



RCVD DEC 16 2019

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Department of Interior
U.S. Fish and Wildlife Service
Federal Fish and Wildlife Permit Application Form

Type of Activity

U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803
1-800-358-2104 or 703-358-2104

**EXPORT/RE-EXPORT/IMPORT/INTERSTATE AND FOREIGN
COMMERCE/TAKE OF ANIMALS (LIVE/ SAMPLES/PARTS/PRODUCTS)
under the Convention on International Trade in Endangered Species
(CITES) and/or the U.S. Endangered Species Act (ESA)**

Complete Sections A or B, and C, D, and E of this application. U.S. address may be required in Section C, see instructions for details. **Instructions on how to make your application complete and help avoid unnecessary delays are attached.**

Section A: Complete if applying as an individual

1.a. Last Name		1.b. First Name	1.c. Middle Name/Initial	1.d. Suffix
2. Date of Birth (mm/dd/yyyy)	3. Telephone Number	3.a. Alternate Telephone Number	4. E-mail address	

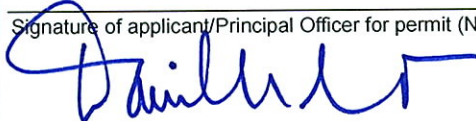
Section B: Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution

1.a. Name of business, agency, Tribe, or institution University of Massachusetts Amherst		1.b. Doing business as (DBA) Scientific researcher		
2. Tax identification no. 04-3167352		3. Description of business, agency, Tribe, or institution Massachusetts Public University		
4.a. Principal officer Last name Sacco	4.b. Principal officer First Name Daniel	4.c. Principal officer Middle name/initial N	4.d. Suffix	
5. Principal officer title Sr. Assoc. Director, Research Compliance		6. Primary contact name Rachel Bell		
7.a. Business telephone number 323-595-9779	7.b. Alternate telephone number 413-545-7397	7.c. Business fax number	7.d. Business e-mail address rbbell@umass.edu	

Section C: All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes) W16 Machmer Hall, 240 Hicks Way				
1.b. City Amherst	1.c. State MA	1.d. Zip code/Postal code 01003	1.e. County/Province Hampshire County	1.f. Country USA
2.a. Mailing address (include if different than physical address; include name of contact person if applicable)				
2.b. City	2.c. State	2.d. Zip code/Postal code	2.e. County/Province	2.f. Country

Section D: All applicants MUST complete

1. Attach the nonrefundable application processing fee in the form of a check or money order payable to the U.S. FISH AND WILDLIFE SERVICE in the amount of \$100. Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – attach documentation of fee exempt status as outlined in instructions [50 CFR 13.11(d)].
2. Certification: I hereby certify that I have read and am familiar with the regulations contained in Title 50 Part 13 of the Code of Federal Regulations and the other applicable parts in subchapter B of Chapter I of Title 50 , and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.
Signature of applicant/Principal Officer for permit (No photocopied or stamped signatures) Date of signature (mm/dd/yyyy)  12/10/2019
Please continue to next page

E. EXPORT/RE-EXPORT/IMPORT/INTERSTATE AND FOREIGN COMMERCE/TAKE OF ANIMALS (Live/samples/parts/products) (CITES and/or ESA)

Allow at least 90 days for the application to be processed. Applications for endangered species permits must be published in the Federal Register for a 30-day public comment period.

Complete all questions on the application. Mark questions that are not applicable with "N/A". If needed, use separate sheets of paper. On all attachments or separate sheets you submit, indicate the application question number you are addressing. If you are applying for multiple specimens, be sure to indicate which specimen you are addressing in each response.

NOTE: The import of live southern white rhinoceros from South Africa and Swaziland must meet specific CITES criteria for an import permit to be issued. If you are requesting authorization for the import of these species, please ensure that you respond to question 14 below.

Electronic submission of inventories, photographs, and receipts: Some applications contain extensive inventories and/or a large number of photographs or receipts. You may provide electronic versions of the documents. Such a submission will assist the processing of your application since it may reduce data entry by the U.S. Fish and Wildlife Service. If you wish to provide information electronically, once you have received an application number via the e-mailed acknowledgment letter, e-mail your information to Permits@fws.gov. Be sure to include the application number provided in the acknowledgment e-mail that will be sent to you when we receive your application.



I will be submitting documents electronically.

1. Name and address where you wish the permit to be mailed, **if different from page 1**. If you would like expedited shipping, please enclose a self-addressed, pre-paid, computer-generated, courier service airway bill. If unspecified, all documents will be mailed via regular mail through the U.S. Postal Service.

2. Who should we contact if we have questions about the application (name, phone number, and e-mail)?

Rachel Bell, 323-595-9779, rbbell@umass.edu

3. Have you or any of the owners of the business (if applying as a business, corporation, or institution), been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed; been convicted, or entered a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act; forfeited collateral; OR are currently under charges for any violation of the laws mentioned above?



No



Yes

If you answered "Yes" to Question 3, provide: a) the individual's name; b) date of charge; c) charge(s); d) location of incident; e) court, and f) action taken for each violation. Please be aware that a "Yes" response does not automatically disqualify you from getting a permit.

4. What activity are you requesting authorization to carry out (Indicate appropriate activities):

☐ EXPORT ☐ RE-EXPORT ☒ IMPORT ☐ TAKE (e.g., cull, lethal harvest)
☐ INTERSTATE COMMERCE ☐ FOREIGN COMMERCE

Note: Interstate Commerce permits authorize the sale of endangered and threatened species across State lines, but only for activities that will contribute to enhancing the propagation or survival of that species.

Interstate commerce activities with wildlife require the buyer to obtain a permit prior to the sale or offer for sale.

ALL REMAINING QUESTIONS ANSWERED ON SEPARATE DOCUMENTS (SEE ACCOMPANYING PDF AND EXCEL SPREADSHEET)

5. For **EACH** animal/specimen involved in the proposed activity provide:

a. Scientific name (genus, species, and, if applicable, subspecies)	b. Common name	c. Birth/ Hatch Date (mm/dd/yyyy) (approximate of actual unknown)	d. Wild or captive-born	e. Quantity	f. Gender (male or female, if known), if	g. Permanent markings, if alive (e.g., tattoo, ID #, microchip #, scars)	h. Type of sample or product (e.g., blood, tissue, DNA)
EXAMPLE: <i>Pan troglodytes</i>	Chimpanzee						

6. The current location of the specimen(s) (address and country):

Name:

Address:

City:

State/Province:

County, Postal Code:

7. Recipient/Sender:

- If **export**, provide name and address of the recipient in the foreign country.
- If **re-export**, provide the name and address of the recipient in the foreign country.
- If **import**, provide name and address of the exporter in the foreign country.
- If **interstate or foreign commerce**, provide name and address of the proposed seller/supplier.

Name:

Address:

City:

State/Province:

County, Postal Code:

SOURCE OF SPECIMEN (answer question 8 or 9 for **EACH** animal/specimen involved, as appropriate).

8. For captive-bred animals or animal(s) from which the specimen(s) are/were obtained, provide a signed and dated statement from the breeder that includes the following:
 - a. Scientific name (genus, species, and, if applicable, subspecies) and common name;
 - b. Name and address of the facility where the animal was bred and born;
 - c. Birth/hatch date (mm/dd/yyyy), and, if applicable, identification information;
 - d. Location (name of facility, address, city, State, postal code) of parental stock;
 - e. A statement that the animal was bred at the above facility;
 - f. Documentation demonstrating the history of transactions (e.g., chain of custody or ownership of the animal).
9. For **EACH** animal/specimen **taken from the wild**, provide the following:
 - a. Scientific name (genus, species, and, if applicable, subspecies) and common name;
 - b. Specific location of where, when, and by whom (name and address) the specimen was removed from the wild;
 - c. Purpose of removal and length or approximate length of time held in captivity. Discuss issues such as the method of collection, was the collection done as part of a larger study, were animals returned to the wild after sampling, and did any mortalities or injuries occur due to collection or holding;
 - d. If and how any remuneration, either financial or in-kind, was provided for taking or capturing animals or for the collection of samples.
 - e. Your efforts to use captive specimens (e.g., captive-born, captive-held), or parts thereof, in lieu of taking animals from the wild.
 - f. Copies of your foreign or domestic collecting permit, license, contract or agreement;
 - g. Documentation showing that the specimen(s) was/were legally obtained by the applicant; and
 - h. Copies of any applicable State, Tribal, Federal, or Foreign government permits or licenses that authorized the removal of this animal from the wild.

JUSTIFICATION FOR REQUESTED ACTIVITY.

10. Provide a detailed statement justifying the proposed activity, particularly the following:

- a. Describe the purpose of your proposed activity. For example, if the purpose is scientific research, attach a copy of your research proposal outlining the purpose, objectives, methods (e.g., specific information on survey/collection methods, sampling regime, equipment to be used), and whether similar work has already been done or is currently being done. If the purpose includes conservation education, provide copies of educational materials (e.g., handouts, text of signage or public presentations), and include the purpose and objectives of the proposed activity. If the purpose is for propagation for conservation purposes (including culling as part of herd management), provide a description of how the species will be propagated and the disposition of progeny, as well as long-term goals of the breeding program, how the breeding program is managed to maintain genetic vitality, and information on any cooperative breeding programs or agreements that are/will be established, including any future plans for re-introduction.
- b. Description of the technical expertise of each person (please also include CV or resume), as it relates to the proposed activities. If the proposed activity involves live animals, include the experience of each animal caretaker working with the species.
- c. Copies of contracts, agreements or other documents that identify persons involved and dates of activities for which authorization is being requested.

11. A statement on how the activities will **enhance or benefit the wild population** (e.g., in-situ and ex-situ projects).

12. If live specimens are to be held in captivity as part of the proposed activity:

- a. Provide a detailed description (e.g., size, construction materials, protection from the elements) and photographs or diagrams (no blueprints, please) clearly depicting the existing facilities **where the wildlife will be maintained**. If the specimens will be housed at multiple facilities, either immediately or within the next year, provide a full description of each facility. If you are unsure of which facilities may be receiving specimens (e.g., final decisions on placement have not been made), please indicate likely candidates and the mechanism that will be used to determine recipient facilities;
- b. A statement of the specific technical experience of CV or resume available to the recipient(s) for maintaining and propagating live specimens of the same or similar species;
- c. The number of years each species has been maintained at the facility;
- d. The number of births by year for each species for the last 5 years; and
- e. Mortalities at the facility with these or similar species in the last 5 years, causes of such mortalities, and steps taken to avoid or decrease such mortalities.

IMPORTS, EXPORTS, OR RE-EXPORTS.

13. For shipment of LIVE specimens, the transport conditions for animals must comply with the CITES Guidelines for Transport of Live Animals or, in the case of air transport, with the International Air Transport Association (IATA) live animal regulations (contact airline for information). As such, describe:
 - a. The type, size, and construction of any shipping container; and
 - b. The arrangements for watering or otherwise caring for the wildlife during transport.

14. For import of live southern white rhinoceroses from South Africa and Swaziland, a determination that the importing facility meets the CITES "appropriate and acceptable destination" annotation must be made. Therefore, provide written documentation demonstrating that the proposed activity would promote *in situ* conservation of the species. **Note: *For any permit authorizing trade of live rhinoceroses under an "appropriate and acceptable destination" annotation, the rhinoceros horn from these animals may not enter commercial trade and the animal may not be sport hunted.***
15. For import of **LIVE CITES Appendix-I listed marine mammal species**, provide a copy of your FWS or NOAA Fisheries permit or authorization.
16. For import of **CITES Appendix-I listed species**, provide information to show the import is not for primarily commercial purposes as outlined in [Resolution Conf. 5.10](#).
17. For export of **CITES Appendix-I listed species**, provide a copy of the CITES import permit, or evidence one will be issued by the Management Authority of the country to which you plan to export the specimen(s). In accordance with Article III of the CITES treaty, it is required that import permits are issued before the corresponding export permit.
18. If the specimen is being **re-exported** (e.g., exporting a specimen that was previously imported into the United States), provide:
 - a. A copy of the canceled CITES export or re-export document issued by the appropriate CITES office in the country from which the wildlife was imported (if applicable); and
 - b. A cleared copy of Form 3-177, wildlife Declaration for Import (hard copy or electronic release); **OR**
 - c. If you did not make the original import, provide a copy of the importer's documents outlined above and the invoice or other documentation that shows you acquired the wildlife from the original importer or history of transactions which demonstrate chain of ownership.

All international shipment(s) must be through a designated port. A [list of designated ports](#) (where an inspector is posted) is available. If you wish to use a port not listed, please contact the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2).

Question 1.

Answered on application.

Question 2

Answered on application.

Question 4.

Answered on application.

Question 5.

See attached spreadsheet.

Question 6. The current location of the specimen(s) (address and country):

All samples are located at the following location.

Name: Joelisoa Ratsirarson

Address: University of Antananarivo, Dept. d' Eaux et Forets

City: Antananarivo

State/Province: Antananarivo Province

Postal Code: BP 3044, 101

Question 7. Recipient/Sender: If import, provide name and address of the exporter in the foreign country.

Name: Joelisoa Ratsirarson

Address: University of Antananarivo, Dept. d' Eaux et Forets

City: Antananarivo

State/Province: Antananarivo Province

Postal Code: BP 3044, 101

Question 8. Not Applicable

Question 9. For EACH animal/specimen taken from the wild, provide the following:

a. Scientific name (genus, species, and, if applicable, subspecies) and common name;

Scientific name: *Propithecus verreauxi*

Common name: Verreaux's sifaka

Scientific name: *Lemur catta*

Common name: Ring tailed lemur

Scientific name: *Microcebus griseorufus*

Common name: Reddish gray mouse lemur

b. Specific location of where, when, and by whom (name and address) the specimen was removed from the wild;

These samples are collected at Beza Mahafaly Special Reserve, Betoiky Sud, Madagascar. These samples were partially collected in August of 2019 and will be collected again in August 2020 and August 2021. The samples were collected by the following people:

Rachel Bell
W16 Machmer Hall 240 Hicks Way
University of Massachusetts Amherst
Amherst, MA 01003

Dr. Jason Kamilar
102 Machmer Hall 240 Hicks Way
University of Massachusetts Amherst
Amherst, MA 01003

Dr. Richard Lawler
MSC 7501
Dept. of Anthropology
James Madison University
Harrisonburg, VA 22807

Dr. Joelisoa Ratsirarson
University of Antananarivo
Dept. d'Eaux et Forets
BP 3044, 101 Antananarivo, Madagascar

c. Purpose of removal and length or approximate length of time held in captivity. Discuss issues such as the method of collection, was the collection done as part of a larger study, were animals returned to the wild after sampling, and did any mortalities or injuries occur due to collection or holding;

Cotton swabs dipped in sterile water are used to collect microbiome samples from the mouth, rectum, and hair of wild lemurs to understand how human disturbance is impacting the diversity of their microbiota. Microbiome diversity has a direct relationship to stress and health in vertebrates, and can be used in conservation biology as an indicator of vulnerability to human disturbance. Cut hair tufts are used in cortisol analysis to provide a measure of long term stress to accompany microbiota sampling. Wild sifaka lemurs and ring tailed lemurs are held in captivity only as long as the time it takes for the anesthetic to wear off (approximately 8 hours). They are returned to the wild in all cases. Reddish gray mouse lemurs are caught in live traps baited with banana slices overnight, are sampled in the early morning (a process taking approximately 15 minutes), then are released immediately at the exact location where they were live-trapped. Animals do not experience injuries during the capture process and there is no mortality incurred from our capture-release protocol.

d. If and how any remuneration, either financial or in-kind, was provided for taking or capturing animals or for the collection of samples.

No remuneration of any kind was provided for or received for the collection of these samples.

e. Your efforts to use captive specimens (e.g., captive-born, captive-held), or parts thereof, in lieu of taking animals from the wild.

This is a study of three sympatric wild lemur populations, of which much of the research is geared to conservation. Our analysis is specifically concerned with how the ongoing human disturbance at the reserve in Southwestern Madagascar may be altering the microbiome of these lemur populations, with the goal of identifying if any of the three species are more vulnerable to disturbance than others and require health-focused conservation strategies. We cannot use captive-animals, since our aim is to assess and preserve the endemic lemur populations in situ. We only temporarily remove animals from the wild; they are released unharmed.

f. Copies of your foreign or domestic collecting permit, license, contract or agreement;

Please see attached copies of our government permits that contain the names of our Malagasy and US scientists.

g. Documentation showing that the specimen(s) was/were legally obtained by the applicant;

Please see attached copies of our government permits that contain the names of our Malagasy and US scientists.

h. Copies of any applicable State, Tribal, Federal, or Foreign government permits or licenses that authorized the removal of this animal from the wild.

Please see attached copies of our government permits that contain the names of our Malagasy and US scientists.

JUSTIFICATION FOR REQUESTED ACTIVITY.

10. Provide a detailed statement justifying the proposed activity, particularly the following:

a. Describe the purpose of your proposed activity. For example, if the purpose is scientific research, attach a copy of your research proposal outlining the purpose, objectives, methods (e.g., specific information on survey/collection methods, sampling regime, equipment to be used), and whether similar work has already been done or is currently being done. If the purpose includes conservation education, provide copies of educational materials (e.g., handouts, text of signage or public presentations), and include the purpose and objectives of the proposed activity. If the purpose is for propagation for conservation purposes (including culling as part of herd management), provide a description of how the species will be propagated and the disposition of progeny, as well as long-term goals of the breeding program, how the breeding program is managed to maintain genetic vitality, and information on any cooperative breeding programs or agreements that are/will be established, including any future plans for re-introduction.

Purpose and Objectives:

The purpose of this research is to examine how lemurs' hair, oral, and gut microbiomes are altered by anthropogenic disturbances. This research is conducted at Beza Mahafaly Special Reserve in southwest Madagascar and focuses on three species: Verreaux's sifaka (*Propithecus verreauxi*), ring tailed lemurs (*Lemur catta*), and reddish gray mouse lemurs (*Microcebus*

griseorufus). The Reserve is an ideal study site for comparing the effects of human disturbance among different lemur species: it includes a mixture of pristine and degraded zones, all of which are inhabited by the three target species. Furthermore, the Reserve is the site of multiple long-term studies involving capture and release of the lemurs, meaning that the ecological monitoring team has extensive experience with captures and allowing this sample collection to coincide with existing annual captures. The specific objectives of this study are to **1)** understand how microbiome diversity and hair cortisol levels are altered by human disturbance in the environment as an indicator of chronic stress and health; **2)** examine species level differences in microbiome diversity and vulnerability to disturbance due to species-specific host evolutionary history and traits; and **3)** understand how microbial communities associated with different body regions are differentially affected by anthropogenic disturbance.

1) Recent studies have shown that the coevolutionary relationships between mammalian hosts and their microbiome (i.e. the bacterial communities living on and within an organism) are modified by ecological conditions and have extensive health consequences. Microbiota assist in alerting the immune system to pathogens, provide a barrier to the overgrowth of detrimental microbes, and can regulate inflammation of epithelial tissues such as skin or intestinal linings. Climate, habitat type, degree of habitat degradation and fragmentation, and available food resources have all been supported as factors influencing the gut microbiome of primates. Environmental changes or disturbances that affect a primate's microbiome may also affect their health and susceptibility to disease. For example, several studies have found a negative relationship between microbiome richness and susceptibility to parasites in a range of vertebrates. Similarly, poor body condition due to ecological disturbances (particularly anthropogenic—or human-caused—factors) may be related to reduced microbial stability. For these reasons, microbiome data in wild populations of primates can be used to assess the health of populations as they deal with human disturbance in the environment. Hair cortisol is a complementary method for measuring long-term (weeks-months) hypothalamic pituitary axis activation—a measure of chronic stress. Chronic stress measured through hair cortisol concentrations have been tied to environmental change in non-human primates, and has also been linked to immune system suppression and decreased survival rates. Taken together, comparing the microbiome diversity and hair cortisol levels between lemur populations living in relatively pristine vs. disturbed habitats can provide vital information on the health effects of human disturbance. Beza Mahafaly Special Reserve is an ideal place to conduct such research, given the existence of a large, fenced-in section of the Reserve, a sustainable use zone west of this parcel, and a degraded zone south of this parcel regularly used for wood cutting, bark stripping, and agriculture.

2) Comparative studies of the primate microbiome have found that closely related primate species have similar gut and skin microbiota, and that this similarity decreases as the evolutionary distance between species increases. The three study species, while all lemurs, are in separate genera. Differences between the gut microbiota of Verreaux's sifaka and ring tailed lemurs have already been identified at the Reserve, but we propose a more comprehensive assessment of interspecific microbiome differences incorporating several body regions and three lemur species. Because species-specific factors modulate the relationship between host microbial diversity and the environment, comparative research on this subject can inform disease ecology and microbiome-focused conservation strategies tailored to different endangered primate species

or populations. For example, previous research comparing the gut microbiome of two howler monkey species—a habitat specialist and a more cosmopolitan species—found that the gut microbial diversity of the cosmopolitan species was more resilient to habitat degradation than the specialist. Understanding the species-specific differences in resilience and vulnerability to human disturbance is a priority for wild primate conservation, and the microbiome is a key indicator of this trait. The lemur species in this study differ greatly in their degree of habitat specialization. Ring tailed lemurs regularly exploit anthropogenic landscapes in the Reserve, whereas Verreaux's sifakas and reddish gray mouse lemurs do not enter the permanent camp within the study site.

3) While existing research has produced insights into host-microbiome coevolution and how the microbiome is altered by the host's environment, it is an incomplete picture: most studies exploring microbial communities in wild primates have focused on the gut, leaving hair and oral microbiota nearly unexplored. Additionally, though anthropogenic effects on the primate gut microbiome have been well documented, how environmental disturbances differentially affect microbial communities throughout an individual's body (e.g. oral vs. hair microbiome) is not clearly understood. We seek to clarify these relationships with this research. To the best of our knowledge, our proposed study includes the first comparative analysis of the lemur hair microbiome across different body regions. Very little is known about the hair microbiome, but the few studies surrounding this topic have revealed that the same factors shaping the gut microbiome are affecting the hair microbiome in unique ways. Our intended research will therefore be a foundational work on the primate hair microbiome. Because of the existing annual sifaka capture season and past ring-tailed lemur and reddish gray mouse lemur captures at Beza Mahafaly Special Reserve, this field site is an ideal location to collect microbiome samples like the oral microbiome and hair/skin microbiome that require brief but direct contact with the lemurs. Researchers affiliated with the field site have extensive experience safely capturing, sampling, and releasing all three lemur species. The ongoing annual sifaka captures at the Reserve allow us to collect our samples without having to establish a separate capture schedule, minimizing captures of the sifaka population while maximizing the data generated from these captures.

Methods:

The sampling methods outlined below have been approved by the James Madison University IACUC and the University of Massachusetts Amherst IACUC.

Capture Regime: The ongoing annual Verreaux's sifaka captures at the Reserve allow us to collect our samples from this species without having to establish a separate capture schedule, minimizing captures of the sifaka population while maximizing the data generated from these captures. Capture of Verreaux's sifaka and ring tailed lemurs is accomplished using a system of disposable non-barbed darts with a 9 mm needle that are delivered by a blowgun. The darts and blowgun are marketed by DanInject, USA Inc. The darts are loaded with Telazol, a nonnarcotic, nonbarbiturate, injectable anesthetic. It is combination of equal parts by weight of tiletamine hydrochloride (an arylaminocycloalkanone dissociative anesthetic) and zolazepam hydrochloride (a nonphenothiazine diazepamone with tranquilizing properties.) Telazol is packaged as a pre-sterilized powder in a bottle containing 250 mg tiletamine and 250 mg zolazepam. It is then diluted with 5 mL sterile (autoclaved) water using sterile (autoclaved) packaged syringes brought from the USA to produce a solution containing the equivalent of 50 mg tiletamine base, 50 mg

zolazepam base and 57.7 mg mannitol per milliliter. This results in a concentration of 100mg/ml. The dosage is 25 mg/kg. The person responsible for the storage/record keeping/disposal of the drug itself is Dr. Joel Ratsirarson, a colleague in Madagascar (Joel Ratsirarson, Professor, Dept. d' Eaux et Forêts BP 3044, University of Antananarivo, Madagascar). The drugs are stored securely in his laboratory in Antananarivo and brought down to the field site each research season by him. All discarded drug bottles/syringes are brought back to the capital city and disposed of at the end of each field season.

During Verreaux's sifaka and ring-tailed lemur capture, all researchers, except the Darter, stand about 10 meters away and in opposite direction of the dart's trajectory so that the dart does not hit a researcher. 6-8 Darts are loaded with Telazol, capped with a rubber tip so as to prevent the dart from discharging its drug, and transported into the field in a hard-plastic container so as to prevent the darts from accidentally "sticking" a researcher. Used darts are recovered and disposed. Darts that miss their targets are recovered from the forest floor; every dart is always recovered; this is a rule of the team so as the darts do not harm other animals or people. All needles from the darts and other hazardously sharp materials are put into a red "Sharps Box" and we bring this box back to the capital city for proper disposal. The animals are habituated to human presence, the forest canopy is very low, and the darter never shoots an animal that is further than 4 meters away; nor does the darter ever shoot an animal without a clear shot of the thigh/rump. This is to avoid injuring the animal. The person using the blowpipe has been part of the scientific research team at Beza Mahafaly Special Reserve for over 20 years and they have 20 years of experience; indeed they are sought by other wildlife biologists in Madagascar due to their darting skills. Anesthetized animals are caught when they fall in a sterile, sturdy sheet held by assistants stationed at the foot of the tree. Animals are transported back to camp in a basket and monitoring of their rectal temperature begins immediately. The sampling procedure is carried out at camp. Sifaka individuals are collared by the collaborating research team that conducts the annual sifaka captures. Ring tailed lemur individuals will only be captured and sampled over a single capture season, so collars are unnecessary to prevent sampling the same individual twice: no group will be targeted for capture more than once. When sampling is completed, the animal's rectal temperature continues to be monitored until it shows signs of recovery. The animal is then put in a small wood-and-chicken-netting holding cage, constructed locally, where it is kept until it has fully recovered. If more than one animal from a particular social group is captured, they are put in a holding cage together. When fully recovered, animals are transported in their cages to the site at which they were captured and the cage door is opened.

Capture of reddish gray mouse lemurs is accomplished via live-trapping with baited Sherman live traps. The ecological monitoring team at Beza Mahafaly Special Reserve has previous years of experience assisting in trapping reddish-gray mouse lemurs within the Reserve using these methods. Trapping will be conducted along pre-existing transects in the gallery forest and dry deciduous forest, including the forest edge. Trapping in a given area will occur for three sequential days before moving to the next planned section of the Reserve. Sherman Live Traps (3 x 3 x 10; 1 animal per trap) will be secured within trees, lianas, and bushes then baited with sliced banana pieces. Traps will be placed every 25 meters along these transects and marked with brightly colored flagging tape. Traps will be checked and collected early the following morning (Maximum time an animal could be in the trap = ~ 11 hours). The predators of mouse lemurs at Beza Mahafaly Special Reserve—two owl species and feral dogs—will be unable to predate

mouse lemurs in these traps because they are secured 1.5-2 meters above ground, and opening the trap requires folding a hinged metal flap down. Additionally, mouse lemurs are heterothermic and capable of lowering their body temperature and corresponding metabolic rate, so the cooler nighttime temperatures during August and September will not negatively affect them in the trap. The captures coincide with a time during which mouse lemurs most frequently enter into daily torpor (short periods of inactivity marked by a curled body position and lowered body temperature), and it is likely that captured individuals will enter torpor in the unstimulating, dark, and cool environment of the trap. Individuals are sampled at the trap location, marked with animal-safe temporary marker to prevent resampling individuals, and then released immediately. This limits human handling time and ensures that the lemurs are released within their specific territories. Traps are sterilized at camp then reset at least 50 meters away from successful capture locations.

We have already sampled 6 Verreaux's sifaka and 19 reddish gray mouse lemur individuals in August 2019. We also opportunistically collected fecal microbiome samples from 6 ring tailed lemur individuals in August 2019. We expect to sample up to 30 additional Verreaux's sifaka, 20 additional reddish gray mouse lemurs, and 30 additional ring tailed lemurs. The additional ring tailed lemur and reddish gray mouse lemur samples will be collected during a single field season (August 2021). The additional Verreaux's sifaka samples may be collected over two field seasons (August 2020 and August 2021). This is because a maximum of 20 Verreaux's sifaka individuals will be sampled per annual capture season for the study, as that is near the maximum number of animals captured annually by the existing research team in Beza Mahafaly Special Reserve. The research team seeks to characterize the dynamics of the population (i.e., how it changes in composition in terms of birth, sex, age, deaths) over time, and the threats to the population due to human encroachment. Thus, similar to other long-term studies, their goal is to maintain a marked population of animals that is 90% of the census size of the population. Their long-term demographic data indicate that each year about 10-20 newborns survive to become yearlings and about 0-8 adults immigrate into the population. In order to maintain a marked population of at least 90%, they capture unmarked yearlings and adults (a maximum of 20 animals) as they come into the population each year. The numbers of captured animals, when analyzed longitudinally, provide an indication of the long-term viability of the population in terms of its conservation. These justifications and sampling limitations apply to this proposed study as we will work in collaboration with the existing sifaka research team to collect microbiome samples from captured sifaka.

Sampling Regime: The sampling regime is standardized across the three lemur species to minimize the effects of different procedures. Species, sex, identity, and location of the animal will be recorded. Per individual, three hair swabs, 1 oral swab, 1 rectal swab, two plucked hair tufts (containing the follicle), and 1 cut hair tuft (not containing the follicle) are taken for sampling. For all three lemur species, we will use sterilized tweezers to pluck 2 hair tufts from the head of each individual. Each hair tuft will contain approximately 20-30 hairs, will include the root of the hair, and will be used to verify hair microbiome swab results. They will be stored in sterile capped 2mL tubes filled with RNAlater (a DNA preservative). We will also closely cut approximately 50-100 hairs from the head of each individual for hair cortisol analysis. Hair cortisol values can be distorted by including the hair follicle, and must be stored dry until analysis so that cortisol does not leech into its storage reagent. The majority of microbiome

collection involves sterile cotton swabs. To account for the small body size of reddish gray mouse lemurs, specialized cotton swabs with small tapered tips are used to collect their samples. We use sterile prepackaged cotton swabs dipped in sterile water to swab the hair/skin of each sifaka individual at the crown of their head, the center of their chest, and their lower back. Sterile cotton swabs dipped in sterile water are also used to swab the oral and rectal regions of the sifaka. When swabbing sifaka individuals' mouths for oral microbiome samples, we carefully rub the gums and inner cheeks with the sterile cotton swab. When swabbing the rectal regions of the sifaka, the area is gently rubbed with the sterile cotton swabs. These swab samples are all immediately placed into sterile capped 2mL tubes filled with RNAlater. The sampling procedures described above are minimally invasive, cause no harm to the animal, and take approximately 15 minutes per individual.

Sample Analysis: Following existing standard protocols for preparing hair cortisol samples, hair cortisol assays will determine the concentration of cortisol in each sample. The difference in cortisol levels between individuals living in degraded areas and individuals living in pristine areas will be compared for each species. Our specific genomic protocols are as follows: We first extract bacterial genomic DNA from all samples. Secondly, PCR amplifications targeting the 515-806 V4 hypervariable region of the 16S rRNA gene are done using primers with Illumina adapters and unique GoLay barcodes to allow multiplexing of pooled samples. Subsequent library preparation and sequencing use the protocol of the Earth Microbiome Project, carried out on Illumina platforms. We will classify the microbial operational taxonomic units (OTUs) in all samples using UCLUST and the Greengenes databases. We will quantify alpha diversity using the Shannon-Weaver and Simpson's diversity indices and beta diversity using UniFrac in QIIME. Next, we will conduct principal coordinate analyses to assess relationships between the microbiome and host species. Lastly, we will use Markov Chain Monte Carlo generalized linear mixed models to examine the effect of species and anthropogenic factors on microbiome diversity.

b. Description of the technical expertise of each person (please also include CV or resume), as it relates to the proposed activities. If the proposed activity involves live animals, include the experience of each animal caretaker working with the species.

QUALIFICATIONS OF INDIVIDUALS

Rachel Bell: BA; PhD Candidate in the Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Rachel Bell has completed 2 field seasons at Beza Mahafaly Special Reserve. Over these field seasons she has been trained by Dr. Richard Lawler in animal handling techniques and sample collection during the annual sifaka captures. Additionally, Rachel Bell successfully implemented reddish gray mouse lemur live-trapping over a three week period at the Reserve with the assistance of the ecological monitoring team. As an advisee within Dr. Jason Kamilar's Comparative Primatology Laboratory, Rachel Bell has routinely conducted DNA extraction from microbial samples, PCR of the 16S rRNA gene, and gel electrophoresis to prepare samples for genomic sequencing.

Jason Kamilar: PhD; Associate Professor of Anthropology and Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Dr. Kamilar has

published extensively on primate ecology, genetics, and conservation. In addition, his current research is focused on the ecology and evolution of primate microbiomes.

Richard Lawler: PhD.; Associate Professor of Sociology and Anthropology, James Madison University; Research Affiliate, Yale University. Since joining the project in 1998, Dr. Lawler gained field experience in animal handling and tissue sampling via training and mentorship provided by Drs. Alison Richard and Joel Ratsirarson. Together these two individuals have fifty years of combined experience in animal handling techniques related to primate conservation. Dr. Lawler also has gained primate handling experience from a previous study he conducted at "Monkey Jungle," a zoological park located in Miami. There he worked with primate veterinarian Dr. Robert Cooper. Dr. Lawler has now been involved in 14 field seasons in Madagascar.

Joelisoa Ratsirarson: PhD.; Professor of Environmental Science, University of Antananarivo, Madagascar; Associate Research Scientist, Yale School of Forestry and Environmental Studies; Research Affiliate, Department of Anthropology, Co-principal Investigator. Dr. Ratsirarson received his Ph.D. in Ecology and Evolutionary Biology from the University of Connecticut in 1993. He has worked as an assistant on the current project since 1985, and has been trained by the Dr. Alison Richard.

c. Copies of contracts, agreements or other documents that identify persons involved and dates of activities for which authorization is being requested.

Please see attached copies of our government permits that contain the names of our Malagasy and US scientists.

11. A statement on how the activities will enhance or benefit the wild population (e.g., in-situ and ex-situ projects).

The results of this study will provide important information on the long term stress levels and wild microbiome of two endangered lemur species (*Lemur catta* and *Propithecus verreauxi*) as well as one lemur species considered a model for human health and genetic research (*Microcebus griseorufus*). Beyond assessing how current management practices and human use in the Reserve is affecting these three sympatric lemur species, this study may be useful in predicting species-specific resiliency to future human disturbances. Differences in resilience and vulnerability to human disturbance between species will be reflected in the data we collect, and can be used to determine the relative risk each species faces in the changing landscape. The unprotected dry deciduous forest around Beza Mahafaly Special Reserve is being increasingly burned for coal and is an encroaching long term threat to the Reserve. Understanding how these lemur species physiologically respond to human disturbance may be critical for creating effective conservation strategies to address this threat. Research on these species will also contribute to assessments of parasite and disease susceptibility in the study populations. Including *P. verreauxi* in microbiome research is particularly relevant in light of a recent die-off of over 31 Verreaux's sifaka in nearby Berenty Reserve, Madagascar due to a sudden unknown contagious infection. In light of the established relationship between microbiome diversity and host health—as well as the troubling fact that over 90% of lemur species are threatened—it is vital to

understand how anthropogenic disturbances interact with the coevolutionary relationship of lemur hosts and their microbiome.

In addition, the project employs Malagasy researchers who are trained by Joel Ratsirarson and funded by an external organization. The Malagasy researchers work closely with the local population that lives near the Reserve. The researchers often work with local school children, providing them with knowledge about conservation, ecotourism, and forest sustainability. During the past two field seasons, we have given lectures on this research to forestry Master's students from the University of Antananarivo's annual field school. We will continue to give lectures and hands-on methods training to students from this field school during each field season. Thus our project helps the in situ lemur populations as well as the local human population.

Question 12: NOT APPLICABLE

Question 13: NOT APPLICABLE

Question 14: NOT APPLICABLE

Question 15: NOT APPLICABLE

Question 16: For import of CITES Appendix-I listed species, provide information to show the import is not for primarily commercial purposes as outlined in Resolution Conf. 5.10

This is a scientific investigation; absolutely no samples will be used for commercial purposes; all samples will be either used-up or destroyed at the end of the project.

Question 17: NOT APPLICABLE

Question 18: NOT APPLICABLE

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

Centers for Disease Control and Prevention
Office of Health and Safety, MS A-46
Atlanta, Georgia 30333
TEL: 404-718-2077; FAX: 404-718-2093; Email: importpermit@cdc.gov



Permit to Import Infectious Biological Agents, Infectious Substances, and Vectors

In accordance with 42 CFR Section 71.54 of the Public Health Service Foreign Quarantine Regulators, cited on the bottom of this permit, permission is granted the permittee to import into any port under control of the United States, or to receive by transfer within the United States, the material described in item 1 below.

PHS PERMIT NO.: 20190905-4125A

ISSUED DATE: 09/11/2019

EXPIRATION DATE: 09/11/2020

1. DESCRIPTION OF MATERIAL

Field collected body fluids, tissues, and hair from non-human primates (Lemur catta, Propithecus verreauxi, and Microcebus griseorufus) that may contain enzootic and/ or zoonotic biological agents.

2. PERMITTEE
(NAME, ORGANIZATION, ADDRESS AND CONTACT INFORMATION)

Rachel Bell (323) 595-9779

University of Massachusetts Amherst
240 Hicks Way
Amherst MA 01003

3. SOURCE OF MATERIAL
(NAME, ORGANIZATION, ADDRESS, COUNTRY)

Joelisoa Ratsirarson 261341155704
School of Agronomy, University of Antananarivo
BP 175, School of Agronomy (ESSA), University of Antananarivo
Antananarivo 101 Madagascar

4. TYPE OF PERMIT AND INSTRUCTIONS
FOR USE

SINGLE IMPORTATION INTO THE U.S.

A. Record of each importation shall be maintained on permanent file by permittee.

B. USDA/APHIS may require additional permits for materials from animals, materials exposed to animal products/byproducts, and agents that are infectious to animals or plants. U.S. Fish and Wildlife Service may require additional permits for materials from endangered animals.

5. CONDITIONS OF ISSUANCE ITEMS APPLICABLE
WHEN CHECKED

PACKAGING MUST CONFORM TO 49 CFR SECTIONS 171-180.

WORK WITH THE AGENT(S) DESCRIBED SHALL BE RESTRICTED TO AREAS AND CONDITIONS MEETING REQUIREMENTS IN THE CDC/NIH PUBLICATION "BIOSAFETY IN MICROBIOLOGICAL AND BIOMEDICAL LABORATORIES.

AS THE PERMITTEE, YOUR FACILITY WILL BE SUBJECT TO INSPECTION AT SOME TIME IN THE FUTURE TO CONFIRM THAT THE IMPORTERS BIOSAFETY MEASURES ARE COMMENSURATE WITH THE HAZARD POSED BY THE ITEMS TO BE IMPORTED AND THE LEVEL OF RISK GIVEN ITS INTENDED USE.

ALL MATERIAL IS FOR LABORATORY USE ONLY - NOT FOR USE IN THE PRODUCTION OF BIOLOGICS FOR HUMANS OR ANIMALS.

6. SIGNATURE OF ISSUING OFFICER

SAMUEL S. EDWIN, PH.D. DIRECTOR, DIVISION OF SELECT AGENTS AND TOXINS



REPOBLIKAN'NY MADAGASIKARA
Fitiavana-Tanindrazana- Fandrosoana

SECRETARIAT GENERAL

DIRECTION GENERALE DE
L'ENVIRONNEMENT ET DES FORETS

AUTORISATION DE RECHERCHE

DIRECTION DE LA GESTION DES
RESSOURCES NATURELLES
RENOUVELABLES ET DES ECOSYSTEMES

N° 19/MEDD/SG/DGEF/DGRNE

NOM BELL

PRENOM Rachel

ADRESSE

FONCTION Chercheur

ACCOMPAGNE DE Sibien Mahereza

ORGANISME TUEL Ecole Supérieure des Sciences Agronomiques (ESSA)

LIEU Réserve Spéciale de Beza Mahafaly

DUREE Deux (02) mois à partir de Juillet 2019.

EST AUTORISE (E) A FAIRE DES RECHERCHES SUR:

« Impacts des perturbations anthropiques sur la diversité du microbiome chez des lémuriens sauvages dans la réserve spéciale Beza Mahafaly, Madagascar. »

MENTION SPECIALE D'ACTIVITES

-Prélèvement d'échantillons de poils ;

-Prélèvement d'échantillons de matière fécales d'individu de *Propithecus verreauxi* et *Lemur catta*.

AUCUN DEVELOPPEMENT DE PRODUITS N'EST AUTORISE

EXPORTATION : Echantillons de matières fécales de *Propithecus verreauxi*.

OBLIGATIONS DU TITULAIRE

- Négocier avec les gestionnaires et/ou comité de gestion des sites ou forêts transférées pour y accéder, le cas échéant
- Faire viser la présente par la Direction Régionale de l'Environnement et du Développement Durable et/ou DREDD concernées avant toute descente sur terrain conformément à la note n° 394-10/MEF/SG/DGF/DVRN/SGFF du 18 Mai 2010 de la localité de recherche
- Remettre à la Direction de la Gestion des Ressources Naturelles renouvelables et des Ecosystèmes, en quatre (04) exemplaires EN FRANÇAIS, le rapport préliminaire à la fin de sa mission et le rapport final avec les résultats des recherches au plus tard UN ans après la mission, en versions papier et électronique.
- Respecter la réglementation en matière forestière
- Pour tout transport de produits de collecte (faune et flore), avoir un procès-verbal de constatation des collectes effectuées par le CEDD concerné et autorisation de transport délivré par DREDD si le déplacement se fait en dehors de la région et remettre une copie au DGRNE
- Pour toute publication : référer le numéro et la date de l'autorisation de recherche
- Pour toute exportation : remettre une copie du dépôt au DGRNE et une autre au dossier d'exportation

AMPLIATIONS :

CAFF/CORE

DREDD : Atsimo-Andrefana

CEDD: concernées

Communes concernées

« Pour contrôle et suivi »

DGEF

« Pour contrôle et suivi »

ESSA

« Pour le rapport »





REPUBLIQUE MALAGASY
Madagascar - Tanàndrazana - Fandraharaha

SECRETAIRE GENERAL

DIRECTION REGIONALE
DE L'ENVIRONNEMENT ET DU
DEVELOPPEMENT DURABLE

CANTONNEMENT DE L'ENVIRONNEMENT
ET DU DEVELOPPEMENT DURABLE

**PROCES-VERBAL DE CONSTATATION DES PRODUITS
FORESTIERS N° 07**

L'an deux mille dix-neuf et le 29 du mois d'Août 2019, Nous soussignés : Chef Cantonnement de l'environnement et du développement durable Betioky

Et sieur JULIEN Jean Jacques propriétaire du permis de conduire N° 0034694U chauffeur de véhicule de transport.

Certifions avoir procédé à la constatation et comptage contradictoire des produits forestiers en chargé dans le véhicule de transport.

Type : 4X4, Marque : NISSAN PATROL, N° : 7027 UC, Remorque n° [REDACTED]

Ces produits appartiennent à RACHEL Bell, PASSEPORT N° [REDACTED]
du 30 NOVEMBRE 2016. à UNITED STATES OF AMERICA

Dans le dépôt sis de BETIOKY SUD destiné à ANTANANARIVO

NATURE DES PRODUITS	ESSENCES	DIMENSIONS			NOMBRE	VOLUME (m3) / poids en Kg
		Longueur	Largeur	Epaisseur		
Animal	Prélèvement d'échantillons de poils de lémuriers				2 boîtes (box1 et box3) avec 83 fioles	0,52 kg
Animal	Prélèvement d'échantillons des matières fécales de lémuriers				2 boîtes (box2 et box4) avec 101 fioles	0,57 kg
TOTAL					4 boîtes, 184 fioles	1,09 kg

Arrêté au nombre de 4 boîtes, 184 fioles pièces et au volume de 1,09 kg

Pièces justificatives : (Autorisation de recherche)

OBSERVATION SI BESOINS

Toutes les échantillons sont mises en une boîte plastique.....

Si une non-conformité de ces produits à la déclaration initiale au départ (lors de la constatation) se fait

constater au cours de route, le propriétaire signataire de ce procès-verbal est tenu responsable et est passible d'une poursuite judiciaire en ce sens.

Le propriétaire

Rachel Bell

Fait à Betioky sud, le 29 Août 2019

Les Agents de constatation



TATA Ramile
Agent Technique des Eaux et Forêts
OFFICIER DE POLICE JUDICIAIRE



REPOBLIKAN'NY MADAGASIKARA
Fitiavana-Tanindrazana- Fandrosoana

SECRETARIAT GENERAL

DIRECTION GENERALE DE
L'ENVIRONNEMENT ET DES FORETS

AUTORISATION DE RECHERCHE

DIRECTION DE LA GESTION DES
RESSOURCES NATURELLES
RENOUVELABLES ET DES ECOSYSTEMES
N° 19/MEDD/SG/DGEF/DGRNE

NOM BELL

PRENOM Rachel

ADRESSE

FONCTION

ACCOMPAGNE DE

ORGANISME TUEL

LIEU

DUREE

Chercheur

Sibien Mahereza

Ecole Supérieure des Sciences Agronomiques (ESSA)

Réserve Spéciale de Beza Mahafaly

Deux (02) mois à partir de Juillet 2019.

EST AUTORISE (E) A FAIRE DES RECHERCHES SUR:

« Impacts des perturbations anthropiques sur la diversité du microbiome chez des lémuriens sauvages dans la réserve spéciale Beza Mahafaly, Madagascar. »

MENTION SPECIALE D'ACTIVITES

-Prélèvement d'échantillons de poils ;

-Prélèvement d'échantillons de matière fécales d'individu de *Propithecus verreauxi* et *Lemur catta*.

AUCUN DEVELOPPEMENT DE PRODUITS N'EST AUTORISE

EXPORTATION : Echantillons de matières fécales de *Propithecus verreauxi*.

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- Négocier avec les gestionnaires et/ou comité de gestion des sites ou forêts transférées pour y accéder, le cas échéant

- Faire viser la présente par la Direction Régionale de l'Environnement et du Développement Durable et/ou DREDD concernées avant toute descente sur terrain conformément à la note n° 394-10/MEF/SG/DGF/DVRN/SGFF du 18 Mai 2010 de la localité de recherche

- Remettre à la Direction de la Gestion des Ressources Naturelles renouvelables et des Ecosystèmes, en quatre (04) exemplaires EN FRANÇAIS, le rapport préliminaire à la fin de sa mission et le rapport final avec les résultats des recherches au plus tard UN ans après la mission, en versions papier et électronique.

- Respecter la réglementation en matière forestière

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- Pour toute publication : référer le numéro et la date de l'autorisation de recherche

- Pour toute exportation : remettre une copie du dépôt au DGRNE et une autre au dossier d'exportation

AMPLIATIONS :

CAFF/CORE

DREDD : Atsimo-Andrefana

CEDD : concernées

Communes concernées

« Pour contrôle et suivi »

DGEF

« Pour contrôle et suivi »

ESSA

« Pour le rapport

Antananarivo, le 09 JUL 2019
LE DIRECTEUR DE LA GESTION DES RESSOURCES
NATURELLES RENOUVELABLES ET DES ECOSYSTEMES
KOTOARIDERA Rantonirina

LE DIRECTEUR REGIONAL

RAHANITRINCRAINY Lovanirina Valisoa

Vu au passage
à la DREDD
ATSIMO - ANDREFANA

07 AOÛT 2019



passage à
le 09/08/19
LE CHEF DE CANTONNEMENT DE L'ENVIRONNEMENT
DES EAUX ET FORETS
ATA Ramule
Agent Technique des Eaux et Forêts
OFFICIER DE POLICE JUDICIAIRE



REPUBLIQUE MALAGASY
REPOBLIKAN'I MADAGASIKARA

SECRETAIRE GENERAL

**AUTORISATION DE TRANSPORT DES
PRODUITS FORESTIERS**

DIRECTION REGIONALE DE
L'ENVIRONNEMENT ET DU
DEVELOPPEMENT DURABLE
ATSIMO ANDREFANA

Durée de validité: 04 jours
Du: 31 Août 2019.
Au: 03 Septembre 2019.

N° 398 -19/MEDD/SG/DREDD A.AND

Il est autorisé à

RACHEL Bell

Type du sollicitant : Titulaire d'une autorisation de recherche n° 179/19/MEDD/SG/DGEF/DGRNE
du 09 Juillet 2019

Propriétaires d'un passeport n° [REDACTED] du 30 Septembre 2016 à United States Of America

De transporter les produits forestiers ci-après de :

Lieu de départ : Toliara

Destination : Ecole Supérieure des Sciences Agronomiques (ESSA) Antananarivo

Les produits forestiers :

DESIGNATION	QUANTITE	EMBALLAGE	ORIGINE	OBSERVATIONS
Echantillons de poils	83 fioles (2 boîtes)	Tube en plastique	Reserve spéciale de Bezà Mahafaly, District de Betioky-sud	A titre de recherche
Matière fécales	101 fioles (2 boîtes)	Tube en plastique	Région Atsimo Andrefana	

Arrêté au nombre de 184 fioles dont 83 fioles d'échantillon de poils et 101 fioles de matière fécales.

La non-conformité des natures des produits forestiers ainsi que les dépassements des charges déclarées dans l'autorisation de transport sont qualifiés comme « infraction » dont la société est tenu responsable au vu de son engagement durant le chargement.

Pièces justificatives de l'origine des produits transportés annexées (photocopies)

Procès-verbal de constatation n° 07 du 29 Août 2019 A C n° du au

LP/AT n° du A C n° du
au

AT/LP n° du A C n° du au

MOYEN DE TRANSPORT : Aérienne Marque : Type : N°

Nom du chauffeur : REMORQUE N°

Permis de conduire / CIN n° du à

Cette autorisation n'est valable que pour un seul transport et pour un seul véhicule.

Tout transport de nuit (18 heures à 6 heures du matin) est strictement interdit.

LE DIRECTEUR REGIONAL

A Toliara, le 30 AOÛT 2019



Dr RANDRANANTZANAKA Soary

[illegible]

Microcebus griseorufus
Microcebus griseorufus

Reddish gray mouse lemur
Reddish gray mouse lemur

8/28/2021 5 swabs; 160 hairs Female
8/29/2021 5 swabs; 160 hairs Female

7-4 Oral swab, rectal swab, hair swabs (x3), plucked hair (x2), cut hair
8-2 Oral swab, rectal swab, hair swabs (x3), plucked hair (x2), cut hair

Joel Ratsirarson

A. Professional Preparation

University of Antananarivo	Madagascar	Engineering/Forestry	DAR 1986
University of Costa Rica	Costa Rica	Tropical Ecology	OTS Certificate 1990
University of Connecticut	USA	Ecology/Evolution	Ph.D. 1993

B. Appointments

Vice President, University of Antananarivo, 2015-present
Professor, Forestry Department, University of Antananarivo, 2007-present
Associate Professor, Forestry Department, University of Antananarivo, 2000-2007
Assistant Professor, Forestry Department, University of Antananarivo, 1994-2000

C. Publications

5 relevant

Richard, A. F., R. E. Dewar, M. Schwartz and J. Ratsirarson. 2002. Life in the slow lane? Demography and life histories of male and female Sifaka (*Propithecus verreauxi verreauxi*). *Journal of Zoology* 256 : 421-436.

Richard, A. F., R. E. Dewar, M. Schwartz and J. Ratsirarson. 2000. Mass change, environmental variability and female fertility in wild *Propithecus verreauxi*. *Journal of Human Evolution* 39: 381-391.

Sussman, R. W., S. Sweeney, G. M. Green, I. Porton, O. L. Andrianasolondraibe and J. Ratsirarson. 2006. A Preliminary Estimate of *Lemur catta* Population Density Using Satellite Imagery. In *Ringtailed Lemur Biology: Lemur Catta in Madagascar*, eds. A. Jolly, R. W. Sussman, N. Koyama and H. Rasamimanana, 16-31. Developments in Primatology: Progress and Prospects series, ed. Russell H. Tuttle. New York: Springer Science.

Brockman, D. K., L. R. Godfrey, L. J. Dollar and J. Ratsirarson. 2008. Evidence of Invasive *Felis silvestris* Predation on *Propithecus verreauxi* at Beza Mahafaly Special Reserve, Madagascar. *Int. J. Primatol* 29: 135-152.

Lawler, R., H. Caswell, A. F. Richard, J. Ratsirarson, R. E. Dewar and M. Schwartz. 2009. Demography of Verreaux's sifaka in a stochastic rainfall environment. *Oecologia* 161:491-504.

5 other

Primack, R. B. et J. Ratsirarson. 2005. Principe de Base de la Conservation de la Biodiversité. CITE Antananarivo.

Ratsirarson, J., J. A. Silander, Jr. and A. F. Richard. 1996. Conservation and management of a threatened Madagascar palm species: *Neodypsis decaryi*, Jumelle. *Conservation Biology* 10 (1): 40-52.

Ratsirarson, J. and J. A. Silander, Jr. 1996b. Reproductive biology of a threatened Madagascar triangle palm *Neodypsis decaryi*, Jumelle. *Biotropica* 28 (4): 737-745.

Ratsirarson, J. and J. A. Silander, Jr. 1996a. Structure and dynamics in *Nepenthes madagascariensis* pitcher plant micro-communities. *Biotropica* 28 (2): 218-227.

Ratsirarson, J., J. Ranaivonasy et A. F. Richard. In Press. *Eds. Dynamique du paysage écologique et socioéconomique de la Réserve Spéciale de Beza Mahafaly et ses alentours. Malagasy Nature Vol 10 Sous Presse. Edition Spéciale.*

D. Synergistic Activities

Primate Specialist Group. Species Survival Commission, IUCN. (2013-present)

CITES Scientific Committee, Primate Specialist Group. (2013-present)

Board member of the Malagasy Environmental Foundation « Tany Meva » Antananarivo, Madagascar. (2015-present)

Chief of Staff of the Presidency Office of the Republic of Madagascar. (March 2007- March 2009)

Deputy Minister of the Ministry of Environment, Water and Forests, Madagascar. (July 2005- March 2007)

Rachel Bell, PhD Candidate

rbbell@umass.edu

W16 Machmer Hall, 240 Hicks Way, Amherst MA 01003

Education

- 2017-Present—PhD Organismic & Evolutionary Biology, University of Massachusetts, Amherst
Ecology & evolution of primate hair; the primate microbiome
Advisor: Jason Kamilar, PhD
- 2012-2016—BA Evolutionary Biology of the Human Species, Columbia University
Senior Thesis: "Factors Affecting the Activity Budgets of Female Blue Monkeys (*Cercopithecus mitis stuhlmanni*)"; Research Mentor: Marina Cords, PhD

Publications

- Bell, Rachel B., Brenda J. Bradley, and Jason M. Kamilar. "Primate hair color evolves independently among body regions and clades." *The American Naturalist* (under review).
- Bell, Rachel, Amanda Fuchs, John Rowan, Trisha Zintel, Tabitha Dorshorst, and Andrew Zamora. "The 88th annual meeting of the American Association of Physical Anthropologists in Cleveland, Ohio." *Evolutionary Anthropology* 28, no. 3 (2019): 106.
- Fuchs, Amanda J., **Rachel B. Bell**, Ignacio Lazagabaster, and Andrew J. Zamora. "The 87th annual meeting of the American Association of Physical Anthropologists in Austin, Texas." *Evolutionary Anthropology* 27, no. 3 (2018): 98-101.
- Carpenter, Kayla, **Rachel B. Bell**, Julius Yunus, Angelika Amon, and Luke Edwin Berchowitz. "Phosphorylation-mediated clearance of amyloid-like assemblies in meiosis." *Developmental Cell* 45, no. 3 (2018): 392-405.
- Bell, Rachel. "You Are What You Eat (Or Are You?): An Exploration of the Effects of Dietary Habits on Mandibular and Dental Morphology of the Genus Gorilla." *Sapient: The Undergraduate Journal of Biological Anthropology* 2 (2014): 23-26. Print.

Fellowships and Awards

- 2019—NSF Graduate Research Fellowship Program; [REDACTED]
- 2019—The Juan Comas Prize: Awarded by the American Association of Physical Anthropologists for an excellent poster or podium presentation – unrestricted topic; \$ [REDACTED]
- 2019—William S. Pollitzer Student Travel Award: Awarded by the American Association of Physical Anthropologists through essay competition to attend 2019 AAPA meeting; \$ [REDACTED]
- 2019—University of Massachusetts Dissertation Fieldwork Grant; [REDACTED]
- 2019—University of Massachusetts Amherst Natural History Collections Summer Scholarship: Awarded by UMass Amherst's Natural History Collections to begin dissertation data collection; [REDACTED]
- 2018—Northeastern Evolutionary Primatologists Best Poster Award; [REDACTED]
- 2018—University of Massachusetts Predissertation Research Grant: Awarded by UMass Amherst's Graduate School to conduct pilot study in Beza Mahafaly Special Reserve, Madagascar; \$ [REDACTED]
- 2018—University of Massachusetts Amherst Natural History Collections Summer Scholarship: Awarded by UMass Amherst's Natural History Collections to conduct pilot study; [REDACTED]
- 2018—William S. Pollitzer Student Travel Award: Awarded by the American Association of Physical Anthropologists through essay competition to attend 2018 AAPA meeting; [REDACTED]
- 2017—Spaulding-Smith Fellowship: Awarded by UMass Amherst's Graduate School to support & mentor underrepresented groups in STEM; [REDACTED]

- 2016—Departmental Thesis Award, Columbia University: Awarded by the Department of Ecology, Evolution & Environmental Biology (E3B) for outstanding senior thesis
- 2016—Dobzhansky Prize, Columbia University: Awarded by E3B for significant achievement in scientific research throughout undergraduate career; [REDACTED]

Field and Research Experience

- Aug 2018-Present—Beza Mahafaly Special Reserve, Madagascar; UMass Amherst
Principal Investigator
Collaborate with local organizations & existing research teams to collect microbiome samples from lemurs using sterile techniques in the field; analyze samples using molecular biology techniques & statistical models in preparation for dissertation research
- Aug 2017-Present—Comparative Primatology Laboratory, UMass Amherst
Graduate Research Assistant
Analyze mammalian tissue & microbial samples using molecular biology techniques; conduct comparative statistical analysis of hair color evolution in primates; conduct ecological niche models to explore effects of mammalian competitors on regional primate distributions
- Oct 2016-Aug 2017—Berchowitz Laboratory, Columbia University Irving Medical Center
Research Technician
Carried out molecular biology techniques including nucleic acid purification, qPCR, gel electrophoresis, & microscopy for *Saccharomyces cerevisiae* genetic research
- Sep 2015-June 2016—EcoHealth Alliance
Research Intern
Contributed to the organization's growing biosurveillance databases by conducting literature reviews & compiling epidemiological data in a collaborative environment
- Sep 2014-May 2015—Marina Cords Laboratory, Columbia University
Undergraduate Research Assistant
Performed statistical analyses through Excel and Stata for over 18 years of behavioral & life history data on *Cercopithecus mitis stuhlmanni* collected by Dr. Marina Cords
- June 2013-July 2013—Wildtracks
Student Volunteer
Assisted researchers at Wildtracks Primate and Manatee Rehabilitation Centre in Sarteneja, Belize by tracking & observing released howler monkeys

Teaching Experience

- Sept 2019-Dec 2019—Primate Behavior, University of Massachusetts, Amherst
Teaching Assistant
Assist instructor with course organization, grade all assignments, & provide constructive student feedback
- Oct 24, 2018; Oct 23, 2019—Primate Behavior, University of Massachusetts, Amherst
Guest Lecturer
Presented undergraduate level course material on primate predation and the evolution of anti-predator strategies
- Aug 2018; Aug 2019—ESSA-Forêts Annual Field School, University of Antananarivo
Guest Lecturer
Presented current research on lemur microbiome diversity to forestry master's students during their annual field school in Beza Mahafaly Special Reserve
- Jan 2019-May 2019—Biology of Social Issues, University of Massachusetts, Amherst
Teaching Assistant

Assist instructors with course organization, answer student questions regarding course material, grade writing assignments, & provide constructive student feedback
June 2016-Sep 2016—Wildlife Conservation Society
Conservation Education Fellow
Taught children ages 4-17 a collaboratively designed curriculum about wildlife, the scientific method, & conservation in an interactive, informal learning environment
Sep 2013-June 2014—Earth Institute Center for Environmental Sustainability
Course Assistant
Provided teaching assistance for Certificate in Conservation & Environmental Sustainability by operating A/V equipment, managing course materials, & addressing student needs

Service to the Profession and Community

February 15, 2019—Lemur Day, Crocker Farm Elementary School
Lemur Day Presenter
As part of annual event, presented information about lemur conservation, ecology, adaptations, & life history in an interactive format for three 5th grade classes
Sep 2018-Present—Graduate Employee Organization
Organismic and Evolutionary Biology GEO Steward
Serve as union representative for members of the OEB graduate community
Sep 2017-Present—That's Life [Science]
Editor & Outreach Committee Equipment Liaison
Collaborate with committee members to organize & inventory all OC supplies, plan & implement scientific outreach events; write original life science-related blog content & provide peer edits on other posts
July 10, 2018—Eureka! Workshop
Workshop Leader
Proposed, designed, and led an interactive 2-hour workshop on primate morphology and forensic anthropology for underprivileged 9th grade girls in the local community through the Girls Inc. STEM program, Eureka!
March 2013-May 2016—Sapient: The Undergraduate Journal of Biological Anthropology
Senior Editor January 2016- May 2016
Editor-in-Chief January 2015- December 2015
Artistic Director March 2013- December 2014
Reviewed, edited, & published undergraduate journal submissions under AJPA guidelines; Managed cover art & layout for the journal while directing others in illustration production

Presentations

"How do non-primate competitors affect the potential distribution of frugivorous primates?"
Northeastern Evolutionary Primatologists 2019 Meeting, University of Massachusetts Amherst, November 9 2019.
"Investigating the Impacts of Ecological Factors on Lemur Microbiome Diversity at Beza Mahafaly Special Reserve, Madagascar" Engaging Anthropology 2019 Conference, University of Massachusetts Amherst, October 6 2019.
"Comparing Evolutionary Models of Primate Hair Color Variation" American Association of Physical Anthropologists 2019 Meeting, Huntington Convention Center of Cleveland, March 30 2019.

"Comparing Evolutionary Models of Primate Hair Color Variation" Northeastern Evolutionary Primatologists 2018 Meeting, Canisius College, September 29 2018.

"Factors Affecting the Activity Budgets of Female Blue Monkeys (*Cercopithecus mitis stuhlmanni*)," Evolutionary Biology of the Human Species Senior Thesis Presentation, Columbia University, May 13 2016.

"Merits of Observational vs. Experimental Evidence in Studies of Primate Cognition," Current Controversies in Primate Behavior & Ecology Seminar, Columbia University, December 17 2015.

CURRICULUM VITAE

RICHARD ROBERTS LAWLER

Associate Professor
Department of Sociology and Anthropology
James Madison University
<http://www.propithecus-verreauxi.com>

Sheldon Hall, room 209
Harrisonburg VA 22801
tel: [REDACTED]
lawlerrr@jmu.edu

APPOINTMENTS:

Present:

Associate Professor (2012-present) Department of Soc/Anth, James Madison University
Graduate faculty in Biology (2010-present) Department of Biology, James Madison University
Guest Investigator (2005-present) Biology Department, Woods Hole Oceanographic Institution

Past:

Research Affiliate (2014-2015) Liverpool John Moores University, Liverpool UK
Assistant Professor (2009-2012) Department of Soc/Anth, James Madison University
Assistant Professor (2004-2009) Department of Anthropology, Boston University
Postdoctoral Fellow (2003-2005) Biology Department, Woods Hole Oceanographic Institution

EDUCATION:

2004 Postdoctoral Researcher. Woods Hole Oceanographic Institution (Biology Department)
2003 Ph.D. Yale University (Department of Anthropology)
2000 M. Phil. Yale University (Department of Anthropology)
1999 M.A. Southern Illinois University (Department of Anthropology)
1992 B.A. University of Illinois, Urbana-Champaign (Department of Anthropology)

REFEREED PUBLICATIONS:

LeFleur M, Clarke TA, Sauther M, Cuzzo F, Parga JA, Lawler RR, Chandrashekar A, Knierim J, Reuter KE, Baden A (submitted) Using molecular tools to determine the origin of wild-captured illegally trafficked ring-tailed lemurs in Madagascar. *Folia Primatologica*.

Webster TH, Guevara EE, Lawler RR, Bradley BJ (submitted) Successful exome capture and sequencing in lemurs using human baits. *American Journal of Physical Anthropology*

Guevara EE, Lawler RR (2018) Epigenetic Clocks. *Evolutionary Anthropology*.
<https://doi.org/10.1002/evan.21745>

- Lawler RR (2018) Emerging and enduring issues in primate conservation genetics. Annual Reviews of Anthropology. Vol. 47: 395-415.
- Guevara EE, Ranaivonasy J, Richard AF, Ratsirarson J, Lawler RR, Bradley BJ (in revision) Preliminary characterization of the oral microbiomes of a wild lemur, *Propithecus verreauxi*. Folia Primatologica.
- Sauther ML, Loudon JE, Cuozzo FP, Sponheimer M, Lawler RR, Nash LT, LaFleur MM, Ratsirarson J, Richard AF, Yamashita N, IA Youssouf Jacky, Fish KD, Whitelaw DC. (submitted) The comparative isotopic ecology of southwestern Madagascar's primates: Insights from stable isotopes. American Journal of Primatology.
- Guevara EE, Ranaivonasy J, Richard AF, Ratsirarson J, Lawler RR, Bradley BJ (2017) A simple, economical protocol for DNA extraction and amplification where there is no lab. Conservation Genetic Resources 1-7
- Kappeler PM, Cuozzo, Fichtel C, Ganzhorn JU, Gursky-Doyen S, Irwin M, Ichino S, Lawler RR, Nekaris K A-I, Ramanamanjato J-B, Radespiel U, Sauther ML, Wright PC, Zimmermann E. (2017) Long-term field studies of Lemurs, Lorises, and Tarsiers. Special Issue Journal of Mammalogy 98: 661-669
- Jacobs RL, MacFie TS, Spriggs A, Baden AL, Morelli TL, Irwin MT, Lawler RR, Kappeler PM, Wright PC, Louis Jr. EE, Mundy NI, Bradley BJ. (2017). Novel and highly polymorphic vision in the diurnal, largest-bodied lemurs. Biology Letters 13: 20170050
- Bradley BJ, Snodon CT, McGrew WC, Lawler RR, McIntosh A, O'Connor T (2016) Non-human primates avoid the detrimental effects of prenatal androgen exposure in mixed-sex litters. American Journal of Primatology. 78: 1304-1315.
- Jacobs RL, Spriggs A, MacFie TS, Baden AL, Irwin MT, Wright PC, Louis Jr. EE, Lawler RR, Mundy NI, Bradley BJ. (2016) Primate genotyping via High-Resolution Melt Analysis (HRMA): Rapid and reliable identification of color vision status in wild lemurs. Primates 57: 541-547.
- Parga JA, Sauther ML, Cuozzo FP, Ibrahim Antho Youssouf Jacky, Lawler RR, Sussman RW, Gould L, Pastorini J. (2016) Paternity in wild ring-tailed lemurs (*Lemur catta*): Implications for male mating strategies. American Journal of Primatology. 78: 1316-1325
- Parga JA, Sauther ML, Cuozzo FP, Ibrahim Antho Youssouf Jacky, Gould L, Sussman RW, Lawler RR, Pastorini J. (2015). Genetic evidence for male and female dispersal in wild *Lemur catta*. Folia Primatologica. 1-2: 66-75
- Linder JM, Lawler RR (2012) Model selection, zero-inflated models, and predictors of primate abundance in Cameroon. American Journal of Physical Anthropology 149: 417-425.

- Parga JA, Sauther ML, Cuzzo FP, Yousouf Jacky IA, Lawler RR (2012) Genetic evidence for a population bottleneck in wild ring-tailed lemurs (*Lemur catta*) from southwestern Madagascar. *American Journal of Physical Anthropology*. 147: 21-29
- Lawler RR (2011) Demographic concepts and research pertaining to the study of wild primate populations. *Yearbook of Physical Anthropology* 53: 63-85.
- Bradley BJ, Lawler RR (2011) Linking genotypes, phenotypes and fitness in wild primate populations. *Evolutionary Anthropology* 20: 109-114.
- Lawler RR (2011) Feeding competition, cooperation, and the causes of primate sociality: A comment on Sussman et al. *American Journal of Primatology* 73: 84-90.
- Lawler RR (2011) Historical demography of a wild lemur population (*Propithecus verreauxi*) in southwest Madagascar. *Population Ecology* 53: 229-240.
- Lawler RR, Blomquist GE (2010) Multivariate selection theory in primatology: An introduction to the concepts and literature. *Open Anthropology Journal* 3: 206-229
- Lawler RR, (2009) Monogamy, monomorphism, and mechanisms of sexual dimorphism. *Journal of Human Evolution* 57: 321-325.
- Lawler RR, Richard AF, Dewar RE, Schwartz M, Ratsirarson J, Caswell H (2009) Demography of a wild lemur population in a stochastic rainfall environment. *Oecologia* 161: 491-504.
- Lawler RR (2008) Testing for a historical population bottleneck in wild Verreaux's sifaka (*Propithecus verreauxi verreauxi*) using microsatellite data. *American Journal of Primatology*. 70: 990-994.
- Lawler RR (2008) Morphological integration and natural selection in the postcranium of wild sifaka. *American Journal of Physical Anthropology*. 136: 204-213.
- Cuzzo FP, Sauther ML, Yamashita N, Lawler RR, et al. (2008) A comparison of salivary pH in sympatric lemur species (*Lemur catta* and *Propithecus verreauxi*) at Beza Mahafaly Special Reserve, Madagascar: Investigating feeding ecology, dietary chemicals, and primate tooth wear. *American Journal of Primatology* 70: 363-371.
- Lawler RR (2007) Fitness and extra-group reproduction in male Verreaux's sifaka (*Propithecus verreauxi verreauxi*). *American Journal of Physical Anthropology* 132: 267-277
- Lawler RR (2006) Sifaka positional behavior: Ontogenetic and quantitative genetic approaches. *American Journal of Physical Anthropology*. 131:261-271
- Lawler RR, Ford SM, Wright PC, Easley SP (2006) Locomotor behavior of *Callicebus brunneus* and *Callicebus torquatus*. *Folia Primatologica*. 77:228-239

- Lawler RR, Richard AF, Riley MA (2005) Intrasexual selection in Verreaux's sifaka (*Propithecus verreauxi verreauxi*). *Journal of Human Evolution*. 48: 259-277
- Lawler RR, Richard AF, Riley MA (2003) Genetic population structure of the white sifaka (*Propithecus verreauxi verreauxi*) in southwest Madagascar. *Molecular Ecology* 12: 2307-2317.
- Lawler RR, Stamps C (2002) The relationship between tail use and positional behavior in *Alouatta palliata*. *Primates*. 42:147-152
- Lawler RR, Richard AF, Riley MA (2001) Isolation and screening of microsatellite loci in a wild lemur population (*Propithecus verreauxi verreauxi*). *American Journal of Primatology*. 55: 253-259.

BOOK CHAPTERS AND OTHER PUBLICATIONS:

- Lawler RR (2018) Population dynamics. *The International Encyclopedia of Biological Anthropology*. W. Trevathan (ed.). John Wiley and Sons, Inc.
- Lawler RR (2017) Genetic distance. *Encyclopedia of Primatology*. A. Fuentes et al. (eds.). Wiley Blackwell Press.
- Lawler RR (2017) Genetic drift. *Encyclopedia of Primatology*. A. Fuentes et al. (eds.). New York, Wiley Blackwell Press.
- Sussman RW, Richard AF, Ratsirarson J, Sauther ML, Brockman DK, Lawler RR, Cuozzo FP (2012) Beza Mahafaly Special Reserve: A research site in southwestern Madagascar. *Long-term Field Studies of Primates*. PM Kappeler, DP Watts, editors. Berlin, Springer Verlag. pp 45-66.
- DiFiore T, Lawler RR, Gagneaux P (2011) Molecular primatology. In: CJ Campbell, A Fuentes, KC MacKinnon, M Panger, SK Bearder (eds.) *Primates in Perspective* (2/e) Oxford, Oxford University Press. pp 390-416.
- Wunderlich RE, Lawler RR, Williams AE (2011) Field and experimental approaches to the study of locomotor ontogeny in *Propithecus verreauxi*. In: *Studying Primate Locomotion: Linking in situ and ex situ Research*. New York, Springer Verlag.
- Lewis RJ, Lawler RR (2011) *Propithecus verreauxi verreauxi*. Entry for "Pictorial Guide to Living Primates, second edition." Noel Rowe (author/editor). Pogonias Press.
- Lawler RR (2004) Review of *Primate Life Histories and Socioecology*, PM Kappeler, ME Pereira (eds.). *American Journal of Physical Anthropology*. 125:97-98.
- Lawler RR (2003) Causes and Consequences of Differential Male Reproductive Success in Male white sifaka (*Propithecus verreauxi verreauxi*). Ph.D. thesis, Yale University. 129 pp.

Lawler RR (1998) The positional behavior of *Callicebus moloch* (= *C. brunneus*) with a comparison to *C. torquatus*. M.A. Thesis. Southern Illinois 153 pp.

Lawler RR (1990) Sitings and Sightings: Review of *The Sacred Geography of the American Mound Builders* and *Dossier X: Les hominids non identifiés des forêts d'Afrique*. Continuum 1(1):188-190

PUBLISHED ABSTRACTS AND MEETING PRESENTATIONS:

American Association of Physical Anthropologists:

Chen-Kraus C, Raharino NA, Lawler RR, Richard AF. (2019) Terrestrial tree hugging in a primarily arboreal lemur: A risky but effective thermoregulatory strategy. *American Journal of Physical Anthropology*. 68: 40

Guevara EE, Lawler RR, Staes N, White CM, Sherwood C, Ely JJ, Hopkins WD, Bradley BJ. (2019) The rate and pattern of age-associated epigenetic change in chimpanzees and humans. *American Journal of Physical Anthropology*. 68: 94

Guevara EE, Webster TH, Ranaivonasy J, Ratsirarson J, Lawler RR, Bradley BJ, Harris RA, Lui Y, Murali SC, Raveendran M, Hughes DST, Yoder AD, Worley KC, Rogers J. (2018) Evolutionary genomics of Verreaux's sifaka (*Propithecus verreauxi*). *American Journal of Physical Anthropology*. 66: 108

Sullivan AP, Godfrey LR, Lawler RR, Ryan T, Perry G (2017) Are jumping tree animals getting smaller over time because humans ate the larger ones? *American Journal of Physical Anthropology*. 64: 374

Jacobs JL, MacFie TS, Kamilar JM, Spriggs AN, Baden AL, Morelli TL, Irwin MT, Lawler RR, Pastorini J, Mayor M, Sauther ML, Lei R, Culligan R, Hawkins MTR, Kappeler PM, Wright P, Louis EE Jr, Mundy NI, Bradley BJ (2017) Variation in lemur color vision across species, populations, and habitats: Implications for signal evolution. *American Journal of Physical Anthropology*. 64: 229

Lawler RR, Ratsirarson J, Ranaivonasy J (2016) Phenotypic constraints on life cycle evolution in wild Verreaux's sifaka (*Propithecus verreauxi*). *American Journal of Physical Anthropology*. 62: 203

Guevara EE, Lawler RR, Richard AF, Ratsirarson J, Ranaivonasy J, Bradley BJ (2016) A simple, economical protocol for DNA extraction and amplification where there is no lab. *American Journal of Physical Anthropology*. 62: 163-164

Lawler RR (2014) An analysis of fitness and fitness components in a wild population of Verreaux's sifaka. *American Journal of Physical Anthropology*. 56: 165-166

- Parga JA, Sauther ML, Pastorini J, Cuzzo FP, Yousouf Jacky IA, Sussman RW, Gould L, Lawler RR (2014) Paternity among ring-tailed lemurs from southwestern Madagascar. *American Journal of Physical Anthropology*. 56: 204
- Webster TH, Lawler RR, Bradley BJ (2014) Gene loss and protein evolution in *Propithecus verreauxi* detected using *de novo* exome sequencing and assembly. *American Journal of Physical Anthropology*. 56: 269
- Lawler RR, Linder JM (2012) Model selection, zero-inflated models, and predictors of primate abundance in Cameroon. *American Journal of Physical Anthropology* 54: 189
- Lawler RR (2011) The influence of anthropogenic and climatic factors on life history evolution in wild Verreaux's sifaka. *American Journal of Physical Anthropology* 52: 195
- Wolf SA, Lawler RR, Wunderlich RE (2011) Ontogeny of limb growth and locomotor behavior in *Lemur catta* and *Propithecus verreauxi*. *American Journal of Physical Anthropology* 52: 314
- Bradley BJ, McGrew WC, Snodon CT, Lawler RR, Macintosh A (2011) Examining potential effects of prenatal androgen exposure in mixed-sex litters of non-human primates. *American Journal of Physical Anthropology* 52: 95
- Lawler RR, Wunderlich RE (2010) The ontogenetic covariance structure of limb elements in sifaka. *American Journal of Physical Anthropology*. Suppl 50: 152. Invited symposium
- Lawler RR. (2009) Comparing patterns of natural selection on life history traits in humans and lemurs. Suppl 48: 262-263. Invited symposium.
- Bradley BJ, MacFie T, Lawler RR, et al. (2009) Eye of the beholder: Variable color vision in wild lemur populations. *American Journal of Physical Anthropology*. Suppl: 48: 138.
- Lawler RR, Parga JA (2008) Testing for historical population bottlenecks in a wild lemur population (*Propithecus verreauxi verreauxi*). *American Journal of Physical Anthropology*. Suppl 46: 137.
- Wunderlich RE, Lawler RR (2008) Functional models of morphological integration in *Propithecus verreauxi verreauxi*. *American Journal of Physical Anthropology*. Suppl 46: 225-226.
- Guillot DM, Lawler RR, MacLachy LM (2007) Patterns of positional behavior among atelines: a comparative analysis of *Alouatta seniculus*, *Lagothrix lagotricha*, and *Ateles belzebuth* in Ecuador. *American Journal of Physical Anthropology*. Suppl. 44: 121.
- Cuzzo FP, Sauther ML, Lawler RR, Yamashita N, Scott JR, Ratsirarson J, Weber M (2007) A comparison of salivary pH in sympatric lemur species (*Lemur catta* and *Propithecus verreauxi*) at Beza Mahafaly Special Reserve, Madagascar: Investigating feeding ecology,

dietary chemicals, and primate tooth wear. *American Journal of Physical Anthropology* Suppl. 44: 94.

- Lawler RR, Caswell H (2007) Calculating the stochastic growth rate in a wild population of lemurs using long-term rainfall data. *American Journal of Physical Anthropology*. Suppl. 44: 151.
- Lawler RR, Caswell H (2006) Conservation biology of wild Verreaux's sifaka: Prospective and retrospective perturbation analyses. *American Journal of Physical Anthropology*. Suppl 42:119
- Lawler RR, Richard AF, Dewar RE, Hunter CM, Caswell H (2005) Demographic analysis of a wild lemur population. *American Journal of Physical Anthropology* Suppl 40: 135-136
- Lawler RR (2004) Sifaka positional behavior: Ontogenetic and quantitative genetic approaches. *American Journal of Physical Anthropology*. Suppl. 34: 133.
- Lawler RR, Richard AF, Riley MA (2003) Spatial and temporal aspects of population structure in a wild lemur population, the white sifaka. *American Journal of Physical Anthropology*. Suppl. 33: 136.
- Lawler RR, Richard AF, Riley MA. (2001) The relationship between genetic and demographic structure in a wild lemur population (*Propithecus verreauxi*). *American Journal of Physical Anthropology* Suppl. 31: 96
- Davis LC, Lawler RR, Wright PC, Ford SM, and Easley SP (1997) Anatomical correlates of positional behavior in two species of *Callicebus*. *American Journal of Physical Anthropology*. Suppl. 24: 54.
- Lawler RR, Wright PC, and Ford SM (1996) Positional Behavior of *Callicebus moloch* at Cocha Cashu, Peru: A Preliminary Analysis. *American Journal of Physical Anthropology*. Suppl. 22: 147.
- Society for the Study of Evolution:*
- Lawler RR (2006) Intrasexual Selection in Verreaux's sifaka (*Propithecus verreauxi verreauxi*). Poster presentation. Stony Brook, NY, USA.
- Lawler RR, Caswell H (2005) Demographic analysis of a wild lemur population (*Propithecus verreauxi verreauxi*). Poster presentation. Fairbanks, AK, USA.
- Lawler RR, Richard AF, Riley MA (2002) Genetic population structure of white sifaka (*Propithecus verreauxi verreauxi*). Poster presentation. Urbana-Champaign, IL, USA.

Society for Integrative and Comparative Biology:

Lawler RR, Wunderlich RE (2008) Age-specific patterns of morphological integration in Verreaux's sifaka. Poster Presentation. San Antonio, TX, USA.

Lawler RR, Caswell H (2009) Conservation biology of wild Verreaux's sifaka: Sensitivity and LTRE approaches. Poster presentation, Boston, USA

International Primatological Society:

Chen-Kraus C, Raharino NA, Lawler RR, Richard AF, Ranaivonasy J, Ratsirarson J, Watts DP (2018) Human activities across management zones at Beza Mahafaly Special Reserve and their effects on Verreaux's sifaka.

Guevara EE, Ranaivonasy J, Richard AF, Ratsirarson J, Lawler RR, Bradley BB (2016) Preliminary characterization of the oral microbiome of a wild lemur, *Propithecus verreauxi*

Lawler RR, Richard AF, Ratsirarson J, Ranaivonasy J, and Brockman DK. (2016) Determinants of recruitment to adulthood in wild Verreaux's sifaka. Invited symposium.

Wunderlich RE, Lawler RR, Williams AE. (2008) Field and experimental approaches to the study of locomotor ontogeny in *Propithecus verreauxi*. Presentation. Edinburgh, Scotland. (presented by Dr. Daniel Schmitt)

American Society of Primatologists:

Parga JA, Sauther ML, Cuzzo FP, Lawler RR (2010) Signature of a genetic bottleneck detected in wild ring-tailed lemurs, *Lemur catta*, from southwest Madagascar. Louisville, KY, USA.

Parga JA, Sauther ML, Cuzzo FP, Youseff Jacky IA, Gould L, Sussman RW, Lawler RR, Pastorini J (2015) Male and female dispersal in wild ringtailed lemurs (*Lemur catta*): Genetic evidence. Bend, Oregon, USA.

Kernim J, Clarke T, La Fleur M, Cuzzo F, Lawler RR, Parga JA, Pastorini J, Sauther ML, Baden AL (2017) Using molecular techniques to determine provenance of illegal ring-tailed lemur (*Lemur catta*) pets to inform conservation actions. Washington DC, USA.

Miscellaneous conferences:

Lawler RR (2008) The adaptive basis of large feet in young sifaka. Presentation. University of Massachusetts, Amherst, USA. Northeast Anthropological Association

Sussman RW, Richard AF, Ratsirarson J, Brockman DK, Sauther ML, Lawler RR, Cuzzo FP (2009) Beza Mahafaly Special Reserve: A research site in southwestern Madagascar. Presentation. German Primate Center, VII. Gottinger Freilandtage, Germany.

- Lawler RR (2010) Variable climates and lemur livelihoods: Insights from demography and genetics. Presentation. Yale University, New Haven, USA. Center for Reproductive Ecology: A look at lemur longevity.
- Wolf SA, Lawler RR, Wunderlich RE (2011) Ontogeny of limb growth and locomotor behavior in *Lemur catta* and *Propithecus verreauxi*. Graduate Research Symposium, College of William and Mary
- Webster TH, Lawler RR, Bradley BJ (2014) Gene loss and protein evolution in *Propithecus verreauxi* detected using exome sequencing and *de novo* assembly. Poster Presentation at the NEPEEBG conference, Rutgers University November 2014.
- Chen-Kraus C, Ihariliva HK, Lawler RR, Ratsirarson J, Ranaivonasy J, Watts DP (2016) Assessing the impacts of human disturbance on sifaka (*Propithecus verreauxi*) at Beza Mahafaly Special Reserve. Northeast Evolutionary Primatology Conference.
- White CM, Guevara EE, Chen-Kraus CL, Lawler RR, Bradley BJ (2018) Genetic diversity of *Propithecus verreauxi* across Beza Mahafaly Special Reserve. Northeast Evolutionary Primatology Conference.
- Guevara EE, Webster TH, Lawler RR, Bradley BJ, Rogers J. (2018) Evolutionary genomics of Verreaux's sifaka (*Propithecus verreauxi*). Northeast Evolutionary Primatology Conference.
- Chen-Kraus C, Raharinoro NA, Mahereza JS, Ranaivonasy J, Ratsirarson J, Lawler RR, Richard AF (2019) Distribution and connectivity of sifaka (*Propithecus verreauxi*) in the Mahafaly region, southwest Madagascar. Association for Tropical Biology, Antananarivo, Madagascar.
- Chen-Kraus C, Raharinoro NA, Anderson DJ, Randrianirinarisoa NAM, Lawler RR, Mahereza SJ, Ranaivonasy J, Ratsirarson J, Richard AF, Watts DP. (2019) Human-lemur coexistence at Beza Mahafaly Special Reserve, southwest Madagascar. Student Conference on Conservation Science, American Museum of Natural History. New York.

FIELD RESEARCH EXPERIENCE:

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Joel Ratsirarson et al. (August 2018)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Joel Ratsirarson et al. (July-August 2016)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Joel Ratsirarson et al. (August 2015)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Joel Ratsirarson et al. (August-September 2014)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (August 2013)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2012)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2011)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2008)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2007)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2006)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2005)

Research Associate, Lemur demography and morphology in southwestern Madagascar with Dr. Joel Ratsirarson et al. (July-August 2003)

Research Assistant, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard et al. (July-August 2001)

Research Assistant, Human reproductive ecology of The Ache in eastern Paraguay with Dr. Richard Bribiescas. (July 1999)

Research Assistant, Lemur demography and morphology in southwestern Madagascar with Dr. Alison Richard. (January 1998)

Teaching Assistant, course in Primate Ecology and Behavior, La Suerte Biological Research Station. Limon, Costa Rica (June-August 1996)

Research Assistant, Dumond Conservancy for Primates and Tropical Forests. Miami FL. Project on cognitive ethology with Dr. Paul Garber (January-May 1993)

LABORATORY/COMPUTATIONAL TRAINING:

Molecular techniques for primate behavior and conservation, Yale University, Dept. of Ecology and Evolutionary Biology with Dr. Margaret Riley (1998-2002); further training provided by the Yale Institute for Biospheric Studies (Conservation Genetics Laboratory)

Demographic techniques for primate conservation biology, Woods Hole Oceanographic Institution, Biology Department with Dr. Hal Caswell. (2003-2005)

Population Genomics and Statistical Epidemiology, Montreal Spring School, University of Montreal (June 2-5, 2010)

Genomic approaches in anthropology, Texas Biomedical Institute, (Jan 9-10, 2013)

CGEMS Summer workshop in genomics and bioinformatics, James Madison University (July 13-15, 2018).

FUNDING RECEIVED:

N.S.F. Genetic and demographic approaches to life history evolution in sifaka

N.S.F. Research Starter Grant in Population Dynamics

N.S.F. Postdoctoral Fellowship in Bioinformatics

N.S.F. Dissertation Improvement Grant

Enders Collaborative Research Fellowship

Williams Fund for Anthropological Research

Yale University Dissertation Fellowship

Mellon Foundation Collaborative Research Grant

Enders Fund of Yale University

NERC proposal, Drs. Nick Mundy and Brenda Bradley (PIs)

ACADEMIC ADVISORS:

Dr. Hal Caswell (postdoctoral advisor)

Dr. David Watts (dissertation advisor and chair)

Dr. Alison Richard (dissertation advisor)

Dr. Margaret Riley (dissertation advisor)

Dr. Susan Ford (M.A. advisor)

Dr. Brenda Benefit (M.A. committee member)

Dr. Patricia Wright (M.A. committee member)

Dr. Paul Garber (undergraduate advisor and M.A. committee member)

AWARDS AND FELLOWSHIPS:

National Science Foundation Postdoctoral Fellowship in Biological Informatics, 2003

Ales Hrdlicka Graduate Student Prize, AAPA conference, Tempe AZ, 2003

Patricia O'Brien Award, Best undergraduate research paper in Anthropology, 1991

TEACHING:

James Madison University:

- Introduction to Biological Anthropology: Every semester
- Human Evolutionary Psychology Spring: 2010, 2011, 2017; Fall: 2012, 2015, 2018
- Anthropological Genetics: Fall 2010, 2016; Spring 2014, 2018
- The Evolution of Primate Sexuality: Fall 2011, 2017; Spring 2013, 2016
- Human Evolution: Spring 2012; Fall 2013
- Biological Anthropology: London Edition, Study Abroad, Spring 2019

Boston University:

- Human Origins (AN331) Fall 2004, 2005
- Evolutionary Psychology (AN334) Fall 2004, 2007, 2008; Spring 2006
- Primate Evolutionary Ecology (AN336) Spring 2007, 2008
- Introduction to Biological Anthropology (AN102) Spring 2005, 2008, 2009; Fall 2006
- Anthropological Genetics (AN551) Fall 2005, 2006, 2008
- Conserving Wild Primates (AN597) Spring 2005, 2006
- Human Osteology (AN498) Spring 2006
- Anthropological Implications of Evolutionary Theory (AN598) Spring 2009

Yale University:

- Introduction to Biological Anthropology, Teaching Fellow.
- Primate Ecology and Behavior, Teaching Fellow.
- The Evolution of Primate Intelligence, Teaching Fellow.
- Human Osteology, Teaching Fellow.
- Primate Evolution, Teaching Fellow.
- Evolutionary Biology, Teaching Fellow.

Other:

- Introduction to Anthropology (3x), Southern Illinois University, Teaching Fellow
- Rotations in Primate Ecology, La Suerte Costa Rica, Teaching Fellow

PROFESSIONAL ACTIVITIES:

Reviewer for:

Molecular Ecology	Behavioral Ecology and Sociobiology	Biotropica
Animal Behavior	Journal of Experimental Zoology	Behavior
Zoo Biology	American Journal of Physical Anthropology	Int. J. Primatol.
J. Hum. Evol.	American Journal of Primatology	PLoS Genetics
J. Anim. Ecol.	Endangered Species Research	Human Nature
Ecology and Evolution	Evolutionary Anthropology	Primates
PLoS One	Proc. Natl. Acad. Sci. USA	Folia Primatologica
Animal Conservation		Primate Biology

External service:

Professional Development Committee, American Association of Physical Anthropologists (2019-2021)

Associate Editor, American Journal of Physical Anthropology (2015-2019)

Associate Editor, Journal of Human Evolution (2008-2012)

NSF Panel member: Division of Social, Behavioral, and Economic Sciences

External Reviewer: National Science Foundation Senior Proposals (>>1x)

External Reviewer: Earthwatch Foundation

External Reviewer: National Geographic Society Senior Proposals (>>1x)

External Reviewer: volume for Developments in Primatology: Progress and Prospects

External Reviewer: Leakey Foundation Senior and Dissertation Proposals (>>1x)

External Reviewer: Primate Conservation Inc. (>>1x)

External Reviewer: chapter for "The Evolution of Primate Societies"

External Reviewer: chapter for "Building Babies"

Invited Seminars:

CUNY Graduate Center (New York Consortium on Evolutionary Primatology)

Harvard University (Department of Anthropology)

Boston University (Department of Biology)

Yale University (Department of Anthropology)

James Madison University (Department of Biology)

University of California-Davis (Evolutionary Anthropology)

University of Antananarivo, Field School, Beza Mahafaly 2014

University of Antananarivo, Field School, Beza Mahafaly 2018

University Service at James Madison University:

Member of PAC for Drs. Becca Howes-Mischel, Benjamin Brewer, Dennis Blanton (2017)

Instructor, Life Long Learning Institute (class on "Evolution of Human Uniqueness")

Member of PAC for Dr. Liam Buckley (2016)

Member of PAC for Dr. Amy Paugh (2015)

Assessment of Internal Leave committee (2015)

IACUC committee (Fall 2015)

Website committee (2015-2016)

Archaeology search committee member (2015-2016)

Member of PAC for Dr. Dennis Blanton (2015)

Member of PAC for Dr. Joshua Linder (2014)

Member of PAC for Dr. Megan Tracy (2014)

Member of Annual Report Committee (2014)

PAC chair for Anthropology Department (2013-2014)

Summer internal research grant committee (chair) (2014)

Student relations and grievance committee (2013-2014)

Faculty advisory committee to the CAL Dean (2012-2014)

Member of Departmental Review APR committee (2014)

Committee (chair) to review internal summer grants (2013-2014)

Cluster 3 (Natural World) Department representative (2009-2017)

Departmental Merit Committee (2010-2012)

Sub-committee for reviewing policy on tenure/promotions (2012)
Cultural Anthropology search committee member (2011-2012)
Archaeology search committee chair (2011-2012)
FMLA departmental committee member (2012)
Academic Rigor Committee, chair (2011)
CAL-FAC University Committee (2010-2011)
Human Science Minor, Committee member (2009-2012)
Advisor, International Service Learning without Borders Club (2011-2015)

Independent studies/Honor's theses/Master's theses at James Madison University:

Matthew Turner (Exploring phylogenetics of hominids)
James Drawdy (Factors influencing Neandertal extinctions)
Kaita Gurian (Professional development for prospective graduate students)
Kathryn Miller (Topics in Evolutionary Psychology)
Jenna Owens (Evolutionary psychology of literature)
Jordan Lamon (Evolutionary Psychology topics)
Kaitlin Shamlian (Readings in forensic anthropology)
Nina Schenk (Honors TA course planner)
Jennifer Wilburn (Mechanisms of Ebola transfer)
Marin Baden (Pressure differences during bipedal walking in two new world monkeys)
Stephanie Wolf (Locomotor ontogeny in *Propithecus verreauxi* and *Lemur catta*)

University Service at Boston University:

Director of Graduate Studies (Spring 2008, Fall 2008, Spring 2009)
Academic Conduct Committee (2007, 2008, 2009)
Graduate Admissions Committee (2005, 2006, 2007, 2008)
Seven-Year Medical Interview Committee (2006, 2007)
Bioanthro search committee member (2007, 2008, 2009)
Senior thesis committee (2005): Anna Schwartz (Theories on the evolution of intelligence)
Senior honors thesis committee (2006): Michael Astolfi (The evolution of humor)
Senior honors thesis committee (2009): Charles Esposito (Mate choice factors in humans)

MANUSCRIPTS IN PREPARATION:

Lawler RR et al. (in prep.) Individual variation in fitness and the opportunity for selection in a wild lemur population.
Lawler RR et al. (in prep.) Constraints on life cycle evolution in a wild lemur population.
Lawler RR et al. (in prep.) Genetic architecture of life history traits in a wild lemur population.
Lawler RR et al. (in prep.) Determinants of survival in a wild lemur population
Lawler RR, Wunderlich RE, Rolian C (in prep.) Developmental aspects of morphological integration in the postcranium in wild Verreaux's sifaka (*Propithecus verreauxi*).
Webster TH, Lawler RR, Bradley BJ (in prep.) Gene loss and protein evolution in *Propithecus verreauxi* detected using *de novo* exome sequencing and assembly.

Jason M. Kamilar

Curriculum vitae

CONTACT INFORMATION

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Twitter: <http://twitter.com/jasonkamilar>

PROFESSIONAL APPOINTMENTS

- 2018 - **Associate Professor**, Department of Anthropology, University of Massachusetts, Amherst
- 2015 - 2018 **Assistant Professor**, Department of Anthropology, University of Massachusetts, Amherst
- 2019 - **Co-Director**, Kasanka Baboon Project at Kasanka National Park
- 2018 - **Faculty**, Institute for Applied Life Sciences, University of Massachusetts, Amherst
- 2016 - **Faculty Affiliate**, Computational Social Science Institute, University of Massachusetts, Amherst
- 2015 - **Faculty**, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts, Amherst
- 2015 - **Curator of Primates**, Natural History Collections, University of Massachusetts, Amherst
- 2011 - 2015 **Research Assistant Professor**, Department of Anatomy, Arizona College of Osteopathic Medicine, Midwestern University
- 2011 - 2015 **Adjunct Faculty**, School of Human Evolution and Social Change, Arizona State University
- 2009 - 2011 **Postdoctoral Research Associate**, Department of Anthropology and Molecular Anthropology Laboratory, Yale University
- 2006 - 2009 **Postdoctoral Fellow and Research Associate**, Department of Anthropology, Washington University, St. Louis
- 2008 - 2009 **Adjunct Instructor**, Department of Sociology and Criminal Justice, St. Louis University

- 2003 - 2006 **Editorial Assistant** for *Evolutionary Anthropology*, Department of Anatomical Sciences, Stony Brook University
- 2003 - 2006 **Academic Advisor**, Academic and Pre-Professional Advising Center, Stony Brook University
- 2004 - 2005 **Instructor**, Department of Anthropology, Stony Brook University

EDUCATION

- 1999 - 2006 **Ph.D.** Anthropological Sciences, Stony Brook University
Dissertation Committee: Charles Janson, John Fleagle, Patricia Wright, and Charles Nunn (outside member)
- 1994 - 1999 **B.A.** Anthropology, Arizona State University
- 1994 - 1999 **B.S.** Life Sciences, Arizona State University

GRANTS (Total external funding received: [REDACTED])

- In review **National Science Foundation**, PI, "Understanding the Relationships Between Host Genetics, Gut Microbiome Diversity, and Kinda Baboon Behavior and Social Structure" [REDACTED]
- In review **National Science Foundation**, PI (with Andrew Best, University of Massachusetts, co-PI), "Doctoral Dissertation Research: Evolution and Diversity of Human Eccrine Sweat Glands" [REDACTED]
- 2019 - 2021 **National Science Foundation**, PI (with Andrew Zamora, University of Massachusetts, co-PI), "Doctoral Dissertation Research: Socio-Genomic Evolution of Sifakas (*Propithecus*)" [REDACTED]
- 2019 **College of Social and Behavioral Sciences Conference Grant, University of Massachusetts Amherst**, "Funding to Support the Northeastern Evolutionary Primatology Meeting" [REDACTED]
- 2017 - 2020 **Leakey Foundation Research Grant**, PI (with Brenda Bradley, George Washington University and David Sela, University of Massachusetts), "The Evolutionary Ecology of Primate Hair and Skin Microbiomes" [REDACTED]
- 2016 **College of Social and Behavioral Sciences Research Support Grant, University of Massachusetts Amherst**, "Generating Pilot Data to Understand Primate Hair Microbiomes" [REDACTED]
- 2016 - 2019 **National Science Foundation**, BCS #1551799, PI (with Kaye Reed, Arizona State University), "Understanding Temporal Variation in Primate Communities: Integrating Data from Extant and Fossil Species" [REDACTED]
- 2014 - 2018 **National Science Foundation**, BCS #1354997 and #1606360, PI (with Brenda Bradley, George Washington University), "The Evolution of Hair and Fur:

Proximate and Ultimate Mechanisms Shaping Primate Pelage Variation"

- 2013 - 2016 **Wenner-Gren Foundation Research Grant**, PI (with Brenda Bradley, George Washington University), "The Evolution of Primate Hair Morphology: A Comparative Approach"
- 2009 **International Primatological Society Research Grant**, "The Evolution of Primate Pelage Coloration Using Melanin Pigments: A Pilot Study"
- 2008 - 2011 **Leakey Foundation Research Grant**, PI, "The Evolutionary Ecology of Primate Pelage Color Variation"
- 2005 - 2006 **National Science Foundation Dissertation Improvement Grant**, co-PI (with Charles Janson, Stony Brook University) "Intraspecific Variation in Primate Behavior and Ecology"

AWARDS

- 2017 - 2018 **Institute of Social Science Research Scholar**, University of Massachusetts Amherst
- 2011 **Postdoctoral Scholar Travel Award**, Yale University
- 2007 **Thomas J. Dee Fellowship**, Field Museum of Natural History
- 2006 **Sigma Xi Travel Award**
- 2005 **Podium Presentation Student Prize** awarded at the 5th Göttinger Freiländertage, Germany. Primate diversity: Past, present and future (
- 2005 **Best Student Poster Honorable Mention (with Kerry Ossi)**, awarded at the 74th annual meeting of the American Association of Physical Anthropologists by the Primate Biology and Behavior Interest Group
- 2004 **Sigma Xi Award for Excellence in Research**
- 2004 **The Sherwood Washburn Student Prize** awarded at the 73rd annual meeting of the American Association of Physical Anthropologists (

PEER-REVIEWED ARTICLES AND BOOK CHAPTERS (*indicates student co-author)

- Agostini GM and Kamilar JM. In review. Phylogenetic signal in primate skeletal morphology. *Journal of Human Evolution*.
- Bell RB*, Bradley BJ, Kamilar JM. In review. Primate hair color evolves independently among body regions and clades. *The American Naturalist*.
- Godfrey LR, Samonds KE, Baldwin J*, Sutherland MR, Kamilar JM, Allfisher K. In review. Mid-Tertiary climate change and extinction in Madagascar and their bearing on the evolution of Madagascar's lemurs. *BMC Evolutionary Biology*.

- Tapanes, E*, Anestis, S, **Kamilar, JM**, Bradley, BJ. In review. Do pigmentation changes in chimpanzees provide a salient progressive signal of ageing? *Biology Letters*.
- Zintel TM*, Ely JJ, Raghanti MA, Hopkins WD, Hof PR, Sherwood CC, **Kamilar JM**, Bauernfeind AL, Babbitt CC. In review. Ecological trait differences are associated with gene expression in the primary visual cortex of primates. *Genome Biology and Evolution*.
55. Rowan J, Beaudrot L, Franklin J, Reed KE, Smail IE*, Zamora A*, **Kamilar JM**. In press. Geographically divergent evolutionary and ecological legacies shape large mammal biodiversity in the global tropics and sub-tropics. *Proceedings of the National Academy of Sciences USA*.
54. Baden AL, Mancini AN*, Federman S*, Holmes S, Johnson SE, **Kamilar JM**, Louis Jr. EE, Bradley BJ. In press. Anthropogenic pressures drive population genetic structuring across a Critically Endangered lemur species range. *Scientific Reports*.
53. Best AW*, Lieberman DE, **Kamilar JM**. 2019. Diversity and evolution of human eccrine sweat gland density. *Journal of Thermal Biology* 84: 331-338.
52. **Kamilar JM** and Beaudrot L. 2019. Quantitative methods for primate biogeography and macroecology, in *Spatial Analysis in Field Primatology: Applying GIS at Varying Scales*. CA Shaffer, F Dolins, JR Hickey, NP Nibbelink, L Porter, eds. Cambridge: Cambridge University Press.
51. Petersdorf M*, Weyher A*, **Kamilar JM**, Dubuc C, Higham JP. 2019. Sexual selection in the Kinda baboon (*Papio kindae*). *Journal of Human Evolution*.
<https://doi.org/10.1016/j.jhevol.2019.06.006>
50. Vander Linden A*, Hedrick BP, **Kamilar JM**, Dumont ER. 2019. Atlas morphology, scaling, and locomotor behavior in primates, rodents, and relatives (Mammalia: Euarchontoglires). *Zoological Journal of the Linnean Society* 185: 283–299.
49. Best A* and **Kamilar JM**. 2018. The evolution of sweat glands in human and nonhuman primates. *Journal of Human Evolution* 117: 33-43.
48. Fuchs AJ*, Gilbert CC, **Kamilar JM**. 2018. Ecological niche modeling of the genus *Papio*. *American Journal of Physical Anthropology* 166: 812-823.
47. **Kamilar JM** and Beaudrot L. 2018. Effects of environmental stress on primate populations. *Annual Review of Anthropology* 47: 417-434.
46. **Kamilar JM**. 2017. Biogeography and primate biogeography. *The International Encyclopedia of Primatology*. A Fuentes, ed. Hoboken: John Wiley & Sons. pp. 98-101.
45. Baden AL, Webster TH*, **Kamilar JM**. 2016. Resource seasonality and reproductive state predict fission-fusion dynamics in a Malagasy strepsirrhine, *Varecia variegata*. *American Journal of Primatology* 78: 256-279.

44. Borries C, Sandel AA*, Koenig A, Fernandez-Duque E, **Kamilar JM**, Amoroso CR*, Barton RA, Bray J*, DiFiore A, Gilby IC, Gordon AD, Mundry R, Port M, Powell LE*, Pusey AE, Spriggs A*, Nunn CL. 2016. Transparency, usability, and reproducibility: guiding principles for improving comparative databases using primates as examples. *Evolutionary Anthropology* 25: 232-238.
43. **Kamilar JM**, Blanco M, Muldoon KM. 2016. Ecological niche modeling of mouse lemurs and its implications for their species diversity and biogeography. Dwarf and mouse lemurs of Madagascar: Biology, behavior and conservation biogeography of the Cheirogaleidae. SM Lehman, U Radespiel, E Zimmermann, eds. Cambridge: Cambridge University Press. pp. 449-461.
42. **Kamilar JM** and Tecot SR. 2016. Anthropogenic and climatic effects on the distribution of *Eulemur* species: An ecological niche modeling approach. *International Journal of Primatology* 37: 47-68.
41. Kelley EA, Jablonski NG, Chaplin G, Sussman RW, **Kamilar JM**. 2016. Behavioral thermoregulation in *Lemur catta*: The significance of sunning and huddling behaviors. *American Journal of Primatology* 78: 745-754.
40. Lazagabaster IA*, Rowan J*, **Kamilar JM**, Reed KE. 2016. Evolution of craniodental correlates of diet in African Bovidae. *Journal of Mammalian Evolution* 23: 385-396.
39. Moore BA, Tyrrell LP, **Kamilar JM**, Collin SP, Dominy NJ, Hall MI, Heesy CP, Johnsen S, Lisney TJ, Loew ER, Moritz G, Nava S, Warrant EJ, Yopak KE, Fernandez-Juricic E. 2016. Structure and functions of regional specializations in vertebrate retinas. *Evolution of Nervous Systems*, 2nd edition, JH Kaas, ed. New York: Elsevier Publishers. pp. 351-372.
38. Rowan J*, **Kamilar JM**, Beaudrot L, Reed KE. 2016. Strong influence of paleoclimate on the structure of modern African mammal communities. *Proceedings of the Royal Society B* 283: 20161207.
37. **Kamilar JM** and Tecot SR. 2015. Connecting proximate mechanisms and evolutionary patterns: Pituitary gland size and mammalian life history. *Journal of Evolutionary Biology* 28: 1997-2008.
36. **Kamilar JM**, Beaudrot L, Reed KE. 2015. Climate and species richness predict the phylogenetic structure of African mammal communities. *PLoS ONE* 10: e0121808. doi:10.1371/journal.pone.0121808.
35. Anestis SF, Webster TH*, **Kamilar JM**, Fontenot B, Watts DP, Bradley BJ. 2014. AVPR1A variation in chimpanzees (*Pan troglodytes*): Population differences and association with behavioral style. *International Journal of Primatology* 35: 305-324.
34. Beaudrot L*, **Kamilar JM**, Marshall AJ, Reed KE. 2014. African primate assemblages exhibit a latitudinal gradient in dispersal limitation. *International Journal of Primatology* 35: 1088-1104.

33. **Kamilar JM** and Atkinson QD. 2014. Cultural assemblages show nested structure in humans and chimpanzees but not orangutans. *Proceedings of the National Academy of Sciences USA* 111: 111-115.
32. **Kamilar JM** and Baden AL. 2014. What drives flexibility in primate social organization? *Behavioral Ecology and Sociobiology* 68: 1677-1692.
31. **Kamilar JM**, Beaudrot L*, Reed KE. 2014. Advances in primate community ecology research across spatial, temporal and phylogenetic scales. *International Journal of Primatology* 35: 1083-1087.
30. **Kamilar JM**, Beaudrot L*, Reed KE. 2014. The influences of species richness and climate on the phylogenetic structure of African haplorhine and strepsirrhine primate communities. *International Journal of Primatology* 35: 1105-1121.
29. **Kamilar JM** and Beaudrot L.* 2013. Understanding primate communities: Recent developments and future directions. *Evolutionary Anthropology* 22: 174-185.
28. **Kamilar JM** and Cooper N. 2013. Phylogenetic signal in primate behaviour, ecology, and life history. *Philosophical Transactions of the Royal Society B* 368: 20120341.
27. **Kamilar JM**, Heesy CP, Bradley BJ. 2013. Did trichromatic color vision and red hair color co-evolve in primates? *American Journal of Primatology* 75: 740-751.
26. Tecot SR, Baden AL*, Romine N*, **Kamilar JM**. 2013. Reproductive strategies and infant care in the Malagasy primates. In: *Building Babies: Proximate and Ultimate Perspectives of Primate Developmental Trajectories*, K. Clancy, K. Hinde, and J. Rutherford, eds. New York: Springer Press. pp. 321-359.
25. Cooper N, **Kamilar JM**, Nunn CL. 2012. Host longevity and parasite species richness in mammals. *PLoS ONE* 7: e42190. doi:10.1371/journal.pone.0042190.
24. Hall MI, **Kamilar JM**, Kirk EC. 2012. Eye shape and the nocturnal bottleneck of mammals. *Proceedings of the Royal Society B* 279: 4962-4968.
23. **Kamilar JM** and Marshack JL.* 2012. Does geography or ecology best explain 'cultural' variation among chimpanzee communities? *Journal of Human Evolution* 62: 256-260.
22. **Kamilar JM**, Muldoon KM, Lehman SM, Herrera JP.* 2012. Testing Bergmann's rule and the resource seasonality hypothesis in Malagasy primates using GIS-based climate data. *American Journal of Physical Anthropology* 147: 401-408.
21. Moore BA*, **Kamilar JM**, Collin SP, Bininda-Emonds ORP, Dominy NJ, Hall MI, Heesy CP, Johnsen S, Lisney TJ, Loew ER, Moritz G*, Nava S, Warrant EJ, Yopak KE, Fernandez-Juricic E. 2012. A novel method for comparative analysis of retinal specialization traits from topographic maps. *Journal of Vision* 12: 13. doi:10.1167/12.12.13.
20. Pointer MA, **Kamilar JM**, Warmuth V*, Chester SGB*, Delsuc F, Mundy NI, Asher RJ, Bradley BJ. 2012. RUNX2 tandem repeats and the evolution of facial length in

- placental mammals. *BMC Evolutionary Biology* 12: 103. doi:10.1186/1471-2148-12-103.
19. Tecot SR, Baden AL*, Romine N*, **Kamilar JM**. 2012. Infant parking and nesting, not allomaternal care, influence Malagasy primate life histories. *Behavioral Ecology and Sociobiology* 66: 1375-1386.
 18. Hall MI, Kirk EC, **Kamilar JM**, Carrano MT. 2011. Technical Comment on "Nocturnality in dinosaurs inferred from scleral ring and orbit morphology". *Science* 334: 1641.
 17. Heesy CP, **Kamilar JM**, Willms J.* 2011. Retinogeniculostriate pathway components only scale with orbit convergence in primates and not other mammals. *Brain, Behavior, and Evolution* 77: 105-115.
 16. **Kamilar JM** and Bradley BJ. 2011. Countershading is related to positional behavior in primates. *Journal of Zoology* 283: 227-233. Cover Article.
 15. **Kamilar JM** and Bradley BJ. 2011. Interspecific variation in primate coat color supports Gloger's rule. *Journal of Biogeography* 38: 2270-2277.
 14. **Kamilar JM** and Ledogar JA.* 2011. Species co-occurrence patterns and dietary resource competition in primates. *American Journal of Physical Anthropology* 144:131-139.
 13. Wheeler BC, Bradley BJ, **Kamilar JM**. 2011. Predictors of orbital convergence in primates: A test of the snake detection hypothesis of primate evolution. *Journal of Human Evolution* 61: 233-242.
 12. **Kamilar JM**, Bribiescas RG, Bradley BJ. 2010. Is group size related to longevity in mammals? *Biology Letters* 6: 736-739.
 11. **Kamilar JM** and Guidi LM.* 2011. The phylogenetic structure of primate communities: Variation within and across regions. *Journal of Biogeography* 37: 801-813.
 10. **Kamilar JM** and Muldoon KM. 2010. The climatic niche diversity of Malagasy primates: A phylogenetic approach. *PLoS ONE* 5: e11073. doi:10.1371/journal.pone.0011073.
 9. **Kamilar JM**. 2009. Environmental and geographic correlates of the taxonomic structure of primate communities. *American Journal of Physical Anthropology* 139: 382-393.
 8. **Kamilar JM**. 2009. Interspecific variation in primate countershading: Effects of activity pattern, body mass, and phylogeny. *International Journal of Primatology* 30: 877-891.
 7. **Kamilar JM**, Martin SK*, Tosi AJ. 2009. Combining biogeographic and phylogenetic data to examine primate speciation: An example using cercopithecine monkeys. *Biotropica* 41: 514-519.
 6. Pontzer H and **Kamilar JM**. 2009. Great ranging associated with greater reproductive investment in mammals. *Proceedings of the National Academy of Sciences USA* 106: 192-196.

5. **Kamilar JM** and Pokempner AA.* 2009. Does body mass dimorphism increase male-female dietary niche separation? A comparative study of primates. *Behaviour* 145: 1211-1234.
4. **Kamilar JM** and Paciulli LM. 2008. Examining the extinction risk of specialized folivores: A comparative study of colobine monkeys. *American Journal of Primatology* 70: 816-827.
3. **Kamilar JM**. 2006. Geographic variation in savanna baboon (*Papio*) ecology and its taxonomic and evolutionary implications. In: *Primate Biogeography*, SM Lehman and JG Fleagle, eds. New York: Springer Press. pp. 169-200.
2. Ossi KM* and **Kamilar JM**. 2006. Environmental and phylogenetic correlates of *Eulemur* behavior and ecology (Primates: Lemuridae). *Behavioral Ecology and Sociobiology* 61: 53-64.
1. **Kamilar JM** and Roehrdanz N.* 2005. Old World monkeys. In: *Encyclopedia of Anthropology*, H.J. Birx, ed. Thousand Oaks: Sage Publications.

ADDITIONAL PUBLICATIONS

- | | |
|------|---|
| 2018 | Fleagle JG and Kamilar JM . Evolutionary Anthropology: Issues, News, and Reviews. <i>Encyclopedia of Global Archaeology</i> . Claire Smith, ed. New York: Springer. |
| 2018 | Kamilar JM . The evolution of Evolutionary Anthropology. <i>Evolutionary Anthropology</i> 27: 1. |
| 2012 | Kamilar JM . Introduction to data analysis. <i>Midwestern University's Office of Research and Sponsored Programs Research Handbook</i> . pp. 157 -191. |
| 2010 | Kamilar JM . Book review: The fruit, the tree, and the serpent: Why we see so well. By Lynne A. Isbell. <i>Quarterly Review of Biology</i> 85: 121. |
| 2007 | Fleagle JG and Kamilar JM . Primate diversity: Past, present and future. <i>Evolutionary Anthropology</i> 16: 83-85. |
| 2006 | Kamilar JM . Monkeys: Old and new. <i>Evolutionary Anthropology</i> 15: 121-122. |
| 2006 | Kamilar JM . and Muldoon KM. Physical anthropology in the Last Frontier. <i>Evolutionary Anthropology</i> 15: 125-126. |
| 2006 | Kamilar JM and Nash LT. Primates in the Great Northwest. <i>Evolutionary Anthropology</i> 15: 39. |
| 2005 | Kamilar JM and Coleman MN. Primate ecology and evolution at the American Association of Physical Anthropology meeting. <i>Evolutionary Anthropology</i> 14: 207-208. |

- 2005 Young JW, Patel BA, **Kamilar JM**. New findings from integrative and comparative research. *Evolutionary Anthropology* 14: 88-89.
- 2004 **Kamilar J** and Heesy CP. Recent advances in primate ecology and evolution. *Evolutionary Anthropology* 13: 168-169.

INVITED PRESENTATIONS

- Apr 2019 *The ecology and evolution of primate biodiversity*. BioTAP Seminar Series, Commonwealth Honors College, University of Massachusetts Amherst.
- Apr 2018 *The ecology and evolution of primate hair*. BioTAP Seminar Series, Commonwealth Honors College, University of Massachusetts Amherst.
- Oct 2017 *A hairy situation: Surprising stories of primate evolution*. OEB Science Café. Graduate Program in Organismic and Evolutionary Biology. University of Massachusetts Amherst.
- Mar 2017 *Climatic and anthropogenic effects on African mammal macroecology*. Department of Anatomical Sciences, Stony Brook University.
- Mar 2017 *Climatic and anthropogenic effects on African mammal macroecology*. Department of Evolutionary Anthropology, Duke University.
- Nov 2016 *The ecology and evolution of primate hair traits*. 4@4, College of Social and Behavioral Sciences, University of Massachusetts Amherst
- Oct 2016 *Climatic and anthropogenic effects on African mammal macroecology*. Graduate Program in Organismic and Evolutionary Biology Seminar Series, University of Massachusetts Amherst.
- Apr 2016 *The ecology and evolution of primate biodiversity*. BioTAP Seminar Series, Commonwealth Honors College, University of Massachusetts Amherst.
- Mar 2015 *Climatic and anthropogenic effects on African mammal macroecology*. Program in Spatial Biodiversity Science and Conservation, Yale University.
- Nov 2014 *Comparative approaches to understanding primate behavior, ecology, and evolution*. Department of Anthropology, University of Massachusetts Amherst.
- Jan 2014 *Comparative approaches to understanding the evolution of primate behavior and ecology*. School of Anthropology, University of Arizona.
- Feb 2013 *Comparative approaches to understanding primate behavior and ecology*. Department of Anthropology, East Carolina University.
- Feb 2013 *Ecology and evolution of primate hair coloration*. Department of Sociology, Anthropology, and Philosophy, Northern Kentucky University.
- Nov 2012 *The ecology and evolution of primate hair coloration*. Department of Anatomy, Arizona College of Osteopathic Medicine, Midwestern University.

- Apr 2011 *Comparative and molecular approaches to understanding primate diversity.* Department of Anthropology, Florida Atlantic University.
- Mar 2011 *Comparative and molecular approaches to understanding primate coloration.* Comparative Primatology Research Group, Department of Human Evolutionary Biology, Harvard University.
- Jul 2010 *Ecological and evolutionary perspectives on primate biodiversity.* Jetz Research Group, Department of Ecology and Evolutionary Biology, Yale University.
- Feb 2010 *Comparative approaches to understanding primate diversity.* School of Anthropology, University of Arizona.
- Feb 2010 *Comparative approaches to understanding primate diversity.* Department of Anthropology, Yale University.
- Feb 2009 *A comparative approach to understanding the behavioral and ecological diversity of primates.* Department of Anthropology, California State University, Los Angeles.
- Feb 2009 *Using GIS and phylogenetic analyses to examine macroecological patterns in primates.* Population Biology Seminar Series, Duke University.
- Jun 2008 *Anthropogenic impacts on current biodiversity loss.* Department of Biology, Kutztown University of Pennsylvania.
- Mar 2008 *Geographic variation in primate behavior and ecology: A comparative approach.* Department of Anthropology, CUNY Hunter College.
- Feb 2008 *Biogeographic variation in primate behavior and ecology.* Department of Anthropology, SUNY Buffalo State College.
- Feb 2007 *Geographic variation in primate ecology: A climatic and evolutionary perspective.* Evolution, Ecology, and Population Biology Group, Washington University, St. Louis.
- Dec 2005 *How do environmental and historical effects shape primate communities?* Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany.
- Aug 2005 *Environmental and historical effects on the composition of anthropoid primate communities.* Primate Interest Group, University of California, Berkeley.

ORGANIZED CONFERENCES

- Nov 2019 *Northeastern Evolutionary Primatologists Annual Meeting.* University of Massachusetts Amherst.

ORGANIZED SYMPOSIA

- Apr 2013 *Understanding Primate Communities Across Spatial, Temporal and Phylogenetic Scales*. Podium Session at the Annual Meeting of the American Association of Physical Anthropologists. Co-organized with Kaye Reed (Arizona State University) and Lydia Beaudrot (UC Davis).

ORGANIZED WORKSHOPS

- May 2016 *Workshop on Owl Monkey Behavior, Ecology, and Evolution*. Funded by Yale University's Edward J. and Dorothy Clarke Kempf Memorial Fund (\$15,000). Co-organized with Eduardo Fernandez-Duque (Yale University) and Brenda Bradley (George Washington University).

SYMPOSIUM AND WORKSHOP PARTICIPATION

- May 2014 Instructor at *The AnthroTree Workshop*. A three-day course that provides hands-on experience to evolutionary anthropologists interested in learning phylogenetic comparative methods. Organized by Charles Nunn (Duke University) and funded by the National Science Foundation.
- May 2014 Participant at the *Comparative Primatology: Data Collection, Storage, and Analysis Workshop*. Department of Evolutionary Anthropology, Duke University. Organized by Charles Nunn (Duke University).
- Dec 2012 Invited speaker at the *Primate Society of Great Britain Meeting: Primate Biogeography*. Talk title: *The biogeography of primate communities: Ecological and evolutionary perspectives*. Organized by Sarah Elton (Durham University) and Helen Chatterjee (University College London).
- Dec 2011 Invited speaker at the *8th Göttinger Freilandtage: Behavioral Constraints and Flexibility*. Talk title: *Phylogenetic signal in primate behavior, ecology, and life history*. Organized by Peter Kappeler (Göttingen University and German Primate Center).
- Jun 2010 Instructor at *The AnthroTree Workshop*. A three-day course that provides hands-on experience to evolutionary anthropologists interested in learning phylogenetic comparative methods. Organized by Charles Nunn (Harvard University) and funded by the National Science Foundation.
- Apr 2010 Discussant at the *Lemur Senescence Symposium*. Department of Anthropology, Yale University. Organized by Richard Bribiescas (Yale University).
- 2009 - 2013 Member of the *Evolutionary Shifts in Vertebrate Visual Ecology and Visual System Morphology* working group. Funded by the National Evolutionary Synthesis Center (NESCent), Durham, North Carolina. Organized by Christopher Heesy, Margaret Hall (Midwestern University), and Andrew Iwaniuk (University of Lethbridge).

FIELD, MUSEUM, AND LABORATORY EXPERIENCE

- 2009 - I have experience with several molecular laboratory techniques including DNA/RNA extraction, cDNA synthesis, quantitative PCR, gel electrophoresis, and library preparation.
- 2005 - I have conducted research at the *American Museum of Natural History*, *Belgium's Royal Museum for Central Africa*, *Berkeley's Museum of Vertebrate Zoology*, *Field Museum of Natural History*, and *Yale University Peabody Museum of Natural History*.
- Feb - Jun 2002 *Phu Khieo Wildlife Sanctuary*, Thailand. I collected ecological and behavioral data on Phayre's langurs (*Trachypithecus phayrei*), initialized the habituation of rhesus macaques (*Macaca mulatta*), and collected primate and large mammal population density data. Directed by Andreas Koenig and Carola Borries.
- Feb - Jun 2001 *Mondika Research Station*, Central African Republic. I collected ecological and behavioral data on agile mangabeys (*Cercocebus agilis*), assisted in the study and habituation of western lowland gorillas (*Gorilla gorilla gorilla*), and participated in phenological surveys. Directed by Diane Doran.

TEACHING EXPERIENCE**Instructor of Record**

- 2017, 2019 Advanced Primate Ecology and Evolution (graduate seminar)
- 2017 - 2020 Statistics in Anthropology Using R (undergraduate lecture and lab)
- 2016, 2017, 2020 Advanced Quantitative Methods (advanced undergraduate and graduate seminar)
- 2016 Human Origins and Variation (undergraduate lecture)
- 2015, 2016, 2018, 2019 Primate Behavior (undergraduate lecture)
- 2014 Quantitative Methods in Evolutionary Anthropology (graduate seminar)
- 2009, 2011 Introduction to Biological Anthropology (undergraduate lecture and lab)
- 2009 Introduction to Human Evolution (undergraduate lecture)
- 2008, 2009 Introduction to Anthropology (undergraduate lecture)
- 2007, 2008 Primate Community Ecology (advanced undergraduate and graduate seminar)
- 2007, 2008 Primate Conservation (advanced undergraduate and graduate seminar)
- 2006, 2007 Primate Biogeography (advanced undergraduate and graduate seminar)

2004, 2005 Primate Evolution (advanced undergraduate lecture and lab)

Teaching Assistant and Lab Instructor

2009 Introduction to Biological Anthropology (undergraduate lecture and lab)

2006, 2007 Introduction to Human Evolution (undergraduate lecture)

2005 Introduction to Physical Anthropology (undergraduate lecture and lab)

2002 Applied Anthropology (undergraduate lecture)

Guest Lectures

2018 *Phylogenetics and Comparative Methods in Evolutionary Biology*. Course title: Graduate Program in Organismic and Evolutionary Biology, Evolution Core Course (graduate seminar)

2013 *Phylogenetic Comparative Methods in Evolutionary Biology*. Course title: Macroevolution (graduate seminar)

2010 *Using Phylogenies in Biological Anthropology*. Course title: Primate Molecular Ecology and Evolution (advanced undergraduate seminar)

2010 *What is Evolution?* Course title: Primate Molecular Ecology and Evolution (advanced undergraduate seminar)

2009 *Genetics and Agriculture: Past and Present*. Course title: Molecular Anthropology (undergraduate lecture)

DOCTORAL DISSERTATION ADVISING AND COMMITTEE MEMBERSHIP (CURRENT)

2019 - Advisor for Catherine Kitrinos, Department of Anthropology, University of Massachusetts Amherst.

2017 - Advisor for Rachel Bell, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Dissertation Title: *Ecological factors affecting the hair and gut microbiomes of three lemur species at Beza Mahafaly Special Reserve*.

2017 - Advisor for Amanda Fuchs, Department of Anthropology, University of Massachusetts Amherst. Dissertation Title: *The spatial ecology of Kinda baboons (Papio kindae) in a seasonal and complex habitat*.

2017 - Advisor for Anna Weyher, Department of Anthropology, University of Massachusetts Amherst. Dissertation Title: *The behavior and ecology of Kinda baboons (Papio kindae) at Kasanka National Park, Zambia*.

2016 - Advisor for Andrew Best, Department of Anthropology, University of Massachusetts Amherst. Dissertation Title: *Evolution and diversity of human eccrine sweat glands*.

- 2016 - Advisor for Andrew Zamora, Department of Anthropology, University of Massachusetts Amherst. Dissertation Title: *Socio-genomic evolution of sifakas* (Propithecus).
- 2019 - Committee member for Kadambari Devarajan, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Advisor: Dr. Toni Lyn Morelli.
- 2019 - Committee member for Peteneinu Rulu, Department of Anthropology, University of Massachusetts Amherst. Advisor: Dr. Lynnette Leidy Sievert.
- 2018 - Committee member for M. Chaise Gilbert, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Advisor: Dr. R. Craig Albertson.
- 2017 - Committee member for Abby Vander Linden, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Advisor: Dr. Elizabeth Dumont.
- 2017 - Committee member for Tanya Lama, Department of Environmental Conservation, University of Massachusetts Amherst. Advisors: Drs. Stephen DeStefano and John Organ.
- 2017 - Committee member for Victor Montalvo. Department of Environmental Conservation, University of Massachusetts Amherst. Advisor: Dr. Todd Fuller.
- 2017 - Committee member for Elizabeth Tapanes. Center for the Advanced Study of Human Paleobiology, The George Washington University. Advisor: Dr. Brenda Bradley.
- 2016 - Committee member for Nereyda Falconi, Department of Environmental Conservation, University of Massachusetts Amherst. Advisor: Dr. John Organ.
- 2016 - Committee member for Amanda McGrosky, School of Human Evolution and Social Change, Arizona State University. Advisor: Dr. Gary Schwartz.
- 2016 - Committee member for Trisha Zintel, Molecular and Cellular Biology Program, University of Massachusetts Amherst. Advisor: Dr. Courtney Babbitt.

DOCTORAL DISSERTATION ADVISING AND COMMITTEE MEMBERSHIP (COMPLETED)

- 2017 - 2018 Committee member for Moira (Concannon) Conith, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst. Advisor: Dr. R. Craig Albertson. Dissertation Title: *An integrative approach to understanding morphological novelties: Anatomy, development, genetics and evolution of an extreme craniofacial trait in East African cichlids.*
- 2016 - 2017 Committee member for Andrew (Smith) Conith, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst.

Advisor: Dr. Elizabeth Dumont. Dissertation Title: *The role of phenotypic integration in mammalian tooth function and jaw morphological diversity.*

- 2010 - 2014 External committee member for Lydia Beaudrot, Department of Anthropology and Graduate Group in Ecology, University of California, Davis. Advisor: Dr. Andrew Marshall. Dissertation Title: *The relative role of niche differentiation in structuring tropical forest vertebrate communities across spatial scales.*

DOCTORAL STUDENT COMPREHENSIVE EXAM COMMITTEE MEMBERSHIP

- 2019 Jacob R. Barnett, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2019 Rachel Bell, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2019 Kadambari Devarajan, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2019 Michael Chaise Gilbert, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2018 Michael S. Griego, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2017 Abby Vander Linden, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst

MASTER'S THESIS ADVISING AND COMMITTEE MEMBERSHIP

- 2018 - 2019 External reader for Alexandra Louppova, Department of Anthropology, CUNY Hunter College. Advisor: Dr. Andrea Baden. Thesis Title: *Environmental variation and primate alloparental care.*
- 2016 - 2017 External reader for Amanda Fuchs, Department of Anthropology, CUNY Hunter College. Advisor: Dr. Christopher Gilbert. Thesis Title: *Ecological niche modeling of the genus Papio.*
- 2014 - 2015 Committee member for Ellis Locke, School of Human Evolution and Social Change, Arizona State University. Advisor: Dr. Kaye Reed. Thesis Title: *Phylogenetic signal in climatic niche and climatic niche breadth of catarrhine primates.*

UNDERGRADUATE HONORS THESIS ADVISING AND COMMITTEE MEMBERSHIP

- 2017 - 2019 Co-Advisor for Eric Wuesthoff, Department of Environmental Conservation, University of Massachusetts Amherst. Thesis Title: *Mouse lemur habitat use in the Mahamavo forest along a dry forest – mangrove gradient.*

- 2016 Advisor for Maia Batista, Department of Anthropology, University of Massachusetts Amherst. Thesis Title: *Effects of anthropogenic and climatic variables on the distribution of bamboo lemurs.*

PRESENTATIONS AT PROFESSIONAL CONFERENCES (*indicates student co-author; 56 presentations between 2003 and 2016 are not listed here)

- 2019 Agostini GM, **Kamilar JM**. Skeletal-wide variation in phylogenetic signal across Order Primates. American Journal of Physical Anthropology 168 (S68): 2.
- 2019 Bell RB*, Bradley BJ, **Kamilar JM**. Comparing evolutionary models of primate hair color variation. American Journal of Physical Anthropology 168 (S68): 16.
- 2019 Fuchs AJ*, **Kamilar JM**. The phylogeny of baboon social organization. American Journal of Physical Anthropology 168 (S68): 78.
- 2019 **Kamilar JM**, Spriggs AN, Maksimoski A*, Bradley BJ. Are there clade level differences in the sexual dimorphism of primate hair morphology? American Journal of Physical Anthropology 168 (S68): 119.
- 2019 Louppova A*, **Kamilar JM**, Baden AL. Climatic variables are strong predictors of allonursing and communal nesting. American Journal of Physical Anthropology 168 (S68): 147.
- 2019 Rowan JJ, Reed KE, Beaudrot L, Zamora A*, Smail IE*, **Kamilar JM**. Paleoclimatic legacies structure present-day mammal communities in the global tropics. American Journal of Physical Anthropology 168 (S68): 209.
- 2019 Spriggs AN, Bradley BJ, **Kamilar JM**, Gordon AD. Environmental predictors of *Propithecus* pelage variation. American Journal of Physical Anthropology 168 (S68): 236.
- 2019 Tapanes E*, **Kamilar JM**, Bradley BJ. Pigmentation changes are (sort of) related to ageing in chimpanzees. Annual Meeting of the American Society of Mammalogists.
- 2019 Weyher AH*, **Kamilar JM**. Male-female friendships in Kinda baboons. American Journal of Physical Anthropology 168 (S68): 266.
- 2019 Zamora AJ*, Webster TH, **Kamilar JM**. Exome sequencing reveals patterns of selection across brown lemurs (*Eulemur*). American Journal of Physical Anthropology 168 (S68): 281.
- 2018 Baden AL, Mancini AN*, Federman S*, **Kamilar JM**, Holmes SM*, Johnson SE, Louis, Jr. EE, Bradley BJ. Habitat degradation and proximity to villages explain genetic community structure in a critically endangered lemur species. American Journal of Physical Anthropology 165 (S66): 15-16.
- 2018 Bell RB*, Bradley BJ, **Kamilar JM**. Comparing evolutionary models of primate hair color variation. Northeastern Evolutionary Primatology Conference.

- 2018 Best A*, **Kamilar JM**. Primate sweat gland evolution. *American Journal of Physical Anthropology* 165 (S66): 28.
- 2018 Fuchs, AJ*, **Kamilar JM**. Derived codon substitution in the catechol-o-methyltransferase (COMT) gene may have implications for behavioral variation in hamadryas baboons (*P. hamadryas*). *American Journal of Physical Anthropology* 165 (S66): 91.
- 2018 McGrosky A*, **Kamilar JM**, Tecot SR, Schwartz GT. Comparative aspects of mammalian pituitary gland anatomy and its usefulness for reconstructing life history. *Integrative and Comparative Biology*.
- 2018 Spriggs AN*, Bradley BJ, **Kamilar JM**, Gordon AD. Environmental predictors of *Eulemur* pelage variation. *American Journal of Physical Anthropology*. 165 (S66): 263.
- 2018 Tapanes E*, Irwin MT, Spriggs AN*, **Kamilar JM**, Bradley BJ. Subtle sexual dichromatism and dimorphism detected in wild *Propithecus diadema*. *American Journal of Physical Anthropology* 165 (S66): 271.
- 2018 Vogel ER, **Kamilar JM**, Rothman JM. Dietary consequences of sexual size dimorphism in primates. *American Journal of Physical Anthropology*.
- 2018 Weyher A*, **Kamilar JM**. Dominance and migration in Kinda baboon males. *American Journal of Physical Anthropology* 165 (S66): 300-301.
- 2018 Zamora AJ*, **Kamilar JM**. Climate change across African protected areas and its implications for primate biodiversity. *American Journal of Physical Anthropology* 165 (S66): 311.
- 2018 Zintel TM*, Ely JJ, Raghanti MA, Hopkins WD, Hof PR, Sherwood CC, Bauernfeind AL, **Kamilar JM**, Babbitt CC. Gene expression in the primary visual cortex differs amongst phenotypically distinct primates. *American Journal of Physical Anthropology* 165 (S66): 313.
- 2018 Zintel TM*, Sherwood CC, **Kamilar JM**, Bauernfeind AL, Babbitt CC. Gene expression in the primary visual cortex differs amongst phenotypically distinct primates. UMass Interdisciplinary Neurosciences Conference.
- 2018 Zintel TM*, Ely JJ, Raghanti MA, Hopkins WD, Hof PR, Sherwood CC, Bauernfeind AL, **Kamilar JM**, Babbitt CC. Phenotypic and phylogenetic differences between primates are linked to gene expression differences in metabolic and neural processes in the primary visual cortex. Northeastern Evolutionary Primatology Conference.
- 2018 Wuesthoff EF*, Radespiel U, **Kamilar JM**, Rouse S, Ramanankirahina

- R, Rokotondravony R, Fuller TK. 2018. Variation in body mass and relative abundances along a mangrove-dry forest habitat gradient in two species of mouse lemurs. Gulf Coast Undergraduate Research Symposium.
- 2017 Baden AL, Mancini AN*, Federman S*, **Kamilar JM**, Holmes SM*, Johnson SE, Louis, Jr. EE, Bradley BJ. Habitat degradation and proximity to villages explain genetic community structure in a critically endangered lemur species. *American Journal of Primatology*.
- 2017 Bradley BJ, **Kamilar JM**, Spriggs AN*, Wilhelm BC, Walsh S. Pigmentation in a comparative context: Factors shaping variation and convergence in primate pelage patterns. *American Journal of Physical Anthropology* 162 (S64): 128.
- 2017 Conith AJ*, Crumpton N, **Kamilar JM**, Dumont ER. The role of phenotypic integration in the evolution of cranial morphological disparity in moles (Talpidae: Mammalia). *Integrative and Comparative Biology*.
- 2017 Fuchs AJ*, Gilbert CC, **Kamilar JM**. Ecological niche modeling of the genus *Papio*. *American Journal of Physical Anthropology* 162 (S64): 187.
- 2017 Jacobs RL, Macfie TS*, **Kamilar JM**, Spriggs AN*, Baden AL, Morelli TL, Irwin TL, Lawler RR, Pastorini J, Mayor M, Sauther ML, Lei R, Culligan R, Hawkins MTR, Kappeler P, Wright PC, Louis Jr EE, Mundy NI, Bradley BJ. Variation in lemur color vision across species, populations and habitats: Implications for signal evolution. *American Journal of Physical Anthropology* 162 (S64): 229.
- 2017 McGrosky A*, **Kamilar JM**, Tecot SR, Schwartz GT. A 'hypophysis' to test: the relationship between sella turcica morphology, pituitary gland size, and life history. *American Journal of Physical Anthropology* 162 (S64): 283.
- 2017 Samonds KE, Godfrey LR, Baldwin J, Sutherland MR, **Kamilar J**, Allfisher K. 2017. Mid-Tertiary climate change, extinction and speciation in Madagascar, and their bearing on the evolution of Madagascar's lemurs. *Society of Vertebrate Paleontology*.
- 2017 Spriggs AN*, Bradley BJ, **Kamilar JM**, Gordon AD. Quantifying countershading in *Eulemur* using eigencoats. *American Journal of Physical Anthropology* 162 (S64): 367.
- 2017 Van Horn A*, Spriggs AN*, Wilhelm B, **Kamilar JM**, Bradley BJ. Males in uniform: intra-individual pelage-color variation is associated with social style in male macaques. *American Journal of Physical Anthropology* 162 (S64): 391.
- 2017 Vander Linden A*, Hedrick BP, **Kamilar JM**, Dumont ER. Three-dimensional morphology of the atlas vertebra in relation to body size and posture in primates, rodents, and relatives. *Integrative and Comparative Biology*.
- 2017 Weyher A*, **Kamilar JM**. Dominance and migration in Kinda baboon (*Papio kindae*) males. German Primate Center Baboon Symposium.

- 2017 Weyher A*, **Kamilar JM**. Dominance and migration in Kinda baboon (*Papio kindae*) males. Northeastern Evolutionary Primatology Conference.
- 2017 Wuesthoff E*, Radespiel U, **Kamilar JM**, Rouse S*, Ramanankirahina R, Rakotondravony R, Fuller T. Variation in body mass along a mangrove-dry forest habitat gradient in two species of mouse lemurs. Northeastern Evolutionary Primatology Conference.
- 2017 Zintel T*, Bauernfeind AL, Sherwood CC, **Kamilar JM**, Babbitt CC. Gene expression in the primary visual cortex differs amongst phenotypically distinct primates. Northeastern Evolutionary Primatology Conference.

MEDIA COVERAGE

- Jul 2019 Quoted in and research featured in "Cool down with the slick science of sweat" - by Katherine Wu in *NOVA PBS*
<https://www.pbs.org/wgbh/nova/article/science-of-sweat/>
- Sep 2018 Quoted in "Human gene mutation may have paved the way for long-distance running" – by Meilan Solly in *Smithsonian*
<https://www.smithsonianmag.com/smart-news/human-gene-mutation-may-have-paved-way-long-distance-running-180970318/>
- Sep 2018 Quoted in "This broken gene may have turned our ancestors into marathoners—and helped humans conquer the world" – by Elizabeth Pennisi in *Science*
<http://www.sciencemag.org/news/2018/09/broken-gene-may-have-turned-our-ancestors-marathoners-and-helped-humans-conquer-world>
- Summer 2018 "Gonna make you sweat" - UMass, the Magazine of the University of Massachusetts Amherst
<http://www.umass.edu/magazine/summer-2018/inquiring-minds>
- Mar 2018 "New study from UMass Amherst anthropologists examines the evolution of mammalian perspiration" - UMass News & Media Relations; Front page of www.umass.edu
<http://www.umass.edu/newsoffice/article/new-study-umass-amherst-anthropologist-0>
- Dec 2017 "Kamilar appointed Editor-in-Chief of Evolutionary Anthropology" - Inside UMass
<http://www.umass.edu/newsoffice/article/kamilar-appointed-editor-chief>
- Nov 2016 "New anthropology findings at UMass" - The Recorder
<http://www.recorder.com/UMass-anthro-research-5388379>
- Oct 2016 "Anthropologist finds past climates more important to species' distribution than modern climate" – Inside UMass

- <http://www.umass.edu/newsoffice/article/new-study-umass-amherst-anthropologist>
- Oct 2016 "Past climate linked to mammal communities in Africa today" – Archaeology News Network
<https://archaeologynewsnetwork.blogspot.com/2016/10/past-climate-linked-to-mammal.html>
- Oct 2016 "Past climate linked to mammal communities today" - EurekAlert!
https://www.eurekalert.org/pub_releases/2016-10/asu-pcl100316.php
- Oct 2016 "Past climate, not current changes, key to some mammal communities" – ClimateWire
<http://www.eenews.net/climatewire/2016/10/05/stories/1060043850>
- Dec 2013 "Humans and chimps share cultural roots, study says" – Los Angeles Times
<http://www.latimes.com/science/sciencenow/la-the-original-culture-vulture-chimps-and-humans-share-behavior-roots-20131209,0,5582446.story>
- Dec 2013 "Researchers find that cultural evolution is similar for humans and chimpanzees" – Arizona State University News
<https://asunews.asu.edu/20131210-cultural-evolution>
- Dec 2013 "Kultur: Wissen verbreitet sich bei Schimpanse und Mensch gleich" (Culture: knowledge spreads equally in chimpanzees and humans) - Der Spiegel Online
<http://www.spiegel.de/wissenschaft/natur/kultur-wissen-verbreitet-sich-bei-schimpanse-und-mensch-gleich-a-938056.html>
- Dec 2013 "Kultur gibt's auch im Affenreich" (Culture is also in the ape kingdom) – German Public Broadcasting WDR5 Leonardo
<http://www1.wdr.de/mediathek/audio/wdr5/wdr5-leonardo/audio-kultur-gibts-auch-im-affenreich---abgucken-und-nachmachen--100.html>
- Dec 2013 "Alle origini della capacità di evoluzione culturale" (The origins of the capacity of cultural evolution) - Scientific American Italian Edition
<http://www.lescienze.it/news/2013/12/10/news/evoluzione-cultura-contagio-sociale-uomo-scimpanz-orango-1922868/>
- Oct 2013 Quoted in "Afraid of snakes? Your pulvinar may be to blame" – by Carl Zimmer in the *New York Times*
<http://www.nytimes.com/2013/10/31/science/afraid-of-snakes-your-pulvinar-may-be-to-blame.html>
- Feb 2013 "The nocturnal mammalian eye" – Academic Minute on Northeast Public Radio
<http://www.wamc.org/post/dr-chris-kirk-university-texas-austin-nocturnal-mammalian-eye>
- Dec 2012 "Did trichromatic color vision and red hair color co-evolve in primates?" – Featured article on the American Society of Primatologists website

- <http://www.asp.org/index.cfm>
- Oct 2012 "New study shows effects of prehistoric nocturnal life on mammalian vision" – Science Daily
<http://www.sciencedaily.com/releases/2012/10/121031161025.htm>
- Feb 2012 "The debate over dinosaur sight" – Smithsonian Magazine's Dinosaur Tracking Blog
<http://blogs.smithsonianmag.com/dinosaur/2012/02/the-debate-over-dinosaur-sight/>
- Aug 2011 Quoted in "The cultured chimpanzees" – by Gayathri Vaidyanathan in *Nature*
<http://www.nature.com/news/2011/110817/full/476266a.html>
- Jun 2011 "Snake-spotting theory brings primate vision into focus" – *Smithsonian Magazine*, Surprising Science Blog
<http://blogs.smithsonianmag.com/science/2011/06/snake-spotting-theory-brings-primate-vision-into-focus/>
- Mar 2011 "Can you see the monkey up there" - Dr. Jerry Coyne's (U. Chicago) blog associated with his book, *Why Evolution is True*
<http://whyevolutionistrue.wordpress.com/2011/03/12/can-you-see-that-monkey-up-there/>
- Dec 2008 "More walking leads to more offspring" - United Press International
http://www.upi.com/Science_News/2008/12/24/More-walking-leads-to-more-offspring/UPI-86351230159944/
- Dec 2008 "Increased daily travel in animals leads to more offspring" - Newswise
<http://www.newswise.com/articles/view/547711/>

PROFESSIONAL SERVICE

- 2017 - Editor-in-Chief, *Evolutionary Anthropology*
- Fall 2017 Panelist, National Science Foundation, Biological Anthropology Program
- Fall 2016 Panelist, National Science Foundation, Biological Anthropology Program
- Spring 2016 Panelist, National Science Foundation, Biological Anthropology Program
- 2015 - 2017 Associate Editor, *Journal of Human Evolution*
- 2013 - 2018 Academic Editor, *PLoS ONE*
- 2013 - 2014 Guest Editor, *International Journal of Primatology*
- 2011 Panel Member, Employment Roundtable at the American Association of Physical Anthropologists Meeting

- 2009 Session Chair, "Primate. Communities, growing up, reproduction, life history and ecology", American Association of Physical Anthropologists Meeting
- 2007 - 2015 Student Awards Committee, American Association of Physical Anthropologists
- 2005 - Manuscript reviewer for: *Acta Theriologica*; *Adaptive Behavior*; *African Primates*; *American Journal of Human Biology*; *American Journal of Physical Anthropology*; *American Journal of Primatology*; *The American Naturalist*; *Animal Behaviour*; *Animal Conservation*; *Behavioral Ecology*; *Behavioral Ecology and Sociobiology*; *Behaviour*; *Biological Conservation*; *Biological Journal of the Linnean Society*; *Biology Letters*; *Biotropica*; *Cambridge University Press*; *Ecography*; *Ecological Applications*; *Ecology and Evolution*; *Ecology Letters*; *Ecosphere*; *eLife*; *Evolution*; *Evolution and Human Behavior*; *Evolutionary Anthropology*; *Folia Primatologica*; *Global Change Biology*; *Global Ecology and Biogeography*; *International Journal of Primatology*; *Journal of Animal Ecology*; *Journal of Biogeography*; *Journal of Human Evolution*; *Journal of Thermal Biology*; *Journal of Tropical Ecology*; *Journal of Zoology*; *Methods in Ecology and Evolution*; *Molecular Phylogenetics and Evolution*; *Nature Climate Change*; *Nature Communications*; *Oecologia*; *Oikos*; *Oxford University Press*; *PeerJ*; *PLoS ONE*; *Primates*; *Proceedings of the Royal Society B*; *Science Advances*; *Scientific Data*; *Scientific Reports*; *Springer's Developments in Primatology Series*
- 2001 - Grant reviewer for: American Society of Primatologists' Conservation Grant, Deutsche Forschungsgemeinschaft (German Research Foundation), Deutscher Akademischer Austauschdienst (German Academic Exchange Service), Leakey Foundation, Lincoln Park Zoo Africa/Asia Conservation Fund, National Environment Research Council (United Kingdom), National Geographic Society, National Research Foundation (South Africa), National Science Foundation (USA), Natural Sciences and Engineering Research Council of Canada
- 2002 - 2008 Conservation Committee, American Society of Primatologists
- UNIVERSITY SERVICE**
- 2019 - 2020 Member, Institute of Social Science Research Advisory Board, College of Social and Behavioral Sciences, University of Massachusetts Amherst
- Oct 2018 Guest Speaker at the Meeting for New Faculty Development, College of Social and Behavioral Sciences, University of Massachusetts Amherst
- Sep 2018 Guest Speaker at an Institute for Social Science Research Fellows Meeting, College of Social and Behavioral Sciences, University of Massachusetts Amherst
- 2018 - 2020 Member, College of Social and Behavioral Sciences Research Council, University of Massachusetts Amherst
- 2018 - 2019 Member, Graduate School Grant Committee, University of Massachusetts

Amherst

- Spring & Fall 2018 Reviewer for the Faculty Research Grant/Healey Endowment Grant, University of Massachusetts Amherst
- 2017 - 2020 Seminar Series Committee Member, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst
- 2017 - 2020 Member, Data Analytics in Computational Social Science Governance Board, College of Social and Behavioral Sciences, University of Massachusetts Amherst
- Fall 2016 Member, Search Committee for Program Coordinator II, Interdepartmental Graduate Programs in the Life Sciences, University of Massachusetts Amherst
- Summer 2016 Member, Search Committee for Program Coordinator I, Interdepartmental Graduate Programs in the Life Sciences, University of Massachusetts Amherst
- 2013 - 2015 Institutional Review Board Member, Midwestern University

DEPARTMENT SERVICE

- 2019 Search Committee Chair for Tenure Track Position in Disease Ecology, Department of Anthropology, University of Massachusetts Amherst
- 2019 - 2020 Graduate Studies Committee Member, Department of Anthropology, University of Massachusetts Amherst
- 2018 - 2019 Personnel Committee Member, Department of Anthropology, University of Massachusetts Amherst
- Jun - Jul 2018 Acting Department Chair, Department of Anthropology, University of Massachusetts Amherst
- 2018 - 2019 AQAD Committee Member, Department of Anthropology, University of Massachusetts Amherst
- 2017 - 2018 Seminar Series Coordinator, Department of Anthropology, University of Massachusetts Amherst
- 2017 Search Committee Member for Chief Undergraduate Advisor, Department of Anthropology, University of Massachusetts Amherst
- 2016 - 2019 Curriculum Committee Member, Department of Anthropology, University of Massachusetts Amherst
- 2015 - 2016 Annual Faculty Review Subcommittee, Department of Anthropology, University of Massachusetts Amherst

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science
 American Association of Anthropological Genetics

American Association of Physical Anthropologists (Lifetime member)
International Biogeography Society
Sigma Xi
Society for the Study of Evolution

Re: [EXTERNAL] Re: CITES Permit App 63307D

Cate, Emily B <emily_cate@fws.gov>

Wed 4/1/2020 2:35 PM

To: Rachel Bell <rbbell@umass.edu>

Hi Rachel,

Thank you for your quick reply and congratulations on your recent marriage! That's a great question about the name. I can certainly put either name on the permit, pending its approval. I *believe* that the name on the permit will need to match the name on the 3-177 declaration form provided to our law enforcement when the samples actually ship. However, since I am not an inspector, I do not want to provide faulty information. Please see this list - [click here](#) - for our designated ports and corresponding contact information. I recommend contacting the port that you plan on using.

I will keep moving forward on reviewing this application and will let you know if we need any additional information. It will take some time as we will need to publish the receipt of application in the Federal Register for the 30-day public commenting period. Please let me know if you have any questions or concerns.

Regards,
Emily

Emily Cate | Permits Biologist
U.S. Fish and Wildlife Service | International Affairs
Division of Management Authority | Branch of Permits
5725 Leesburg Pike, MS:IA
Falls Church, VA 22041-3803



From: Rachel Bell <rbbell@umass.edu>
Sent: Monday, March 30, 2020 3:49 PM
To: Cate, Emily B <emily_cate@fws.gov>
Subject: [EXTERNAL] Re: CITES Permit App 63307D

Hi Emily,

Thank you for your questions. In regards to the permit type, I do think it would be better to establish this as a multi-year import permit. Because of the ongoing issues with COVID-19 I do not plan on collecting samples in 2020. There are samples collected in 2019 currently being stored in Madagascar that I would like to bring into the U.S. with the CITES permit, and I also plan on collecting samples in 2021. Therefore I think the multi-use permit would be most appropriate.

Fecal swabs, oral swabs, swabs of pelage, and plucked hair tufts are each stored in 2 mL capped microcentrifuge tubes, with approximately 750 microliters of RNAlater in each tube acting as a preservative. Tubes are parafilmed to guarantee safe storage and labelled with sample information in black lab marker. The cut hair tufts will be stored dry in small, resealable, UV-resistant envelopes. The envelopes will also be labelled for identification in black lab marker.

I hope this information is helpful. Lastly, I have a question regarding my name on the permit. I recently got married, and I even more recently had my legal name changed from Rachel Brietta Bell to Rachel Bell Burten (essentially I took my husband's surname and made my middle name to my maiden name). Since this name change was only recently made official, I will be in the process of updating all of my documents under my new name over the next few months. However, I applied under Rachel Bell since at the time that was the name reflected on all of my documents and IDs. How does CITES deal with something like this? Should the name on the permit reflect my new married name? I have copies of my marriage license, my official name change documentation, and my birth certificate if any of that would be helpful.

Please let me know if you have any questions or need any additional information. Thank you very much for your time, and I look forward to your response.

Best Regards,
Rachel

On Fri, Mar 27, 2020 at 1:06 PM Cate, Emily B <emily_cate@fws.gov> wrote:

Dear Ms. Bell,

I have your application dated 12/10/2019, received 12/16/2019, regarding the proposed import of samples collected from lemurs and sifakas in Madagascar. I apologize for the delay in processing your applicant.

Please provide the following information so that I may continue processing your application:

Based on your application, this will be a multi-year study and samples will be collected for at least the next couple of years. I wanted to let you know that we can set this up as a multi-use import permit, rather than a single-use permit. The application will still need to go through all of the usual approval processes, but because these species are classified as endangered under the ESA, we will also need to publish the receipt of application in the Federal Register (FR) for a 30-day public commenting period. We can state in the FR notice that the notification is intended to include activities for up to 5 years. Otherwise, you will have to reapply each year when importing samples and be published each time you apply. The multi-use permit (if granted) would still expire after 1 year; however, you would just apply to reissue the permit (and still be covered under the original FR notice) rather than applying for a whole new permit. Please let me know if you'd prefer for me to treat this as a single-use or multi-use permit request.

Please provide information on how the samples will be packaged for each sample type (e.g., vials for oral swabs, envelopes for hair, etc.). I will need this information to clearly set up the permit.

Please let me know if you have any questions or concerns.

In accordance with 50 CFR 13.11(e), if the requested information is not received by this office by **May 11, 2020**, your application will be abandoned and administratively closed. Once a file is closed you will need to submit a new application and all required fees for the Service to consider your proposed activity. Please refer to permit number 63307D in your correspondence.

Regards,
Emily

Emily Cate | Permits Biologist

U.S. Fish and Wildlife Service | International Affairs

Division of Management Authority | Branch of Permits

5725 Leesburg Pike, MS:IA

Falls Church, VA 22041-3803



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Rachel Bell

PhD Candidate, Organismic and Evolutionary Biology

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