



Department of the Interior
U.S. Fish and Wildlife Service

OMB No. 1018-0093
Expires 05/31/2017

Federal Fish and Wildlife Permit Application Form

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

Type of Activity:
**EXPORT/RE-EXPORT/IMPORT/INTERSTATE AND
FOREIGN COMMERCE/TAKE OF ANIMALS
(LIVE/ SAMPLES/PARTS/PRODUCTS) (ESA and/or CITES)**
(circle/highlight proposed activity)

RCVD OCT 19 2015

LB

☒ New Application

☐ Requesting Re-issuance/Amendment of Permit#: _____

Complete Sections A or B, and C through H of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual			
1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix
2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)
6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution			
1.a. Name of business, agency, Tribe, or institution Columbia University, Center for Infection and Immunity		1.b. Doing business as (dba) Academic Institution	
2. Tax identification no. 135598093		3. Description of business, agency, Tribe, or institution Research laboratory specializing in pathogen discovery and assay development.	
4.a. Principal officer Last name Lipkin	4.b. Principal officer First name Walter	4.c. Principal officer Middle name/ initial Ian	4.d. Suffix
5. Principal officer title Professor and Director of the Center for Infection and Immunity		6. Primary contact name Brittany Miller	
7.a. Business telephone number 212-342-9031	7.b. Alternate telephone number 212-342-9038	7.c. Business fax number 212-342-9044	7.d. Business e-mail address bym2106@cumc.columbia.edu

C. All applicants complete address information				
1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes) 722 W. 168th Street, 17th Floor				
1.b. City New York	1.c. State NY	1.d. Zip code/Postal code: 10032	1.e. County/Province	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

D. All applicants MUST complete	
1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE in the amount of \$100 nonrefundable processing fee. 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. Do you currently have or have you ever had any Federal Fish and Wildlife permits? Yes <input type="checkbox"/> If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: _____ No <input checked="" type="checkbox"/>	
3. 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 (in blue ink) of applicant/person responsible for permit (No photocopied or stamped signatures) Date of signature (mm/dd/yyyy) 10/13/2015	

E. EXPORT/RE-EXPORT/IMPORT/INTERSTATE AND FOREIGN COMMERCE/TAKE OF NON-NATIVE 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 a separate sheet 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.

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

EXPORT ☐

IMPORT ☒

INTERSTATE COMMERCE ☐

FOREIGN COMMERCE ☐

*Interstate Commerce permits authorize the sale of endangered and threatened species across State lines, but only for that will contribute to enhancing the propagation or survival of that species. Captive-breeding alone will not generally meet this requirement. Scientific research must be related to the species to be permitted. Interstate commerce activities with wildlife require the buyer to obtain a permit prior to the sale.

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

Scientific name (genus, species, and, if applicable, subspecies)	Common Name	Birth/Hatch Date (mm/dd/yyyy) Or Approximate date	Quantity	Gender, if known	Permanent markings (e.g., tattoo, ID #, microchip #, scars), if alive	Type of Sample or product (e.g., blood, tissue, DNA)
EXAMPLE: <i>Macaca fascicularis</i>	Crab-eating macaque					
See attached	See attached	n/a	See attached	n/a	n/a	See attached

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

Name: Gerardo Suzan Azpiri

Business Name: Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autonoma de Mexico

Address: Circuito Exterior, Ciudad Universitaria, Av. Universidad 3000

Address:

Address:

City:

State/Province: Mexico, D.F. CP 04510

Country, Postal Code:

4. Recipient/Sender:
- If export, provide 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 recipient.

Name: Gerardo Suzan Azpiri

Business Name: Universidad Nacional Autonoma de Mexico

Address: Av. Universidad 3000

Address:

City:

C.U. Distrito Federal

State/Province: Mexico 04510

Country, Postal Code:

F. SOURCE OF SPECIMEN (answer question 5 or 6 for each animal/specimen involved, as appropriate).

5. For each animal or animal from which specimen are obtained born in captivity:

- a. If you are the **breeder** of the specimen(s), please provide a signed and dated statement that includes the following:
- i. Scientific name (genus, species, and, if applicable, subspecies) and common name;
 - ii. That the animal was bred and born at your facility;
 - iii. Birth/hatch date (mm/dd/yyyy), and, if applicable, identification information (as described in question 2b above);
 - iv. Name and address of your facility where each animal was bred and born; and
 - v. Location (Name of facility, address, city, State/province, postal code) of parental stock.

- b. If you are **NOT the breeder** of the specimen(s), provide copies of documentation showing that you acquired the animal from the breeder or documentation demonstrating the history of transactions (e.g., chain of ownership of the animal) and a signed and dated statement from the breeder or breeder's record that clearly includes the following:
- i. Scientific name (genus, species, and, if applicable, subspecies) and common name;
 - ii. That each animal was bred and born/hatched at his/her facility;
 - iii. Birth/hatch date (mm/dd/yyyy), and, if applicable, identification information (as described in question 2b above);
 - iv. Name and address of the breeder's facility; and
 - v. Location (name of facility, address, city, State/province, postal code) of parental stock.

6. For each animal/specimen taken from the wild, provide the following:
- Scientific name (genus, species, and, if applicable, subspecies) and common name;
 - Specific location of where, when, and by whom (name and address) the specimen was removed from the wild;
 - Purpose of removal and length or approximate length of time held in captivity;
 - Describe your efforts to use captive specimens (e.g., captive-born, captive-held), or parts thereof, in lieu of taking animals from the wild.
 - Copies of your foreign or domestic collecting permit, license, contract or agreement;
 - Documentation showing that the specimen(s) was legally obtained by the applicant; and
 - Copies of any applicable State, Tribal, Federal, or Foreign government permits or licenses that authorized the removal of this animal from the wild.

G. JUSTIFICATION FOR REQUESTED ACTIVITY.

7. Provide a full statement justifying the proposed activity, particularly the following:
- 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 is 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, provide a description of how the species will be propagated, disposition of progeny, and cooperative agreements that are/will be established for re-introduction.
 - Description of the technical expertise of each person (please include CV or resume), as it relates to the proposed activities. If the proposed activity involves the import of live animals, include the experience of each animal caretaker working with the species.
 - Copies of contracts, agreements or other documents that identify persons involved and dates of activities for which authorization is being requested.
8. Provide a statement on how the activities will enhance or benefit the wild population (e.g., in-situ and ex-situ projects).
9. If live specimens are to be held in captivity as part of the proposed activity:
- 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., SSP has not made final decision), please indicate likely candidates and the mechanism that will be used to determine recipient facilities.
 - 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.
 - The number of years each species has been maintained at the facility;
 - The number of births by year for each species for the last 5 years; and
 - 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.

H. IMPORTS, EXPORTS, OR RE-EXPORTS.

10. 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:
 - i. The type, size, and construction of any shipping container; and
 - ii. The arrangements for watering or otherwise caring for the wildlife during transport.
11. For import of LIVE CITES Appendix-I marine mammal specimens, provide a copy of your FWS or NOAA Fisheries permit or authorization.
12. 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 (www.cites.org).
13. For export of CITES Appendix-I 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.
14. 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.
15. All international shipment(s) must be through a designated port. A list of designated ports (where an inspector is posted) is available from <http://www.fws.gov/le/designated-ports.html>. 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).
16. Name and address where you wish permit mailed, if different from page 1 (All permits will be mailed via the U.S. Postal Service, unless you identify an alternative means below):
17. If you wish the permit to be delivered by means other than USPS regular mail, provide an air bill, pre-paid envelope, or billing information. If you do not have a pre-paid envelope or air bill and wish to pay for a courier service with your credit card, please check the box below. Please DO NOT include credit card number or other information; you will be contacted for this information.

☐ If a permit is issued, please send it via a courier service to the address on page 1 or question 11. I understand that you will contact me for my credit card information once the application has been processed.

See attached page for FedEx account no.

18. Who should we contact if we have questions about the application? (Include name, phone number, and email):
Brittany Miller, 212-342-9038, bym2106@cumc.columbia.edu
19. **Disqualification Factor.** A conviction, or entry of 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 disqualifies any such person from receiving or exercising the privileges of a permit, unless such disqualification has been expressly waived by the Service Director in response to a written petition. (50 CFR 13.21(c)) Have you or any of the owners of the business, if applying as a business, been convicted, or entered a plea of guilty or nolo contendere, forfeited collateral, or are currently under charges for any violations of the laws mentioned above?
- ☐ Yes ☒ No If you answered "Yes" 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.

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

2.

Scientific Name: *Leptonycteris nivalis*

Common Name: Mexican long-nosed bat

Birth/Hatch Date: n/a

Gender, if known: n/a

Permanent markings: n/a

Quantity and Type of Sample or product: 2 blood, 2 wing biopsy, 2 oral swabs, 2 rectal swabs = 8 total

Scientific Name: *Leptonycteris yerbabuenae*

Common Name: Lesser long-nosed bat

Birth/Hatch Date: n/a

Gender, if known: n/a

Permanent markings: n/a

Quantity and Type of Sample or product: 66 blood, 66 wing biopsy, 66 oral swabs, 66 rectal swabs = 264 total

Scientific Name: *Artibeus hirsutus*

Common Name: Hairy fruit-eating bat

Birth/Hatch Date: n/a

Quantity: 47

Gender, if known: n/a

Permanent markings: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Artibeus jamaicensis*

Common Name: Jamaican fruit bat

Birth/Hatch Date: n/a

Quantity: 17

Gender, if known: n/a

Permanent markings: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Balantiopteryx plicata*

Common Name: Gray sac-winged bat

Birth/Hatch Date: n/a

Quantity: 40

Gender, if known: n/a

Permanent markings: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Carollia sowelli*

Common Name: Sowell's short-tailed bat

Birth/Hatch Date: n/a

Quantity: 22

Gender, if known: n/a

Permanent markings: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Centurio senex*
Common Name: Wrinkle-faced bat
Birth/Hatch Date: n/a
Quantity: 1
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Choeroniscus godmani*
Common Name: Godman's long-tailed bat
Birth/Hatch Date: n/a
Quantity: 10
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Choeronycteris mexicana*
Common Name: Mexican long-tongued bat
Birth/Hatch Date: n/a
Quantity: 3
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Desmodus rotundus*
Common Name: Common vampire bat
Birth/Hatch Date: n/a
Quantity: 39
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Diphylla ecaudata*
Common Name: Hairy-legged vampire bat
Birth/Hatch Date: n/a
Quantity: 4
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Eptesicus fuscus*
Common Name: Big brown bat
Birth/Hatch Date: n/a
Quantity: 1
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Glossophaga commissarisi*
Common Name: Commissaris's long-tongued bat
Birth/Hatch Date: n/a

Quantity: 3
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Glossophaga leachii*
Common Name: Gray long-tongued bat
Birth/Hatch Date: n/a
Quantity: 20
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Glossophaga morenoi*
Common Name: Western long-tongued bat
Birth/Hatch Date: n/a
Quantity: 45
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Glossophaga soricina*
Common Name: Pallas's long-tongued bat
Birth/Hatch Date: n/a
Quantity: 1
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Macrotus waterhousii*
Common Name: Waterhouse's leaf-nosed bat
Birth/Hatch Date: n/a
Quantity: 47
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Micronycteris microtis*
Common Name: Common big-eared bat
Birth/Hatch Date: n/a
Quantity: 6
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Mormoops megalophylla*
Common Name: Ghost-faced bat
Birth/Hatch Date: n/a
Quantity: 19
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Myotis californicus*
Common Name: California myotis

Birth/Hatch Date: n/a
Quantity: 12
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Myotis keaysi*
Common Name: Hairy-legged myotis
Birth/Hatch Date: n/a
Quantity: 7
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Myotis occultus*
Common Name: Arizona myotis
Birth/Hatch Date: n/a
Quantity: 1
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Myotis velifer*
Common Name: Cave myotis
Birth/Hatch Date: n/a
Quantity: 61
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Natalus stramineus*
Common Name: Mexican funnel-eared bat
Birth/Hatch Date: n/a
Quantity: 22
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Nyctinomops macrotis*
Common Name: Big free-tailed bat
Birth/Hatch Date: n/a
Quantity: 21
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Pteronotus davyi*
Common Name: Davy's naked-backed bat
Birth/Hatch Date: n/a
Quantity: 18
Gender, if known: n/a
Type of Sample or product: wing biopsy

Scientific Name: *Pteronotus parnellii*

Common Name: Parnell's mustached bat

Birth/Hatch Date: n/a

Quantity: 56

Gender, if known: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Pteronotus personatus*

Common Name: Wagner's mustached bat

Birth/Hatch Date: n/a

Quantity: 14

Gender, if known: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Sturnira lilium*

Common Name: Little yellow-shouldered bat

Birth/Hatch Date: n/a

Quantity: 2

Gender, if known: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Tadarida brasiliensis*

Common Name: Brazilian free-tailed bat

Birth/Hatch Date: n/a

Quantity: 20

Gender, if known: n/a

Type of Sample or product: wing biopsy

Scientific Name: *Uroderma bilobatum*

Common Name: Tent-making bat

Birth/Hatch Date: n/a

Quantity: 1

Gender, if known: n/a

Type of Sample or product: wing biopsy

F. SOURCE OF SPECIMEN

5. N/A

6.

a.

Scientific name: *Leptonycteris nivalis*; **Common name:** Mexican long-nosed bat

Scientific name: *Leptonycteris verbabuenae*; **Common name:** Lesser long-nosed bat

Scientific Name: *Artibeus hirsutus*; **Common Name:** Hairy fruit-eating bat

Scientific Name: *Artibeus jamaicensis*; **Common Name:** Jamaican fruit bat

Scientific Name: *Balantiopteryx plicata*; **Common Name:** Gray sac-winged bat

Scientific Name: *Carollia sowelli*; **Common Name:** Sowell's short-tailed bat

Scientific Name: *Centurio senex*; **Common Name:** Wrinkle-faced bat

Scientific Name: *Choeroniscus godmani*; **Common Name:** Godman's long-tailed bat

Scientific Name: *Choeronycteris Mexicana*; Common Name: Mexican long-tongued bat
 Scientific Name: *Desmodus rotundus*; Common Name: Common vampire bat
 Scientific Name: *Diphylla ecaudata*; Common Name: Hairy-legged vampire bat
 Scientific Name: *Eptesicus fuscus*; Common Name: Big brown bat
 Scientific Name: *Glossophaga commissarisi*; Common Name: Commissaris's long-tongued bat
 Scientific Name: *Glossophaga leachii*; Common Name: Gray long-tongued bat
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 Scientific Name: *Myotis velifer*; Common Name: Cave myotis
 Scientific Name: *Natalus stramineus*; Common Name: Mexican funnel-eared bat
 Scientific Name: *Nyctinomops macrotis*; Common Name: Big free-tailed bat
 Scientific Name: *Pteronotus davyi*; Common Name: Davy's naked-backed bat
 Scientific Name: *Pteronotus parnellii*; Common Name: Parnell's mustached bat
 Scientific Name: *Pteronotus personatus*; Common Name: Wagner's mustached bat
 Scientific Name: *Sturnira lilium*; Common Name: Little yellow-shouldered bat
 Scientific Name: *Tadarida brasiliensis*; Common Name: Brazilian free-tailed bat
 Scientific Name: *Uroderma biobatum*; Common Name: Tent-making bat

b. Bats were captured and immediately sampled from caves and buildings located at Neotropical-Nearctic limits in Central Mexico (Morelos, Hidalgo, Distrito Federal and Puebla) from May to September 2014 and January to May 2015 by Paola Martinez Duque, advised by Dr. Gerardo Suzan Aspíri (Address: Universidad Nacional Autónoma de México, Facultad de Medicina Veterinaria y Zootecnia. Circuito Exterior, Ciudad Universitaria, Av. Universidad 3000, México, D.F. CP 04510).

c. Bats were not held in captivity longer than was needed to sample and immediately release. They were captured in 5 x 9 mist nets, which were opened at dusk and remained open for four hours. Captured individuals were released immediately after samples were collected.

d. N/A

e. – f. Please see attached document: Permit to collect, issued by Secretaría de medio ambiente y recursos naturales, from Mexico.

g. N/A

G. JUSTIFICATION FOR REQUESTED ACTIVITY

7.

a. Purpose of proposed activity: Scientific Research. Please see attached project description from La Universidad Nacional Autónoma de México: "Coronaviruses diversity in bats from Neotropical-Nearctic limits in Mexico"

b. Please see attached resumes for: Simon Anthony, D.Phil.; Gerardo Suzan Azpiri, D.Phil.; Paola Martinez Duque, DVM.

c. N/A

8. N/A

9. N/A

H. IMPORTS, EXPORTS, OR RE-EXPORTS

10. – 14. N/A

15. n/a

16. n/a

17. E-mail to bym2106@cumc.columbia.edu or FedEx priority overnight. FedEx acct. no. [REDACTED]

W. Ian Lipkin
c/o Brittany Miller
Center for Infection and Immunity
722 W. 168th St. 17th Floor
New York, NY
10032
212-342-9038



SECRETARÍA DE MEDIO AMBIENTE
Y RECURSOS NATURALES

SUBSECRETARÍA DE GESTIÓN
PARA LA PROTECCIÓN AMBIENTAL
DIRECCIÓN GENERAL DE VIDA SILVESTRE

OFICIO NÚM. SGPA/DGVS/ 09459/14

MÉXICO, D. F., A 25 SEP 2014

"2014, Año de Octavio Paz".

DR. GERARDO SUZÁN ASPIRI
DEPARTAMENTO DE ETOLOGÍA, FAUNA
SILVESTRE Y ANIMALES DE LABORATORIO
FACULTAD DE MEDICINA VETERINARIA Y ZOOTECNIA
UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO
CIUDAD UNIVERSITARIA 3000 S/N
COLONIA COPILCO UNIVERSIDAD, C.P. 04510
DELEGACIÓN COYOACÁN, MÉXICO, D.F.
TEL. 5622 5941 EXT. 5, gerardosuz@gmail.com

En atención a su solicitud de Prórroga de Vigencia a la Licencia de Colecta Científica por Línea de Investigación que realizan Investigadores y Colectores Científicos vinculados a Instituciones de Investigación, otorgada con el Oficio Núm. SGPA/DGVS/03170/14, de fecha 21 de abril de 2014, para desarrollar actividades de Colecta Científica, con Núm. FAUT-0250, como apoyo a las actividades sobre VERTEBRADOS TERRESTRES.

Al respecto y con fundamento en lo dispuesto en los artículos 27 tercer párrafo de la Constitución Política de los Estados Unidos Mexicanos; 26 y 32 Bis fracción I, III y XXXIX de la Ley Orgánica de la Administración Pública Federal; Artículos 19 fracción XXV y 32 fracciones VI, XVIII, XXI, XXIV del Reglamento Interior de la Secretaría de Medio Ambiente y Recursos Naturales, publicado en el Diario Oficial de la Federación el 26 de noviembre de 2012; en relación con los artículos 79, 80, 82, 86 y 87 de la Ley General del Equilibrio Ecológico y la Protección al Ambiente; 97 de la Ley General de Vida Silvestre; y 125 del Reglamento de la Ley General de Vida Silvestre, esta Dirección General autoriza la siguiente Prórroga de Vigencia a la autorización otorgada con el oficio Núm. SGPA/DGVS/03170/14:

- La autorización tendrá una vigencia hasta el 31 de diciembre de 2015.

Finalmente, le notifico que este oficio deberá estar acompañado invariablemente del similar con Núm. de oficio SGPA/DGVS/03170/14 y queda sujeto estrictamente a las condiciones establecidas en los mismos.

EN SUPLENCIA POR AUSENCIA TEMPORAL DEL DIRECTOR GENERAL DE VIDA SILVESTRE
CON FUNDAMENTO EN EL ARTÍCULO 84 DEL REGLAMENTO INTERIOR DE LA SEMARNAT,
FIRMA EL PRESENTE LA DIRECTORA DE APROVECHAMIENTO DE LA VIDA SILVESTRE.

M.V.Z. LAURA ELENA GÓMEZ MONTES

copias al reverso.../

Hoja 1 de 1

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"Por una cultura ecológica y el uso eficiente del papel, las copias de conocimiento de este oficio, se remiten vía electrónica"

En suplencia del Director General de Vida Silvestre Jorge Maksabedian de la Roquette, previo a la SEMARNAT, en el Estado de México, el oficio No. SGPA/DGV5/08697/14 de fecha 08 de septiembre de 2014.





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"Coronaviruses diversity in bats from Neotropical-Nearctic limits in Mexico"

1. Introduction

Bats (Order Chiroptera) are the second group most diverse of mammals, overcome in species number only by rodents (Ceballos & Oliva 2005). Currently about 1116 bat species of 18 families are recognized worldwide (Simmons 2005). Order Chiroptera is characterized because are the only flying mammals (Eisenberg 1981); bats are nocturnal or crepuscular (Morrison 1978), their temporal and spatial activity depends on environmental factors as climate and food availability (Fleming 1988). Bats species are diverse about habits and ecological characteristics like trophic guilds (Gardner 1977), reproductive patterns (Wilson 1979) and social structure. They can take refuge in different places like caves, bridges, old buildings, trees (Nowak 1999), some migrate and others enter in torpor (Ceballos 1997). Bats may be the most abundant and geographically dispersed mammals (Calisher 2006), they play an important role on ecosystems function and structure by consuming tons of insects annually, pollinate plants and disperse seeds (Campbell 1925, Hill & Smith 1984). These mammals evolved early and have changed relatively little in comparison with mammals of other taxa (Hill & Smith 1984).

There are human health concerns associated with bats, rabies used to be the main health issue (Mickleburgh 2002), but in recent years, knowledge about role played by bats in the maintenance and transmission of emerging infectious diseases has been increasing, elucidating that bats are reservoir hosts for viruses which can cross species barriers ("spill over") to infect humans and other domestic and wild animals (Calisher 2006). Recent research showed a number of high-profile zoonotic viruses linked to bats reservoirs, including Ebola, Marburg, Hendra and Nipah virus, and sudden acute respiratory syndrome-like Coronaviruses (Ge 2013; Leroy 2005; Towner 2009; Halpin 2000; Chua 2002).

Animal Coronaviruses (CoV) that are highly pathogenic for livestock, pet and laboratory animals have been known since 1930s, however emerging diseases caused for CoVs have been important in public health over the last decade. *Coronaviridae* virus family belongs to *Nidovirales* order. *Coronavirinae* subfamily includes four genera *Alphacoronavirus*, *Betacoronavirus*, *Deltacoronavirus* and *Gammacoronavirus* (Cavanagh, 2004). These viruses have been described in animal production, because are an important respiratory and digestive infectious disease cause and represent significant economic losses (King et al. 2012). About Public Health concerns CoVs used to be recognized only for being part of the viruses group that cause common cold in humans, but the outbreak of SARS (Severe Acute Respiratory Syndrome) in China in 2002-2003, that caused 8464 worldwide patients of which 799 died (Wang et al. 2006), and the outbreak of MERS-CoV (Middle



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East Respiratory Syndrome) caused for the emergence of a novel betacoronavirus in Middle East (Raj et al. 2013), have motivated further research on identifying ecological and evolutionary factors associated with the emergence of these group of zoonotic viruses (Peiris, et al. 2003).

Coronaviruses are large, enveloped (protein E and M), have circular or pleomorphic structure of 80 - 220 nm in diameter, with large surface spikes (protein S), some CoVs have small surface spikes (Hemagglutinin-esterase glycoprotein HE) too. The RNA (27-32 kb) genome associates with the N phosphoprotein to form a long, flexible, helical nucleocapsid. When released from virus particles, nucleocapsids appear as extended tubular strands 14 to 16 nm in diameter (King et al 2012; Ballesteros et al 1997). Due CoVs viruses are enveloped, they are unstable to environmental conditions besides are considered unique among RNA viruses, because of their structure and replication strategies (Spaan et al. 2004). To date there have been described 3 phylogenetic groups according to serological and genetically characteristics. First group include viruses that can affect mammals, in second group we found viruses that affect mammals include human beings (SARS-CoV), and in third group there are viruses that affect wild and domestic birds (Gorbalenya et al 2004).

Nowadays CoV outbreak threatens human health; however, this may depend on many factors such as virus prevalence in natural reservoirs (Ksiazek et al 2003). Several researches have been suggested that bats are the natural host-reservoir of SARS-CoV (Yang et al. 2013; Lau et al. 2013), for example it have been reported genetically diversified CoVs related to SARS-CoV, that were found in Chinese rhinolophidae bats, suggesting that this group of mammals may constitute the competent reservoir of this CoV (Lau et al., 2005; Li et al., 2005). Therefore monitoring this viral group on bats has increased and it is becoming a major focus for modeling and predicting future outbreaks.

Drexler et al (2014) summarize a total of 53 publications since 2005 to present, which characterized CoV genomes from bat feces in 12 different bats families from 26 countries, showing that bats harbor more CoV diversity than other mammalian hosts and evidence that some are zoonotic including four of the six known human CoVs. Previous studies of CoVs in Mexico reported 8 novel alphacoronaviruses and 4 novel betacoronaviruses, 1 with 96% similarity to MERS-CoV (Anthony et al 2013), expanding knowledge about diversity and range of known bat CoVs and increase the known reservoir for potential emerging zoonotic CoVs in America (Wang et al 2013).

Current research in Emerging Infectious Diseases is approached from a wide range of perspectives associated with host, pathogen and environmental factors; even though, research on bats natural history and their relevance as reservoir hosts for zoonotic viruses have been neglected until recent years. Lately, some factors have been identified as promoting bats as competent reservoirs for mammalian viruses including their longevity, density (packed colonies), close social interaction, and their flying ability (Calisher et al., 2006; Luis et al., 2013). However, our understanding of the role of



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different factors in determining bats CoVs prevalence is incomplete, and ecological and evolutionary approaches are needed, therefore hypothesis are currently underway. For example, Anthony et al. (2013) presented a distinct phylogenetic diversity of CoVs in bats from Neartic and Neotropical sites in Mexico, these findings suggest that phylogeography, bats coevolution, besides viruses and environmental factors may drive infections dynamics and prevalence.

The limit between Neotropic and Nearctic regions is located in Middle America, causing Mexico an area of high diversity and endemism. Several authors with the objective to establish the location of the limit between the New World biogeographic areas have determined that the line lies in the Neovolcanic axis close to Mexico City (Ortega & Arita, 1998; Fig. 1.). Historical Mexican biogeography is particularly complex, it reflects contact among Neartic and Neotropical regions. The highlands are occupied by lineages of northern affinity, lowlands affinity for Neotropical lineages, and intermediate region with mixed biota and strong speciation, which has determined patterns of distribution in several species. In this region, Neartic and Neotropical lineages, migratory and resident, endemic and widespread species coexist. Testing ecological and phylogeographic influences in host-parasite relationships (bat-CoVs) may reveal patterns and processes that drive infections in time and space.

2. Objectives

2.1. GENERAL OBJECTIVE

The principal aim of this research is to survey the presence of Coronaviruses in Mexican bats from Neotropical-Nearctic limits; besides to describe the role of bats ecology on evolutionary and geographical relationship with CoVs phylogenetic diversity patterns.

2.2. SPECIFIC OBJECTIVES

- Survey the prevalence of CoVs in Mexican bat species from Neotropical-Nearctic limits.
- Characterize CoVs phylo-diversity, diversity and composition present in different Mexican bat species from Neotropical-Nearctic limits.
- Determine the influence of life history traits from bats on CoVs diversity phylo-diversity, diversity and composition.
- Analyze the association between bats and CoVs geographical distribution.

3. HYPOTHESIS

- CoVs phylo-diversity, diversity and composition in bats are driven by host ecology (life history traits).
- CoVs phylo-diversity, diversity and composition are the result of co evolutionary patterns represented by lineages of Nearctic or Neotropical affiliation.



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- CoVs geographical distribution is determined by bats distribution.

COLLECTION METHODS

4.1. STUDY AREA

Bats refuges were identified (mostly caves and buildings) located at Neotropical-Nearctic limits in Central Mexico (Morelos, Hidalgo, Distrito Federal and Puebla). Sampling refuges were selected, optimizing the species diversity from both ecozones.

4.2. BAT SAMPLING

From May to September 2014 and from January to May 2015 we will capture bats from refuges ($n=13$) located at Neotropical-Nearctic limits in Mexico. From each selected species we will collect samples from two refuges in order to evaluate the same species of bats in independent populations. We will capture 15-20 individuals per specie per refuge (in this way we will have 40 total individuals per specie). Capture effort per refuge will depends on the capture success and species that we need to capture. We will use 5x9 mist nets or a bat harp trap depending on the roosts sites. Nets will be opened at dusk and remained open for 4 h consecutively. Identification of bats will be made using field guide (Medellin et al. 2008). Oral and rectal swabs, and blood will be collected from each specimen according to guidelines of the American Society of Mammalogists for the use of wild mammals in research (Sikes et al. 2011). Samples will be collected directly into viral transport medium (Chua et al. 2002) and preserved at -80°C until transfer to laboratory. Capture individuals will be released after samples being collected.

4.3. DATA COLLECTION

During fieldwork we will collect individual information as: body mass, sex, age, somatic measurements, and weight. For bat species captured we will compile life history and ecological traits data from literature as: number of litters per year, torpor use, migration, dispersal ability, basal metabolic rate, conservation status, geographical distribution area, trophic guild, refuge preferences, roosting population size, etc.

4.4. LABORATORY ANALYSIS

Samples will be crude purified of viral particles. It would be centrifuged and filtered to remove traces of bacterial and host cells; they must be treated to remove naked nucleic acids. Viral RNA/DNA will be extracted from all samples, cDNA synthesis will be performed and the PCR extension across all samples using commercial kits. CoVs diagnostic will be performed using general reactive consensus PCR primers, targeting the RdRp (Watanabe et al 2010). Positive PCR products using a commercial



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cloning vector to generate sequence data will be cloned for analysis. When positive samples are identified, genome sequencing will be trying using unbiased high-throughput sequencing.

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Book Chapters:

Attoui, H; Maan,S; **Anthony, S.J**; Mertens, P.P.C
Bluetongue virus, other orbiviruses and other reoviruses: Their relationships and taxonomy (2009)
In *Bluetongue*: (eds Mellor,PS; Baylis, M; Mertens, P.P.C). Academic Press, London. Pg:23-52

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In *Bluetongue*: (eds Mellor,PS; Baylis, M; Mertens, P.P.C). Academic Press, London. Pg:135-166

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In *Bluetongue*: (eds Mellor,PS; Baylis, M; Mertens, P.P.C). Academic Press, London. Pg:265-284

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Bluetongue virus diagnosis. (2009)
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Students

[REDACTED] Amy Wray – Masters Student, [REDACTED] University
[REDACTED] Rafael Ojeda - PhD Student, Universidad [REDACTED]

Professional Service

[REDACTED] Morris Animal Foundation; Scientific Board

[REDACTED] IUCN Wildlife Health Specialist Group

[REDACTED] Review Editor for EcoHealth Journal

[REDACTED] Grant reviewer for National Science Foundation (NSF)

[REDACTED] Science in Schools. Hosting/training local science teachers about public health and conservation for better integration into high-school education.

[REDACTED] Reviewer for Journal of Virology; Journal of Zoo and Wildlife Medicine, Virus Genes, Journal of Virological Methods, Journal of Herpetological Medicine and Surgery, Journal of Wildlife Diseases, Current Biology, PloS One, Emerging Infectious Diseases and Diseases of Aquatic Organisms

Professional Memberships [REDACTED] Academy of Sciences
[REDACTED] American Society of Microbiology

References:

[REDACTED]



Paola Martínez Duque

Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México,

Professional Preparation

Facultad de Medicina Veterinaria y Zootecnia, U [REDACTED] MS [REDACTED]
Facultad de Medicina Veterinaria y Zootecnia, U [REDACTED] DVM [REDACTED]

Appointments

Volunteer in Animal Welfare, [REDACTED] Zoo, [REDACTED]

Research Support in Conservation Medicine.

[REDACTED] Association for Conservation Medicine

Research Assistant of [REDACTED] (FMVZ, UNAM)

Field veterinarian for wildlife surveillance projects (FMVZ, UNAM)

Field veterinarian for wildlife surveillance projects (FMVZ, UNAM)

Field Technician, Mammals and Bird Survey, [REDACTED]

Publications

Martínez-Duque Paola, Ávila-Flores Rafael, Emerson Ginny L., Carroll Darin S., Suzán Gerardo and Gallardo-Romero Nadia F. (2014). Orthopoxvirus antibodies in grey squirrels (*Sciurus aureogaster*) in Mexico City, Mexico. **Journal of Wildlife Diseases**, 50(3): 696-698.

Synergistic Activities

- Conference/symposium organizer assistant, 1o. Congreso Internacional de Ecología de Enfermedades y Medicina de la Conservación Kalaan-Kab, Veracruz, México [REDACTED]
2o. Congreso Internacional de Ecología de Enfermedades y Medicina de la Conservación Kalaan-Kab, Querétaro, México [REDACTED] 3o. Congreso Internacional de Ecología de Enfermedades y Medicina de la Conservación Kalaan-Kab, Yucatán, México [REDACTED]; WDA Annual International Conference, Albuquerque, USA [REDACTED].
- Field Veterinarian monitoring bats and rodents Chiapas, Campeche and Mexico City, "PREDICT-Mexico", EcoHealth Alliance [REDACTED]
- Research Exchange – Orthopoxvirus and Rabies Branch, Centers of Diseases Control and Prevention, Atlanta Ga. Project: Serosurvey of Orthopoxvirus in grey squirrels of Mexico City. Supervisor: DVM Nadia Gallardo-Romero [REDACTED]
- EcoHealthNet Workshop. Tufts University Cummings School of Veterinary Medicine [REDACTED]

Main Collaborators:

Gerardo Suzán (FMVZ, UNAM); Rafael Ávila-Flores [REDACTED]; Heliot Zarza (IE, UNAM); Nadia Gallardo-Romero [REDACTED]; Roxana Acosta (FC, UNAM); Juan Morales-Malacara (FC, UNAM); Victor Banda [REDACTED], Simon J. Anthony (Columbia University; Ecohealth Alliance).

Thesis Advisor and Scholar Sponsor:

Gerardo Suzán (FMVZ, UNAM); Rafael Ávila-Flores [REDACTED]; Nadia Gallardo [REDACTED]

Gerardo Suzán (FMVZ, UNAM); Rosa Elena Sarmiento Silva (FMVZ, UNAM); Simon J. Anthony (Columbia University; EcoHealth Alliance).

CURRICULUM VITAE
GERARDO SUZÁN AZPIRI
June 2015

1. Name: Gerardo Suzán Azpiri
2. Professional Degree: MVZ, MSc, PhD
3. Position, U[REDACTED]: Full time professor Professor
4. Phone number: [REDACTED]
5. E-mail: [REDACTED]

1. Professional Preparation

- 1.1 DVM, FMVZ. UNAM, [REDACTED]
- 1.2 MSc Ecology and Ecolution Sciences, Facultad de Ciencias. UNAM [REDACTED]
- 1.3 PhD Biology, The University of [REDACTED]
- 1.4 Post – doc, Conservation Medicine, Wildlife Trust [REDACTED]

2. Appointments

Permanent Full-Time Professor “B”. FMVZ, UNAM
Postgraduate Studies Coordinator at Dept. Ethology and Wildlife, FMVZ, UNAM
Specialist advisor for the CITES [REDACTED] Scientific Authority

3. Relevant publications

J. J. Sotomayor-Bonilla, A. Chaves, Rico-Chávez O, M. K. Rostal, S. J. Anthony, M. Salas-Rojas, Á. Aguilar-Setien; S. Ibáñez-Bernal, R. Ojeda-Flores, G. Gutiérrez-Espeleta, A. A. Aguirre, P. Daszak and G. Suzán (2014). Dengue virus in bats from southeastern Mexico. *Journal of Tropical Medicine and Hygiene (in Press)*.

Rendón-Franco E., Muñoz-García C., Romero-Callejas E., Moreno-Torres K., Suzán G. (2014). Effect of host species diversity on multiparasite systems in rodent communities. *Parasitology Research*. 113(1):447-450.

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Gerardo Suzán, Erika Marcé, J. Tomasz Giermakowski, James N. Mills, Gerardo Ceballos, Richard S. Ostfeld, Blas Armien, Juan M. Pascale, Terry L. Yates (2009). Experimental Evidence for Reduced Rodent Diversity Causing Increased Hantavirus Prevalence. *PLoS ONE* 4(5).

Rubio André V., Ávila-Flores Rafael, and Suzán Gerardo. (2014). Responses of small mammals to habitat fragmentation: Epidemiological considerations for rodent-borne hantaviruses in the Americas. *Ecohealth*. *In press*.

Martínez-Duque Paola, Avila-Flores Rafael, Emerson Ginny L., Carroll Darin S., Suzán Gerardo and Gallardo-Romero Nadia F. (2014). Orthopoxvirus antibodies in grey squirrels (*Sciurus aureogaster*) in Mexico City, Mexico. *Journal of Wildlife Diseases*. *In press*.

Suzán, G., G. Ceballos, J. Mills, T. G. Ksiazek, and T. Yates. (2001). Serologic evidence of hantavirus infection in sigmodontine rodents in Mexico. *Journal of Wildlife Diseases* 37: 391-393

Daily, G. C., G. Ceballos, J. Pacheco, G. Suzán, and A. Sánchez-Azofeifa. (2003). Countryside Biogeography of Neotropical Mammals: Conservation Opportunities in Agricultural Landscapes of Costa Rica. *Conservation Biology* 17:1814-1826.

Suzán, G., J. T. Giermakowski, E. Marcé, H. Suzán-Azpiri, B. Armien, and T. L. Yates. (2006). Modelling Hantavirus reservoir species dominance in high seroprevalence areas on The Azuero Peninsula of Panama. *American Journal of Tropical Medicine and Hygiene*. 74:1103-1110

4. Synergistic Activities

Leadership and Organization: Scientific Steering Committee: International Research Committee on Biodiversity and Disease, England (2012); Awards Committee of WDA (2012); Wildlife Symposium Fauna, UNAM, México (2007;2008); Pan-American Congress of Veterinary Science (2008); International EcoHealth Forum (IEF), México (2008). Scientific Advisory Board: CITES (2010-); World Organization for Animal Health (OIE; 2011-) Conference/symposium organizer: Medicina de la conservación, UNAM, (2007); 1º. Conferencia internacional Ecología de Enfermedades, México, UNAM (2008); Bases Aprovechamiento y conservación de fauna silvestre, UNAM, México (2009); 1º. Congreso en Ecología de Enfermedades y Medicina de la Conservación, México, (2009); Trilateral Trans-boundary Wildlife and Ecosystem Health Workshop, (2010); Ecología de

enfermedades zoonóticas transmitidas por roedores, México (2011); 2^a Congreso internacional de Ecología de enfermedades y Medicina de la Conservación, México, (2013).

Workshop participant: Field Studies Rodent Anesthesia Workshop. The University of New Mexico, (2004); Enfermedades Emergentes en Murciélagos. 14th International Bat Research Conference, México (2007); Ecohealth: Exploring links between biodiversity and emerging infectious diseases, England, (2010); Ganadería y Ambiente, SAGARPA, UNAM, Embajada Británica en México, University of Cambridge, (2012).

Journal reviewer: EcoHealth, Biodivers Conserv, Conserv Biol, J Parasitol, Mol Ecol Resour, Nat. Commun., Proc R Soc Lond B Biol Sci, Zoonoses Public Health, J Mammal, Anim Conserv, Conserv Biol, Int J Infect Dis, Biol Conserv, J. Vect. Ecol., Vet. Méx, Revista Mexicana de Biodiversidad, Revista Mexicana de Mastozoología, Mastozool. Neotrop., Parasites & Vectors, J Anim Ecol.

International Disease Ecology Research: Countryside Biogeography Neotropical Mammals: A Costa Rican Case Study, Stanford University, (1999); Evaluación y desarrollo de la epidemia de hantavirus en Panamá, (2001); PREDICT-México, (2010-2013); Morbilivirus in marine mammals, ECOHEALTH-ALIANCE, (2011).

Integrating Research and Education: Instructor: Wildlife ecology and Infectious Diseases Course, Panamá, (2011); Diseases Ecology and Conservation Medicine Course, Mérida, México, (2009); International Seminary on Biological and Clinical Management of Wildlife, Colombia (2009); Selected Topics in Medical exotic mammals, zoo animals and wildlife, UNAM (2010); Prevention and management of invasive species in Mexico, INE, United States Fish & Wildlife Service, BC Conservation States, CONANP and CONABIO, Mexico City (2011); Conservation Medicine, Costa Rica, (2011); Ecology of emerging diseases, UNAM (2012).

5. Main Collaborators (in addition to authors listed in publications above)

Arturo Barbachano (IPN); Leopoldo Aguilar (IPN); Heliot Zarza (IE, UNAM); Andrea Chaves (UCR); Gustavo Gutierrez (UCR); Sergio Ibáñez (INECOL); Carlos Arias (Instituto de Biotecnología, UNAM); Jean-Francois Guégan (University of Montpellier); Annapaola Rizzoli (Research and Innovation Centre); Felicia Keesing (Bard College); Vanessa Ezenwa (University of Georgia).

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On behalf of the Trustees of Columbia University

DETACH ALONG THIS PERFORATION



Moore, Kathleen <kathleen_moore@fws.gov>

**Re: Oct 19 2015 1:00:01; Acknowledgement letter for Permit No. "79276B""
PRT-79276B**

Miller, Brittany Y. <bym2106@cumc.columbia.edu>
To: "Moore, Kathleen" <kathleen_moore@fws.gov>

Mon, Nov 30, 2015 at 4:21 PM

Dear Kathleen,

I have attached here a response to the request for additional documentation for file number PRT-79276B. Please let me know if a hard copy needs to be sent in or if this electronic version will suffice.

Best regards,
Brittany

On Nov 9, 2015, at 3:54 PM, Moore, Kathleen <kathleen_moore@fws.gov> wrote:

We received your application for a Endangered Species Act (ESA) authorization to import several biological samples from bats for the purpose of scientific research. The processing of your application cannot be completed because:

1. Of the rather long list, for which many do not need our prior authorization, the big brown bat, lesser long-nosed bat, and the Mexican long-nosed bat will need our consult and prior authorization. You did not adequately justify the direct benefit to the species in your research proposal. Please respond.

Please provide the information and documentation indicated. **Any response must be in written form.**

If we do not receive the information requested above within **45 days** from the date of this e-mail, your application will be abandoned and administratively closed. Once the file is closed, you would need to submit a new application and all required fees. If you have questions, you may contact me at Kathleen_Moore@fws.gov or at 5275 Leesburg Pike Falls Church, VA 22041, (telephone number 1-800-358-2104, ext. 2511; facsimile transmission number 703-358-2281). Please reference your file number, **PRT-79276B**.

On Mon, Nov 9, 2015 at 1:15 PM, Moore, Kathleen <kathleen_moore@fws.gov> wrote:

This application will be pending for at least another 60 days since I will have to consult with our Regional office on this request as well as publish it in the Federal Register for public comment for 30 days.

I have not reviewed this one yet. If I have any questions I will let you know.

Thanks,
Kathleen

On Mon, Nov 9, 2015 at 10:11 AM, Miller, Brittany Y. <bym2106@cumc.columbia.edu> wrote:

Hello Kathleen,

What is the status of permit US79276B/9?

Thank you,
Brittany Miller

Project Coordinator
Center for Infection and Immunity
Mailman School of Public Health
Columbia University
722 W. 168th St., Rm. 1701
New York, NY 10032
Office: 212-342-9038
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On Oct 19, 2015, at 1:00 PM, E-Mail Sys#5 <permits@fws.gov> wrote:

COLUMBIA UNIVERSITY, CENTER FOR INFECTION AND
IMMUNITY
722 WEST 168TH STREET. 17TH FLOOR
NEW YORK, NY 10032
U.S.A.

Thank you for submitting an application to the U.S. Fish and Wildlife Service. The application was received by the Division of Management Authority on 10/19/2015; check number 1000894145 accompanied the application. Your application has been assigned the following PRT identification number: **US79276B/9

While processing time may be less, you should anticipate a minimum of 30 days to process your request, with many requests averaging between 60 to 90 days due to some requests which need to be published in the Federal Register and/or be reviewed by other Service offices.

While we are aware that you may want to inquire about the status of your application, we request that you allow our office at least three weeks after the receipt of this letter to make any inquiries. If you have additional information that needs to be provided, please mail information to DMA, Branch of Permits MS: IA, 5275 Leesburg Pike, Falls Church, VA 22041 by fax 703-358-2281 or call our staff on duty at 800-358-2104.

--

Kathleen Moore
USFWS/Division of Management Authority
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***Check out the new CITES species database at www.speciesplus.net to find out more information about how species are listed and protected under the Convention. ***

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Additional Information-USFWS ESA_bym.docx
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Coronavirus Diversity in bats from Nearctic and Neotropical limits in Mexico.

Additional Information.

How will the proposed research activities enhance or benefit the wild population?

México is home to the transitional area between two biogeographical regions (Nearctic and Neotropical); it is classified as a megadiverse country and is third in wildlife mammalian richness on the planet. In this country we found 134 bat species representing 8 different taxonomic families. In recent years bats have been identified as an important group in the maintenance and conservation of entire ecosystems (seed dispersers, pollination & pest control); therefore, bat research has increased in various fields such as ecology, evolution, physiology, disease ecology, etc.

Human activity has modified bat ecosystems, causing loss of habitat and resources, pollution, and disease transmission between wildlife, domestic animals and humans; these processes have been identified as the cause of some emerging infectious diseases in spillover events between pathogens of these three target population groups. The overlapping distribution of reservoir and recipient hosts crudely delineates areas where recipient hosts are at risk of infection. Areas of human population growth and changes in land use collectively increase the area and incidence of co-occurrence between bats and another species. Some viral spillovers occur where urban and peri-urban areas are expanding and human population growth is high.

Bats have been identified as reservoirs for a wide range of human pathogens including Nipah, Hendra, Ebola, Marburg, and the Coronaviruses (CoVs) related to Severe Acute Respiratory Syndrome (SARS and MERS CoVs). The research proves that bats and some viruses share an evolutionary history that may accommodate an interaction between virus and host cells that results in no apparent pathology or clinical disease. If persistent infections are suppressed by the host's immune response, viral replication and episodic shedding could occur when intrinsic or extrinsic stressors (anthropogenic activities) weaken the immune response. It is also plausible that physiological and environmental stressors and co-infections could increase the probability of individuals becoming shedders or even supershedders.

In Mexico until a few years ago nothing was known about the diversity of some viruses as CoVs in bats, but recent studies detected a significant co-phylogenetic signal between CoVs and chiropteran phylogenies. This research suggests that lineages have a diversification history dominated by co-speciation events and that host species at the genus level represent a strong selective driver in CoVs diversification. This host-parasite link also suggests that host switching is frequent within bat genera, but rare across bats from different genera. This conclusion is the driver for the constructions of new theories, explaining that if bats and CoVs have a strong co-evolutionary relationship this virus can be a symbiont and we will have hosts and also parasites niche specialists and generalists. In this context, if we survey parasites (viruses) on **niche specialist bats (in general endangered or vulnerable species)**, these organisms are excellent sentinels for ecosystem function.

Therefore, the results of this research will be an important tool in describing bat communities and ecosystems, and will generate strong data to justify the importance of their restoration and conservation.