No other zoo or research center is **accredited by both research and animal welfare organizations**, including the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) and the Association of Zoos and Aquariums (AZA). These accreditations testify that the Duke Lemur Center meets the highest standards of animal care.

The DLC works within a network of other AZA-accredited institutions nationwide to develop and adhere to Species Survival Plans (SSPs), using carefully planned conservation breeding programs to create a **genetic safety net** for rare and endangered lemurs. We're proud to have celebrated over **3,285 births** since our founding in 1966.

Our signature Natural Habitat Enclosures enable our lemurs to **roam freely in multi-acre tracts of forest** and live in natural social groups, fostering the same behaviors and social structures seen in the wilds of Madagascar.

Our daily enrichment program promotes lemurs' **curiosity, exploration, and mental stimulation**. Positive reinforcement training is used to teach lemurs to sit on a scale, enter a kennel, and other behaviors that may seem like play to the lemurs but enable us to provide the best care with minimal handling or stress to the animals.

### CONSERVATION

For over 35 years, the DLC has worked on-the-ground in Madagascar to **protect lemurs and their natural habitat**. Most of these activities are community-based, encouraging biodiversity conservation in northeastern Madagascar by supporting the livelihoods of rural people in forest-bordering communities. Many involve partnerships with Duke students and faculty, inspiring the next generation of conservation leaders and environmental stewards.

At the invitation of the Government of Madagascar, the DLC's newest conservation initiative is to **assist Madagascar's zoos and wildlife parks** in developing a conservation breeding program and establish best practices in lemur care. In doing so, the DLC has the opportunity to improve the care and welfare of over 600 lemurs representing 20 endangered species housed in 14 licensed zoos across the island.

### RESEARCH

By studying the variables that most affect lemurs' health, reproduction, and social dynamics, we learn how to better care for them in captivity and **how to most effectively focus our conservation efforts** in Madagascar. We also learn how to better care for them in captivity, and the DLC is recognized as a global authority on lemur veterinary medicine.

In the past five years alone (2014-19), the DLC's large and diverse research program has facilitated 343 projects representing 104 different institutions from six different countries. All DLC research projects have one thing in common: a non-invasive approach. **We do not allow research that will harm our animals in any way.**

The Division of Fossil Primates examines primate extinction and evolution over time and houses over 35,000 fossils, including extinct giant lemurs and one of the world's largest and most important collections of early anthropoid primates.

### PUBLIC OUTREACH AND EDUCATION

Our Student Projects Program connects students with **volunteer, work-study, research, and internship opportunities** at the DLC. Our goal is to provide hands-on experiential learning opportunities that allow students to take part in the DLC's research, education, animal husbandry, and conservation programs here on Duke's campus and in Madagascar.

The Education Department welcomes more than **32,000 people every year** to learn about lemurs, science, and conservation through tours, summer camps, and Wild Workshops. 🦊

# *My Life* with **LEMURS** A PHOTO RETROSPECTIVE

Nearing retirement, photographer **DAVID HARING** reflects on nearly four decades at the DLC

IMAGES AND TEXT BY DAVID HARING

**I BECAME INTERESTED** in photography in the early '70s when I was in college, but I never took any courses or received formal training, nor did I consider myself a "serious" photographer. I barely had the money to purchase a decent camera, and when I did, I had to be super frugal with the number of photos I took because of the cost of film. Photography in the age of film was expensive. No wonder there were so few photographers in those days!

I began working at the Lemur Center as a Primate Technician in 1982. It didn't take long for me to become completely

enthralled with every detail surrounding the day-to-day care of lemurs: their staggering beauty and amazing diversity; how they gobbled down their food; the way each species had its own unique odor, vocalizations, and different ways of scent-marking; and their generally friendly and charmingly inquisitive demeanor. Within a year, I'd begun my first attempts at photographing them—because, after all, they are the most beautiful, charismatic, and endangered animals on the planet.

Initially I focused on the forest-dwelling lemurs of Natural Habitat Enclosure

(NHE) 1, where a group of 15 red-fronted lemurs and eight ring-tailed lemurs had been released in the fall of 1981: the first-ever attempt to allow lemurs to free-range in a naturally forested setting. By March 1984, the NHE 1 ring-tailed lemur group had grown to 15 animals and was moved to the larger and more scenic NHE 2, with a group of red-fronted lemurs and this photographer soon to follow. I've recently seen some of my photos from that time, and trust me, there was no hint whatsoever that I would grow into the polished lemur photographer I am today!

CONTINUED ON PAGE 8



**37** OF MY MOST FAVORITE PHOTOS & THE STORIES BEHIND THEM  
*A celebration of 37 years of lemur photography*



But then my life changed: the DLC's visionary director, Elwyn Simons, instituted a program to bring tarsiers to the center. The first phase of the project consisted of importing two pairs of Philippine tarsiers from the Skansen Aquarium in Sweden. As soon as the four tarsiers arrived in May 1983, I became entranced with photographing these charming, sharp-toothed carnivores. This had much to do with the incredible coolness and otherworldliness of the animals, plus the fact that they had never been housed successfully in captivity and tarsier photographs were few and far

between. That the tarsiers smelled like freshly buttered popcorn clinched the deal! Ultimately I assumed responsibility for feeding, cleaning, and monitoring the health of the DLC's precious nascent tarsier colony, and with my privileged insider's role of animal caretaker, I could take as many photos as I desired as long as I got my work done.

There was only one problem that faced me: lack of funding. In 1985, I made \$6.00/hour which in 2019 dollars is the equivalent to squat. Sure, I could afford to buy gas for my 1969 Chevy Caprice that my parents had given me, and pay the

rent on my modest Durham bungalow which I shared with three other people, and maybe even have enough money left over for a weekly fancy dinner and a beer at Durham's trendy The Ivy Room (one of the few restaurants close to campus and a Durham mainstay since the 1940s); but in terms of money to pay for film and fancy cameras, forget about it.

I was saved by capitalism. It turns out I was capable of reliably producing good and sometimes even great photos of tarsiers and other prosimians at the Center, and that there was a market for those photos from primatology buffs who wanted good

quality color slides of the DLC's rare animals, for academic and conservation-related publications and even for popular books and magazines—especially if I could dream up and market a story to go along with the photos, which indeed I could. Hence by the time I photographed Mandarin the tarsier munching on a katydid in 1987, I had a decent new Nikon camera (FE2) and a “pro quality” lens (a 50mm macro). Whenever I sold a few photos, I invested it in new equipment. And although I drove that Chevy (or a series of rundown successors) for years and lived in semi-squalor with three other grungy dudes,<sup>1</sup> I had some fine photography equipment and was more than satisfied with my life with lemurs. 📷

<sup>1</sup> Fortunately, the DLC named me its official photographer in 1999 and began underwriting the costs of film and equipment.



PHOTOS ON PREVIOUS PAGE:

**1**  
**1988:** In January 1987, a Philippine tarsier (*Carlito syrichta*) was born at the DLC to a wild-caught female. The infant, named Mandarin, was ignored by her mother, so the Lemur Center decided to hand-raise the infant. I should say, the Lemur Center decided that I, David Haring, would hand-raise the infant! The colony manager, Andrea Katz, recruited some of my fellow primate technicians to take over my day-to-day DLC tasks, and for the next two weeks my sole job was to take care of Mandarin. That's right: I became a stay-at-home mom to a tiny tarsier! At first it was rough with round-the-clock feedings the first ten days, but Mandarin thrived and by the time she was 68 days old she was starting to hunt and eat food on her own. (Tarsiers eat only live prey, so you can imagine the relief everyone felt when Mandarin began hunting for crickets.) Eventually Mandarin was successfully introduced to another tarsier, but she remained friendly and unafraid of her human caretakers. Hence when I bought my first fancy camera, a Nikon FE2, a dedicated flash, and a 55mm macro lens, I was able to get really close to the little tarsier (we are talking like six inches away!) to get this shot of her munching on a katydid—which of course I, her human daddy, had caught for her.

**2**  
**1988:** A trio of red-fronted lemurs (*Eulemur rufifrons*), two males and one female, huddled against the chill of a November morning in NHE 4.

**3**  
**1986:** When I first started to get really interested in lemur photography, the place to go was NHE 2 with its 28-lemur-strong group of ring-tails (*Lemur catta*), which routinely produced four or five infants every spring. Fascinated by the group's social dynamics, foraging behavior, and breeding and birth season behaviors, I blissfully tried to document every aspect of lemur behavior. My favorite subject matter, however, was ring-tails feeding on redbud and dogwood flowers, and every spring would find me in NHE 2 trying to photograph them in flowering trees, which actually was a pretty rare sight. Although not an especially sharp photo, this image is one of my favorites.

**4**  
**1988:** Another springtime photograph from NHE 2, this one depicts two ring-tailed lemurs feeding on the huge, swollen buds of a hickory tree on the verge of leafing out. I love the lighting and the exuberance of the lemurs as they go to extremes to access the tasty buds. The nature of the forest in NHE 2 in those days was totally different than today—much more open and devoid of secondary growth. That's because for years, the forest had been utilized by Duke Zoology as a research station and a small herd of red deer had kept the forest completely clear of secondary growth, resulting in an open, park-like setting that offered beautiful lighting conditions to photographers.



**5**  
**1988:** In the mid 1980s, the Lemur Center imported two pairs of Verreaux's sifaka (*Propithecus verreauxi*). One pair was introduced to NHE 1 in the spring of 1988 and really thrived in the free-range environment. One of the first times I photographed them, the male, Caesar, was in a black locust tree feeding on leaves while I stood nearby on a fallen tree about a foot off the ground to get a better view. Suddenly Caesar surprised me by dropping down from his upright posture to a full-body dangling-from-his-feet pose. I wanted to capture his entire body, but I was using a non-zoom lens and could not step backward lest I fall off the log. So I leaned backwards as far as I could, but still only managed to capture one of his eyes. Even though I missed capturing half his face, I have always loved this image.



**6**  
**1991:** A hot sultry August day. A 20-year-old Coquerel's sifaka, Nigel, a blissful look on his face, stretched out and totally relaxed on a section of firehose which looks exactly like a hammock. A 38-year-old primate technician with a camera. Who cares if he has to shoot through a smudged window under less-than-ideal lighting conditions? It is a photograph that perfectly captures a mature, legendary sifaka relaxing and contemplating the nature of life of a hot summer's day.

**7**  
**1991:** Tulia, a female golden crowned sifaka (*Propithecus tattersalli*), feeds on maple flowers. At the time, I was experimenting with different diffusers and soft boxes to soften the harsh light of the mounted-on camera flash. I was really pleased with the “artistic” lighting produced in this photo, which also a result of its being slightly underexposed which really increases the vibrancy of the colors of the sifaka's fur and the maple flowers.



**8**  
**1994:** In September of '94, a family of blue-eyed black lemurs (*Eulemur flavifrons*) was released into NHE 5, the first time that species had free-ranged at the Lemur Center. I photographed Brando, Lamour, and six-month-old Kidman shortly after their release, and for the next couple of years they were residents of the enclosure. The sight of a beautiful blue-eyed lemur on a brilliant day against a backdrop of bare winter trees and bright blue sky will surely take your breath away.



9 ▲  
**1996:** One day I had the brilliant idea of trying to get some nice photos of a summer-blooming mimosa flower in front of a lemur eagerly contemplating it (or eating it). I approached golden crowned sifaka Agrippa with the idea, and he was quite enthusiastic about it. First he approached the flower slowly and sniffed the buds, allowing me to photograph the entire flower perfectly framing his face. Then he slowly devoured the flower, maintaining perfect position the whole time for optimal shots! If I were to regard one photo of mine, lemur or otherwise, as my “signature” photo this would be the one.

◀ 11  
**1995:** In August 1993, *BBC Wildlife*, one of the leading nature magazines of the day, ran a seven-page spread on my lemur photography. A year or so later, the editor called me up and said they needed a photo of a crowned lemur (*Eulemur coronatus*) for an upcoming cover, and they needed it quickly! Because of their deadline, I had time to shoot only one roll of film—so I loaded a roll of color slide film into my Nikon, harvested a clump of the very best flowers for lemur photos, trumpet creeper, and headed out to photograph a pair of crowns eating orange flowers. Luckily the lemurs cooperated and the editor loved my images. This one was chosen for the September 1995 cover of *BBC Wildlife*. I miss the age of magazines!

10 ▼  
**1996:** A lesser bushbaby (*Galago moholi*, licking fingers) and a northern giant mouse lemur (*Mirza zaza*) share a gooey treat of ripe and tasty persimmon fruits. I love this photo as it shows two species that don't even share the same continent in the wild, living together compatibly at the Lemur Center, and even coming together to eat peacefully at the same table (or branch in this case).



12 ▶  
**1997:** Coquerel's sifaka (*Propithecus coquereli*) infant Faustina cuddles with mom Paulina. I love the way some sifaka mothers cradle their infants. Not many do this, but those who do tend to do it with each and every infant they give birth to.

13 ▼  
**1996:** I brought a camellia flower to a pair of slow lorises (*Nycticebus coucang*), Kiritan and Natesa, and one of them came down to investigate the blossoms. But instead of eating the flower or ripping it apart, Kiritan held it to his nose as if inhaling deeply of the wonderful fragrance.



14 ▲  
**1997:** The bamboo lemurs (*Haplolemur griseus*) are some of my favorite lemurs. I haven't said that about any other species, have I? One of the wonderful things about them is their uniqueness, as they are totally different from other lemurs: a different size, a different way of raising young, unique vocalizations, and despite one of their common names (the gentle lemur), possessed of one of the toughest, meanest, take-no-prisoners attitudes of any lemur. Plus they love bamboo!



◀ 15  
**1997:** Female common black lemur (*Eulemur macaco*).

16 ▶

**2001:** With modern autofocus cameras, getting an in-focus well-lit action photo of a lemur running on the ground or leaping between trees is getting easier, but it is by no means a given that an action sequence of 10 or 15 photos will yield any usable shots. A somewhat cryptically colored lemur moving through a dense tree- and shrub-covered forest is just too complex a scene for autofocus to lock into! In the old days of manual focus, the only way to capture a leaping lemur was to make a before-the-jump guess as to where the lemur was leaping to, and then pre-focus the lens to a point through which the lemur would pass in mid-jump, and hope for the best. This photo of a leaping sifaka taken in the early 2000s (of Alexianus and Jovian's group) was the most successful of my early leaping sifaka photo efforts. For once the whole lemur is in the photo, focus was reasonably sharp, and the lemur's eyes are visible and in focus. Luck played a huge roll in the success of photos like these!



18 ▶

**2012:** Ring-tailed lemur mother with twins.



17 ▼

**1997:** One of the most charismatic of all the lemurs to be housed here over the decades, golden crowned sifaka Agrippa was imported from Madagascar in 1987 and lived at the DLC until his death in 2005. One day when I was doing my morning rounds as a young and eager primate technician, I entered Agrippa's enclosure and he struck this wonderful pose for me. Luckily I had my camera ready and squeezed off a few shots before he changed position. This photo was used on the cover of Walker's Primates of the World, published in 1999.



19 ▼

**2005:** One summer day in NHE 1, I noticed Agrippa and his son, Valens, sitting on the steps of the beach house, with Valens sitting exactly as a human would! I quickly got my camera ready and moved into position and, miracle of miracles, the golden-crowned sifakas held their pose.



20 ▲

**1997:** The slender loris (*Loris tardigradus*) of southeast Asia is one of the most bizarre and yet oddly beautiful prosimian species the Lemur Center has housed. Someone described them as "torpedoes on stilts" and, while accurate, that obviously doesn't do justice to their beauty. They are also notoriously shy, and my early attempts to photograph them yielded zero results, because as soon as someone entered their room with a camera the animals would flee. Finally Ashwani, one of our slenders, got comfortable enough around humans that she would come right over to investigate a tasty treat even if the person offering it was standing right there. One day I brought in some trumpet creeper flowers, and not only did Ashwani come over to check them out, but she settled into, and then held, an absolutely perfect prosimian pose!



22 ▲

**1998:** Marvin was the eighth aye-aye (*Daubentonia madagascariensis*) born at the Lemur Center. Within a couple of days of his birth in February '98, it was apparent that his mother, Morticia, was not taking care of him as Marvin was losing weight. DLC staff began to supplement Marvin multiple times day and night. During the months of supplemental feeding, Marvin was returned to Morticia's nest box immediately afterward so he did not become imprinted on humans. This photo was taken one evening after I had just fed him from a syringe and placed him in a Tupperware container for weighing. He looks so bright, alert, and absolutely goofy!

21 ▼

**1999:** I cannot describe how wonderful it is to be able to cut some dogwood flowers in the springtime, bring them into a lemur's enclosure, and watch the animals get excited about their new enrichment item and start sniffing, tasting, and marking the flowers. Then wait for the lemur to calm down and, maybe just maybe, position his face perfectly between the blossoms. Then fire your camera away with the chance that in the total amount of time spent on the project (30 minutes or so) you can emerge with a unique, never-before-seen photo of almost breathtaking beauty.



23 ▾

**2014:** When two-month-old Gertrude, daughter of the legendary Jovian and Pia, was scheduled to be briefly removed from Pia for weighing, I set up the white tent for a quick photo shoot. I wanted to photograph Gertrude in a beer stein and, not having any steins around my house, had ordered one online. Gertie fit perfectly! I called the shot “Gertrude’s Stein” and thought it would become a worldwide sensation, but either people didn’t get it or they just thought it was silly. Nonetheless I loved the photo, and I imagine that the real Gertrude Stein might have too.



27 ▶

**2013:** It is a rare privilege to enter a room in which the lights have just gone off and a spirited group of four free-ranging mouse lemurs (*Microcebus murinus*) have just awoken and are zipping around like miniature furry demons, and then spend a few minutes observing and trying to track their frenzied movements. But it is somewhat of a nightmare trying to photograph them: the light is too dim, and their movements are too quick. But one day after fruitlessly pointing my camera in a thousand different directions trying to catch Thistle, Oleander, Bluebell, or Blackberry standing still in one location for longer than a second, they finally all settled in one of their nest tubes. The tubes had little cloth flaps over each end to give the lemurs privacy, and at one point three of the four poked their adorable faces out of the tube at the same time.



28 ▶

**2013:** Kizzy, a black and white ruffed lemur (*Varecia variegata*), with one-month-old sons Rees and Amor Jr. Only one of the infants is visible in this photo, but I love the shot and the neutral matte black background.



24 ▲

**2015:** I was giving a friend on a tour one September afternoon when I decided to show off Rodelinda’s sifaka group (with mate Marcus and their lively brood Wenceslaus, Eleanor, and Beatrice). I was delighted when we easily found the group on the forest’s edge, and especially when we were met with an amazing sight: two of the juveniles (Eleanor and Beatrice?) were dangling from a horizontal branch side-by-side in exactly the same position—which, believe me, is a very rare sight indeed! Unbelievably they held their pose while I grabbed my camera out of the bag and shot away. I dubbed this photo “sifaka synchronized swinging.”



◀ 25

**2014:** Two-month-old mongoose lemur (*Eulemur mongoz*) Oscar with mom Carolina.



26 ▲

**2013:** lo Moth, a pygmy slow loris (*Nycticebus pygmaeus*), holds a frozen enrichment treat.



29 ▲

**2016:** Another way to get free-ranging mouse lemurs into camera range and moving slow enough to photograph is to bring a treat into their enclosure.

◀ 30

**2015:** A cluster of three mongoose lemurs (Maddie flanked by sons Ignacio and Mico) are all reaching out to grab something above my head. And what are the lemurs reaching for? It actually is a flower that I have clamped to the end of a Wimberly Plamp so that the flower is dangling just out of sight above my head and almost within reach of the mongoose lemurs, who really, really want to grab it. The result is an endearing photo of a mongoose lemur family who might be symbolically regarded as reaching out not for a mere flower, but for the right to continue to live in unspoiled forests of Madagascar and no longer be threatened by extinction. Or is that too much of a reach?





◀ 32

**2017:** This photo of aye-aye Agatha was taken within a week or two of Halloween, when Agatha was five months old. Traditional beliefs of the Malagasy regard the sighting of an aye-aye to be a harbinger of bad luck and perhaps even death—especially if an aye-aye appears to be pointing its long skeletal finger at the person witnessing it. But there is something about Agatha in this photo (perhaps that she is an adorable fur ball?) that renders her finger-pointing not the slightest bit threatening. In my opinion, Agatha was the most adorable and charismatic aye-aye infant ever.

34 ▼

**2017:** Velona, a blue-eyed black lemur, with a hibiscus flower.



35 ▶

**2019:** This past April, the DLC was put under a tornado warning, so all free-ranging groups had to be brought inside the buildings for their safety. I wanted to document the process, so I headed out to NHE 7. Liz, their technician was just bringing in Rupillia's sifaka group (Rupi, Gordian, and their daughter Magdalena). I got there just as the last free-ranger, Magdalena, literally sprinted across the "lemur highway" that bridges the forest edge to the entrance of the fenced chute leading into the building. She looks so graceful, and perhaps also a bit afraid that if she turned around she might see a monster twister on her tail!



31 ▶

**2016:** I was photographing a family of Coquere's sifakas when its matriarch, Drusilla, hopped down the path right beside me with her infant Calpurnia riding jockey-style on her back. Generally a sifaka infant feels more exposed to potential dangers when she is on her mom's back, and if mom is not actively in motion the infant will quickly move to her mother's belly when she senses danger. But if the adult female is actively moving through the forest, all an infant can do is hold on tight and bury her face into mom's shoulder fur, in hopes that the threat will vanish. In this photo, however, Calpurnia makes the unusual choice of turning around to check out the possible human threat—and when she sees what it is, she probably wished she had buried her face in Drusilla's fur!



33 ▲

**2018:** In the spring of 2018, I spotted a large patch of beautiful coral honeysuckle draped over a small maple tree on the edge of the forest in NHE 3. But no matter how much I stomped, whistled, and jumped up and down I could not get the forest-dwelling lemurs to come over and investigate the spectacular display (and of course be photographed in the process). So I did the next best thing: I cut a few small branches and took them into the enclosure housing blue-eyed black lemurs (*Eulemur flavifrons*) Leigh and Murphy. It turns out that lemurs are not fond of coral honeysuckle. Hence the dominant female, Leigh, was uninterested and Murphy had a chance to sniff the blooms. The resulting photo with its black, blue, and red color scheme is pretty spectacular. (Sorry, Leigh! Rusty brown, red, and blue just doesn't compete!)



◀ 36

**2016:** Ring-tailed lemurs Tellus and Licinius bask in the sun on a crisp December day. On sunny, chilly days such as this, the sifaka and ring-tailed lemurs of NHE 8 ascend high up into one particular highly visible tree in the corner of their enclosure to bask in the sun, thereby offering a spectacular view of their backlit forms from the enclosure next door. For one reason or another, these special backlit lemur scenes have not been possible the past two years; but hopefully the autumn of 2019 will offer fresh opportunities. Hopefully, too, Licinius (age 26) and Tellis (age 15)—especially Licinius—are not too old and rickety to climb to the top of the sunning tree!



37 ▶

**2017:** Pygmy slow loris (*Nycticebus pygmaeus*) Junebug with one-month-old Warble.

# DONATE

## DUKE LEMUR CENTER ENDOWMENTS: A LEGACY OF SUPPORT FOR LEMURS AND THE WORK OF THE DLC

BY MARY PAISLEY



▲ This past year, revenues from one donor's endowment fund provided critical upgrades and maintenance to our lemurs' outdoor enclosures and fence lines for the safety of our free-ranging lemurs. Photo by Bob Karp.

**DID YOU KNOW** that the Duke Lemur Center can help you create lasting gifts to support our work to protect lemurs and their habitat, and to sustain student programs here and in Madagascar? Endowment gifts and the revenues they generate are increasingly important to both furthering the DLC's work and securing the Duke Lemur Center's financial future.

Currently, the DLC has nine endowments. Their revenues provide about 4% of the center's annual operating budget.

### HOW DOES IT WORK?

An endowment is a gift that keeps on giving! Each year, a portion of an endowment fund's value is paid out to support the fund's purpose at the DLC. Any earnings in excess of this distribution are used to build the fund's market value. In this way, an endowment fund can grow and provide support to its designated purpose here at the DLC in perpetuity.

You can support the Duke Lemur Center through an endowment by:

- > **making an outright gift** during your lifetime to establish an endowment fund;
- > **establishing an endowment** through creative estate and retirement planning (we can help you and your advisors to explore options that might be a good fit for you); or
- > **creating an endowment with an outright gift** during your lifetime while planning to later provide an additional gift to support the endowment through your estate plan.

### HOW MUCH MONEY IS REQUIRED TO CREATE AN ENDOWMENT?

The Duke Board of Trustees has minimum\* funding levels for different types of endowments:

- > **\$100,000** will establish a named endowment for unrestricted support of the Duke Lemur Center.
- > **\$300,000 or more** will establish a named endowment for a restricted area of support, such as colony care, student programs, or Madagascar conservation work. It's also possible to endow staff positions within the DLC—such as director, veterinarian, and more.

> **A gift at any level** can be designated to the Duke Lemur Center's general operations endowment fund. This is an excellent choice for someone interested in supporting the DLC's work in perpetuity with a gift under \$100,000.

Please consult your personal and financial advisors and any close family members for your plans to make this special gift to the Duke Lemur Center.

\* Please note that the minimum funding levels listed above may increase in the future, and if they do, the giving requirement in effect at the time that your gift is received by the DLC would apply.



## PLANNED GIFTS FOR THE DUKE LEMUR CENTER

**IT'S EASIER** than you might think to establish a planned gift (of any amount) from your estate to benefit the Duke Lemur Center. Our team can help you explore all of your options—like naming the DLC as a beneficiary of your retirement plan, including the DLC in your will, or establishing a life income gift that supports the DLC and pays you back.

By making a planned gift to the Duke Lemur Center, you'll join a growing network of our closest friends as a member of the Legacy for Lemurs Society. Preview the Legacy Gift form at [lemur.duke.edu/LegacyGiftForm](http://lemur.duke.edu/LegacyGiftForm).

### QUESTIONS?

For more information on how you can support the Duke Lemur Center, please contact:

**Mary Paisley**  
Development Officer  
Duke Lemur Center  
Phone: 919.401.7252  
Email: [mary.paisley@duke.edu](mailto:mary.paisley@duke.edu)

**Anne Morrison Bradley**  
Assoc. Director & Philanthropic Advisor  
Duke University Office of Gift Planning  
Phone: 919.613.5224  
Email: [anne.bradley@duke.edu](mailto:anne.bradley@duke.edu)



▲ Proper gear—including waterproof boots, rain jackets, and winter coats—is essential for the DLC's animal care staff, who feed, enrich, and tend to our lemurs 365 days a year in all weather conditions. Revenues from one endowment supported these important needs at the DLC last year.

## DONOR SPOTLIGHT: MARTHA SEELIGSON, T'87

**MARTHA SEELIGSON'S** passion for the Duke Lemur Center began during her time as a Duke student in the 1980s. She remains a loyal friend and generous supporter of the DLC today. In addition to consistent annual donations since her first gift in 1991, Seeligson has also established an endowment fund to benefit the DLC.

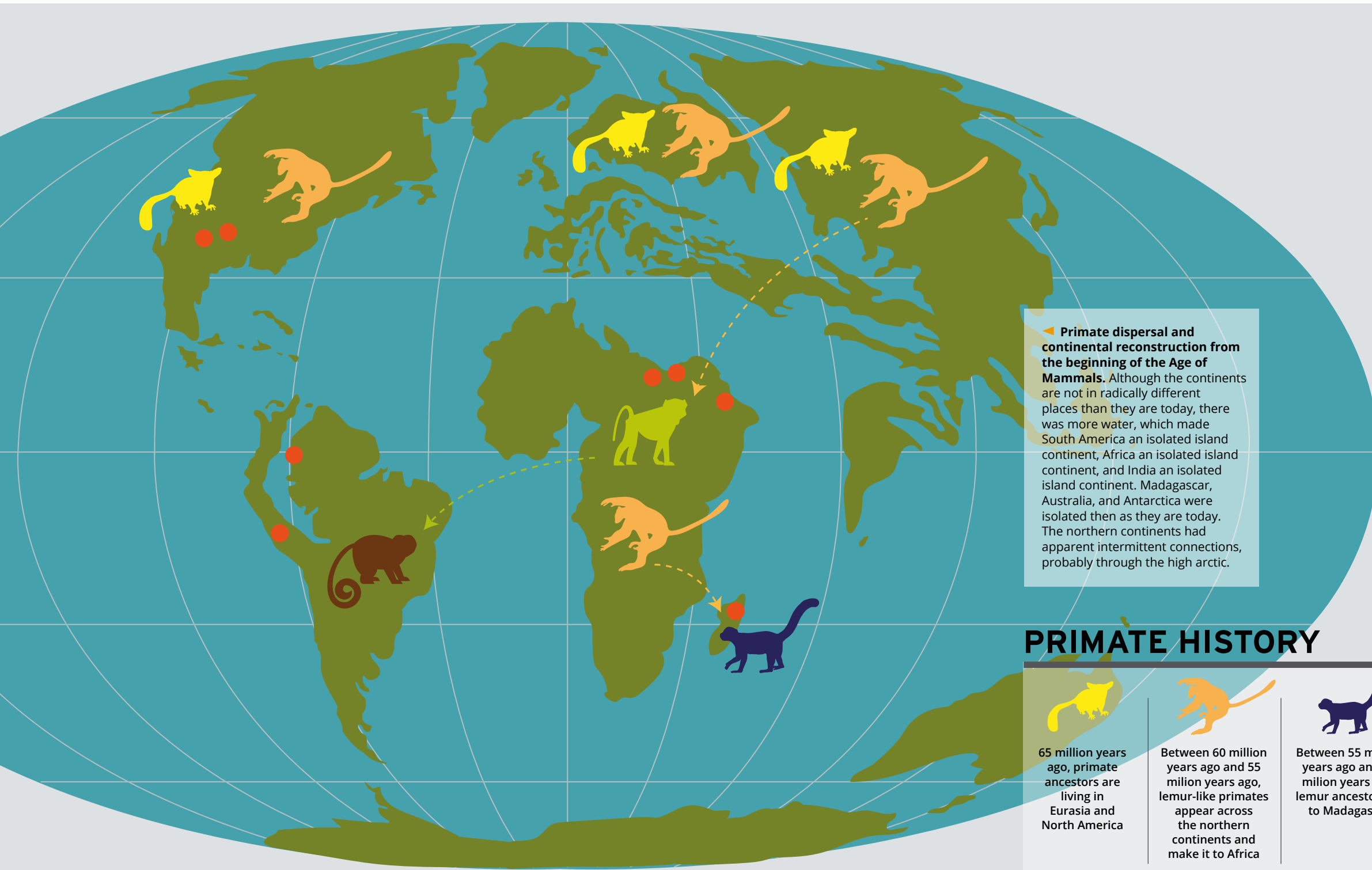
**"I DISCOVERED THE LEMUR CENTER IN 1984 AS AN UNDERGRADUATE AND I KNEW I HAD TO GET INVOLVED. AFTER VOLUNTEERING AS AN ANIMAL TECH, RESEARCHING A SENIOR THESIS, BEING ON THE BOARD OF VISITORS, AND CONTRIBUTING REGULARLY, I AM STILL A HUGE FAN. BY SUPPORTING THE LEMUR CENTER, I CAN HELP IN A SMALL WAY TO ENSURE THE LONG-TERM SURVIVAL OF THESE AMAZING ANIMALS. AND THEY ARE SO CUTE!"**



# ON THE TRAIL *of* ANCIENT PRIMATES

## DIGGING INTO LEMUR HISTORY

BY MATTHEW BORTHS, PH.D.



▶ **Primate dispersal and continental reconstruction from the beginning of the Age of Mammals.** Although the continents are not in radically different places than they are today, there was more water, which made South America an isolated island continent, Africa an isolated island continent, and India an isolated island continent. Madagascar, Australia, and Antarctica were isolated then as they are today. The northern continents had apparent intermittent connections, probably through the high arctic.


**T**he hail started pounding, forcing me to hunker down on the outcrop, ice stinging my back and hands. As I watched puddles of melted ice pool around my feet, one question kept bubbling up: Did we cover the skull? My now drenched notebook, GPS, and camera would dry; there was a 50-million-year-old creature that needed my attention right now. Trying to present as small a target as possible, I slopped my way back to our excavation. The layers of glue, duct tape, paper towels, and more duct tape were holding strong. We would get this specimen back to Durham, even if the hail wanted otherwise.

Tens of millions of years ago, lush forests spread across southwestern Wyoming. Dog-sized horses and leaf-munching tapirs nipped the undergrowth. In the canopy, lemur-like primates hopped through the trees. Today, non-human primates are long gone from the dry badlands of Wyoming; but 65 million years ago, soon after the extinction of the non-avian dinosaurs, the primate story was unfolding in North America. From the northern hemisphere, primates found their way to Africa, Madagascar, and South America. Sorting out how primates adapted and diversified their way around the globe drives a lot of research at the Division of Fossil Primates (DFP) at the Duke Lemur Center, and during the summer of 2019, it drove me to the hotspots of primate evolution.

One year ago, I became the curator of the DFP, one of the most important collections of primate fossils in North America. The collection already houses specimens from Egypt, Madagascar, Colombia, and Wyoming that have shaped paleontology's understanding of the primate family tree. But there is so much more to learn about the ecosystems that supported primate diversification and triggered primate extinction. This summer was about renewing the

### PRIMATE HISTORY

● DFP FIELD SITE

				
65 million years ago, primate ancestors are living in Eurasia and North America	Between 60 million years ago and 55 million years ago, lemur-like primates appear across the northern continents and make it to Africa	Between 55 million years ago and 20 million years ago, lemur ancestors go to Madagascar	Between 55 million years ago and 40 million years ago, monkey relatives make it to Africa	Between 40 million years ago and 36 million years ago, the ancestors of South American monkeys cross the Atlantic from Africa to South America



▲ **USA:** DFP curator Matt Borths, Ph.D. sizes up a large mammal jaw at a new fossil locality in south-central Utah. *Photo by Matt Borths.*



▲ **Peru:** Butterflies feeding on salt deposits in ancient rock that could preserve fossils of South American primates. *Photo by Matt Borths.*

◀ **USA:** Duke Evolutionary Anthropology Ph.D. student Madison Bradley takes a shift in Wyoming to remove a block containing the skull of an ancient primate. *Photo by Matt Borths.*



◀ **Madagascar:** The skull of Megaladapis, an extinct giant lemur the size of a gorilla, at the University of Antananarivo. *Photo by Matt Borths.*

DFP’s search for our primate ancestors and relatives by expanding the collection and making plans with research collaborators around the world.

**NORTH AMERICA**

My first stop took me to the last days of primates in North America. I met up with geologist Dr. Eric Roberts (James Cook University), an expert on the rocks of south-central Utah. This remote region was one of the last places mapped in the lower 48. We trekked through neon canyons and along sheer cliffs, searching for scraps of bone that could reveal why lemur-like primates started to dwindle on this continent, but flourished in places like Madagascar.

Some rock formations preserve literal tons of fossils. But not this one. On the last day of our short expedition, we stopped the Wrangler at the mouth of a small gully. A clear mountain brook looked like an inviting hike, but fossils had never been found there. Ahead of me, Eric popped out of the creek bed. “Jaw!” We had our first mammal specimen and our reason to return in 2020

**MADAGASCAR**

From Utah, I traveled to Madagascar to work in the subfossil collection at the University of Antananarivo (UA) with DFP research affiliate Dr. Kathleen Muldoon (Midwestern University). Kathleen is an expert on the chaotic, recent past in Madagascar when gorilla-sized lemurs and pig-sized hippos were wiped out and surviving species adapted to the changing landscape. At UA we worked with Malagasy colleagues to start a research program that will explore new

areas on the island, documenting how climatic and ecological change impacted modern lemur diversity.

**SOUTH AMERICA**

Like Madagascar, South America was colonized by primates that likely crossed an ocean from Africa on natural rafts of vegetation. In South America this founding population of primates became tiny marmosets and prehensile-tailed spider monkeys. Dr. Rich Kay (Duke University) and his students—including Dr. Lauren Gonzales (University of South Carolina)—use South American primate diversification to explore the fundamental role primates play in their ecosystems. In July, I joined Lauren’s team in the Peruvian Amazon, where we used small motor boats and soggy feet to trek up and down tributaries of the Madre de Dios River in search of the monkeys that colonized the Amazon. As we searched for tiny primate fossils in the rock, their modern descendants sheltered in the trees above, keeping a lower profile than the irate blue and gold macaws.

Back at the DFP in Durham, my notebook and camera are dried out and the fossils are piled up. CT scans of the hail-soaked block reveal an entire skeleton of an ancient pangolin relative. Another small boulder contains most of the remains of a lemur-like primate. The journey continues as we remove rock, expose bones, and make digital, sharable models of the material. Finally, after spanning continents and weathering storms, the specimens will join the DFP collection, helping researchers further understand the epic story of our primate relatives. 🦋



# Meet MELISANDRE,

a rare baby aye-aye born at the Duke Lemur Center on August 13, 2019! The daughter of 23-year-old Ardrey and 9-year-old Grendel, "Mel" is one of nine aye-eyes at the DLC and one of only 25 of her kind in the United States.

Pictured here at approximately 12 hours old, Melisandre was weighed for the first time (when this photo was taken) the morning of August 14. She tipped the scales at 81 grams. 🐼

*Photo by David Haring.*

**TO LEARN MORE**, please visit  
[lemur.duke.edu/melisandre](https://lemur.duke.edu/melisandre)

# THE RELATIONSHIPS BEHIND ANIMAL CARE

New partnerships between Madagascar and Durham improve the well-being of lemurs around the world

BY VANESSA MOSS, RESEARCH COMMUNICATIONS INTERN

**T**he DLC's bond with Madagascar has grown even stronger this year with the launch of three training programs that promise to improve lemur care and welfare in both the lemurs' native and adoptive homes.

This spring, through our first-ever collaboration with Mad Dog Initiative (MDI), the Duke Lemur Center hosted Malagasy veterinarian Dr. Tsiky Rajaonarivelo in Durham for three months of intensive training in lemur veterinary medicine.

And this fall, the DLC's own primate technician of 15 years, Bevan Clark, will be leaving for a 10-month stay at Parc Ivoloïna in eastern Madagascar. There she'll train staff of Madagascar's zoos on husbandry, health monitoring, and breeding and birth season management techniques for captive lemurs.

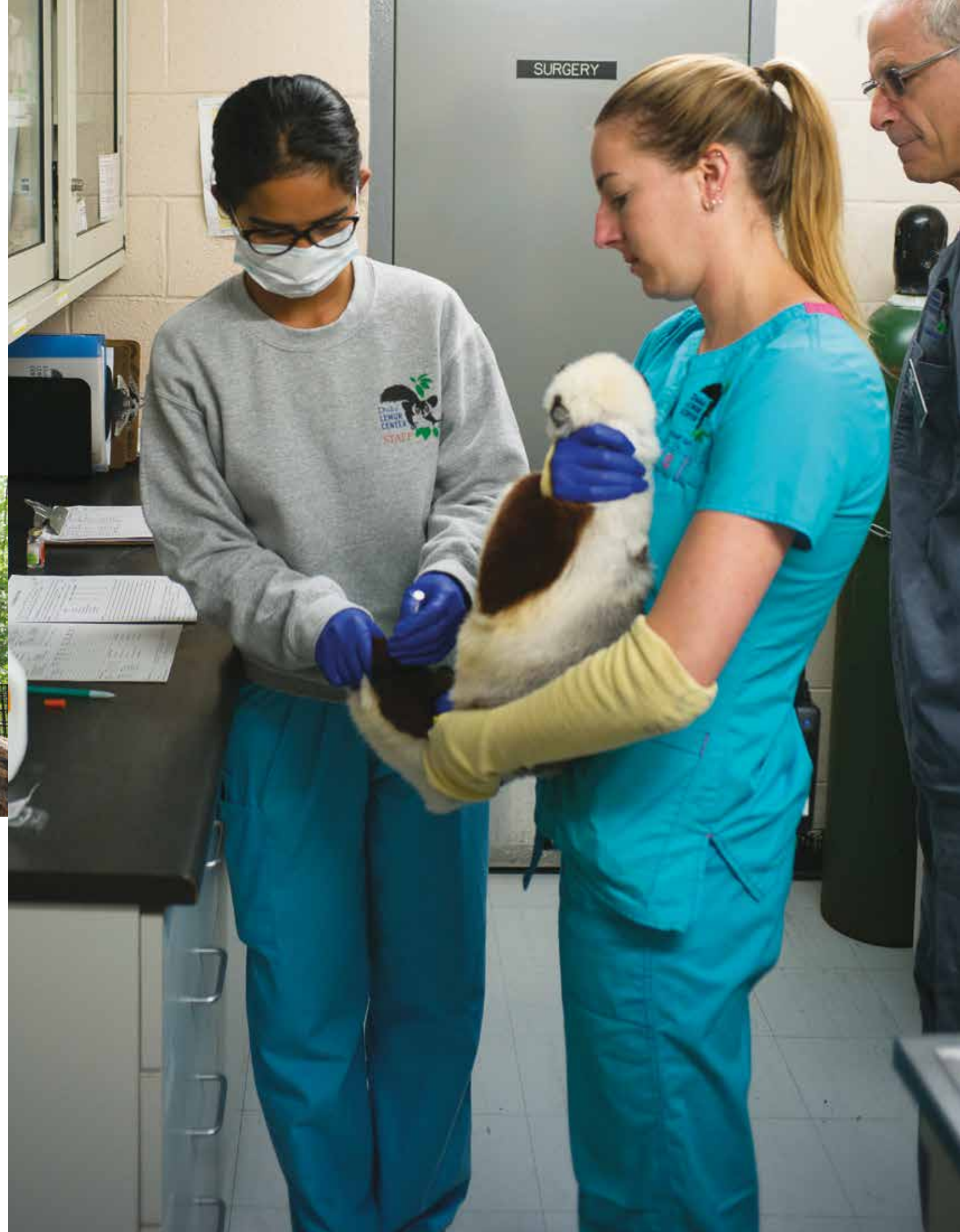
Bevan will help oversee the on-the-ground implementation of our third training initiative: a comprehensive lemur care manual compiled by DLC conservationist Andrea Katz, who lived in Madagascar for 15 years and managed the DLC colony from 2006-2018. The manual, which was created in partnership with the Government of Madagascar, will help advance lemur care and welfare in zoos across the island.

Bevan's trip to Madagascar is the biggest project the DLC has ever assigned to a technician. "We've never had a tech project of this magnitude or duration," says DLC executive director Greg Dye, adding: "The most tangible thing we can do for lemur care in Madagascar is to send one of our staff there or bring a



▲ Bevan Clark, one of the DLC's most experienced Primate Technicians, will live in Madagascar for 10 months starting in the fall of 2019. Bevan, who has over 15 years' experience caring for lemurs, will train Malagasy zookeepers on lemur care, health monitoring, and breeding and birth season management techniques. Pictured here with Bertha, a Coquerel's sifaka. *Photo by David Haring.*

► This spring, the DLC hosted Malagasy veterinarian Dr. Tsiky Rajaonarivelo in Durham for three months of intensive training in lemur veterinary medicine. "There are around 50 Malagasy students graduating from vet school every year," says Tsiky, "and I think many of them would want to take advantage of this experience." Pictured: Tsiky (left) administers a routine injection to Justa, a Coquerel's sifaka at the DLC, with the assistance of vet tech Megan Davison. Supervising veterinarian Bobby Schopler looks on. *Photo by Sara Clark.*



veterinarian here. The zoos and conservation programs in Madagascar have hearts as big as ours, but their funds and resources are just a fraction of what we have access to.”

Tsiky’s arrival at the Duke Lemur Center in March 2019 heralded the beginning of an annual internship for Malagasy vets, which DLC veterinarian Bobby Schopler has been working on arranging for years. Offered in collaboration with MDI, the veterinary exchange program blends two organizations with the same shared vision for conservation work. MDI assesses the impact of feral dogs on native Malagasy wildlife,

including lemurs, and provides training for veterinary students and graduated veterinarians from the University of Antananarivo.

“Madagascar runs on relationships,” says the DLC’s curator, Cathy Williams. A longtime veterinarian with extensive experience working in Madagascar, Cathy understands clearly why Bevan’s extended stay is so valuable and how Tsiky’s training has the capacity for huge positive change. “If any veterinarian is going to have a positive impact, it’s going to be a Malagasy vet,” she says. “They understand the culture and unique challenges and provide more continuity

than any visiting foreign vet ever could.”

Veterinary training in Madagascar is based more on theory than practice. “We have five years in theory, and in the last year you do your thesis,” says Tsiky. “In my time, we didn’t have as much practical training on animals. We learn about animal medicine and practice on humans in the beginning, but we don’t really have a chance to practice on animals.”

Cathy first worked with Tsiky on a project in 2012, when Tsiky was in her final year of vet school. At that time, she hadn’t ever conducted a physical exam on a lemur, used a stethoscope, or recorded data in the field.



◀ Tsiky is one of only five veterinarians island-wide who are known to treat lemurs. “Since there are so many lemurs in captivity [in Madagascar],” she says, “it’s very important to consider their welfare and educate veterinarians on how to improve their lives... At my clinic, sometimes people try to give us pet lemurs that they don’t want. After coming here to the DLC, I have confidence I will be able to provide better care for those lemurs and share my knowledge with others.” Pictured: Tsiky with the DLC’s curator, Cathy Williams, and red ruffed lemur Buzz at the DLC. Photo by David Haring.

## ADVANCING LEMUR CARE AND MANAGEMENT IN MADAGASCAR

BY ANDREA KATZ

**AT THE INVITATION** of the Government of Madagascar’s Ministry of the Environment (MinEnv), four DLC staff members—conservationist Andrea Katz, veterinarian Bobby Schopler, animal care supervisor Britt Keith, and data manager Sarah Zehr—travelled to Madagascar in June to conduct a workshop on lemur care and management in Madagascar’s zoos and wildlife parks.

Held at Parc Ivoloina and co-hosted by the Madagascar Fauna and Flora Group (MFG), the workshop celebrated the new Lemur Care and Management Manual created by the DLC in collaboration with Malagasy colleagues. With chapters on breeding and social management, housing and enrichment, veterinary care and nutrition, animal records, zoo ethics, and wildlife laws, the new manual (in French) will serve as an official MinEnv document and advance standards of lemur care at zoos throughout Madagascar.

Over 30 representatives from the MinEnv, local conservation associations, and Malagasy zoos—including veterinarians, animal managers, and keepers—participated in the workshop. The manual was reviewed by the



▲ Workshop participants included Malagasy veterinarians and representatives from local zoos and conservation organizations—pictured here with special guests “safari Mickey” from Disney and “Rupert” from DLC! Nearly 40 persons, including the training teams from the DLC and Wild Welfare, participated in the workshop. Photo by Tom Schopler.

workshop’s participants, whose input will be incorporated into the upcoming final version.

In addition to presentations by Andrea, Bobby, Britt, and Sarah, Dave Morgan of Wild Welfare spoke about modern concepts of animal welfare and ethics. MinEnv staff led sessions on wildlife laws and the government’s goals to expand oversight of captive lemur facilities and cooperative breeding programs, and the group discussed the creation of a Madagascar Zoo Association to support these goals into the future. DLC staff is excited about next steps and the opportunities to grow our partnerships to benefit both ex situ and in situ lemur conservation in Madagascar.

“I’ve worked with a lot of veterinary students,” Cathy remembers, “But I’ve never met one so motivated to improve her skills. She was open to any route of learning, soaking up everything—suggestions, books, anything.”

That hasn’t changed, even seven years later. “You could tell the way she thought about cases and sick animals changed over her time here,” agrees Megan Davison, a Lemur Center veterinary technician who worked alongside Tsiky almost daily during her stay. In addition to her eagerness and upbeat attitude, Megan appreciated the cultural context she brought to the center.

“I always learn something new from someone coming in,” Megan says. “Whether it’s about new medicines or fresh insight from another institution, it’s valuable. But Tsiky brought a different cultural background, and hearing about MDI and how people see veterinary care in Madagascar helped me know what to expect if I were to ever work over there on a DLC project.”

After her time at the DLC, Tsiky now has the skills to treat lemurs brought to her clinic from the pet trade. “Sometimes we encounter pet lemurs that people want to give to us because they don’t know where to keep them,” says

Tsiky. “So, I will be able to take proper care of them and share my knowledge with my colleagues in zoos.”

She is one of only five veterinarians island-wide who are known to treat lemurs, and her connection to the Duke Lemur Center makes her a major source of lemur-related veterinary knowledge in Madagascar.

International exchange opportunities like Tsiky’s and Bevan’s provide insight into effective methods and new approaches to lemur care and conservation work, benefitting lemurs around

the world. By providing instruction to Malagasy veterinarians and guidance for zoos, we provide better care for captive lemurs in Madagascar, which leads to a better global breeding population, and better likelihood for species survival.

“But the greatest benefit from having Tsiky here,” Greg says, “is understanding the amount of passion and determination she has for protecting Madagascar’s natural resources. You see the drive of professionals like Tsiky, and you know: If the future of Madagascar is in hands like hers, it’s in very good hands.” 🐾

## THANK YOU, DONORS!

**BEVAN’S AND TSIKY’S** programs were made possible by the generosity of individual donors. Andrea’s lemur care manual and workshop were supported by a grant to the DLC from the Disney Conservation Fund and the Conservation Grants Funds of the Association of Zoos & Aquariums (AZA). Duke University alumni Drs. Elisabeth and Russel Cook provided key support for DLC staff members’ travel to Madagascar in June.

100% of funding for the DLC’s Madagascar conservation programs comes from private donations and grants. Please consider making a tax-deductible donation today! [LEMUR.DUKE.EDU/PROTECT](https://lemur.duke.edu/protect)



▲ Jovian, pictured at the Lemur Center in 2014, was famous as “Zoboomafoo”—the star of the PBS Kids show by the same name, hosted by brothers Martin and Chris Kratt. Photo by David Haring.

► In an episode of *Wild Kratts*, the Kratt brothers’ newest series, animated versions of Martin (wearing blue) and Chris (green) search for golden bamboo lemurs in Madagascar. “Wild Kratts is so different from *Zoboomafoo*,” says Martin. “There are so many ways to present wildlife and amazing animals in the natural world to kids.”



# A CONVERSATION *with* MARTIN KRATT

The creator of *Zoboomafoo* and *Wild Kratts* on his time at Duke and DLC, and the origin of his love for lemurs

BY SARA CLARK

**A** DUKE GRADUATE and former work-study student at the Duke Lemur Center, Martin Kratt is the co-creator (with his brother, Chris Kratt) of three popular children’s television shows about animals: *Kratts Creatures*, *Zoboomafoo*, and *Wild Kratts*.

*Zoboomafoo* in particular is dear to the Lemur Center’s heart. Starring Jovian, a much-loved Coquerel’s sifaka living at the DLC, the series aired 65 episodes in just over two years (1999-2001) and taught millions of children about lemurs and primate conservation.

This fall, we had a chance to talk to Martin about Duke, the DLC, and the behind-the-scenes experience of filming *Zoboomafoo*.

**SARA: You enrolled at Duke as an undergraduate in 1985. How did you discover the Duke Lemur Center? Did you know about it when you enrolled at Duke, or was it a “happy surprise” afterward?**

**MARTIN:** I had no idea! But I did come to Duke for zoology. I was originally pre-med

and thought I was going to be a conservation veterinarian. My first exposure to lemurs was the Duke Lemur Center. I took a primatology course with Patricia Wright,<sup>1</sup> and we’d go out to the Lemur Center. Also around that time, I got a work-study job at the DLC: I helped the technicians feed the animals and clean the enclosures. So I got to meet all the lemurs and see them close up—even Blue Devil, the first aye-aye ever born in captivity.

**When did you decide you wanted to be a filmmaker instead of a conservation vet?**

In my last semester at Duke, I took a film course and an amphibian ecology course. Part of the amphibian ecology course was going on weekends to catch salamanders all over North Carolina and Virginia, and I did my first film, *Hellbenders*, on the three-foot-long salamanders that live in the rivers. That won the Hal Kammerer film award at Duke, and that launched filmmaking for me.

When I graduated from Duke, I became a research assistant for Dr. Ken Glander,<sup>2</sup>



▲ Chris and Martin Kratt on the set of *Zoboomafoo*. Photo courtesy of The Kratt Brothers Company.

<sup>1</sup> Patricia Wright, Ph.D., was hired by the Duke Lemur Center in the early 1980s to establish its colony of Philippine tarsiers. She traveled to Madagascar in 1986 at the request of Elwyn Simons (director of the Duke Lemur Center from 1977-1991), when she rediscovered the greater bamboo lemur (*Prolemur simus*, then thought to be extinct) and discovered a new species, *Hapalemur aureus* (the golden bamboo lemur).



working with him on his howler monkey project in Costa Rica. Chris and I made some of our first videos there and had the idea of making a TV show about wildlife for kids.

The second trip, we went to Madagascar with Dr. Wright—and we filmed all the lemurs at Ranomafana, including the sifaka that were there [Propithecus edwardsi, the Milne-Edwards sifaka]. We traveled via taxi brousse [bush taxi] to the Ankarana massif. We went to visit the indri in Andasibe, then down to Beza-Mahafaly where we filmed another type of sifaka [Propithecus verreauxi, the Verreaux’s sifaka] and ring-tailed lemurs. So we were immersed in lemurs as we were making another one of our videos, which we were pitching to broadcasters trying to get a show; and ultimately we ended up getting *Kratts Creatures* on PBS.

**For your second series, we love that you chose to star Jovian, a Coquerel’s sifaka, and introduced an entire generation to lemurs! At that time, lemurs were relatively unknown in popular culture. What was it that inspired you to choose a lemur as your co-star in *Zoboomafoo*?**

It was working with lemurs while at Duke, and then going to visit them in their wild habitat in Madagascar, that led us to circle back to lemurs as an idea for our next television series. We chose a lemur because they’re so cute, they’re interesting, they’re personable. When Chris and I finished filming *Kratts Creatures*, we were like, “What are we going to do next?” And all our previous exposure to lemurs became the inspiration for *Zoboomafoo*. We wanted to do a show for younger kids who were getting their very first introductions to animals, and we thought a lemur co-star would be a great way to introduce kids to all these amazing creatures.

**Was there a moment when you thought, “We need a sifaka in this!”**

*Zoboomafoo* was a mix of Jovian, who was living at the DLC, and the puppet in Animal Junction—they were edited together to make the character seem as real and lively as possible. The sifaka in particular was the lemur species most suitable to match up with a puppet.

**So there was a practical consideration as well, with the creation of the puppet?**

Oh yeah! The thing about the sifaka is, they have such a perfect face for a puppet; even the way they sit, it works so well. It’s hard to bring a puppet to life. Having it match the real lemur as much as we could, to suspend the disbelief, just really worked with the sifaka.

We’d ruled out, very early on, the idea of taking a real lemur off-site to film—not just the stress of traveling, but we also wouldn’t want him anywhere near the live snow leopard that would come into Animal Junction, or the black bear! [Laughs] Instead the puppet interacted with all of the live animals. There were emus that would peck at the puppet’s eyes, and falcons would land on its head. The puppeteer could feel the talons on his hand through the fabric! It was a lot of fun!

**As you were filming on-set here at the DLC, what was that like?**

We came to the Lemur Center and we built an enclosure—a big one—where about one-third of the set of Animal Junction could be inside. Then we put a tent over it. Jovian and his family moved into the enclosure for a while, so they became very comfortable with it. There were a lot of fun things inside: ropes for them to hang on, perches designed just for lemurs so they could leap around. It was a very cool three-dimensional space for the sifakas to play in.

We filmed so much of Jovian and

his parents, Nigel and Flavia, jumping around. But it was mostly Jovian. And it was just really fun! It was funny what the lemurs would do: hang from their feet, grab your hair. I remember once when Jovian grabbed Chris’s nose with his foot—and those little moments of interacting with Jovian became a huge part of the show.

**What do you think made *Zoboomafoo* so successful?**

Our goal with *Zoboomafoo* was to give kids their first introduction to these amazing animals. We chose a sifaka as one of those really awesome animals that could help with those introductions in a fun way. We tried to create something that was playful, fun, a little unique; and with *Zoboomafoo*, we were able to get this really intimate, personal look at whatever animals wandered into Animal Junction. Zobo was a great guide because he always saw everything from the animal’s perspective.

**You and Chris have done so much to raise awareness of lemurs and other amazing, endangered animals and environmental issues. There are a lot of kids out there who want to be just like you when they grow up, helping save the world and the creatures in it. What advice would you give them?**

There are so many ways to present wildlife and amazing animals in the natural world to kids! *Wild Kratts*, our new show, is so different from *Zoboomafoo*. We can do things with *Wild Kratts* that we could never do with *Zoboomafoo*. Because it’s animation, we can show a walrus using its pharyngeal throat sacs to float around and take naps in the Arctic sea. It would be extremely difficult to film that that in the wild and do that scene.

So I would say, there are so many great wildlife shows that can be made.

## The enDANGERed Project

BY JULIE K.

**AS A KID**, I was completely obsessed with animals; I remember watching *Zoboomafoo* at four years old and loving it so much that my grandparents gave me my own stuffed animal lemur. *Zoboomafoo* was just one of many art forms that encouraged my love of learning and helped lead to the creation of The enDANGERed Project. The project explores the intersection of art history and science in order to raise endangered species awareness, especially of animals like the scimitar-horned oryx and the African painted dog that are less well known or talked about. Conservation will only be reached through education; I can only hope that my paintings teach others about our Earth’s amazing creatures and how to protect them.

*Julie K. is a painter, potter, and illustrator based in Columbia, SC. Learn more at [JULIEKART.COM](http://JULIEKART.COM).*



In the world of animals, there is so much amazing source material to explore! Every episode we do, Chris and I learn something new about animals. For us, it’s continued learning—from the time I was in zoology classes at Duke and working at the Duke Lemur Center, up to now.

**What’s the coolest thing you’ve learned recently?**

We’d just finished a *Wild Kratts* episode on tardigrades when we saw on the news that some tardigrades<sup>3</sup> had crash-landed on the moon. Our whole episode is about tardigrades on the moon, and how amazing they are at surviving there. It was such a weird coincidence! For kids, our episode is going to be a first introduction to these incredible animals that are in every pond and drop of water and can survive dormant on the moon and in outer space. I mean, they’re amazing.

**Do you have a favorite animal?**

Impossible to decide! [Laughs] We just got back from the Peruvian Amazon and saw, for the first time, the pink river dolphins. They’re so incredible!

And of course, we went back to Madagascar in the first season of *Wild Kratts* and made six episodes on lemurs: mouse lemurs, golden bamboo lemurs, sifakas, ring-tailed lemurs, and aye-ayes.

**I love that the aye-aye is on that list.**

Aye-ayes are amazing! The first aye-aye born in captivity was Blue Devil, right? I remember going into his enclosure to clean, and once he actually climbed down on me. He went out on my arm and looked at my watch, tapping it with his thin finger. He was so curious! I’ll never forget that. It was such a cool moment.

**Wow, that’s incredible! Anything else you’d like to add before you go?**

We’re just really happy that we’ve been able to support the Lemur Center’s mission of protecting and preserving endangered lemur species. It takes teamwork: all of the work the DLC is doing, scientists in the field from the Lemur Center and elsewhere, people working in national parks and reserves, Chris and me introducing kids to amazing endangered animals. There are so many ways to help endangered species, and lemurs are one of the most incredible groups of endangered species out there. It’s great work that the DLC and everyone else involved is doing to help lemurs. 🙏

<sup>2</sup> Kenneth Earl Glander, Ph.D., was director of the Duke Lemur Center from 1991-2001.

<sup>3</sup> Tardigrades are micro-animals also known as water bears; not to be confused with *Loris tardigradus*, the slender loris from southeast Asia which the Lemur Center used to house.

# A KID'S GUIDE TO HELPING LEMURS

BY SOPHIE BARNETT, JUNIOR INTERN IN COMMUNICATIONS

**T**HERE ARE so many ways you can help the DLC's lemurs thrive! Below are three different projects to help lemurs, all with instructions on how to complete them.

## 1 START A FUNDRAISER AT YOUR SCHOOL!

Would you like to help lemurs at the DLC and in Madagascar while learning more about your favorite species? Consider raising money to symbolically adopt a lemur through the DLC's Adopt a Lemur program! For just \$50, your group or club will receive an adoption packet and quarterly photos and updates about your lemur and its family for one year!

**Bake sales** are a fantastic way to raise money for a specific cause while also making sweet treats. The mechanics of a bake sale are simple: You bake cupcakes, Rice Krispies treats, and cookies to sell, generating money that you or your group can use to adopt a lemur!

Jacob Bullock is an elementary school student in Ridgeland, MS, who has always loved lemurs—especially aye-eyes! Jacob wanted to teach his

classmates about the most endangered primates in the world and began a **recycling drive** at his school to raise money to symbolically adopt one of the DLC's aye-eyes. He successfully raised \$100 to adopt an aye-aye for two years by encouraging his classmates and teachers to recycle aluminum cans.

## SEND A LEMUR A PRESENT!

Our lemurs love receiving presents! The Duke Lemur Center has an [amazon.com wishlist \(lemur.duke.edu/wishlist\)](https://www.amazon.com/wishlist) where you can find tons of fun toys and treats to send to our animals. You can even organize your own "toy drive"! If you purchase an item, be sure to include your name and email address in the notes field so the lemurs can send you a thank-you!

▼ Bertha, a Coquerel's sifaka, eyes herself in a baby mirror donated via the DLC's amazon.com wishlist. Photo by David Haring.



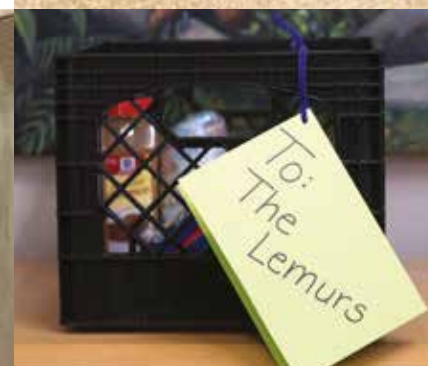
▲ Jacob Bullock began a recycling drive at school to raise money to care for an aye-aye through the DLC's Adopt a Lemur program ([lemur.duke.edu/adopt](https://lemur.duke.edu/adopt)).



▼ Wiig, a critically endangered blue-eyed black lemur, forages for treats hidden inside her cardboard roll enrichment toy. Enrichment toys promote curiosity, exploration, mental stimulation, and natural behaviors (like foraging). Photo by David Haring.



▼ 10-month-old Helene, a critically endangered ruffed lemur, plays with a donated feeder ball. Photo by Sara Clark.



▲ This lemur "toy box" included an awesome selection of items from our wishlist: a hanging plush bed, two hammocks, a toy mirror, and yummy cinnamon to add an enriching touch to our lemurs' daily diets! The crate itself was attached to a branch—to create a cozy place for a lemur—or two or three—to curl up for a nap.

# 3

## CREATE YOUR OWN ENRICHMENT TOYS!

Lemurs need to stay happy, healthy, and busy just like you! Enrichment is an important aspect of our lemurs' everyday lives and offers new sources of mental and physical stimulation each day. Below are step-by-step instructions on how to use everyday household items to make your very own enrichment toy for lemurs!

**Step 1:** Gather all of your bare cardboard rolls: they can be toilet paper rolls or paper towel rolls. Make sure they are free of all paper residue!



**Step 2:** Take a pair of scissors and carefully cut a roughly 1-inch slit onto two corresponding sides of the cardboard roll. Small children can also use a pencil to puncture a hole and then widen it with their hands.



**Step 3:** Take a washed fleece blanket and cut it into strips about 1.5 feet long and 1 inch wide.



Enrichment toy photos by Bob Karp

**Step 4:** Tie a knot about 2 inches from the end of one side of the fleece.



**Step 5:** Take your cut cardboard rolls and string them onto the piece of fleece until they are snug against the knotted end.



**Step 6:** Continue this process until you have five or six rolls on the string. You can even mix and match different sized rolls!



**Step 7:** Once your enrichment toy is complete, mail it to the Lemur Center so the lemurs can enjoy your present! Our mailing address is: Duke Lemur Center | Attn: Enrichment Dept. | 3705 Erwin Road | Durham, NC 27705. Or, if you're local, drop off the toy at our visitor center! 📬

# HOW MUCH IS THAT LEMUR IN THE WINDOW?

That lemur on Craigslist?  
Don't be fooled—it makes a terrible pet

BY COMMUNICATIONS INTERN WILL GOODWIN

It's tough to look at a ring-tailed lemur and not get the urge to hold one. With their plush coats, black button noses, and raccoon-ish eyes, you can't help but picture yourself taking one home and scratching behind his tufted ears. What's surprising is how simple it is to do just that. In some states in the US, including North Carolina, it's perfectly legal to own an animal as endangered and exotic as a lemur. In fact, there are an estimated 15,000 pet primates in the United States, and purchasing one is relatively easy: a couple thousand dollars and a trip to an online pet store is all it takes.

What many people don't realize is that,

despite its legality, keeping a lemur as a pet can be devastating to both the animal and the owner. Here's why:

## LEMURS ARE ENDANGERED

Lemurs are the most endangered group of mammals on Earth, with 95% of species facing a high risk of extinction. Although illegal to keep as pets in Madagascar, thousands of lemurs have been illegally removed from their wild habitats and kept in-country as household pets or as tourist attractions at Malagasy hotels and restaurants.

Much has been written about the serious, negative impact of the pet trade on the conservation of lemurs throughout Madagascar. This article addresses a

related, but different, issue—one that's even closer to home: the pet lemur trade right here in the US.

## LEMURS NEED LEMURS

Even though most pet lemurs that are sold in the United States are bred in the United States, this does not make the issue any less serious. An infant lemur destined to become a pet is taken away from its mother on the day of its birth and reared in isolation from other lemurs—bad news for a primate that, in the wild, lives in natural family groups and forms strong bonds with others of its species. “They're social animals,” says the DLC's conservation coordinator, Charlie Welch, who has seen many pet lemurs in Madagascar



over the years. “They need to be around other lemurs.”

“You cannot be a companion for a lemur like you can for a domesticated dog or cat,” adds the DLC's curator of behavioral management, Meg Dye. Lemurs have complicated inborn social habits and structures, which cannot be satisfied by humans. Isolation from other lemurs can have serious consequences, including the development of harmful coping strategies such as overgrooming, licking, biting, or chewing on their tails or limbs.

“A human-raised lemur,” says Cathy Williams, director of animal care and welfare at the DLC, “will be physically and psychologically maldeveloped—it's just bad for the animal.”

## LEMURS ARE WILD ANIMALS

It's important to understand the difference between *domestication* and *habituation*. Dogs, cats, sheep,

▲ If you want a pet, choose a domesticated animal—not a wild primate. Before bringing home any companion, make sure you have the time, money, and space to meet its needs. Even common domesticated animals can require highly specialized care. And in some species, like dogs, some breeds are harder to care for than others. *Photo of adoptable Tova by Assorted Poppies Photo for the Animal Protection Society of Durham, NC (apsfordurham.org).*

horses—these animals have been *domesticated*. This means that over long stretches of time, natural selection and selective breeding weeded out those animals whose temperaments weren't suitable for living alongside humans.

When you see a wild animal being “nice” to a human, it's likely become habituated to humans. That coyote or dolphin or black bear has grown accustomed to the presence of people, and in some cases can even be trained. But its inborn wild instincts will never go away,

▲ Although legal in some states in the US, keeping a lemur as a pet can be devastating to both the animal and the owner. The DLC is against all trade in pet primates, and against the holding of any prosimian (lemur, loris, bushbaby, potto) as a pet. *Photo by Bob Karp.*

which can make *habituated* wild animals unpredictable and even dangerous. A famous example is Mantacore, a white tiger who starred in Siegfried and Roy's legendary Las Vegas magic shows. During a live performance in 2003, Mantacore—then seven years old and having spent his entire life with humans, including being bottle-fed as a cub—attacked Roy Horn, paralyzing the performer and ending Horn's career.

Similarly, you may sometimes see photos or videos of lemurs acting

<sup>1</sup> The Association of Zoos and Aquariums (AZA) defines pets as “animals kept by humans for pleasure or companionship” and estimates 15,000 privately owned non-human primates in the United States. These can be “easily obtained” by the general public through “online advertisements, pet stores, and roadside attractions.” The problem isn't limited to lemurs, as “non-human primate species most commonly kept in personal possession include marmosets, tamarins, lemurs, capuchins, squirrel monkeys, macaques, baboons, and chimpanzees.”

affectionately towards their owners. Yet these lemurs are still wild animals. “There are a lot of risks you assume if you try to tame a wild animal,” says Cathy. Which leads us to...

#### LEMURS CAN BECOME AGGRESSIVE

Lemurs are dominance-oriented creatures. Their ingrained social structure requires an alpha, generally a female. While pet lemurs may seem calm and content as infants, when they reach sexual maturity, they begin to crave structure and assert dominance. With no other lemurs around, they may attempt to establish dominance over their owners in a similar manner as lemurs naturally do with other lemurs: by lunging, chasing, grabbing, and biting.

“Fairly frequently, we’ll get calls from lemur owners asking how to handle their pet now that it’s begun to bite or scratch them, or wondering where they can send a lemur they don’t want anymore,” says Megan McGrath, education programs manager at the DLC. “I remember one call, they said ‘I’m trapped in my bathroom and he’s outside the door. How do I escape?’” Since there aren’t many facilities prepared to foster abandoned lemurs, public officials may be forced to euthanize them.

#### LEMURS ARE EXPENSIVE

According to the American Kennel Club, keeping the average dog healthy and fulfilled will set you back \$15,000 over a typical thirteen-year lifespan. If cared for properly, prosimians in human care can live 30 years or more. The health and general welfare of a lemur can cost the Duke Lemur Center upwards of \$220,000 over the lifespan of a single lemur—and we get to buy food in bulk.

#### LEMURS ARE STINKY

If you’re not turned off by the price tag, you should know this: lemurs stink. Most species of lemur communicate through *scent marking*. Ring-tailed lemurs are one of the more sought-after species for

ownership. The males have scent glands in their wrists and on their chests and the females have scent glands directly under their tails, close to the anus. They’ll rub these glands on surfaces to mark their territory. In the wild, they’ll stink up a tree. In your home, they may decide to scent mark your sofa.

In addition to scent marking with their glands, lemurs will urine mark just as frequently. Some species, such as ruffed lemurs, also have loose, splatty stools. Because they’re primates like us, humans and lemurs can easily pass diseases to one another, including tuberculosis and intestinal infections like giardia. Transmission can happen through direct contact, like touching fecal matter, or indirectly, by breathing the same air.

#### LEMUR VET CARE IS HARD TO FIND

Think of how often dogs or cats get sick and are taken to the vet. Yet very few animal hospitals are equipped to treat primates, and fewer still have the expertise to care for lemurs specifically. Recently a pet lemur owner requested help diagnosing toxoplasmosis via the DLC Facebook page, because “all the vets I work with don’t do exotics.” Another commented, “I have a 32-year-old brown lemur. I was wondering if there were some zoological/vet care guides for lemurs?” Unfortunately, there are no lemur vet care manuals.

#### LEMURS ARE HARD WORK EVERY DAY

Between habitat maintenance, daily enrichment, routine and emergency medical attention, and food prep, lemur care is a 24/7 job and a 365-days-per-year life-altering responsibility. An owner cannot take her lemur to a boarding facility or hire a pet sitter when she goes on vacation.

Even providing a lemur with a proper daily diet is complicated. Owners occasionally contact us, already having purchased a pet lemur, with no idea what to feed them. In one case, the owners

of a ring-tailed lemur named Milo were feeding him pizza and ice cream. Another owner messaged the DLC, asking whether to feed her lemur lettuce. In a reality television show filmed in eastern North Carolina, a lemur is shown eating a slice of bacon.

That pet lemurs tend to have serious nutritional problems from being fed inappropriate diets exacerbates the problem of limited access to qualified veterinary care. Unfortunately this can lead to privately-held pet lemurs developing a host of illnesses and dying prematurely.

#### HOW TO HELP

If you want a pet, choose a domesticated animal and not a wild primate. But before bringing home a companion, do your research to make sure you’re prepared to meet its needs. Even seemingly “simple” domesticated pets like guinea pigs are social, herd animals that do better in pairs or groups and need plenty of space, enrichment, and a high-quality diet (hay, pellets, and fresh fruits and veggies) every day.

Even if you never own a pet lemur yourself, there are choices you can make to reduce others’ interest in lemurs as pets.

The Association of Zoos and Aquariums (AZA) has reported that viewing lemurs in contact with humans increases the public perception that they are suitable as pets. Avoid businesses and wildlife parks that offer contact with lemurs or other wild animals, such as yoga with lemurs or hands-on “encounters” involving touching or feeding.

Videos and selfies where humans and animals are in direct contact go viral all the time. After a clip of a ring-tailed lemur motioning for a child to pet it accrued millions of views, there was a dramatic increase in Google searches for the phrase “pet lemur.” The next time you come across a video of a pet lemur in a bathtub, or a photo of a diapered ring-tail perched on someone’s shoulder, don’t share it. 🙅

## STAFF SPOTLIGHT:

# MEET BOBBY SCHOPLER, THE DLC’S SENIOR VETERINARIAN

**Number of years at the DLC:** 14

**How he became a lemur vet:** I grew up exploring the woods and streams of Chapel Hill enthralled with snakes, turtles, fish, and farm animals. The summer after my freshman year of high school, I travelled to east Africa with a school group to observe African wildlife and climb Mt. Kilimanjaro. I majored in zoology as an undergraduate at UNC-Chapel Hill. I went to vet school at NC State University and helped form the Wildlife, Avian, Aquatic, Zoological Medicine club. I married the love of my life whom I had met at a wilderness camp in western North Carolina at age 7. After graduating from vet school (me) and nursing school (Elley), we moved to Ethiopia so I could work with African animals. We moved back to NC to raise a family. I went to UNC graduate school to get a Ph.D. in Epidemiology to better study diseases in wildlife populations. My love of wildlife resulted in my volunteering at the Animal Protection Society (APS) to help with wildlife care. I opened the APS Wildlife Center and later the Piedmont Wildlife Center. Yes, a consistent love of wildlife led me here.

**What it’s like:** At the Lemur Center, my job constantly changes—no day is the same. That’s what five genera, 14 different species, and over 200 individual lemurs provide! Something new and perhaps unexpected happens almost every day. When I tell people who ask me “What do you do?” that “I am a lemur vet,” I usually get a reaction of “Wow, that’s really neat!” and/or “That’s



▲ Bobby Schopler, D.V.M., Ph.D., works with veterinary and research assistants Hoby and Elodi at Anjajavy Reserve in Madagascar to radio collar an aye-aye.

pretty specialized.” Interestingly, to be a lemur vet it helps to be a generalist: part internist, part dentist, part surgeon, part ophthalmologist, part pharmacologist, part orthopedist, part theriogenologist, part pediatrician, part nurse, part physical therapist.

There are not a whole lot of books on lemur medicine. So much of what I do in lemur medicine comes from talking with other lemur vets (Cathy Williams), experience (thanks to all the lemurs for putting up with my learning), and experts in the field of medicine (extrapolated from the literature of small animal medicine, large animal medicine, primate medicine, and human medicine). One of the most enjoyable aspects of my job is sharing the information and cumulative knowledge the DLC has to offer with veterinary students and, most importantly, Malagasy

veterinarians. This year we even had our first Malagasy veterinary intern, Tsiky Rajaonarivelo.

**Memorable day at work:** The first time I did a pregnancy check on a mouse lemur with an ultrasound machine and saw three little fetuses. Also performing a caesarian section on Antonia [a Coquere’s sifaka] to deliver baby Valeria.

**Best advice ever received:** My father told me, “Follow your passion and don’t look back. Make the best decision with the information you have and proceed with no regrets.” 🙌



# 53

## YEARS *of* LEMUR DATA AVAILABLE ONLINE

BY DLC STAFF

**A** 53-year archive of life history data for the world's largest and most diverse population of endangered primates is now available for free download online. Fully updated in 2019, the Duke Lemur Center database allows visitors to view and download data for more than 3,700 animals representing 27 species of lemurs, lorises, and galagos.

Since the DLC's first data release in 2014, data has been utilized by students, scientists, veterinarians, zoo professionals, and educators from 25 countries around the world. The 2019 update contains the same file types released with the original manuscript in 2014, plus additional data collected over the intervening years. A total of 130 animals have been added to the database.

According to registry information collected via the Duke Lemur Center website, the majority of downloads have been by undergraduate students (26%) and graduate students (25%). 12% of downloads were by veterinarians and zoo professionals, and 7% were by high school students and educators. 62% of registrants used the data for research projects.

### A "TREASURE TROVE" OF DATA

The DLC's treasure trove of data, which contains information about the lives, health, and habits of thousands of animals, dates from the center's beginnings in 1966. The large sample sizes, exact dates of events, and longitudinal data that in many cases span an animal's entire life make these data sets unique, particularly within the primate literature.

Because lemurs are teetering on the brink of extinction, it's extremely unlikely that a collection of similar size will ever be recreated, says Dr. Sarah Zehr, a research scientist and former Data Manager at the DLC. "Many of these species are critically endangered in the wild, so they're unlikely to be held in captivity again. This means that the data are irreproducible."

By making its data available to the world, the DLC hopes that the information will help institutions better care for lemurs in captivity, and help researchers and conservationists understand these animals in order to better protect them in the wild. Lemurs are the most endangered mammals on Earth, and by studying the variables that most affect their health, reproduction, and social dynamics, we learn how to most effectively focus our conservation efforts in Madagascar. 🐵

### HOW TO ACCESS

To download the updated datasets, please visit [lemur.duke.edu/2019-data-release](http://lemur.duke.edu/2019-data-release)

*The project was supported by the Institute of Museum and Library Services (MA-30-16-0191-16), National Evolutionary Synthesis Center, and the National Science Foundation (DBI 1258440). Additional support was provided by the Duke Lemur Center and Duke's Natural Sciences Division.*



### PHOTOS ON PREVIOUS PAGE AND THIS PAGE:

**1** Rupert, an infant Coquerel's sifaka, during a routine weighing. One of the ways the DLC monitors the health of an infant is the infant's weight. Young Rupert was weighed regularly and his growth curve was compared to other sifaka infants born at the DLC, which helped our veterinarians ascertain whether he was growing at a healthy rate. The center's database contains 82,609 weight measurements for more than 2,200 animals, taken over each animal's lifespan.

**2** Staff at the Duke Lemur Center observe and record virtually every aspect of an animal's life from birth to death. They know when each animal was born, who her parents were, how fast she grew, what she ate, which animals she mated with, how many offspring she had, and when and why she died.

**3** Blue-eyed black lemurs represent one of the 25 most endangered primates in the world. Wiig, Murphy, and McKinnon are among 27 species of endangered primates at the Duke Lemur Center whose lifelong records are digitized and available online. Researchers hope the data will help the last blue-eyed black lemurs left in the wild—possibly fewer than 1,000—hold on.

**4, 5 & 6** A few of the infants born at the DLC since the previous data release in 2014: Agatha, Gellar, Hostilian, Kek, and Griselda. A total of 130 animals have been added to the data.

## RESEARCH SPOTLIGHT: THE FAT-TAILED DWARF LEMUR

**COULD THIS** six-ounce hibernating primate hold the key to deep space travel?

The Duke Lemur Center is home to more than 20 fat-tailed dwarf lemurs—the world's only hibernating primates. By mimicking the environmental factors that trigger hibernation in these ancient cousins of ours, Duke researchers are gaining significant insight into how this incredible survival technique works.

Once understood, primate hibernation

may help the US military lessen the effects of sleep deprivation in soldiers on long combat missions; extend the lives of people awaiting organ transplants until suitable donors can be found; and, because hibernating lemurs live up to ten years longer than their non-hibernating cousins, identify "anti-aging" genes in humans. By helping us learn how to induce a hibernation-like condition in astronauts, these little lemurs may even help us leave the galaxy! 🚀



IMPERCEPTIBLE  
BRAIN  
ACTIVITY

RESPIRATORY RATE  
DROPS FROM  
**60**  
BREATHS PER MINUTE  
TO LESS THAN  
**1**  
BREATH PER MINUTE

CORE TEMPERATURE  
DROPS FROM  
**98° TO JUST 2°**  
ABOVE AMBIENT  
TEMPERATURE

HEART RATE DROPS FROM  
**300**  
BEATS PER MINUTE TO  
**8**  
BEATS PER MINUTE

# HOW THE INDRI LOST HIS TAIL: *A Malagasy folktale*

AS TOLD BY CHARLIE WELCH  
WRITTEN BY COMMUNICATIONS INTERN WILL GOODWIN  
AND ILLUSTRATED BY EDUCATION INTERN LEELA WISSMANN



**A**s we all know, Babakoto has a short stumpy tail and Varikandana has a black, fluffy tail.\* However, it was not always this way.

Many, many years and many, many lemur generations ago, Babakoto had a long, beautiful tail. The tail was so plush, so luxurious, it was the envy of the rainforest! But Varikandana had no tail at all, only a humble stump.

One day, Varikandana asked Babakoto for a favor.

“There’s an important celebration tonight, my friend, and all the lemurs in the rainforest will be there. I must look my absolute best. Please, may I borrow your magnificent tail to wear to the party?” asked Varikandana.\*\*

Babakoto stroked his tail lovingly, then slowly shook his head.

“I’m sorry, but I can’t help you. I love my tail. It helps me keep my balance as I jump

through the forest. I simply cannot part with it.”

Varikandana looked ready to cry.

“Please, please, I must look my best! All the other lemurs have lovely tails, and I have none! If I appear at the party with no tail, they’ll think I’m underdressed. Please, please help me!”

Babakoto shook his head again. Varikandana begged and nagged and moaned and groveled at Babakoto’s feet. He followed Babakoto around all day, pleading for his help.

“Alright, fine!” sighed Babakoto, worn down and rolling his pale yellow eyes. “You may borrow my tail for the party—but only on one condition.”

“Anything!” cried Varikandana, rubbing his hands together.

“You must promise that you’ll give it back tomorrow morning, unharmed. I love my tail, and I would be heartbroken to see it hurt.”

“Of course, of course! You have my word,” pledged Varikandana. Babakoto



reluctantly gave him his tail. He felt uneasy, but it was too late. Varikandana leapt away, cackling with joy and flicking his new fluffy, black tail. Babakoto sat down, feeling a bit empty, hoping Varikandana would keep his word.

The party came and went and Babakoto paced nervously all night, wishing he could run his toothcomb through his tail and wrap it around his shoulders for comfort. Morning came and Babakoto, who hadn’t slept a wink, saw no sign of Varikandana. *Maybe he overslept*, thought Babakoto, or *he could have gotten lost*. A second day came and went. Still no tail. On the third morning, Babakoto decided to look for Varikandana and find out why he’d broken his word.

Before long, he found Varikandana relaxing on a high branch with gentle sunlight dappling his coat through the canopy. He swung Babakoto’s lustrous, voluminous tail lazily back and forth.

“I want my tail back, you promised you’d give it back!” demanded Babakoto.

Varikandana lolled his head over to smirk at Babakoto.

“About that,” he began, daintily grooming his tail. “I’ve grown attached to this tail. I’ve gotten many compliments already. It feels like a part of me now, and I think I’ll keep it from now on.”

“You gave your word!” said Babakoto, indignant. Varikandana shrugged and, rolling over, prepared to go back to sleep. Babakoto gazed longingly at his tail, his eyes welling with tears. He loved his tail too much to risk harming it in the struggle trying to get it back. He went home tailless, crying all the way, while Varikandana laughed and laughed.

Babakoto is still sad today, and you can hear it in his mournful, wailing call as he laments the loss of his lush black tail. Varikandana still has that splendid, stolen tail, and to this day you can hear his cackling laughter echoing loudly through the rainforest. 🤪

\* Babakoto (pronounced “Baba-KOO-too”) is the Malagasy name for the indri lemur, *Indri indri*. Varikandana (“Vari-KAHN-dun-a”) is the Malagasy name for the black and white ruffed lemur, *Varecia variegata*.

\*\* Although Varikandana claims “all the lemurs” will be there, he seems to know Babakoto will not. This part of the story is lost to us. Babakoto is a reasonable and well-liked lemur, so perhaps he had his own reasons.



## LEMUR CENTER NAMES GREG DYE NEW EXECUTIVE DIRECTOR

BY ROBIN SMITH, PH.D.

Originally published in *Duke Today* on February 13, 2019. Reprinted with permission.

**L**emurs and killer whales have more in common than you might think. Sure, one prefers bananas and the other fish. And while lemurs are cat-sized, killer whales can grow to nearly the size of a bus. But both creatures can form friendships, solve puzzles and live for decades, says the Duke Lemur Center's Greg Dye.

He should know. Dye, who began his career as a marine mammal trainer three decades ago, will take up the role of executive director of the Duke Lemur Center in July. He will succeed biology professor Anne Yoder, who led the center for 12 years.

Dye, 52, has been serving as the center's interim director since June 2018, when Yoder stepped down. Before that, he was the director of operations and administration, responsible for the day-to-day workings of the 70-acre, 42-employee facility that

houses more than 200 rare and endangered primates.

"Leadership matters. That's what I saw with Anne," Dye said. "She's an innate leader. She knows how to pull a team together and how to move them forward. That's what I want to do."

Dye started his career in the mid-1980s at SeaWorld, where he worked his way through college training animals like killer whales, sea lions and dolphins.

He'd only been there a few weeks when he almost drowned during a "play session" with a 1200-pound walrus.

"The advice I'd gotten was, 'don't let her get you in a corner,'" Dye said. "And within 30 seconds she had me in a corner."

The walrus, named Slowpoke, plunged to the bottom of the pool with her new play thing and pinned him underwater for over a minute before someone finally managed to coax her off.

Dye not only escaped the life-threatening encounter, "I still came back to work the next day," he said.

When he wasn't training animals to flip, jump, or dive during shows, Dye also spent time teaching animals to participate in non-invasive research and cooperate in their own care. Trainers might, for example, teach a walrus to waddle up to a scale to get weighed or a sea lion with cataracts to accept eye drops.

"That's when I got the bug," Dye said.

He went on to become the lead animal care specialist at Shedd Aquarium in Chicago. Along the way he also earned a master's degree studying bottlenose dolphins at Western Illinois University. Dye then moved to the Chicago Zoological Society, where he worked as the curator of marine mammals for nine years.

He and his wife had left Chicago and were busy running a consulting firm helping zoos and aquariums in countries as far away as South Africa when he learned, in 2008, that the Duke Lemur Center was looking for an operations manager.

As Yoder wrote several years ago, reflecting on her early days working with Dye, "I knew that I needed someone very special... Someone with experience in housing live animals, who also knew a thing or two about HVAC and electrical systems, and who could coax the best from each individual staff member while reshaping them as a team. And a little experience with animal training wouldn't

hurt. Easy to find... right? You would think not, but then Greg Dye walked through my office door."

"It was so off my radar," Dye said. "I knew nothing about primates. But the fact that it was a noninvasive research center really struck a chord with me."

Dye rose to the challenge, and what started as a two-year commitment became a 10-year partnership. "Anne is by far the best person I've ever worked for in my life. Passionate, fun, smart," he said. "Together we brought new energy and innovation to the center and it just all clicked."

Responsible for keeping the center running smoothly day-to-day, Dye handled everything from hiring and supervising staff to managing budgets and facilities, setting goals and running meetings. He no longer wore a wetsuit at work. But waterproof boots still came in handy. In a given day he might wear a tie one moment and carry a shovel the next.

When Dye was hired in 2008, the center was undergoing a major face-lift. Yoder and Dye oversaw a \$10 million project to build 35,000 square feet of new indoor and outdoor housing where lemurs could live. Their first winter, he spent countless hours at the center in the middle of the night, making sure the heat was working.

During this time the center also launched a new conservation initiative in the SAVA region in northeastern Madagascar, with programs ranging from

environmental education to fish farming and family planning.

"With the programs we've developed in Madagascar we've built this virtual bridge from Durham to the SAVA region," Dye said. "Now we have DukeEngage students going out there."

And, although the Lemur Center had long given tours, it grew in that area as well, from an average of 13,000 visitors a year to more than 32,000.

Dye brings significant managerial experience and business training to the role. In addition to his previous leadership positions he is also a 2013 graduate of the Duke Leadership Academy.

One of his visions for the center is to continue to raise its profile as a leader in research. He will be supported by an advisory committee made up of four Duke researchers and four researchers outside of Duke.

He also plans to focus on increasing the diversity of students and faculty, and putting the center on more stable financial footing.

Altogether the center has an annual budget of \$4.45 million, nearly half of which comes from outside grants and donations.

Ten years after he arrived, Dye says his best days at the office are still "any day that I get to spend with the animals out in the forest. It's never lost on me." 🐼





4520132-693600  
Duke University  
Duke Lemur Center  
3705 Erwin Road  
Durham, NC 27705

# ON AIR NOW!

## New Adopt a Lemur commercial featuring John Cleese

**NYC DIRECTOR** & producer **Joe Whelski** has partnered with the Duke Lemur Center to create a commercial encouraging viewers to participate in the DLC's Adopt a Lemur program! Comedy legend (and huge lemur supporter!) **John Cleese** has graciously lent his voice to the spot. The commercial is slated to be released in late fall 2019 and features the work of top-notch NYC creators, including: **Alan J. Carmona** as Director of Photography, sound work by **BtOven Music**, editing by **Matt Hartman**, co-producing by **Mila Milosevic**, and **Nick Goodey** and **Alyssa Briddes** sharing writing duties with Whelski.

John Cleese, Joe Whelski, and all others involved in the project have lent their time and talent to the commercial pro bono, without charge to the DLC. We are so incredibly grateful, and we cannot wait to see the final result!

Voiceover: **John Cleese**

Director and Producer: **Joe Whelski, Secret Station Films**

Writers: **Alyssa Briddes, Nick Goodey, and Joe Whelski**

Director of Photography: **Alan J. Carmona**

Associate Producers: **Mila Milosevic and Alan J. Carmona**

Sound recording, music, design, and mix: **BtOven Music, NYC**

Editing: **Matt Hartman**

Colorist: **Steve Ratigan**

Special thanks to: **Steve Gal, Du-All Camera**



▲ John Cleese with Romulus, a Coquerel's sifaka, at the Duke Lemur Center in 2015. Cleese has a long history of lemur love. "In addition to being a brilliant and funny man, he's a genuinely caring person and passionate about lemurs and conservation," says the DLC's conservation coordinator, Charlie Welch. "We owe him so much." *Photo by David Haring.*

[LEMUR.DUKE.EDU/CLEESE](http://LEMUR.DUKE.EDU/CLEESE)

THE ADOPT A LEMUR PROGRAM HELPS FUND THE \$8,400 PER YEAR COST TO CARE FOR EACH LEMUR AT THE DLC, AS WELL AS AIDING OUR CONSERVATION EFFORTS IN MADAGASCAR. TO LEARN MORE, PLEASE VISIT [LEMUR.DUKE.EDU/ADOPT](http://LEMUR.DUKE.EDU/ADOPT).