

MATTHEW CHRISTOPHER IKAIKA MEDEIROS
CURRICULUM VITAE

I. PERSONAL INFORMATION

Assistant Professor
Pacific Biosciences Research Center
University of Hawai'i at Mānoa
Honolulu, HI

mcmedeir@hawaii.edu
Phone: (808)-956-8187

II. EDUCATION

2007-2013 Doctor of Philosophy, Biology
 University of Missouri-St. Louis
 Department of Biology
 Program in Evolution, Ecology and Systematics
 Advisor: Robert E. Ricklefs
 Dissertation: *Elucidating the Factors that Modulate the Distribution of Avian
 Haemosporida Parasites across a Community of Hosts*

2001-2006 Bachelor of Science
 University of Hawai'i at Mānoa
 Major: Zoology

III. IDIOMS

English: Native language
Portuguese: Understand well, read well, and speak fair
Hawaiian: familiar

IV. EXPERIENCE

2019- Co-Director
 Center for Microbiome Analysis through Island Knowledge and Investigation
 (C-MĀIKI)
 University of Hawai'i at Mānoa
 Honolulu, HI

2019- Chief Scientist
 Insectary for Scientific Training and Advances in Research
 (InSTAR)
 University of Hawai'i at Mānoa
 Honolulu, HI

2016- Assistant Professor
 Pacific Biosciences Research Center
 University of Hawai'i at Mānoa
 Honolulu, HI

2015-2016 Post-doctoral Researcher
 Department of Entomology
 Texas A&M University
 College Station, TX
 Advisor: Gabriel L. Hamer, Ph.D.

2014-2015 Post-doctoral Researcher
 Laboratório de Ecologia e Conservação de Aves

Departamento de Zoologia
 Universidade de Brasília
 Advisor: Miguel Â. Marini, Ph.D.
 2012-2013 Graduate School Dissertation Fellow
 University of Missouri-St. Louis
 2007-2012 Graduate Assistant
 Department of Biology
 University of Missouri-St. Louis
 Activities: Teach and coordinate a Human Anatomy and Physiology lab course for undergraduate students.
 2006-2007 Fieldwork coordinator
 Department of Zoology
 University of Hawai'i at Mānoa
 Activities: Organized and coordinated a bird mist-netting operation on O'ahu, Hawaii

V. TEACHING

Courses

2018- Instructor
 Introduction to Systems Biology (OEST 103)
 University of Hawai'i at Mānoa
 Activities: Develop curriculum, deliver lectures, administer examinations

 2014 Field Instructor
 Techniques in ornithology field course (Pantanal, Brazil)
 Universidade de Brasília
 Activities: Demonstration and instruction on field methods associated with the study of birds.

 2007-2012 Lab Instructor
 Human Anatomy and Physiology Laboratory (BIOL 1131)
 University of Missouri-St. Louis
 Activities: Lectures on relevant topics associated with laboratory activities; instruction on practical exercises (i.e. dissection, anatomical structure identification); setting up, administering, and grading practical exams.

 2006 Teaching Intern
 Animal Evolution (ZOOL 480)
 University of Hawai'i at Mānoa
 Instructor: John Stimson

Student Mentoring and Training.

2020- **Chasen Griffin, PhD student, University of Hawai'i at Mānoa, Zoology**
PhD advisor
Project: Heterogeneity in the vectorial capacity of mosquito populations
 2020- **Danya Weber, Masters student, University of Hawai'i at Mānoa, Zoology**
Masters Advisor
Project: Avian malaria and bird conservation in Hawai'i
 2019 Jeromalyn Santos, REU Intern, University of Guam
 Mentor
 Project: Wolbachia genetic diversity in *Culex quinquefasciatus* mosquitoes on O'ahu
 2019 Kahiwhiwa Davis, REU Intern, Gonzaga University
 Mentor
 Project: Larval mosquito development and microbiota assembly across different plant sources of detritus

- 2018 Kristen Feato, REU intern, Chaminade University
Mentor
Project: The avian microbiome of O‘ahu forest birds
- 2018 Ma. Vida Amor Echaluse, REU intern, Northern Marianas College
Mentor
Project: *Angiostrongylus* transmission in suburban environments across an environmental gradient
- 2017- Alex Ching, Masters student, University of Hawai‘i at Mānoa, Entomology
Committee member
Project: Microbiome of tephritid flies.
- 2017- Randi Rollins, PhD student, University of Hawai‘i at Mānoa, Zoology
Committee member
Project: The ecology of *Angiostrongylus* transmission.
- 2017- Maria Costantini, Ph.D. candidate, University of Hawai‘i at Mānoa, Zoology
Committee member
Project: Role of the avian microbiome in conservation.
- 2017-2018 Stevie Kennedy-Gold, Masters student, University of Hawai‘i at Mānoa, Zoology
Committee member
Project: Behavioral changes in lizards across different communities
- 2017-2018 Rachel Sommer, Masters student, University of Hawai‘i at Mānoa, Zoology
Committee member
Project: Two invasive veronicellid slugs in the Hawaiian Islands: life history and microbiome
- 2017 Rachelle Tom, REU intern, Kapiolani Community College
Mentor
Project: The distribution of mosquitoes across an elevational gradient
- 2016- Priscilla Seabourn, Ph.D. candidate., University of Hawai‘i at Mānoa, Entomology
PhD Advisor
Project: Ecology of mosquitoes on Maui, Hawai‘i**
- 2016- Robyn Screen, Ph.D. candidate, University of Hawai‘i at Mānoa, Zoology
Committee member
Project: Behavioral and stress responses of *Anolis sagrei* to urban habitats
- 2015-2019 Andrew Golnar, Ph.D. student, Texas A&M University, Entomology
Committee member
Project: The influence of coinfection on arbovirus transmission ecology
- 2014-2015 Nicole Dubois, Master’s student, Universidade de Brasília
Data analysis training
Project: Adaptive nest site choice in *Aratinga aurea*
- 2014-2015 Gabriela Correa, Master’s student, Universidade de Brasília
Data analysis training
Project: Changes in avian community structure after fire
- 2010-2011 Jon-Erik Hansen, Undergraduate student, University of Missouri-St. Louis
Laboratory training
Project: *Avian Haemosporida in mosquito vectors*.
Currently a laboratory technician at Monsanto, Inc.
- 2010 Genevieve Pang, Undergraduate student, Washington University
Laboratory training
Project: *Avian Haemosporida in Panamanian bird*.
Currently a graduate student at Michigan State University.
- 2005- Supervised more than 30 assistants, undergraduate students, and graduate students in ornithological fieldwork techniques.

***graduate students are bolded**

Matthew C.I. Medeiros

VI. RESEARCH

Overall research statement: I am a natural historian at heart who is fascinated with the complexity of nature. This fascination compels me to maintain diverse interests in ecology, evolution, and conservation biology. While my research retains distinct foci, I am eager to explore questions that broaden my appreciation for how organisms interact with each other and their environment. A central theme of my work is to combine field, laboratory, and mathematical and theoretical techniques to answer questions in ways that could not be achieved through one technique alone. Currently, my primary research focuses on the proximate and ultimate drivers of infectious disease transmission across various ecological scales, from dynamics within host individuals, to those that manifest within and between ecological communities across heterogeneous landscapes. By elucidating these mechanisms that modulate infectious disease dynamics, we aim to inform strategies that limit opportunities for infectious disease emergence and develop evidence-based approaches that mitigate transmission risks.

VII. PROFESSIONAL SERVICE, ACTIVITIES, AND IMPROVEMENT

Peer Reviewer

The Auk	Journal of Parasitology
Biological Invasions	Malaria Journal
Behavioral Ecology and Sociobiology	Parasites and Vectors
Ecohealth	PeerJ
International Journal of Parasitology	PLoS NTD
Journal of Animal Ecology	The ISME Journal
Ecology	

Classes and Workshops

2019	National Science Foundation DEB REU workshop in Roslynn, VA
2018	National Science Foundation GEO REU workshop in Boulder, CO
2009	Data Analysis and Presentation in R workshop University of Missouri-St. Louis

Working Groups

2017-	Hawai'i Bird Conservation Forum
2016-	Hawai'i Mosquito Working Group
2016-	All-Mosquito Working Group (invitation only) A gathering of local, national, and international experts to review options for mosquito population suppression in Hawai'i.

International Meetings and Presentations

2019	American Society of Tropical Medicine and Hygiene Annual Meeting (poster presentation)
2008	American Association for the Advancement of Science-Pacific regional meeting (oral presentation)
2005	Cooper Ornithological Society Annual Meeting 2005 (oral presentation)
2004	Cooper Ornithological Society Annual Meeting 2004 (oral presentation)

Invited Talks

2019	Hawaii Department of Health Vector Control Workshop Keynote
2019	Natural Resource and Environmental Management, University of Hawai'i at Mānoa
2018	Pacific Birds meeting
2018	University of Hawai'i-West O'ahu Math+Science+X seminar
2017	Department of Biology seminar series, University of Hawai'i at Mānoa

2017	Pacific Biosciences Research Center, University of Hawai'i at Mānoa
2016	Pacific Biosciences Research Center, University of Hawai'i at Mānoa
2015	Wildlife Disease Association-Texas A&M Student Chapter
2015	Vector Seminar Series, Texas A&M University

VIII. GRANTS, FELLOWSHIPS, and SCHOLARSHIPS AWARDED

Grants-Awarded

2020-	\$378,652	National Science Foundation DBI 1659889 REU SIE: Environmental Biology for Pacific Islanders (PI: Medeiros)
2018-	\$1,061,250	National Institutes of Health P20GM125508-01 Integrative Center for Environmental Microbiomes and Human Health (Role: Project Leader) Project: Microbiome Diversity in Insect Vectors and its Influence on Pathogen Transmission (PI: Medeiros)
2017-2018	\$700,000	Strategic Investment Initiative , Office of the Vice Chancellor for Research, University of Hawai'i at Mānoa Microbiomes of Hawaiian ahupua'a (ridge-to-reef) watersheds: Data acquisition and mathematical analysis to discover the basis of sustainability across vital Hawaiian landscapes Awarded to C-MĀIKI - Center for Microbiome Analysis through Island Knowledge and Investigation (Role: Investigator/ Member of C-MĀIKI Leadership Team)
2017-2019	\$414,604	National Science Foundation REU Site DBI 1659889 Environmental Biology for Pacific Islanders (Role: Co-PI, PI: M. Hadfield)
2016-2018	\$222,750	National Institutes of Health R21 AI128953-01 Social-ecological factors influencing receptivity to Zika virus and the efficacy of interventions in communities along the Texas-Mexico border. (Role: Investigator, PI: G.L.Hamer)
2016-2017	\$250,000	Lawrence Livermore National Laboratory (05/01/16-04/30/19) Integrated vector-animal-human test bed for surveillance of high-consequence trans-boundary infectious diseases (role: Investigator, PI: G.L. Hamer)

Research Grants-Pending

2021-2025	\$ 2,999,290	National Science Foundation MIM: Using Machine Learning and a Model Watershed to Understand how Microbes Govern Food Web Architecture and Efficiency (role: co-PI, PI: A. Amend)
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Scholarships and Fellowships

2012-2013	Dissertation Fellowship University of Missouri- St. Louis University of Missouri-St. Louis Graduate School Fellowship in the amount of \$15,000 to support a student during the final stages of a dissertation
2010	Raven Fellowship University of Missouri- St. Louis Department of Biology Fellowship in the amount of \$7500 to support a student while conducting research for a semester.
2004-2005	Minority Access to Research Careers research student University of Hawai'i at Mānoa Tuition and stipend, advisor: Rebecca Cann, Leonard A. Freed; project: Avian malaria among a lowland community of forest birds on O'ahu, Hawaii

- 2004 Research Experience for Undergraduates student
University of Notre Dame
Summer stipend, advisor: John Adams, project: Isolation and characterization of MAEBL (merozoite apical erythrocyte-binding ligand) in rodent malaria
- 2003-2004 Haumana Biomedical Program research student
University of Hawai‘i at Mānoa
Stipend, advisor: Leonard A. Freed; project: Reproductive Biology of the Hawai'i 'Ākepa (*Loxops coccineus coccineus*)
- 2003-2004 Presidential Scholar
University of Hawai‘i at Mānoa
Tuition and stipend

IX. PUBLICATIONS

- Golnar, A, **Medeiros, M.C.I.**, Rosenbaum, K., Bejcek J. Hamer, S.A., & Hamer, G.L. (2021). Vector-borne blood-parasites of the great-tailed grackle (*Quiscalus mexicanus*) in east-central Texas, USA. *Microorganisms*, 9: 504.
- Juarez, J.G., Garcia-Luna, S. , **Medeiros, M.C.I.**, Dickinson, K.L., Borucki, M.K., Frank, M., Badillo-Vargas, I., Chaves, L.F., & Hamer, G.L. (2021). The eco-bio-social factors that modulate *Aedes aegypti* abundance in South Texas border communities. *Insects* 12:183.
- Rollins, R. L., Cowie, R. H., Echaluse, M. V., & **Medeiros, M.C.I.** (2021). Host snail species exhibit differential *Angiostrongylus cantonensis* prevalence and infection intensity across an environmental gradient. *Acta Tropica* 216: 105824. <https://doi.org/10.1016/j.actatropica.2021.105824>.
- Seabourn, P.S., Spafford, H., Yoneishi, N.M., & **Medeiros, M.C.I.** (2020). The *Aedes albopictus* (Diptera: Culicidae) microbiome varies spatially and with Ascogregarine infection. *PLoS Neglected Tropical Diseases* 14(8): e0008615. <https://doi.org/10.1371/journal.pntd.0008615>
- Medeiros, M. C., Rollins, R. L., Echaluse, M. V., & Cowie, R. H. (2020). Species identity and size are associated with rat lungworm infection in gastropods. *EcoHealth*, 17(2), 183-193.
- Poh, K. C., **Medeiros, M. C.I.**, & Hamer, G. L. (2020). Landscape and demographic determinants of Culex infection with West Nile virus during the 2012 epidemic in Dallas County, TX. *Spatial and Spatio-temporal Epidemiology*, 33, 100336.
- Cowie, R.H., Rollins, Randi L., **Medeiros, M.C.I.**, & Christensen, C.C. (2019) New records of Clausiliidae: *Taupaedusa tau* (Boettger, 1877)(Gastropoda: Heterobranchia) on O‘ahu, Hawaiian Islands, and the first global record of infection of a clausiliid land snail with *Angiostrongylus cantonensis* (Chen, 1935), the rat lungworm. Bishop Museum Occasional Papers 126, 11–18.
- Martin, E., **Medeiros, M.C.I.**, Carbajal, E., Valdez, E., Juarez, J.G., Luna, S.G., Salazar, A., Qualls, W.A., Hinojosa, S., Borucki, M.K. & Manley, H.A. (2019). Surveillance of *Aedes aegypti* indoors and outdoors using Autocidal Gravid Ovitrap in South Texas during local transmission of Zika virus, 2016 to 2018. *Acta Tropica* 192, 129-137.
- Martin, E., Chu, E., Shults, P., Golnar, A., Swanson, D. A., Benn, J., Kim, D., Schneider, P., Pena, S., Culver, C., **Medeiros, M. C. I.**, Hamer, S.A., & Hamer, G.L. (2019). *Culicoides* species community composition and infection status with parasites in an urban environment of east central Texas, USA. *Parasites & Vectors*, 12(1), 39.
- Hynson N., Frank K., Alegado R., Amend A., Arif M., Bennett G., Jani A., **Medeiros M.**, Mileyko Y., Nelson C., Nguyen N., Nigro O., Prisc S., Shin S., Takagi D., Wilson S., & Yew J. (2018) Synergy among microbiota and their hosts: leveraging the Hawaiian archipelago and local collaborative networks to address pressing questions in microbiome research. *mSystems* 3, e00159-17.

Ricklefs, R. E., Ellis, V. A., **Medeiros, M. C.I.**, & Svensson-Coelho, M. (2018) Duration of embryo development and the prevalence of haematozoan blood parasites in birds. *The Auk*, 135, 276-283.

Fecchio, A., Svensson-Coelho, M., Bell, J., Ellis, V.A., **Medeiros, M.C.I.**, Trisos, C.H., Blake, J.G., Loiselle, B.A., Tobias, J.A., Fanti, R., Coffey, E.D., de Faria, I.P., Pinho, J., Felix, G., Braga, E.M., Anciães, M., Tkach, V., Bates, J., Witt, C., Weckstein, J.D., Ricklefs, R.E., & Farias, I.P. (2017). Host associations and turnover of haemosporidian parasites in manakins (Aves: Pipridae). *Parasitology* 144, 984-993.

Bertram M.R., Hamer G.L., Hartup B.K., Snowden K.F., **Medeiros M.C.I.**, & Hamer S.A. (2017). Haemosporida prevalence and diversity are similar in endangered wild whooping cranes (*Grus americana*) and sympatric sandhill cranes (*Grus canadensis*). *Parasitology* 144, 629-640.

Ricklefs, R. E., **Medeiros, M.C.I.**, Ellis, V. A., Svensson-Coelho, M., Blake, J. G., Loiselle, B. A., Soares, L., Fecchio, A., Outlaw, D.C., Marra, P.P, Latta, S.C., Valkiūnas, G., Hellgren, O., & Bensch, S. *ahead of print*. Avian migration and the distribution of malaria parasites in New World passerine birds. *Journal of Biogeography* 44, 1113-1123.

Medeiros, M.C.I.*, Boothe, E.*, Roarke, B., & Hamer, G.L. (2017) Dispersal of male and female *Culex quinquefasciatus* and *Aedes albopictus* mosquitoes using stable isotope enrichment. *PLoS Neglected Tropical Diseases* 11: e0005347. *These authors contributed equally.

Bertram, M., Hamer, S.A., Hartup, B.K., Snowden, K.F., **Medeiros, M.C.I.**, Outlaw, D.C., & Hamer, G.L. (2017) A novel Haemosporida clade at the rank of genus in North American cranes (Aves: Gruiformes). *Molecular Phylogenetics and Evolution* 109, 73-79.

Ellis, V.A., **Medeiros, M.C.I.**, Collins, M.D., Sari, E.H.R., Coffey, E.D., Dickerson, R.C., Lugarini, C., Stratford, J.A., Henry, D.R., Merrill, L., Matthews, A.E., Hanson, A.A., Roberts, J.R., Joyce, M., Kunkel, M.R., Ricklefs, R.E. (2017) Prevalence of avian haemosporidian parasites is positively related to the abundance of host species at multiple sites within a region. *Parasitology Research*, 116 (1), 73-80.

Castellanos, A.A.*, **Medeiros, M.C.I.***, Hamer, G.L., Morrow, M.E., Eubanks, M.D., Teel, P.D., Hamer, S.A., Light, J.E. (2016) Decreased small mammal and tick abundance in association with invasive red imported fire ants (*Solenopsis invicta*). *Biology Letters*, 12, 20160463. *These authors contributed equally.

Medeiros, M.C.I., Ricklefs, R.E., Brawn, J.D., Ruis, M.O., Goldberg, T.L., Hamer, G.L. (2016) Overlap in the seasonal infection patterns of avian malaria parasites and West Nile virus in vectors and hosts. *American Journal of Tropical Medicine and Hygiene*, 95, 1121-1129.

Lopes, L.E. Fernandes, A.M., **Medeiros, M.C.I.**, Marini M.A. (2016) A classification scheme for avian diet types. *Journal of Field Ornithology*, 87(3), 309-322.

Meyers J.I., Pathikonda, S., Popkin-Hall, Z.R., **Medeiros, M.C.I.**, Fuseini, G., Matias, A., Garcia, G., Overgaard, H.J., Kulkarni, V., Reddy, V.P., Schwabe, C., Lines, J., Kleinschmidt, I., Slotman, M.A. (2016) Increasing outdoor host-seeking in *Anopheles gambiae* over 6 years of vector control on Bioko Island. *Malaria Journal*, 15(1), 1.

Freed, L. A., **Medeiros, M. C.I.**, Cann, R. L. (2016) Multiple reversals of bill length over 1.7 million years in a Hawaiian bird lineage. *The American Naturalist*, 187(3), 363-371.

Medeiros, M. C. I., Ricklefs, R.E., Brawn, J.D., Hamer, G. L. (2015) *Plasmodium* prevalence across avian host species is positively associated with exposure to mosquito vectors. *Parasitology*, 142(13), 1612-1620.

Ellis, V.A., Collins, M.D., **Medeiros, M.C.I.**, Sari, E.H.R., Coffey, E.D., Dickerson, R.C., Lugarini, C., Stratford, J.A., Henry, D.R., Merrill, L., Matthews, A.E., Hanson, A.A., Roberts, J.R., Joyce, M., Kunkel, M.R., Ricklefs, R.E. (2015) *Matthew C.I. Medeiros*

Local host specialization, host-switching, and dispersal shape the regional distributions of avian haemosporidian parasites. *Proceedings of the National Academy of Sciences*, 112(36) 11294-11299.

Boothe, E., **Medeiros, M. C. I.**, Kitron, U. D., Brawn, J. D., Ruiz, M. O., Goldberg, T. L., Walker, E.D., Hamer, G. L. (2015) Identification of avian and hemoparasite DNA in blood-engorged abdomens of *Culex pipiens* (Diptera; Culicidae) from a west Nile virus epidemic region in suburban Chicago, Illinois. *Journal of Medical Entomology*, 52(3), 461-468.

Medeiros, M.C.I., Ellis, V.A., Ricklefs, R.E. (2014) Specialized avian Haemosporida trade reduced host breadth for increased prevalence. *Journal of Evolutionary Biology*, 27(11), 2520-2528.

Ricklefs, R.E., Outlaw, D.C., Svensson-Coelho, M., **Medeiros, M.C.I.**, Ellis, V.A., Latta, S. (2014) Species formation by host shifting in avian malaria parasites. *Proceedings of the National Academy of Sciences of the United States of America*, 111 (41), 14816-14821.

Medeiros, M.C.I., Anderson, T.K., Higashiguchi, J.M., Kitron, U.D., Walker, E.D., Brawn, J.D., Krebs, B.L., Ruiz, M.O., Goldberg, T.L., Ricklefs, R.E., Hamer, G.L. (2014) An inverse association between West Nile virus serostatus and avian malaria infection status. *Parasites and Vectors* 7, 415.

Medeiros, M. C. I., Hamer, G. L., Ricklefs, R. E. (2013) Host compatibility rather than vector–host-encounter rate determines the host range of avian *Plasmodium* parasites. *Proceedings of the Royal Society B: Biological Sciences*, 280(1760).


Medeiros, M. C., Freed, L. A. (2009) A fledgling-mass threshold greatly affects juvenile survival in the Hawaii ‘ākepa (*Loxops coccineus coccineus*). *The Auk*, 126(2), 319-325.

Freed, L. A., **Medeiros, M. C.**, Bodner, G. R. (2008) Explosive increase in ectoparasites in Hawaiian forest birds. *Journal of Parasitology*, 94(5), 1009-1021.

Freed, L. A., Fretz, J. S., **Medeiros, M. C.** (2007) Adaptation in the Hawaii ‘ākepa to breed and moult during a seasonal food decline. *Evolutionary Ecology Research*, 9(1), 157-167.

I acknowledge that this CV is the most current and correct as of the date of the signature.

Signature



Date: 18 May 2021