



Mrinalini Watsa

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Profile

Conservation and wildlife biologist, with experience in animal handling and mark-recapture programs for wildlife monitoring and biodiversity screening using field-based genomics techniques.

Education

Washington University in Saint Louis, Missouri, USA – PhD Biological Anthropology, 2013
Washington University in Saint Louis, Missouri, USA – MA Biological Anthropology, 2008
Grinnell College, Iowa, USA – BA Biology (Honours), 2005

Professional Appointments

POSTDOCTORAL RESEARCH FELLOW – 2017-PRESENT

Department of Biology, University of Missouri, St. Louis, Missouri, USA

POSTDOCTORAL RESEARCH ASSOCIATE – 2017-PRESENT

Department of Anthropology, Washington University in Saint Louis, St. Louis, Missouri, USA

VISITING ASSISTANT PROFESSOR – 2016 JANUARY -2017 MAY

Department of Anthropology, Washington University in Saint Louis, St. Louis, Missouri, USA

POSTDOCTORAL RESEARCH ASSOCIATE – 2013 -2015

Molecular Primatology, Washington University in Saint Louis, St. Louis, Missouri, USA

PRESIDENT AND SENIOR RESEARCH SCIENTIST – 2013-PRESENT

Field Projects International, St. Louis, Missouri, USA

Research Experience

FIELD EXPERIENCE

2018 - **Co-director of the Field Projects International One Health Program**

Los Amigos Biological Field Station, Madre de Dios, Peru

Long-term mark-recapture based disease screening program on bats, birds, primates and small terrestrial mammals with subsequent data analysis in situ at the Green Lab.

2009 - **Co-director of the Field Projects International Los Amigos Research Program**

Los Amigos Biological Field Station, Madre de Dios, Peru

Long-term behavioral and health monitoring of 14 social groups of saddleback and emperor tamarins, including implementation of an annual capture-and-release program without disturbing habituation

2015 - **Biodiversity Monitoring using Molecular Barcodes**

Fringe Ford, Western Ghats, India

Initial field surveys of terrestrial and arboreal mammals at an unstudied site, including Endangered lion-tailed macaques and Vulnerable Nilgiri langurs, using camera traps, line transects, and molecular barcoding

2007 **Research Assistant, Proyecto Carey**

Osa Peninsula, Costa Rica

Feeding ecology of spider monkeys and associated avifauna

ONGOING RESEARCH ACTIVITIES

- 2018 - Field-based genomics analyses of microbiome and diet, along with species confirmation via DNA barcoding of howler and spider monkeys in collaboration with the Taricaya Rehabilitation Center, Peru
- 2018 - Decoding the Amazon, an effort to implement a DNA barcode library of the Madre de Dios Department of Peru in collaboration with Aaron Pomerantz (University of California, Berkeley), Stefan Prost (University of California, Berkeley), Gideon Erkenwick (University of Missouri St. Louis), Geoff Gallice (Florida State University) and Varun Swamy (San Diego Zoo Global).
- 2015 - The olfactory repertoire in *Saguinus* spp., in collaboration with Eva Garrett (Boston University), Amanda Melin (University of Calgary), and Gideon Erkenwick (University of Missouri St. Louis)
- 2014 - Patterns of Exchange of mycobacteria among wild animals and humans, in collaboration with Anne Stone (Arizona State University) and Gideon Erkenwick (University of Missouri, St. Louis)
- 2014 - The trade-off between olfaction and vision in dichromatic and heterochromatic tamarins in southeastern Peru, in collaboration with Amanda Melin (University of Calgary)
- 2013 - Chimerism and the assessment of paternity in a multi-generational population of sympatric callitrichine primates, in collaboration with Anthony DiFiore (University of Texas, Austin), Alan Templeton (Washington University in Saint Louis), and Gideon Erkenwick (University of Missouri, St. Louis)
- 2012 - Demography and life history effects on parasite loads in sympatric callitrichids in southeastern Perú, in collaboration with Gideon Erkenwick (University of Missouri St. Louis)
- 2011 - Population assessment of *Callimico goeldii* in southeastern Perú, in collaboration with Jennifer Rehg (Southern Illinois University Edwardsville) and Gideon Erkenwick (University of Missouri St. Louis)
- 2009 - Vaginal and gut microbial phylogenetics of the New World Monkeys, in collaboration with Rebecca Stumpf (University of Illinois at Urbana-Champaign)

Peer-Reviewed Publications

Robakis, E., **Watsa, M.**, and Erkenwick, G. (2018). Classification of producer characteristics in primate long calls using neural networks. *The Journal of the Acoustical Society of America*, 144 (1), 344-353

Watsa, M., Erkenwick, G.A., and Robakis, E. (2017). Modeling developmental class provides insights into individual contributions to infant survival in callitrichids. *International Journal of Primatology*, 38(6): 1032-1057

Erkenwick, G.A., **Watsa, M.**, Pacheco, M.A., Escalante, A.A. and Parker, P.G., 2017. Chronic *Plasmodium brasilianum* infections in wild Peruvian tamarins. *PLoS one*, 12(9), p.e0184504.

Adams, D. B., Rehg, J., and **Watsa, M.** 2017. Observations of termitarium geophagy by Rylands' bald-faced saki monkeys (*Pithecia rylandsi*) in Madre de Dios, Peru. *Primates* 58 (3): 449-459

Erkenwick, G. A., **Watsa, M.**, Dmytryk, N., Gozalo, A. S., & Parker, P. 2017. Temporal and demographic blood parasite dynamics in two free-ranging neotropical primates. *International Journal for Parasitology: Wildlife and Diseases* 6 (2): 59-68.

Watsa, M., Erkenwick, G. A., Halloran, D., Kane, E. E., Poirier, A., Klonoski, K., Cassalet, S., Maciag, E., Mangalea, M. R., Dinsmore, M. P., McCreedy, H., Boughan, B. K., Parker, C., Hickmott, A., Nole, I. E., & Zuñiga, A. 2015. A field protocol for the capture and release of callitrichids. *Neotropical Primates* 22 (2): 59-68

Watsa, M., Erkenwick, G., Rehg, J. Leite Pitman, R. 2012. Distribution and new sightings of Goeldi's monkey (*Callimico goeldii*) in Amazonian Perú. *International Journal of Primatology* 33(6): 1477-1502

Manuscripts In Review

Souza-Alves JP, **Watsa, M.**, 62 other authors & Barnett AA. (In review) Terrestrial behavior in titi monkeys (*Callicebus*, *Cheracebus*, and *Plecturocebus*): a multi-data set search for critical drivers. *International Journal of Primatology*

Robakis, E., **Watsa, M.**, and Erkenwick, G.A. (In review) High arousal vocalizations follow motivation-structural rules in free-ranging emperor tamarins (*Saguinus imperator subgriseus*). *American Journal of Primatology*.

Manuscripts In Preparation

Robakis, E., **Watsa, M.**, and Erkenwick, G.A. (In preparation) The role of long distance vocalizations in communication breeding status and facilitating dispersal in cooperatively breeding callitrichids. *American Journal of Primatology*.

Poirier, A., **Watsa, M.**, Erkenwick, G., Melin, A. (In preparation) On the trail of primate scent signals: first field analysis of tamarin scent-gland semiochemistry by portable gas chromatography-mass spectrometry. *American Journal of Physical Anthropology*.

Watsa, M., Moreira, L.A.A., Erkenwick, G. A. and Melin, A. (In prep) Visual cues of age and breeding status in callitrichids. *American Journal of Physical Anthropology*

Watsa, M., Erkenwick, G. A., Lopez-Clinton, S., & Villanyi, A. (In prep) A population viability analysis of free-ranging tamarins in southeastern Peru. For submission to the *American Journal of Primatology*

Rehg, J.A., **Watsa, M.**, & Erkenwick, G.A. (In prep) Review of plant diet diversity in *Saguinus fuscicollis*. For submission to *Primates*

Erkenwick, G. A., **Watsa, M.**, and Escobar, A. (In prep) A review of the risks of chiroptera consumption by Neotropical primates. For submission to *Primates*.

Other Select Publications

Watsa, M., Erkenwick, G. A., & Halloran, D. 2016. Capture-and-release protocol for the Callitrichidae and other small mammals. Technical Report. Field Projects International

Watsa, M. 2015. 200,000 of Peru's primates trafficked for pet trade or bushmeat yearly. Mongabay Series: Latin American Wildlife Trade; <http://bit.ly/2ejfv7f>

Watsa, M. 2015. Policing domestic wildlife trafficking in Peru. Mongabay Series: Latin American Wildlife Trade; <http://bit.ly/2dZmoam>

Watsa, M. 2015. Mining at the heart of the Mother of God: Peru's gold rush claims more forest. Mongabay.org; <http://bit.ly/2eqeWD2>

Watsa, M. 2015. Fracas over Costa Rican shark-fin exports leads American Airlines to stop shipping fins. Mongabay.org; <http://bit.ly/2dZmlvb>

Watsa, M. 2015. One of Brazil's rarest primates still holds out in single patch of rainforest. Mongabay.org; <http://bit.ly/2eitk20>

Awards and Honours

2016 Winner, Grinnell College Pioneer Award; <http://bit.ly/2dlvRuF>

2014 Finalist, Grinnell College Wall Award

2014 First place, Mongabay Annual Top Contributor in Science Reporting, for: "To collect or not to collect? Experts debate the need for specimens"; <http://bit.ly/2eeUdWH>

2013 Second place, Mongabay Annual Top Contributor in Science Reporting, for: "The quicksilver demon: rogue gold-mining is the world's largest source of mercury pollution"; <http://bit.ly/2dZh4na>

- 2012 Finalist, Professional Development Award, Bridging GAPS, Graduate Professional Council, Washington University in St. Louis
 2012 Inducted into Phi Beta Kappa

Grants and Fellowships

2017	The Green Lab: The Amazon's first in-situ molecular laboratory	\$70,000
2016	IdeaWILD Research Grant	\$1500
2013-	Field Projects International Research Grant (annual grant to present)	\$5000
2012	Dissertation Writing Fellowship, Washington Univ. in St. Louis	\$19,500
2012	Exploration Fund Award, Explorer's Club	\$4000
2011	IdeaWILD Research Grant	\$1500
2011	Washington University in Saint Louis, Summer Research Grant	\$2500
2010	American Society of Mammalogists, Grant-in-Aid of Research	\$1500
2010	International Primatological Society Research Grant	\$1500
2010	International Primatological Society Conservation through Community Involvement Initiative	\$500
2009	IdeaWILD Research Grant	\$1500
2009	Lambda Alpha Graduate Overseas/Charles R. Jenkins Award	\$2500
2009	American Society of Mammalogists, Grant-in-Aid of Research	\$1500
2009	International Primatological Society Research Grant	\$1500
2009	Animal Behaviour Society Research Grant	\$500
2009	Washington University Summer Writing Grant	\$2500
2008	Washington University Summer Pilot Project Grant	\$3000
2006	Washington University Academic Fellowship	\$18,000

Invited Talks

- January 26, 2018 The Mortality-Morbidity Paradox in Wild Tamarins, Saint Louis University
 June 25, 2014 Callitrichid biology in southeastern Peru, Smithsonian-Mason School of Conservation at Los Amigos Biological Field Station
 June 10, 2013 Growing up tamarin, Amazon Conservation Association
 October 19, 2011 The biology of the Callitrichidae, Southern Illinois University-Edwardsville
 October 20, 2011 Invited session speaker to conference titled: *Primatología en el Perú: Historia, Estado Actual y Perspectivas*, *Regretfully declined*
 February 24, 2011 A capture-and-release program to study chimerism in callitrichids in the southeastern Peruvian Amazon. The Wildlife Conservation Society, at the National Centre for Biological Sciences, Bangalore, India

Conference Activity/Participation

- 2018 Steps for Making Primate Capture Safer, Round Table, Congress of the International Primatological Society, Nairobi, Kenya, August 20
- 2011 Primatología en el Perú: Historia, Estado Actual y Perspectivas, October 19-22

ABSTRACTS AND PROFESSIONAL PRESENTATIONS (*PRESENTER IN BOLD)

Robakis, E., **Watsa, M.**, Erkenwick, G. 2017. Group membership, individual identity, and sex encoded in *Saguinus imperator* long calls. American Association of Physical Anthropologists Annual Meeting, April 19-22

Watsa, M., and Erkenwick, G. Tamarin hips don't lie: modeling breeding status from reproductive morphology in the saddleback (*Saguinus weddelli*) and emperor (*S. imperator*) tamarin. 2016. International Primatological Society/American Society of Primatology Joint Meeting, August 21-27

Banda, K., Erkenwick, G., Watsa, M., and Stryker, G.A. 2016. An investigation of the effects of seasonality on the parasite richness of saddleback tamarins (*Saguinus weddelli*). International Primatological Society/American Society of Primatology Joint Meeting, August 21-27

Erkenwick, G., **Watsa, M.**, Estrada, G. R., Robakis, E., de Vries, M., and Anderson, J. A. 2016. An analysis of spatial associations by home range overlap and land-use densities between free-ranging groups of saddleback (*Saguinus weddelli*) and emperor (*S. imperator*) tamarins in Peru. International Primatological Society/American Society of Primatology Joint Meeting, August 21-27

Watsa, M., Erkenwick, G. and López Clinton, S. Reproductive status affects scent-marking behavior in a free-ranging group of saddleback tamarins (*Saguinus weddelli*) with multiple breeding females in Peru. 2016. International Primatological Society/American Society of Primatology Joint Meeting, August 21-27

Watsa, M., Erkenwick, G. A., Rasmussen, D. T. 2015. Age belies reproductive status in a wild population of *Saguinus fuscicollis* and *S. imperator* in southeastern. American Association of Physical Anthropologists Meetings, March 25-28.

Honap, T.P., Pfister, L-A, Erkenwick, G., Watsa, M., and Stone, A. 2015. Analysis of a nonhuman primate *Mycobacterium leprae* strain: implications for zoonotic transmission of mycobacterial pathogens. Society for Molecular Biology and Evolution Meetings, July 12-16

Honap, T. P., Housman, G., Erkenwick, G., Malukiewicz, J. Boere, V., Pereira, L. C. M., Grativol, A. D., Ruiz-Miranda, C. R., E Silva, I. D. O, Watsa, M., and Stone, A. C. 2015. Investigating the presence of mycobacterial pathogens in New World primates. American Association of Physical Anthropologists Meetings, March 25-28.

Robakis, E., Watsa, M., and Erkenwick, G. 2015. Preliminary Analysis: The Vocal Repertoire of the Emperor Tamarin (*Saguinus imperator*). 2015. American Association of Physical Anthropologists Meetings, March 25-28.

Watsa, M. A revision of field methods for capturing and marking free-ranging saddleback tamarins (*Saguinus fuscicollis*) and emperor tamarins (*Saguinus imperator*). 2012. International Primatological Society Meetings, August 13-17

Leite Pitman, R., Adams, D.B., Watsa, M. 2012. A lethal case of malignant lymphoma in a wild squirrel monkey (*Saimiri boliviensis*), in the Peruvian Amazon. American Journal of Primatology. 147(S54): 237-238.

Erkenwick, G.A., Watsa, M., Rheg, J. A., Pitman, R. L. 2012. Distribution and new sightings of Goeldi's monkey (*Callimico goeldii*) in Amazonian Peru. International Primatological Society Meetings, August 13-17

Rehg, J.A., Watsa, M., and Erkenwick, G. A. 2011. Demografía, ecología, y comportamiento de los calitriquideos al Centro de Investigación y Capacitación Rio Los Amigos en Madre de Dios, Peru. Primatología en el Perú: Historia, Estado Actual y Perspectivas, October 19-22

Adams, D.B., Rehg, J.A., Watsa, M. 2011. Observations of termitarium geophagy by *Pithecia irrorata*, monk saki monkeys, in Madre de Dios, Peru [abstract] American Journal of Primatology. 73 (S1): 18

Watsa, M., H. Pontzer. 2008. Does increased ranging effort result in fewer wasted menstrual cycles? [abstract] American Journal of Physical Anthropology. 135 (S46): 218

Watsa, M. 2007. Identification of polymorphic markers in the Rhesus macaque (*Macaca mulatta*) genome [abstract]. American Journal of Physical Anthropology. 132 (S44):245

Teaching Experience

Faculty, On-Campus Courses, Washington University in Saint Louis:

Primate Conservation Biology, Anthropological Genetics and Primate Biology

Faculty, Field Courses, Field Projects International and University College:
Longterm Primate Monitoring, Genomics in the Jungle, Primate Health and Communication, Primates and Predators, Tropical Biology and Primatology (India and Peru)

Teaching Assistant, Washington University in Saint Louis:
Primate Cognition, Topics in Health and Community, Anthropology and Public Health, Primate Biology, Anthropological Perspectives on the Foetus, The Biological Basis of Human Behavior, The AIDS Epidemic

Mentoring and Outreach

GRADUATE STUDENT THESIS COMMITTEES:

- 2018 Efstathia Robakis, Ph.D., Washington University in Saint Louis
- 2018 - Alexandra Sacco, M.A., Central Washington University
- 2017 Lana Kerker Oliver, Ph.D., Washington University in Saint Louis
- 2016 - Laís Moreira Pachecho, University of Calgary
- 2015 - Alice Poirier, Ph.D., Anglia Ruskin University
- 2015 Matthew Devries, M.Sc., University of Toronto
- 2014 - Krista Banda, M.A., Central Washington State University

UNDERGRADUATE STUDENTS (WASHINGTON UNIVERSITY IN SAINT LOUIS)

- 2017 Rebecca Chen, Feeding dominance in callitrichids
- 2016 Aashna Narang, Barcoding biodiversity in the Western Ghats of India
- 2016 Catherine Cumbe, Paternity analyses in callitrichine primates
- 2016 Ashley D'Costa, Paternity analyses in callitrichine primates
- 2016 Gary Yan, Paternity analyses in callitrichine primates
- 2016 Samantha Lopez Clinton, Opsin screening in wild callitrichine primates
- 2016 Kenny Chin, Paternity analyses in callitrichine primates
- 2014 Cassandra Mitchell, Chimerism in callitrichid primates (Co-supervised with Dr. Melin)
- 2014 Anna Villanyi, Dental-wear analysis to estimate age in free-ranging callitrichids
- 2009 Mentor to 129 research assistants from across 10 countries at Los Amigos via FPI

COMMUNITY INVOLVEMENT/OUTREACH

- 2013 - 2018 Trained students from Iran, Colombia, Brazil, Mexico and Peru through scholarships provided by Field Projects International
- 2013 - 2016 Written 25+ articles for Mongabay.org, an environmental news agency, to encourage science communication through conscientious and accurate reporting

2009 – 2010 Participated in Sábado Científicos or Science Saturdays at the Los Amigos Biological Field Station for children of gold miners in the region

MEDIA COVERAGE

- 2015 Andrew Mann. "No experience necessary: how studying tamarins led to an innovative research organization in the Amazon." Mongabay.org. January 15. <http://bit.ly/2einb1H>.
- 2015 Scientific advisor to the British Broadcasting Corporation on a documentary film of deception among primates, titled World's Sneakiest Animals
- 2013 Scientific advisor to the British Broadcasting Corporation on a documentary film of alloparenting behavior by *Saguinus imperator* in Peru, titled Monkey Planet

Related Professional Skills

Familiarity with software: R Statistical Software, Geospatial Information Systems, Geneious, Mega, Wordpress, basic html, Microsoft Office Suite including Microsoft Access and Sharepoint, ImageJ, RavenLite, , and OceanView

Languages

English: native language
Kannada: fluent
Spanish: near fluent – speak, read, write, and translate
Hindi, Tamil, and Malayalam: conversational

Professional Memberships/Affiliations

American Society of Primatologists
American Association for the Advancement of Science
International Primatological Society
Animal Behaviour Society

References

Dr. Jane Philips-Conroy
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Dr. Amanda Dawn Melin
Department of Anthropology & Archaeology
and Cumming School of Medicine
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