

Elizabeth (Beth) Lloyd Clare

School of Biological and Chemical Sciences
Queen Mary University of London
London, England, United Kingdom
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Citizenship: Canadian & British

Education and Qualifications

Fellow of the Higher Education Academy: Professional Recognition /University Teaching Accreditation 2015.

ADEPT Fellow: Queen Mary University of London Teaching Accreditation, Center for Academic and Professional Development. 2015.

Fellow of the Linnean Society, London. 2015.

Doctor of Philosophy, Department of Integrative Biology, University of Guelph: 2010.
Thesis Title: “*Mitochondrial DNA diversity in Neotropical bats: Molecular Evolution, Systematics and Biodiversity*”

Bachelor of Science Hons., Department of Biology, University of Western Ontario: 2005.
Thesis Title: “*Gene flow and population structure across seasons: the case of the little brown bat*”

Current Positions:

- Senior Lecturer, School of Biological and Chemical Sciences, Queen Mary, University of London. London, UK.
- Hon. Senior Lecturer, School of Genetics, Evolution and the Environment, University College London. London, UK.
- Departmental Associate, Royal Ontario Museum, Toronto, Ontario, Canada

Past Academic Positions:

- 2013-2017: Lecturer, School of Biological and Chemical Sciences, Queen Mary, University of London. London, UK.
- 2010-2012: Visiting Fellow, School of Biological Sciences, University of Bristol, Bristol, UK (Behavioural, Acoustic and Sensory Ecology group of Dr. M. Holderied)
- 2010-2012: Natural Sciences and Engineering Research Council of Canada Research Fellow (Permission from NSERC to take up this position within the University of Bristol UK)

Career Break – **Maternity/shared parental leave September 2015-August 2016.**
– **Maternity/shared parental leave November 2018-May 2019.**

External Funding and Research Grants (values in approx. CAD):

- 2019-2020 BBSRC Agricultural & Horticultural Development Board. “Rapid DNA-based identification of brown marmorated stink bug, *Halyomorpha halys*” (with Dr. Glen Powell NIAB) \$81,448.
- 2017-2019 Endangered Species Recovery Committee “Basic research of the home ranges, seasonal movements, habitat utilization, diet, and prey availability of the Hawaiian hoary bat on the island of Maui” (led by H.T. Harvey & Associates Dave Johnston, Daniel Rubinoff, Ron Duke) \$950, 275
- 2017-2019 Neotropical Migratory Bird Conservation Act Program U.S. Fish & Wildlife Service “Conserving & Knowing Wood Thrush Habitat In Mid-Elevation Rain Forests of the Caribbean Slope in Costa Rica” \$199,056 (with Eric Palola, Natalie Sanchez Ulate, Sigifredo Marin, Felipe Chavarria, Pablo Elizondo, Frank Joyce, Winnie Hallwachs)
- 2015-2017 British Ecological Society “Understanding the interaction between vampire bats and humans” \$ 9, 519
- 2015-2017 Consejo Nacional De Ciencia Y Tecnología (National Council Of Science And Technology “Fishing in the darkness: Ecology and foraging behavior of the *Myotis* Fishing bat (*Myotis vivesi*)” (with Luis Gerrardo Herrera Montaivo and Martha Valdez) \$150, 000
- 2015-2016 The British Council. Newton Institutional Links “A new research network to study animal-plant interactions in urban environments’ \$83, 587
- 2014-2018 Science Without Borders, Brazilian Student Fellowship Programme PhD Fellowship for Tiago Teixeira \$160, 000
- 2014-2018 Science Without Borders Brazilian Student Fellowship Programme PhD Fellowship for Hernani Oliveira \$160, 000
- 2014-2015 The Royal Society Grant “The role of low frequency vocalizations in ecological niche differentiation and food web structure” \$30, 000.
- 2014-2015 Westfield Fund For Enhancing the Student Experience “Formative assessment and enhancing student achievement” \$8, 396
- 2012-2013 Polish Academy of Sciences Research Grant, “Shifting Biotas: the changing roles of bat mediated seed dispersal and insect consumption on the Island of Jamaica” (with Dr. W Bogdanowicz and Dr. M. Brock Fenton) \$80, 000
- 2012-2013 K.M. Molson Foundation, “Molecular Dietary Analysis of Canadian bats” (with Dr. M. Brock Fenton, University of Western Ontario) \$40, 000
- 2011-2012 K.M. Molson Foundation, “White Nose Syndrome, Little Brown Bats and Ecosystem Services” (with Dr. M. Brock Fenton, University of Western Ontario) \$20,000

Scholarships and Fellowships (values in Canadian dollars):

- 2010-2012 NSERC of Canada – Canada-United Kingdom Millennium Research Award \$5,000/year
- 2010-2012 NSERC of Canada – Postdoctoral Fellowship \$40,000/year
- 2009 Bat Conservation International – Student Research Scholarship \$3,500 (USD)
- 2009 NSERC of Canada – Michael Smith Foreign Studies Supplement \$6,000
- 2007-2009 NSERC of Canada – Canadian Graduate Scholarship (CGS-D2) \$35,000/year
- 2006-2007 NSERC of Canada – Canadian Graduate Scholarship (PGS-M extension) \$21,000
- 2006 Arthur Richmond Memorial Scholarship \$3,000

2005-2006	NSERC of Canada – Canadian Graduate Scholarship (CGS-M) \$ 21,700
2005 (declined)	Ontario Graduate Scholarship (OGS) \$15,000
2004	NSERC of Canada – Undergraduate Research Award (USRA) \$6,500
2003	NSERC of Canada – Undergraduate Research Award (USRA) \$6,500
2002	NSERC of Canada – Undergraduate Research Award (USRA) \$6,500

Peer Reviewed Publications:

- Gallant LR, Grooms C, Kimpe LE, Smol JP, Bogdanowicz W, Stewart RS, **Clare EL**, Fenton BM, Blais JM. A 4,300-year record of tropical bat diet, agricultural changes, and metal exposure. *Paleo-3*. Accepted.
- **Clare EL**, Fazekas A, Ivanova N, Floyd R Hebert P, Adams A, Nagel J, Girton R, Newmaster S, Fenton B. 2019. Three approaches to incorporating DNA into food webs. *Molecular Ecology*. 28:503-519.
- Gordon R, Ivens S, Ammerman L, Fenton MB, Ratcliffe JM, **Clare EL**. 2019. Molecular diet analysis finds an insectivorous desert bat community dominated by resource sharing despite diverse echolocation and foraging strategies. *Ecology and Evolution*. 9:3117-3129.
- Drinkwater, R, Bærholm I, Schnell KB, Bernard H, Veron G, **Clare EL**, Gilbert MTP, Rossiter SJ. 2019. A metabarcoding approach for comparing the suitability of two blood-feeding leech species for sampling mammalian diversity in North Borneo. *Molecular Ecology Resources*. 19:105-117.
- Littlefair J, Zander A, deSena Costa C, **Clare EL**. 2019. DNA metabarcoding reveals changes in trophic interactions along an elevation gradient. *Molecular Ecology*. 28:281-292.
- Deagle B, Thomas A, McInnes J, Clarke L, Vesterinen E, **Clare EL**, Kartzinel TR, Eveson P. 2019. Counting with DNA in metabarcoding studies: how should we convert sequence reads to dietary data?" *Molecular Ecology*. 28:391-406.
- Faulkes CG, Elmore JS, Baines DA, Fenton B, Simmons NB, **Clare EL**. 2019. Chemical characterisation of potential pheromones from the shoulder gland of the Northern yellow-shouldered-bat, *Sturnira parvidens* (Phyllostomidae: Stenodermatinae). *PeerJ*. 7:e7734. doi: 10.7717/peerj.7734.
- Drinkwater R, Williamson J, Swinfield T, Deere NJ, Struebig MKJ, **Clare EL**, Coomes D, Rossiter SJ. 2019. Occurrence of blood feeding terrestrial leeches (Haemadipsidae) in a degraded forest ecosystem and their potential as ecological indicators. *Biotropica*. <https://doi.org/10.1111/btp.12686>.
- Gresty C, **Clare EL**, Devey D, Cowan R, Malakasi P, Csiba L, Lewis O, Willis K. 2018. Flower preferences and pollen transport networks for cavity-nesting solitary bees: implications for the design of agri-environment schemes. *Ecology and Evolution*. 8:7574-7587.
- Czenze ZJ, Tucker JL, **Clare EL**, Littlefair JE, Hemprich-Bennett D, De Oliveira HFM, Brigham RM, Hickery AJR, Parsons S. 2018. Demographics, Season, and Location Affect Dietary Preferences of New Zealand Lesser Short-Tailed Bat (*Mystacina tuberculata*). *Ecology and Evolution*. 8: 7599-7610.
- Brandon-Mong G-J, Littlefair J, Sing K-W, Lee Y-P, Gan H-M, **Clare EL**, Wilson J-J. 2018. Temporal change in arthropod activity in tropical anthropogenic forests. *Bulletin of Entomological Research*. 108:792-799.
- Herrera JP, Duncan N, **Clare EL**, Fenton MB, Simmons NB. 2018. Community disassembly of fragmented bat communities in Orange Walk District, Belize. *Acta Chiropterologica*. 20:147-159.

- Arrizabalaga-Escudero A, **Clare EL**, Salsamendi, E, Alberdi A, Garin I, Aihartza J, Goiti U. 2018. Unveiling the niche partitioning of sibling horseshoe bats by DNA. *Molecular Ecology*. 27:1273-1283.
- Pearson CE, Symondson WOC, **Clare EL**, Ormerod JS, Bolanos EI, Vaughan IP. 2018. The effects of pastoral intensification on the feeding interactions of generalist predators in streams. *Molecular Ecology*. 27:590-602.
- Becker DJ, Chumchal MM, Broders HG, Korstian JM, **Clare EL**, Rainwater TR, Platt SG, Simmons NB, Fenton MB. 2018. Mercury bioaccumulation in bats reflects dietary connectivity to aquatic food webs. *Environmental Pollution*. 233:1076-1085.
- Lim VC, **Clare EL**, Littlefair JE, Ramli R, Bhasu S, Wilson JJ. 2018. The impact of urbanization and agriculture on diet of fruit bats and implications for seed dispersal. *Urban Ecosystems*. 21:61-70
- Nielsen J, **Clare EL**, Hayden B, Brett M, Kratina P. 2017. Diet tracing in ecology: method comparison and selection. *Methods in Ecology and Evolution*. 9:2787-2791.
- Littlefair JE, **Clare EL**. 2016. Barcoding the food chain: from Sanger to high-throughput sequencing. *Genome*. 59(9):946-948.
- **Clare EL**, Chain FJJ, Littlefair JE, Cristescu ME. 2016. The effects of parameter choice on defining molecular operational taxonomic units and resulting ecological analyses of metabarcoding data. *Genome*. 59(9):981-990.
- Sarah JA, Chain FJJ, **Clare EL**, Deiner K, Dincă V, Elías-Gutiérrez M, Hausmann A, Hogg ID, Kekkonen M, Lijtmaer DA, Naaum A, Steinke D, Valdez-Moreno M, Van der Bank M, Wilson JJ, Xu J. From Barcodes to Biomes: Special Issues from the 6th International Barcode of Life Conference. *Genome*. 59(9): v-ix.
- Murphy M, **Clare EL**, Rydell J, Yovel Y, Baron Y, Oelbaum P, Fenton B. 2016. Opportunistic use of banana flower bracts by *Glossophaga soricina*. *Acta Chiropterologica*. 18(1):209-213.
- **Clare EL**, Holderied MW. 2015. Resting substrates provide acoustic camouflage for moths preyed upon by gleaning bats. *eLife* 5: 4:e07404.
- Salinas-Ramos VB, Gerardo Herrera LM, Leon-Regagnon V, Arrizabalaga-Escudero A, **Clare EL**. 2015. Dietary overlap and seasonality in three species of mormoopid bats from a tropical dry forest. *Molecular Ecology*. 24:5296-5307.
- **Clare EL**. 2014 Molecular detection of trophic interactions: emerging trends, distinct advantages, significant considerations and conservation applications. *Evolutionary Applications*. 7: 1144-1157.
- **Clare EL**, Symondson WOC, Broders H, Fabianek F, Fraser E, Mackenzie A, Boughen A, Hamilton R, Willis C, Martinex F, Menzies A, Norquay K, Brigham M, Poissant J, Rintoul J, Barclay R, Reimer J. 2014. The diet of *Myotis lucifugus* across Canada: assessing habitat quality and dietary variability. *Molecular Ecology*. 23:3618-3632.
- **Clare EL**, Symondson WOC, Fenton MB. 2014. An inordinate fondness for beetles? Variation in seasonal dietary preferences of night roosting big brown bats (*Eptesicus fuscus*). *Molecular Ecology*. 23: 2333-2647.
- Emrich MA, **Clare EL**, Symondson WOC, Koenig S, Fenton MB. 2014. Resource Partitioning by Insectivorous Bats. *Molecular Ecology*. 23: 3648-3656.
- Sedlock JL, Kruger F, **Clare EL**. 2014. Island bat diets: does it matter more who you are or where you live? *Molecular Ecology* 23: 3684-3694.
- Kruger F, **Clare EL**, Grief S, Siemers BM, Symondson WOC, Sommer RS. 2014. An integrative approach to detect subtle trophic niche differentiation in the sympatric trawling bat species *Myotis dasycneme* and *Myotis daubentonii*. *Molecular Ecology*. 23: 3657-3671.

- Kruger F, **Clare EL**, Symondson WOC, Keis O, Peetersons G. 2014. Diet of the insectivorous bat *Pipistrellus nathusii* during autumn migration and summer residence. *Molecular Ecology* 23: 3672-3683.
- Brown DS, Burger R, Cole N, Cencatasamy D, **Clare EL**, Symondson WOC. 2014. Dietary competition between the alien Asian Musk Shrew (*Suncus murinus*) and the reintroduced population of Telfair's Skink (*Leiolopisma telfarii*). *Molecular Ecology*. 23: 3695-3705.
- Pinol J, San Andre V, **Clare EL**, Mir G, Symondson WOC. 2014. A pragmatic approach to the analysis of diets of generalists predators? The use of next generation sequencing with no blocking probes. *Molecular Ecology Resources*. 14: 18-26.
- **Clare EL**, Goerlitz HR, Drapeau VA, Holderied MW, Adams AM, Dumont ER, Hebert PDN, Fenton MB. 2014. Nectar Seeker Sneaks Insect Snacks: niche flexibility in *Glossophaga soricina*. *Functional Ecology*. 28: 632-6441.
- **Clare EL**, Schiestle FP, Leitch AR, Chittka L. 2013. The promise of genomics in the study of plant-pollinator interactions. *Genome Biology*. 14, 207.
- **Clare EL**, Adams AM, Maya-Simões AZ, Eger JL, Hebert PDN and Fenton MB. 2013. Diversification and reproductive isolation: cryptic species in the only New World high-duty cycle bat, *Pteronotus parnellii*. *BMC Evolutionary Biology*. 13:26.
- Jarrin-V P, **Clare EL**. 2013. Systematics of *Sturnira* (Chiroptera: Phyllostomidae) in Ecuador, with comments on species boundaries. *Zoo Taxa*. 360:165-183.
- Morgan ER, **Clare EL**, Jefferies R, Stevens J. 2012. Parasite epidemiology in a changing world: can molecular phylogeography help us tell the woods from the trees? *Parasitology*. Invited Review Article. 139(14):1924-1938.
- Razgour O, **Clare EL**, Baerholm I, Rasmussen M, Gilbert MTP, Jones G. 2011. High-throughput sequencing offers insight into mechanisms of resources partitioning in cryptic bat species. *Ecology and Evolution*. 1:556-570.
- **Clare EL**, Lim BK, Fenton MB, Hebert PDN. 2011. Neotropical bats: Estimating species diversity with DNA barcodes. *PLoS ONE*. 6(7): e22648.
- **Clare EL**. 2011. Cryptic Species? Patterns of maternal and paternal gene flow in eight Neotropical bats. *PLoS ONE*. 6(7): e21460.
- Bohmann K, Monadjem A, Noer CL, Rasmussen M, Zeale MRK, **Clare EL**, Willerslev E, Gilber MTP. 2011. Molecular dietary analysis of two African free-tailed bats (Molossidae) using high throughput sequencing. *PLoS ONE*. 6(6): e21441.
- **Clare EL**, Barber B, Sweeney BW, Hebert PDN, and Fenton MB. 2011. Eating local: Influences of habitat on the diet of little brown bats (*Myotis lucifugus*). *Molecular Ecology*. 20(8): 1772-1780.
- Maya-Simões AZ, **Clare EL**, Fenton MB. 2010. Parnell's Mustached Bat (*Pteronotus parnellii*): a morphologically cryptic species complex. *Chiroptera Neotropical* 16(1): 130-132.
- Ashlock D, **Clare EL**, Ashlock W, von Königslöw TE. 2010. Evolution and instability in ring species complexes: an *in silico* approach to the study of speciation. *Journal of Theoretical Biology*. 264(4): 1202-1213.
- Dzal Y, Hooton, LA, **Clare EL**, Fenton MB. 2009. Bat activity and genetic diversity at Long Point, Ontario, an important bird stopover site. *Acta Chiropterologica*. 11(2): 307-315.
- **Clare EL**, Fraser EE, Braid HE, Fenton MB, Hebert PDN. 2009. Species on the menu of a generalist predator, the Eastern red bat (*Lasiurus borealis*): Using a molecular approach to detect arthropod prey. *Molecular Ecology*. 18: 2532-2542.
- Faure P, Re D, **Clare EL**. 2009. Wound healing in the flight membranes of big brown

- bats. *Journal of Mammalogy*. 90(5): 1148-1156.
- Ashlock D, von Königslöw TE, **Clare EL**, Ashlock W. 2008. Transience in the simulation of ring species. *Computational Intelligence in Bioinformatics and Computational Biology*. 256-263.
 - **Clare EL**, Kerr K, von Königslöw T, Wilson J, Hebert PDN. 2008. Diagnosing mitochondrial DNA diversity: Applications of a sentinel gene approach. *Journal of Molecular Evolution*. 66: 362-367.
 - Neff BD, **Clare EL**. 2008. Temporal variation in cuckoldry and paternity in two sunfish species (*Lepomis* spp.) with alternative reproductive tactics. *Canadian Journal of Zoology*. 2: 92-98.
 - Hajibabaei M, Singer G, **Clare EL**, Hebert PDN. 2007. Design and applicability of DNA arrays and DNA barcodes in biodiversity monitoring. *BMC Biology*. 5: 24.
 - **Clare EL**, Lim BK, Engstrom MD, Eger JL, Hebert PDN. 2007. DNA barcoding Neotropical bats: species identification and discovery within Guyana. *Molecular Ecology Notes*. 7: 184-190.

Publications in Review:

- Hemprich-Bennett DR, Oliveira HFM, LeComber SC, Rossiter SJ, **Clare EL**. Assessing the impact of taxon resolution on network structure with implications for comparative ecology. *Ecology*. In Review. bioRxiv <https://doi.org/10.1101/357376>
- Kemp VA, Kratina P, **Clare EL**, Hemprich-Bennett DR, Lewis OT, Rossiter SJ, Grey J. Diet shift of mobile predators in response to rainforest degradation. In Review.
- Villa-Galaviz E, Smart SM, **Clare EL**, Ward SE, Memmott J. The Bottom-Up Effects of Eutrophication on food webs and plant-pollinator networks. *Proc. Roy Soc. B*. In Review.
- González AA, Vaughan IP, **Clare EL**, Bailey S, Memmott J. An orchard food web: pollination and pest control in a network context. *Agricultural and Forest Entomology*. In Review.
- Bogdanowicz W, Worobiec E, Grooms C, Kimpe L, Smol J, Steward R, Suchecka E, Pomorski J, Blais J, **Clare EL**, Fenton MB. Pollen assemblage and environmental DNA changes: a 4300-year-old guano deposit from Jamaica. *The Holocene*. In Review.
- Hodgkiss D, Brown MJF, Fountian MT, **Clare EL**. Detection rates of aphid DNA in guts of larval hoverflies (Diptera, Syrphidae, Syrphinae) vary according to the addition of floral resources in a commercial strawberry field. In Review.
- Chan A, Abdul S, **Clare EL**, Coleman JL. Diet of urban *Cynopterus brachyotis* provides insights into potential ecosystem services provided by fruit bats in urbanised tropical landscapes. *Urban Ecosystems*. In Review.
- de Oliveira H, Camargo N, Hemprich-Bennett D, Rodrigues-Herrera B, Rossiter S, **Clare EL**. Wing morphology predicts individual niche specialization in *Pteronotus mesoamericanus* (Mammalia: Chiroptera). *PlosOne*. In Review.

Book Chapters

- Ivanova NV, **Clare EL**, Borisenko AV. 2012. "DNA Barcoding in Mammals" in *DNA Barcodes: Methods and Protocols*. Ed. WJ Kress and DL Erikson. Smithsonian National Museum of Natural History.
- Hajibabaei M, Singer G, **Clare EL**, Hebert PDN. 2007. Design and applicability of DNA Arrays and DNA barcodes in biodiversity monitoring. In *Biodiversity for Sustainable Development*. Ed. Azmal Hussain. Icfai University Press.

Other Publications/Popular Science/Non-refereed publications

- **Elizabeth Clare** and Nancy B. Simmons. Key to Bats of Lamanai 2019.
- **Elizabeth Clare** and Nancy B. Simmons. Key to Bats of Lamanai 2014.
- **Elizabeth Clare** and M. Brock Fenton. Bats of Lamanai. Field Guide. 2014.
- **Elizabeth Clare** and M. Brock Fenton. Bats of Lamanai. Field Guide. 2013.
- **Elizabeth Clare** and Robin Floyd. Out of the dark: DNA sheds light on habitat type and quality through bat diet. BATS magazine. Publication of Bat Conservation International. Volume 29. No 3. Fall 2011.
- **Elizabeth Clare**. No longer in the dark about what bats eat. Barcode Bulletin: the newsletter of the international barcode of life project. 1(2): 8-9. 2010.
- Robin Floyd and **Elizabeth Clare**. Food Forensics: Using DNA to reveal the feeding behaviour of eastern red bats. BATS magazine. Publication of Bat Conservation International. Volume 27. No 4. Winter 2009.
- Alex Borisenko, Nataly Ivanova, **Elizabeth Clare** and Robert Hanner. Canadian Center for DNA Barcoding Advances: Methods Release No. 6 - DNA sampling and storage using FTA CloneSaver cards. January 19th 2007.

Post-Doctoral Supervision:

Dr. Joanne Littlefair 2015-2016, Queen Mary University of London

Dr. Jens Nielson 2016, Queen Mary University of London (with Dr. Kratina)

Current Graduate Student Supervision:

Omar Khalilur Rahman: 2017 PhD, Queen Mary University of London

Project: Parasite Networks in Fragmented Landscapes of the Brazilian Atlantic Forest

Jane Hallum: 2018 PhD, Queen Mary University of London (with Dr. Julia Day)

Project: eDNA monitoring of fish in the Thames River system.

Alejandro Obregon: 2019: PhD University College London (with Dr. Julia Day)

Project: eDNA of fishes and biomonitoring practices

Past Graduate Student Supervision:

Tiago Teixeira: 2019 PhD, Queen Mary University of London

Project: The effect of patch size and connectivity on food web structure and biodiversity of bats in the Brazilian Atlantic Forest

Hernani Oliveira: 2018 PhD Student, Queen Mary University of London

Project: Determinants of bat food web structure: morphology and seasonal effects

David Bennett: 2018 PhD, Queen Mary University of London

Project: The effect of deforestation on food web structure and biodiversity in Malaysia

Rosie Drinkwater: 2018 PhD, Queen Mary University of London (with Prof. Steve Rossiter)

Project: Documenting Tropical Mammal Biodiversity Across a Human-modified Landscape Using Leech Bloodmeal DNA in Malaysia

Aitor Arrizabalanga: 2014 Visiting PhD Student, University of the Basque Country

Project: Bioinformatics of food web analysis, resource partitioning in Spanish bats.

Valaria Salinas: 2014 Visiting PhD Student, University of Mexico

Project: Resource partitioning in Mexican Mormoopid bats.

Georgia Law: 2019 MSc, University College London (with Dr. Seirian Summner)

Project: Diet of *Vespa* wasps

Alice Goodwin: 2018 MSc, Queen Mary University of London

Project: Mercury accumulation risks in diet of an aquatic foraging bat in Mexico

Leah Kathryn Taylor: 2018 MSc, Queen Mary University of London

Project: Fungal food webs of solitary bees in UK agricultural management schemes

Ben Bellekom: 2018 MSc, University College London (with Dr. Seirian Summner)

Project: Dietary diversity of *Vespa* wasps in the UK

Rowena Gordon: MSc, Queen Mary University of London

Project: Acoustic determinants of a Texas desert bat food web

Sally Ivens: MSc, Queen Mary University of London

Project: Morphological determinants of a Texas desert bat food web

Omar Khalilur Rahman: MSc, Queen Mary University of London

Project: Detecting mammal DNA in parasite blood meals

Jake Crush: MSc, Queen Mary University of London

Project: Identification of fish in piscivore diet

Jashan Abraham: MSc, Queen Mary University of London

Project: Resource partitioning in CF and FM bats.

Madeleine Clare Rhodes: MSc Queen Mary University of London

Project: Fungal symbiotic food webs of solitary bees

Leon Tucker, MSc, Queen Mary University of London

Project: networks structure of New Zealand bats

Undergraduate Student Supervision:

Elizabeth Burroughs, Queen Mary University of London

Project: Publishing biases in the sciences.

Oliver Gaskin, Queen Mary University of London

Project: Seasonal niche shifting in tropical bats

Fatima Ahmad, Queen Mary University of London

Project: Food webs of plants and on organic farms

Arsenijš Jermakovs, Queen Mary University of London

Project: Primer assessment for mammal forensic identification

Clara De Sena Costa, Queen Mary University of London

Project: Metabarcoding the diet of carnivorous plants

Bruno De Araujo Andreoli, Queen Mary University of London

Project: Bioinformatics for diversity assessments with metabarcoding

Alfie Gleeson, Queen Mary University of London

Project: Metabarcoding as a method of insect biodiversity assessment

Rebecca Mann, Queen Mary University of London

Project: What goes up, what goes down - behavioural differences and trapping success

Olivia Murrin, Queen Mary University of London

Project: Investigating the effect of temperature on Dipteran Diversity in Kew Gardens using DNA metabarcoding

Swastina Nathvarma, Queen Mary University of London

Project: How insect biodiversity changes with rainfall and wind in two different locations

Olivia Niblock, Queen Mary University of London

Project: Do lunar cycles affect insect biodiversity?

Lucy Vialls, Queen Mary University of London

Project: Seasonal changes in the biodiversity of Lepidoptera and Coleoptera in London

Diviya Uthayakumar, Queen Mary University of London

Project: How the diversity of arthropods changes with fluctuations in temperature

Rebecca Girton, Queen Mary University of London

Project: Factors influencing parasite diversity

Shelby Temple, University of Bristol (with Dr. Marc Holderied)

Project: Structural difference in moth scales.

Natasha Evans, University of Bristol (with Dr. Marc Holderied)

Project: Structural differences in moth scales.

Gwen Jenkins, University of Bristol (with Dr. Marc Holderied)

Project: Surface resting position as mechanisms of anti-bat predation

Tom Mansfield, University of Bristol (with Dr. Marc Holderied)

Project: Surface resting position as mechanisms of anti-bat predation

Alejandra Ceballos Vasques, University of Western Ontario (with Dr. M. Brock Fenton)

Project: Systematics of *Glossophaga soricina*

L.J. Sanders, University of Guelph (with Dr. Ryan Gregory)

Project: Phylogeography and host-specificity of bat ectoparasites

Daniel Re, McMaster University (with Dr. Paul Faure)

Project: Wound healing in flight membranes of *Eptesicus fuscus*

PhD and MSc Examinations

- Imperial College London PhD external examiner
- Royal Holloway University of London (RHUL) PhD internal examiner
- Queen Mary University of London (QMUL) PhD internal examiner
- University College London (UCL) PhD internal examiner
- University of Malaya MSc external examiner

Course contribution at QMUL:

- BIO 113: Evolution
- BIO 123: Ecology
- BIO 190: Practical Molecular and Cellular Biology
- BIO 192: Practical Biology
- BIO 294: Ecological Interactions
- BIO 209: Research Methods and Communication I
- BIO 309: Research Methods and Communication II
- BIO 391: Savannah Ecology and Conservation Field Course
- BIO 395: Species and their relationships: Dinosaurs to DNA + Field Course
See our course documentary here - <https://youtu.be/HkBv8Nc-gP0>
- SBC5221 Philosophy & Business of Science (15 credits)
- SBC5222 Philosophy & Business of Science (10 credits)
- BIO 603: Project Skills in the Life Sciences – Thesis supervisor
- BIO 703 Research Project – Thesis Supervisor
- SBC M004: Ecosystem Structure and Function (MSc Module)
- SBS M028: Research Frontiers in Evolutionary Biology (MSc Module)
- Doctoral Training Programme

Past Teaching Experience:

- 2012 - 2013 - College Tutor, The University of Bristol.
- 2012 - 2013 - Senior Associate Teacher, The University of Bristol.
- January - April 2013 - Lecturer, distance education graduate course in “Speciation” with Dr. M. Brock Fenton.
- October 2011 - Acoustic monitoring workshop, North American Symposium on Bat Research. Toronto, Ontario. Instructor.
- August 2011 - Introduction to tropical bat biology: field course in La Selva, Costa Rica. Run through the University of Bristol. Instructor.

- May 2010 - Acoustic monitoring and bat survey course. Jamaica. Instructor.
- July 2006: The Biology of Desert-dwelling Bats. Field Course, Ben-Gurion University (Sede Boqer campus), Negev Desert highlands, Israel. Run through Ontario University Program in Field Biology. Instructor.
- 2005-2010 – TA University of Guelph - Introductory Biology, Population Genetics, Zoology, Developmental Biology, Mammalogy
- 2004-2005 – TA University of Western Ontario - Introductory Biology, Scientific Methods in Biology

Invited Graduate Lectures

- Speciation - “The genetics of speciation” University of Western Ontario. February 4, 2013.
- Post Graduate Training Modules - “Introduction to phylogenetics” University of Bristol. February 27, 2013.

Invited Undergraduate Guest Lectures

- Junior Honours Field Zoology 2012 - “Food Forensics: The truth lies in the poop” University of Edinburgh. March 7, 2012.
- Introductory Cell Biology 2012 - “Marvelous Mitochondria: function, origins consequences and applications” Mount Allison University, New Brunswick, Canada March 2, 2012.
- Introduction to tropical bat biology 2011 - “Measuring the biodiversity of bats in the tropics: DNA, echolocation, morphology” University of Bristol field course in La Selva, Costa Rica
- Junior Honours Field Zoology 2011 - “Unraveling insectivorous bat food webs through DNA” University of Edinburgh.
- MBG 3000 Population Genetics 2008 - “DNA Barcoding” University of Guelph
- MBG 3000 Population Genetics 2007 - Seven lectures on “Quantifying Genetic Variation”, “The Hardy Weinberg Theorem”, “Quantitative Genetics”
- The Biology of Desert-dwelling Bats field course 2006 - “The Barcode of Life: Prospects for species identification in bats”
- MBG 3000 Population Genetics 2006 - “Variable Fitness” University of Guelph

Invited Department Seminars

- 2020 - Fragmented networks, when habitat is lost. University of Oxford, Scheduled.
- 2017 - Networks of species interactions across landscapes: Stories of urban ecology, El Nino and forest fragmentation. University of Toronto Scarborough. February 15th 2017
- 2017 - Molecular Food Webs for Conservation and Ecological Analysis. University of Bristol. February 6th 2017.
- 2015 - Untangling the tangled bank: genomics, food webs and patterns of ecosystem organization. University of Toronto Mississauga. January 18th 2015.
- 2015 - Untangling the tangled bank: ecosystem patterns from the genomic analysis of trace materials. Trent University. January 15th 2015.
- 2014 - DNA and interaction networks: detangling the tangled bank. Royal Holloway. November 26th, 2014.
- 2014 - Diagnosing species’ interactions with DNA: from ancient ecosystems to modern food webs. Biological and Environmental Sciences. University of Sterling. March 3rd, 2014.

- 2014 - Diagnosing species' interactions with DNA: from ancient ecosystems to modern food webs. Cardiff School of Biosciences. Cardiff University. February 6th, 2014.
- 2013 - Diagnosing species' interactions with DNA: from ancient ecosystems to modern food webs. School of Biological and Chemical Sciences. Queen Mary University of London. September 26, 2013
- 2013 - How nectar bats sneak insect snacks, moth tails to defy your ears and other stories from the world of molecular food webs. London Zoological Society. London UK. June 17th. 2013
- 2013 - Nectar bats sneak insect snacks, insectivorous bats for habitat assessments and a tale of moth tails to defy your ears: stories from eco-barcoding. Biodiversity Institute of Ontario, University of Guelph. Ontario Canada. May 9th, 2013
- 2012 - DNA barcoding and environmental genomics: quantifying biodiversity and ecosystem interactions. Queen Mary, University of London, London UK. October 15, 2012.
- 2012 - Identifying species: from systematics to ecosystem interactions. Invited Seminar, Mount Allison University New Brunswick, Canada, March 2nd, 2012
- 2011 - Uncovering biodiversity and species interactions with DNA barcodes. Departmental Research Seminar, School of Biological Sciences. University of Bristol. UK, November 28th 2011.
- 2011 - DNA and guano: what molecular food webs can tell us about habitat, evolutionary arms races and niche flexibility. Invited seminar. Leibniz Institute for Zoo and Wildlife Research, Berlin Germany. November 23rd 2011.
- 2011 - Applied Taxonomy: from DNA to diet. Round table presentation. School of Biological Sciences. University of Bristol, UK. January 27th 2011.
- 2010 - Evolution and instability in ring species complexes: an *in silico* approach to the study of speciation. Invited Seminar. Biodiversity Institute of Ontario. University of Guelph. March 4th 2010.
- 2010 - Mitochondrial DNA Diversity of Bats: Molecular Evolution. Invited Seminar. Biodiversity Institute of Ontario. University of Guelph. February 18th 2010.
- 2009 - Unraveling Complex Food Webs with Molecules: Ontario Bats and their arthropod prey. Invited Seminar. Environment Canada. Aerial Insectivores Workshop. March 8-11. 2009.

Invited Conference Keynote Lectures

- Networks of species across landscapes and advanced terrestrial biomonitoring. **Terrestrial Technical Group Meeting**. Natural England Peterborough, UK. July 12, 2018.
- Conservation, DNA and ecological networks: methods and challenges. **3rd Symposium on Ecological Networks and 3rd Symposium on Molecular Analysis of Trophic Interactions**. Uppsala, Sweden. September 11-15, 2017.
- Untangling the tangled bank: lessons in the genetic analysis of food webs. **Genomics Seminar. Genomics Week. CIBIO-InBIO**. Vairao, Portugal. June 17, 2015.
- A changing view of biodiversity and ecosystems: the age of metagenomics. **Eukaryotic-Omics: Exploring and testing with next-generation sequencing**. Geneva Switzerland. April 24th, 2014.
- Metagenomics and Collections: the new frontier in biodiversity science. **Linnaean Society**. London England April 2nd, 2014.
- Diagnosing species' interactions with DNA: from ancient ecosystems to modern food webs. **MexBOL 2014: Mexican National Conference on DNA barcoding**. Mexico City, Mexico. March 6th, 2014.
- Detecting trophic interactions with barcodes: from ancient ecosystems to modern food

- webs. Plenary Lecture. **5th International Barcode of Life Conference**. Kunming China. Oct 30th 2013.
- Ecological genomics: diagnosing species' interactions. Oral Presentation. **Tropical biodiversity in the 21st century symposium**. Natural History Museum London UK. June 4th 2013.
 - Unraveling Complex Food Webs with Molecules: Ontario Bats and their arthropod prey. Environment Canada. **Aerial Insectivores Workshop**. March 8-11. 2009.

Selected Conference Presentations

- Living on the Edge: A Community Approach to Molecular Food Webs in the Texas Desert. Oral Presentation. **45th North American Symposium on Bat Research. Monterey California**. October 28-31, 2015.
- Here's how you unravel an ecosystem: DNA and the largest interaction network ever made. Oral Presentation. **44th North American Symposium on Bat Research**. Albany New York. October 22-25, 2014.
- Deconstructing the biggest food web ever investigated. Oral Presentation. **2nd Meeting of the UK eDNA network**. University of Hull. September 18-19, 2014.
- The diet of *Myotis lucifugus* across Canada: assessing habitat quality and dietary variability. Oral Presentation. **2nd International Symposium on the Molecular Detection of Trophic Interactions**. Lexington Kentucky. May 14, 2013.
- An inordinate fondness for beetles? Variation in seasonal dietary preferences of night roosting big brown bats (*Eptesicus fuscus*). Oral Presentation. **2nd International Symposium on the Molecular Detection of Trophic Interactions. Lexington Kentucky**. May 14, 2013.
- Acoustic Tomography: A new technique sheds light on the moth bat evolutionary race. Oral Presentation. **42nd North American Symposium on Bat Research**. San Juan Puerto Rico. October 24-27. 2012.
- Nectar Seeker Sneaks Insect Snacks: Molecular Food Webs and *Glossophaga soricina*. Oral Presentation. **41st North American Symposium on Bat Research**. Toronto ON. October 26-29. 2011.
- Cryptic Species in *Glossophaga soricina*: Three Distinct Lineages, Only One Reproductively Isolated. Oral Presentation. **41st North American Symposium on Bat Research**. Toronto ON. October 26-29. 2011. (Presented by student Alejandra Ceballos Vasquez)
- Molecular dietary analysis of *Myotis lucifugus*, in Southwestern Ontario: spatial and temporal heterogeneity in dietary preferences indicate habitat type and quality. Oral Presentation. **40th North American Symposium on Bat Research**. Denver CO. October 27-30. 2010.
- Genetic Identification of Prey Species in Guano: Spatial and Temporal Variation in Food Webs. Oral Presentation. **3rd International Barcode of Life Conference**. Mexico City, Mexico. November 9-13. 2009.
- Genetic Identification of Prey Species in Guano: Spatial and Temporal Variation in Food Webs. Oral Presentation. **39th North American Symposium on Bat Research**. Portland OR. November 4-7. 2009.
- Unraveling complex food webs with molecules: Ontario's generalist predator *Lasiurus borealis* and its arthropod prey. Oral Presentation. **38th North American Symposium on Bat Research**. Scranton PA. October 22-25. 2008.
- DNA barcoding and the evolution of predator-prey strategies: new insights from Ontario Eastern Red Bats (*Lasiurus borealis*). Poster. **Evolution**. University of

- Minnesota. June 20-24. 2008.
- DNA barcoding and the evolution of predator-prey strategies: new insights from Ontario Eastern Red Bats (*Lasiurus borealis*). Oral Presentation. **2nd Canadian Barcode of Life Network Meeting**. Royal Ontario Museum. April 28-29. 2008.
 - DNA barcoding bats: Global Campaigns and Regional Focuses. Poster. **2nd International Barcoding Conference**. Taiwan. September 17-21. 2007.
 - Geographic patterns of mitochondrial DNA sequence variation: recent data collection and historical perspectives on Neotropical bat species. Oral Presentation. Combined meeting of the **International Bat Conference and 37th North American Symposium on Bat Research**. Merida, Mexico. August 20-23. 2007.
 - The Extra Genome of the Little Brown Bat. Oral Presentation. Combined meeting of the **International Bat Conference and the 37th North American Symposium on Bat Research**. Merida, Mexico. August 20-23. 2007.
 - DNA Barcoding Bats: global campaigns and regional focuses. Poster. **1st Canadian Barcode of Life Network Meeting**. Guelph, Ontario, Canada. May 9-12, 2007.
 - DNA Barcoding of Mammals at the Royal Ontario Museum (Presented by Judith L. Eger). **Royal Ontario Museum Colloquium**. Toronto Ontario. 2007.
 - DNA Barcoding Bats: projects patterns prospects. Oral presentation. **36th North American Symposium on Bat Research**. Wilmington, North Carolina, United States of America. October 18-21, 2006.
 - Bats, Birds, Butterflies and Bees: Comparing patterns of divergence in flying life. Poster. **36th North American Symposium on Bat Research**. Wilmington, North Carolina, United States of America. October 18-21, 2006.
 - Identifying bat species through DNA barcodes. Poster. **Dr. Peter Yodzis Colloquium in Fundamental Ecology**. University of Guelph. Ontario Canada. May 17-18. 2006.
 - Barcoding Bats in Central and South America: Taxonomic assessment and Geographic Patterns. Poster. Inaugural meeting of the **Canadian Society of Ecology and Evolution**. Montreal, Quebec, Canada. April 3-4, 2006.
 - Genetic evidence for population structure in the little brown bats. Oral presentation. **35th North American Symposium on Bat Research**. Sacramento California, United States of America. October 19-22, 2005.
 - Alternative reproductive tactics in pumpkinseed sunfish. Oral presentation. **Ontario Ethology and Ecology Colloquium**. Carleton University, Ottawa Ontario, Canada. May 7-9, 2005.

Selected Research Press Coverage:

- 2015 - "Acoustic shadows help gleanings bats find prey" ScienceVideos.org
 2015 - "Scientists create a bat ear that lets you see what bats hear" IFLScience.com
 2015 - "First imagery from echolocation reveals new signals for hunting bats" sciencedaily.com
 2015 - "elife podcast"
 2011 - "Finding Facts From Fragments" Barcoding Life Highlights 2011
 2011 - "Beth Clare, eco-CSI investigator" The Kitchener Waterloo Record.
 2011 - "Bat Mobiles" BBC Wildlife magazine.
 2011 - "Food forensics: DNA links habitat quality to bat diet" LiveScience.com and various other sources.
 2011 - "What are bats' favorite foods? The truth lies in the poop" Yahoo News and various other sources.
 2010 - Smithsonian Magazine "Meet the New Species" by Richard Conniff.

- 2010 - The Portico (Magazine) "DNA barcoding Evolves"
- 2009 - "At Guelph" (Newspaper and online feature) "Grad Student Goes to Bat for Research"
- 2009 - "People Behind Biology: Elizabeth Lloyd Clare", research profile in *Biology: exploring the diversity of life* (text book) by Peter J Russell et al. published by Nelson.
- 2007 - "Birds Bats and Barcodes" *Science*. v.315 p.1059.
- 2007 - "Frog-Eating Bat Not Just Another Pretty Face" *Strange Behaviours Blog* by Richard Conniff.
- 2007 - Spark: press article: "Young Researchers in a Young Science: Students among the most excited, active members of emerging barcoding community".
- 2007 - *Science Daily* (Magazine) "New Bird, Bat Species Revealed by Extensive DNA Barcode Studies."

Major Field Work Expeditions: *Brazil, Malaysia, Costa Rica, Jamaica, Belize, USA, Greece, Israel, Canada, etc.*

- 2018 - ongoing Field DNA sequencing. Belize April-May. (PhD student Omar Khalilur Rhahman)
- 2018- ongoing eDNA detection of fish populations in the Thames waterways (PhD student Jane Hallam)
- 2016-2017 Forest fragmentation effects on mammal populations and their ecosystem functions in the Brazilian Atlantic forest (PhD student Tiago Teixeira)
- 2015-2017 Work on the Sustainability of altered forest ecosystems (SAFE) project in Malaysia (PhD students David Bennett and Rosie Drinkwater)
- 2015-2016 Study of El Niño's impacts on seed dispersal and insectivory of bats (PhD students Hernani Oliveira)
- 2016 - Vampire bat feeding ecology. Belize April
- 2014 - 2015 - Low frequency bat Food Webs, Texas USA
- 2014 - Bio-survey Bats of Belize
- 2013 - Visual choices of *Glossophaga* pollinators. Belize April
- 2012 - Visual choices of vertebrate pollinators. Belize April.
- 2011 - Prey handling in bats, Costa Rica August.
- 2011 - Bat ecto-parasite Biodiversity, Belize May
- 2011 - Interspecific acoustic recognition in cryptic species, Jamaica April.
- 2010 - Mammalian ecto-parasite collection expedition in Lamanai, Belize, April.
- 2010 - Bat survey, Windsor Cave, Jamaica, May.
- 2009 - Bat survey, monitoring, ecto-parasite and fecal collection expedition to the Area de Conservación Guanacaste, Costa Rica, May-July.
- 2009 - Bat tissue collection, ecto-parasite collection and fecal collection, alcohol consumption behavioural experiment Lamanai Belize, April.
- 2008 - Bat monitoring and fecal collections, Ontario May-October
- 2006 - Bat survey, Negev desert, Israel, July
- 2005 - Bat activity monitoring, turtle monitoring, Zakynthos, Greece, May-June
- 2004-2005 - Population genetics survey of *Myotis lucifugus* in Ontario
- 2004 - Bat survey, Tortuguero, Costa Rica, March.
- 2001-2004 - Behavioural Ecology and Genetics of Sunfish, Queens University Biological Station, Kingston, Ontario.

Selected Public Engagement:

- Public lectures to Field Naturalists Clubs
 - Bat Conservation Trust Wales
 - Orillia Naturalists' Club
 - Midland Field Naturalists
 - Friends of Wye Marsh
 - Carden Field Naturalists
 - West Humber Naturalists
 - Ontario Nature AGM

- Public lectures to Parks and Conservation Authorities
 - Grey-Bruce Conservation Area
 - Lake St. George Conservation Area
 - Mountsberg Conservation Area

- Other Outreach
 - Numerous Public School visits
 - Queen Mary University of London "Open Days"
 - University of Guelph "Interactions"
 - University of Bristol "Open Day"

Departmental and Other Academic Services

- QMUL - HEA, Teaching Recognition Project mentor 2014-Present
- QMUL - Internationalization School Rep 2015-2016
- QMUL - Athena Swan Committee 2014-2017
- Canada-Wide Science Fair – Judge 2010
- Waterloo-Wellington Sciences and Engineering Fair – Judge 2010
- Undergraduate Curriculum Committee 2009-2010 member
- Graduate Program Advisory Committee 2008-2009 member
- Ontario Ecology and Ethology Colloquium OEEC 2008 organizational committee

Selected Journal Peer Review Service

- Conservation Genetics
- Molecular Ecology
- Molecular Ecology Resources
- Molecular Biology Reports
- Methods in Molecular Evolution
- Zootaxa
- PLoS ONE
- Journal of Applied Ecology
- Journal of Mammalogy
- Molecular Phylogenetics and Evolution
- Biological Journal of the Linnean Society
- Journal of Avian Biology
- PNAS
- Oecologia
- Scientific Reports

Professional Memberships:

- Fellow of the Linnaean Society of London
- Fellow of the UK Higher Education Association
- Consortium for the Barcode of Life
- International Barcode of Life
- North American Society for Bat Research
- Bat Conservation International