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PROFESSIONAL APPOINTMENTS

Smithsonian Tropical Research Institute (2025–present), Panamá
Director, STRI Center for Animal Behavior
striresearch.si.edu/laboratory-for-animal-behavior/

Smithsonian Tropical Research Institute (2009–present), Panamá
Staff Scientist, Smithsonian Bat Lab lead
Animal behavior, sensory and cognitive ecology, predator-prey interactions
stri.si.edu/scientist/rachel-page

McGill University (2014–present), Montreal, Canada
Adjunct Professor, Department of Biology, Faculty of Science and McGill-STRI Neotropical Environment Option (www.mcgill.ca/neo/)

Max Planck Institute for Ornithology (2008–2009), Seewiesen, Germany
Humboldt Postdoctoral Research Fellow
Comparative cognition in bats: Ecological correlates of learning and novelty response; Host: Björn Siemers

EDUCATION

University of Texas at Austin (2002–2008), Austin, Texas
Ph.D. in Ecology, Evolution & Behavior, Section of Integrative Biology, Advisor: Michael J. Ryan

Columbia University (1992–1996), New York, New York
B.A. in East Asian Languages and Cultures, Concentration in Anthropology

PUBLICATIONS

2025

141. Baier AL, Mortensen SA, Cohen G, Page RA, Madsen PT, Stidsholt L. 2025. Extreme hunting efficiency in a carnivorous bat. *Current Biology*. doi: 10.1016/j.cub.2025.10.023.

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137. James LS, O'Mara MT, Touchon JC, Ryan MJ, Bernal XE, Page RA. 2025. The ontogeny of predatory response behavior in an eavesdropping bat. *Proceedings of the Royal Society B*. 292: 20250450. doi: 10.1098/rspb.2025.0450.

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135. Muñoz-Romo M, Cohen G, Page RA. 2025. Actual folivory in bats: whole leaves as a formerly dismissed trophic item and a potential avenue for self-medication. *Behaviour*. doi: 10.1163/1568539X-bja10297.

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2024

132. Carter GG, Ripperger SP, Girbino V, Razik I, Dixon MM, Page RA, Hobson E. 2024. Long-term cooperative relationships among vampire bats are not strongly predicted by their initial interactions. *Annals of the New York Academy of Sciences*. doi: 10.1111/nyas.15241.

131. Chaverri G, Page RA. 2024. Food-associated calls in disc-winged bats. *Behavioral Ecology and Sociobiology*. 78: 119. doi: 10.1007/s00265-024-03534-8.

130. Cronin AD, Murphy MA, Ryan MJ, Taylor RC, Page RA, Hunter K. 2024. Rapid cross-generational changes in morphology, genetics, and mate choice following an extreme climatic event. *Evolutionary Ecology*. doi: 10.1007/s10682-024-10324-1.

129. Heckley AM, Tilley HB, Page RA, Klein BA, Yovel Y, Harding CD, Diebold CA. 2024. The effect of group size on sleep in the Neotropical bat, *Artibeus jamaicensis*. In special issue: Comparative perspectives of sleep and circadian rhythms. Ed J Lesku. *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology.* doi: 10.1002/jez.2860.

128. Kohles JE, Page RA, Wikelski M, Dechmann DKN. 2024. Severe seasonal shifts in insect ephemerality drive bat foraging effort. *Current Biology*. doi: 10.1016/j.cub.2024.05.074.

127. Sealey BA, James LS, Cohen G, Ryan MJ, Page RA. 2024. Rapid foraging risk-assessments in the Jamaican fruit-eating bat, *Artibeus jamaicensis*. *Animal Behaviour*. 216: 45-53.

2023

126. Amichai E, Boerma DB, Page, RA, Swartz S, ter Hofstede HM. 2023. By a whisker: the sensory role of vibrissae in hovering-flight in nectarivorous bats. *Proceedings of the Royal Society B*. 290: 20222085. doi: 10.1098/rspb.2022.2085.
125. Bernal XE, Leavell BC, Page RA. 2023. Assessing patterns of eavesdropper risk on sexual signals and the use of meta-analysis in behavioural ecology: a comment on: 'The exploitation of sexual signals by predators: a meta-analysis' White et al. (2022). *Proceedings of the Royal Society B*. 290: 20221866. doi: 10.1098/rspb.2022.1866.
124. Bernal XE, Page RA. 2022. Tactics of evasion: strategies used by signallers to deter eavesdropping enemies from exploiting communication systems. *Biological Reviews*. doi: 10.1111/brv.12904.
123. Dixon MM, Carter GG, Ryan MJ, Page RA. 2023. Spatial learning overshadows learning novel odors and sounds in both predatory and frugivorous bats. *Behavioral Ecology and Sociobiology*. arad001. doi: 10.1093/beheco/arad001.
122. Page RA, Dechmann DD, O'Mara MT, Tschapka M. 2023. Bat Island: A Rare Journey into the Hidden World of Tropical Bats. San Rafael, CA: Insight Editions. On Amazon.

2022

121. Bernal XE, Page RA. 2022. Editorial: How enemies shape communication systems: sensory strategies of prey to avoid eavesdropping predators and parasites. *Frontiers in Ecology and Evolution*. 10. 989763. doi: 10.3389/fevo.2022.989763.
120. Bernal XE, Page RA (editors). 2022. Edited volume: How enemies shape communication systems: sensory strategies of prey to avoid eavesdropping predators and parasites. *Frontiers in Ecology and Evolution*. 6391.
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116. James LS, Baier AL, Page RA, Clements P, Hunter KL, Taylor RC, Ryan MJ. 2022. Cross-modal facilitation of auditory discrimination in a frog. *Biology Letters*. 18: 20220098.

115. Kernan CE, Yiambilis AN, Searcy ZE, Pulica RM, Page RA, Caldwell MS. 2022. Mid-flight prey switching in the fringed-lipped bat (*Trachops cirrhosus*). *The Science of Nature*. 109: 43.

114. Larter L, Bernal XE, Page RA, Ryan MJ. 2022. Local competitive environment and male condition influence within-bout calling patterns in túngara frogs. *Bioacoustics*. 10.1080/09524622.2022.2070544.

113. Muñoz-Romo M, Cohen G, Page RA. 2022. Place your bets: a small prey faces large predators. *Behaviour*. 159: 989-997. doi: 10.1163/1568539X-bja10157. *Coverage by the New York Times*: https://www.nytimes.com/2022/04/13/science/bats-bullies-slap.html

112. Muñoz-Romo M, Page RA, Vilar EM, Dewynter M, Lim BK. 2022. Revealing hidden sexually dimorphic male traits in the little white-shouldered bat, *Ametrida centurio* Gray 1847 (Chiroptera: Phyllostomidae). *Mammalian Biology*. doi: 10.1007/s42991-022-00227-5.

111. Page RA, Dechmann DKN. 2022. Primer: Roost making in bats. *Current Biology*. R1252-R1259. doi: 10.1016/j.cub.2022.10.040.

2021

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106. Hiller T, Vollstädt MGR, Brändel SD, Page RA, Tschapka M. 2021. Bat–bat fly interactions in Central Panama: host traits relate to modularity in a highly specialized network. *Insect Conservation and Diversity*. doi: 10.1111/icad.12508.

105. James LS, Halfwerk W, Hunter KL, Page RA, Taylor RC, Wilson PS, Ryan MJ. 2021. Covariation among multimodal components in the túngara frog's courtship display. *The Journal of Experimental Biology.* 224. doi: 10.1242/jeb.241661.

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101. Taylor RC, Wilhite KO, Ludovici RJ, Mitchell KM, Halfwerk W, Page RA, Ryan MJ, Hunter KL. 2021. Complex sensory environments alter mate choice outcomes. *The Journal of Experimental Biology* 224: jeb233288. doi: 10.1242/jeb.233288.

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100. Brändel SD, Hiller T, Halczok TK, Kerth G, Page RA, Tschapka M. 2020. Consequences of fragmentation for Neotropical bats: The importance of the matrix. *Biological Conservation*. 252: 108792.
99. Brown BKG, Leffer L, Valverde Y, Toshkova N, Nystrom J, Page RA, Carter GG. 2020. Do bats use guano and urine stains to find new roosts? Tests with three group-living bats. *Royal Society Open Science*. 7: 201055. doi: 10.1098/rsos.201055.
98. Carter GG, Farine DR, Crisp RJ, Vrtilek JK, Ripperger SP, Page RA. 2020. Development of new food-sharing relationships in vampire bats. *Current Biology*. 30: 1275-1279. e1273. doi: 10.1016/j.cub.2020.01.055.
97. Flores V, Carter GG, Halczok TK, Kerth G, Page RA. 2020. Social structure and relatedness in the fringe-lipped bat (*Trachops cirrhosus*). *Royal Society Open Science*. 7: 192256. doi: 10.1098/rsos.192256.
96. Geipel I[*], Kernan CE[*], Litterer AS, Carter GG, Page RA[#], ter Hofstede HM[#]. [*]Co-first authors; [#]Co-last authors. 2020. Predation risks of signalling and searching: bats prefer moving katydids. *Biology Letters*. 16: 20190837. doi: 0.1098/rsbl.2019.0837.
95. Hemingway C*, Dixon MM*, Page RA. 2020. The omnivore's dilemma: the paradox of the generalist predators. In: Phyllostomid Bats, a Unique Mammalian Radiation (editors: TH Fleming, L Davalos, M Mello). University of Chicago Press. *Equal contribution.
94. Hemingway CT, Ryan MJ, Page RA. 2020. State-dependent learning influences foraging behaviour in an acoustic predator. *Animal Behaviour*. 163: 33-38.
93. Hermanns K, Marklewitz M, Zirkel F, Overheul GJ, Page RA, Loaiza JR, Drosten C, van Rij RP, Junglen S. 2020. Agua Salud alphavirus defines a novel lineage of insect-specific alphaviruses discovered in the New World. *Journal of General Virology.* 101: 96-104.
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91. Jones PL, Divoll TJ, Dixon MM, Aparicio D, Cohen G, Mueller U, Ryan MJ, Page RA. 2020. Sensory ecology of the frog-eating bat, *Trachops cirrhosus*, from DNA metabarcoding and behavior. *Behavioral Ecology*. 31: 1420–1428. doi: 10.1093/beheco/araa100.
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89. Muñoz-Romo M, Flores V, Ramoni-Perazzi P, Page RA. 2020. The crust of a male: does size matter when females are fertile? *Behavioral Ecology and Sociobiology*. 74: 151. doi: 10.1007/s00265-020-02914-0.

88. Page RA, Bernal XE. 2020. The challenge of detecting prey: Private and social information use in predatory bats. Invited review in 'The role of sensory ecology and cognition in social decisions' (eds. K Schneeberger, M Taborsky). *Functional Ecology*. 34: 344-363. doi: 10.1111/1365-2435.13439.

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86. Ripperger SP, Carter GG, Page RA, Duda N, Koelpin A, Weigel R, Hartmann M, Nowak T, Thielecke J, Schadhauser M, Robert J, Herbst S, Meyer-Wegener K, Wägemann P, Schröder-Preikschat W, Cassens B, Kapitza R, Dressler F, Mayer F. 2020. Thinking small: Next-generation sensor networks close the size gap in vertebrate biologging. *PLOS Biology.* 18: e3000655.

85. Stockmaier S, Bolnick DI, Page RA, Carter GG. 2020. Sickness effects on social interactions depend on the type of behaviour and relationship. *Journal of Animal Ecology*. 89: 1387-1394. doi: 10.1111/1365-2656.13193.

84. Stockmaier S, Bolnick DI, Page RA, Josic D, Carter GG. 2020. Immune-challenged vampire bats produce fewer contact calls. *Biology Letters* 16: 20200272. doi: 10.1098/rsbl.2020.0272.

83. Szczygieł H, Page RA. 2020. When the hunter becomes the hunted: foraging bat attacked by pit-viper at frog chorus. *Ecology*. The Scientific Naturalist. e03111. doi: 10.1002/ecy.3111.

82. ter Hofstede HM, Symes LB, Martinson SJ, Robillard T, Faure P, Madhusudhana S, Page RA. 2020. Calling songs of Neotropical katydids (Orthoptera, Tettigoniidae) from Panama. *Journal of Orthoptera Research*. 29: 137-201. doi: 10.3897/jor.29.46371.

81. Velilla E, Muñoz M, Quiroga N, Symes L, ter Hofstede HM, Page RA, Simon R, Ellers J, Halfwerk W. 2020. Gone with the wind: Is signal timing in a neotropical katydid an adaptive response to variation in wind-induced vibratory noise? *Behavioral Ecology and Sociobiology.* 74: 1-11. doi: 10.1007/s00265-020-02842-z.

2019

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78. Dixon MM, Hulgard K, Ratcliffe JM*, Page RA*. 2019. Habituation as an indicator of ecological relevance: Insights into the foraging ecology of a frog-eating bat. *Behavioral Ecology*

and Sociobiology. *Ratcliffe and Page contributed equally to this work. 73: 101. doi: 10.1007/s00265-019-2700-1.

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2018

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13. Page RA, Schnelle T, Kalko EKV, Bunge T, Bernal XE. 2012. Sequential assessment of prey through the use of multiple sensory cues by an eavesdropping bat. *Naturwissenschaften* 99: 505-509.
12. Page RA*, von Merten S*, Siemers BM. 2012. Associative memory or algorithmic search: a comparative study on learning strategies of bats and shrews. *Animal Cognition* 15: 495-504. *Equal contribution.

2011

11. Akre, KL, Farris, HE, Lea, AM, Page, RA, Ryan, MJ. 2011. Signal perception in frogs and bats and the evolution of mating signals. *Science* 333: 751-752.
10. Jones, PL, Page, RA, Hartbauer, M, Siemers, BM. 2011. Behavioral evidence for eavesdropping on prey song in two Palearctic sibling bat species. *Behavioral Ecology and Sociobiology* 65: 333-340.

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9. Bernal, XE, Page, RA, Ryan, MJ, Argo, TF, Wilson, PS. 2009. Acoustic radiation patterns of mating calls of the túngara frog (*Physalaemus pustulosus*): implications for multiple receivers. *Journal of the Acoustical Society of America* 126: 2757-2767.
8. Siemers, BM, Page, RA. 2009. Behavioral studies of bats in captivity: methodology, training, and experimental design. In: Ecological and Behavioral Methods for the Study of Bats (ed. TH Kunz & S. Parsons), Baltimore: Johns Hopkins University Press. pp. 373-392.

2008 and earlier

7. Page, RA, Ryan, MJ. 2008. The effect of signal complexity on localization performance in bats that localize frog calls. *Animal Behaviour* 76: 761-769.
6. Bernal, XE, Page, RA, Rand, AS, Ryan, MJ. 2007. Cues for eavesdroppers: do frog calls indicate prey density and quality? *The American Naturalist* 169: 409-415.
5. Page, RA. 2007. Prey-predator communication: for your sensors only. Dispatch for *Current Biology* 17: R965-R966.
4. Page, RA, MJ. Ryan. 2006. Social transmission of novel foraging behavior in bats: frog calls and their referents. *Current Biology* 16: 1201-1205.
3. Page, RA, Bernal, XE. 2006. Túngara frogs. Quick guide for *Current Biology* 16: R979-980.
2. Page, RA, Ryan, MJ. 2005. Flexibility in assessment of prey cues: frog-eating bats and frog calls. *Proceedings of the Royal Society Series B* 272: 841-847.
1. Gabor, CR, Page, RA. 2003. Female preference for large males in sailfin mollies, *Poecilia latipinna*: the importance of predation pressure and reproductive status. *Acta Ethologica* 6: 7-12.

RESEARCH GRANTS, AWARDS, AND FELLOWSHIPS

Smithsonian Institution Office of Science & Research Combined Call. The role of chemical signaling and individual chemical signatures in bat reproductive success. PI: Rachel Page. Co-PI: Mariana Muñoz-Romo. April 2025 to July 2025: $58,979.

American Society of Naturalists (ASN) Distinguished Naturalist Award. 2024. This award is given to an active investigator in mid-career who has made significant contributions to the knowledge of a particular ecosystem or group of organisms. The award consists of a work of art and an honorarium of $2,000 (https://www.amnat.org/awards.html#distinguished).

Smithsonian Scholarly Studies. Shedding light on the social, sensory, and cognitive ecology of collective movement in nature. PIs: Gloriana Chaverri, Rachel Page. CoPIs: Adriana Maldonado-Chaparro, Inga Geipel. One year (March 2024-March 2025): $65,725.

Smithsonian Secretary's Research Prize to Rachel Page and Ximena Bernal. 2024. For the edited volume: *How enemies shape communication systems: sensory strategies of prey to avoid eavesdropping predators and parasites*. $2,000.

Human Frontier Science Program. SELFCURE: Evolutionary and cognitive processes underlying self-medication of immune-challenged bats. PIs: Daniel Becker (University of Oklahoma, USA); Ralph Simon (Nuremberg Zoo, Germany); Rachel Page (STRI, Panama). Three years: Sept 2023-Aug 2026. $1,200,000; 1/3 directly to STRI. $133,333 per year for 3 years = $400,000 to STRI in total.

Scientists for Scientists Initiative, Human Frontier Science Program and the European Commission. Initiative supporting Ukrainian scientists displaced or otherwise affected by the war in their country to join active Human Frontier Science Program projects. Received support for a team of four Ukrainian bat scientists to join the SELFCURE project (Sept 2023-Aug 2026): Kseniia Kravchenko, Valeriia Bogodist, Maryna Yerofeieva, and Alona Shulenko. $273,000.

Smithsonian Scholarly Studies, Bond Endowment. Unlocking secrets of longevity: Factors underlying variation in aging in a Neotropical bat. PI: Rachel Page, co-PI: Dina Dechmann (Max Planck Institute of Animal Behavior). Jan 2023-Jan 2024. $52,350

In recognition of '*commitment and passion within the Institution organizing the STRI-IDEA (Inclusión, Diversidad, Equidad y Acceso / Inclusion, Diversity, Equity and Access) group and hard work and scientifical contributions to our mission in Panama*' I received three awards from the Smithsonian Institution in 2022:

- **Smithsonian Institution Unsung Hero Award** (2022)
- **Smithsonian Institution Special Act Award** (2022)
- **Smithsonian Secretary's Special Recognition Award** (2022)

Scholarly Studies Grant, Smithsonian Institution. Collateral damage and beyond: The implications of eavesdropping predators and parasites for signalers calling in mixed-species choruses. PI: Rachel Page, co-PIs: Michael Caldwell (Gettysburg College), Alex Trillo (Gettysburg College), Hannah ter Hofstede (Dartmouth College). April 2022-April 2023. $48,250.

National Science Foundation, IOS: Collaborative Research: RUI: Cognitive overload versus enhanced performance: Is more information always better?. PI: Ryan Taylor (Salisbury University). Co-PIs: Michael J. Ryan (University of Texas at Austin), Kimberly Hunter (Salisbury University). Co-I: Rachel Page (STRI). Four years: Sept 2019-Aug 2023. Total: $1,855,813.

Scholarly Studies Grant, Smithsonian Institution. The evolutionary dance between eavesdropping predators and their sexually signaling prey: Testing the role of predator sensory limitations in the evolution of 'private' channels in prey communication. PI: Rachel Page. Co-PIs: Hannah ter Hofstede (Dartmouth College), Inga Geipel (STRI), Ciara Kernan (Dartmouth College). One year: Jan 2020-Jan 2021. $37,220.

American Women's History Initiative Programming and Education Fund Award, Smithsonian Institution. How to Be a Scientist: Smithsonian Women as Career Role Models. PI: Darren Milligan. Co-PIs: Cody Coltharp, Pino Monaco, Michelle K. Smith, Rachel Page. One year: Jan 2019-Dec 2020. $18,300.

Scholarly Studies Grant, Smithsonian Institution: Multimodal signal evolution: Is more information always better? PI: Rachel Page (STRI). Co-PIs: Ryan Taylor (Salisbury University), Kim Hunter (Salisbury University), Mike Ryan (University of Texas at Austin). One year: 2017-2018. $46,240.

Wildlife Acoustics Scientific Product Grant: Effectiveness of artificial roosts for Neotropical bat species. PI: Michael Schöner (University of Greifswald). Co-PIs: Gloriana Chaverri (University of Costa Rica), Rachel Page (STRI). Two years: Oct 2017-Aug 2019. $4921.

U.S.–Israel Binational Science Foundation (BSF): The benefits of social sleeping: behavior and neuroimaging of sleep within a group. PIs: Yossi Yovel (Tel-Aviv University), Rachel Page (STRI), Barrett Klein (University of Wisconsin, La Crosse). Four years: Sept 2017-Sept 2021. $220,000.

National Geographic Society Research Grant (WW-057R-17): Food-sharing vampire bats: manipulating and tracking cooperative relationships in the lab and field. PI: Gerry Carter. Co-PIs: Simon Ripperger, Rachel Page, Frieder Mayer. One year: 2017-2018. $19,275.

Scholarly Studies Grant, Smithsonian Institution: Tracking and manipulating cooperative relationships in vampire bats. PI: Rachel Page, Co-PIs: Gerry Carter, Simon Ripperger, Frieder Mayer. One year: 2016-2017. $54,200.

Smithsonian Competitive Grants Program for Science, Pell Grant: Improved learning as a shared functional benefit of sleep. PI: Rachel Page. Co-PIs: Bill Wcislo, Barrett Klein. One year: 2014-2016. $26,043.

Human Frontier Science Program: Multimodal sensing in the natural environment. PI: Cindy Moss. Co-PIs: Yossi Yovel, John Hallam, Annemarie Surlykke, Rachel Page. Three years: 2013-2016. $1,350,000.

National Science Foundation: Multimodal communication, mate choice and predation risk. PIs: Mike Ryan, Ryan Taylor. Co-PI: Rachel Page. Five years: 2011-2016. $1,174,954.

National Geographic Society Research Grant (9794-15): Acoustic-GPS tracking of frog-eating bats to reveal foraging flexibility in a changing world. PI: Yossi Yovel. Co-PIs: Rachel Page and Gerry Carter. One year: April 2016-April 2017. $25,000.

Smithsonian Institution Barcode Network Opportunity: Barcoding Central American bats and their ectoparasites including a new type of acoustic voucher. PI: Rachel Page. Co-PIs: Matt Miller, Thomas Sattler, Marco Tschapka, Thomas Hiller, Jose Loaiza Rodriguez. One year: 2013-2014. $14,283.

Alexander von Humboldt Postdoctoral Research Fellowship: 2008-2009

Smithsonian Institute Postdoctoral Fellowship: 2008-2010 (declined)

Smithsonian Institute Predoctoral Fellowship: 2007-2008

P.E.O. Scholar Award: 2007-2008

National Science Foundation Doctoral Dissertation Improvement Grant: 2006-2008

American Association of University Women Dissertation Fellowship: 2006-2007

National Science Foundation Graduate Research Fellowship: 2003-2006.

American Society of Mammalogists, Elisabeth Horner Award for best research proposal: 2005.

Zoology Scholarship Endowment for Excellence, UT Austin: 2004.

Center for Perceptual Systems Travel Grant, UT Austin: Summer 2007, 2004, 2003.

Dorothea Bennett Memorial Graduate Fellowship, UT Austin: 2003.

American Museum of Natural History, Theodore Roosevelt Memorial Fund: 2003.

Smithsonian Tropical Research Institute Short-Term Fellowship: Spring 2003; Spring 2002.

Terrell H. Hamilton Endowed Graduate Fellowship Fund: 2002.

Dean's Excellence Award, UT Austin: 2002.

CONFERENCES AND INVITED TALKS

Bat sensory and cognitive ecology: Tales from a frog-eating bat. Page RA. SERC Science Seminar Series. Smithsonian Environmental Research Center. Edgewater, Maryland. Feb 28, 2026.

Bat sensory and cognitive ecology: Tales from a frog-eating bat. Page RA. SCBI Science Seminar. Smithsonian Conservation Biology Institute. Front Royal, Virginia. Feb 13, 2026.

Sensory and cognitive ecology: Insights from a frog-eating bat. Page RA. Invited seminar to the Department of Biology at the University of Oklahoma. Dec 4, 2025.

Crusty smelly forearms: A collaborative approach to the study of sexual signaling in a frog-eating bat. Page RA, Flores V, Cabezón N, Sánchez A, Cohen G, Rodríguez C, Fernández-Marín H, Muñoz-Romo M. Invited talk in the 'International collaborations in animal behavior: The case of Latin America' symposium organized by Ignacio Escalante, Ximena Bernal and Adriana Maldonado-Chaparro for the Animal Behavior Society conference. Baltimore, Maryland. July 8 - 12, 2025.

Emergent properties of signal exploitation by eavesdropping enemies. Bernal XE and Page RA. Invited talk in the 'The golden age of animal communication networks' symposium organized by David Logue for the Animal Behavior Society conference. London, Ontario, Canada. June 26-29, 2024.

The past, present, and future of bat research on Barro Colorado Island. Page RA. Smithsonian Tropical Research Institute, BCI Centennial Science Symposium. Gamboa Rainforest Resort, Panama. June 19, 2024.

Cognitive constraints, foraging flexibility, and rationality in decision-making: Insights from a frog-eating bat. Page RA. Invited seminar for the Organismal Biology Seminar Series. Biology Department at McGill University, Québec, Montreal, Canada. March 28, 2024.

Whisper in my pinna: Cognitive constraints, foraging flexibility, and decision-making in an eavesdropping bat. Page RA. Invited talk at the Max Planck Institute of Animal Behavior. Konstanz, Germany. January 26, 2024.

Bat Island – A photographic journey covering 100 years of bat research on Barro Colorado Island. Page RA, Dechmann DKN, O'Mara MD, Tschapka M, Ziegler C. Smithsonian webinar. December 13, 2023.

Eavesdroppers and eavesdroppees. Bernal XE, Page RA. Birthday Symposium for Michael J. Ryan. University of Texas at Austin, USA. November 4, 2023.

Frog-eating bats and prey mating calls: efficient eavesdroppers, evasive advertisers, and multimodal cocktails. Page RA. 50th North American Symposium for Bat Research / 19th International Bat Research Conference. Austin, Texas, USA. August 7-12, 2022.

Efficient eavesdroppers, evasive advertisers, and multimodal cocktails. Page RA. Animal Behavior Society. San Jose, Costa Rica. July 20-23, 2022.

Cognitive constraints, flexibility and decision-making: Insights from a frog-eating bat. Page RA. Invited speaker in the Ecology and Biodiversity seminar series at the University of Hong Kong. Sept 10, 2021.

Foraging flexibility in the Neotropical frog-eating bat, *Trachops cirrhosus*. Page RA. Invited seminar at Salford University, UK. March 30, 2021.

Cognitive constraints and decision-making: Insights from an eavesdropping bat. Page RA. Invited seminar at the University of Bristol, UK. Dec 7, 2020.

Efficient eavesdroppers, evasive advertisers, and multimodal cocktails: The sensory and cognitive ecology of a frog-eating bat. Page RA. Tupper talk, Smithsonian Tropical Research Institute, Panamá. June 5, 2020.

Ecology and behavior of bats: the link between bats' immune systems, their longevity and the transmission of zoonotic disease. Page RA. STRI Zoom Seminar Series. May 20, 2020.

Sleep in bats: Moving to the tropics. Invited talk in the symposium: Sleep Across Taxa. Page RA. Sleep Conference, Tel Aviv University, Israel. May 23-25, 2019.

The sensory and cognitive ecology of bat foraging behavior: A tribute to Alexander von Humboldt. Page RA. 2019 Von Humboldt Kolleg. Universidad del Norte, Barranquilla, Colombia. March 19, 2019.

The ecology and evolution of information acquisition by predatory bats. Page RA, Bernal XE. 48th North American Symposium for Bat Research. Puerto Vallarta, Mexico. Oct 24-27, 2018.

How enemies shape communication systems. Page RA, Bernal XE. Introductory symposium talk at the 55th Annual Conference of the Animal Behavior Society. University of Wisconsin, Milwaukee, Wisconsin. Aug 2-6, 2018.

Sensory strategies of prey to avoid eavesdropping predators and parasites. Page RA, Bernal XE. Behavior Seminar Series. Tupper Center, Smithsonian Tropical Research Institute. July 3, 2018.

The cognitive ecology of predator eavesdropping behavior: Learning and memory in a frog-eating bat. Page RA. Invited seminar in the Department of Ecology, Environment and Evolution, School of Life Sciences, La Trobe University, Melbourne, Australia. September 20, 2017.

Learning, flexibility and memory: Cognitive ecology of an eavesdropping bat. Page RA. Zoology Department, University of Otago. Dunedin, New Zealand. August 11, 2017.

The costs and benefits of sexual signaling: Learning, memory and signal detection in an eavesdropping bat. Page RA. Invited seminar, Head of School Seminar Series, Queensland University of Technology (QUT). Brisbane, Australia. July 24, 2017.

Social eavesdropping in bats: When, where, why and how? Page RA, Ryan MJ, Jones PL. 45th Meeting of the Australasian Society for the Study of Animal Behaviour. Mooroolbark, Victoria, Australia. July 19-22, 2017.

Efficient eavesdroppers, evasive advertisers, and multimodal cocktails: The sensory and cognitive ecology of a frog-eating bat. Page RA. Invited seminar, School of Biological Sciences, University of Auckland. Auckland, New Zealand. May 15, 2017.

Collateral damage or shadow of safety? Effect of predatory bats and parasitic midges on frog calling. Page RA, Bernal XE, Caldwell MS, Halfwerk WH, Wessel MO, Trillo PA. North American Symposium for Bat Research. San Antonio, TX. Oct 12-15, 2016.

Eavesdropping predators and sexual signals: Bat exploitation of frog calls. Page RA. Harvard Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. August 1, 2016.

Conservation in the Neotropics: Challenges and triumphs. Page RA. Invited lecture in International Conservation course at the University of Greifswald, Germany. November 23, 2015.

Foraging flexibility in the Neotropical frog-eating bat, *Trachops cirrhosus*: Behavioral metrics for genetic correlation. Page RA. Invited talk at the University of Greifswald, Germany. November 18, 2015.

Water-borne vibrations and dynamically inflating vocal sacs: a multimodal cocktail for frog-eating bats. Page RA, Taylor R, Ryan MJ, Halfwerk W. North American Symposium for Bat Research. Monterey, California. October 28-31, 2015.

Costs and benefits of multimodal signaling in environmental complexity. Page RA, Taylor R, Ryan MJ, Halfwerk W. 52nd Annual Conference of the Animal Behavior Society. Anchorage, Alaska. June 10-14, 2015.

La flexibilidad, el aprendizaje y la memoria: Cuentos de un murciélago que come ranas. Page RA. Smithsonian Tropical Research Institute, Panama. Charla Pública (public outreach talk in Spanish). May 2014.

The dark side of the túngara frog call: 30 years of research on frog-eating bats. Page RA. Invited speaker for symposium: Brain, behavior and evolution: three decades of scientific exploration. University of Texas at Austin. January 17, 2014.

Predator use of prey cues: Sensory and cognitive ecology of a frog-eating bat. Page RA. Invited departmental seminar for consideration as adjunct faculty. McGill University, Montreal, Canada. December 5, 2013.

Of bats, frogs and flies: Cognitive and sensory insights from a communication network. Page RA. Gamboa Seminar, Smithsonian Tropical Research Institute. December 2, 2013.

Neotropical mosaic: an Eli Kalko approach to understanding sensory niche partitioning, species coexistence, and eavesdropping in Phyllostomid bats. Page RA, Falk J, Jones PL, ter Hofstede H, Dixon M, Faure PA, Kalko EKV. Invited talk in the Memorial Symposium, Two curious explorers: the work of Elisabeth Kalko and Björn Siemers. 16th International Bat Research Conference, San Jose, Costa Rica, August 11-15, 2013.

Learning, decision-making, and flexibility in the fringe-lipped bat, *Trachops cirrhosus*. Page RA, O'Mara, MT, Jones, PL. Invited talk in the Behavioral Ecology Symposium. 16th International Bat Research Conference, San Jose, Costa Rica, August 11-15, 2013.

Sensory perception in frog-eating bats – and other recent projects with Elisabeth Kalko. Page RA. Elisabeth Kalko Memorial Symposium, Tupper Auditorium, Smithsonian Tropical Research Institute, August 20-21, 2012.

Psychoacoustics, ratio-comparisons, sex and dinner: stimulus perception in frogs and bats. Page RA, Akre, KL, Farris, HE, Lea, AM, Ryan, MJ. 41st North American Symposium on Bat Research, Toronto, Canada, October 26-29, 2011.

The acoustic universe of a frog-eating bat. Page RA, Ryan, MJ. 13th International Society for Behavioral Ecology, Perth, Australia, September 26-October 1, 2010.

Bat-frog interactions: Learning, categorization and memory. Page RA. Invited talk in the Adaptations and Evolutionary Ecology Symposium. 15th International Bat Research Conference, Prague, Czech Republic, August 22-27, 2010.

Social transmission of novel foraging behavior in bats: Frog calls and their referents. Page RA. Invited talk for Interdisciplinary Symposium and Workshop on Copying, Zurich, Switzerland. Host: Dr. Gerald Kerth. February 5-7, 2009.

Flexibility, learning and memory in foraging behavior. Page RA. German Bat Research Conference (Treffen der Fledermausforscher). Frauenchiemsee, Germany. January 22-24, 2009.

Learning and flexibility in foraging: Bats, frogs and shrews. Page RA. Max Planck Institute for Ornithology, Seewiesen, Germany. November 25, 2008.

Flexibility in sensory strategy use during foraging in the fringe-lipped bat, *Trachops cirrhosus.* Page RA, Kalko EKV, Ryan MJ. Invited talk in the Adaptability and Functional Significance of Echolocation Symposium. 14th International Bat Research Conference, Mérida, Mexico, August 19-23, 2007.

Foraging flexibility in the frog-eating bat, *Trachops cirrhosus*. Page RA. Allee Competition. Animal Behavior Society Meeting, Burlington, VT, July 21-25, 2007.

Predator use of prey cues: Learning and flexibility in a frog-eating bat. Page RA. Invited talk at the Max Planck Institute for Ornithology, Seewiesen, Germany. Host: Dr. Björn Siemers. March 16, 2007.

Predator use of prey cues: Frog-eating bats and frog calls. Page RA. Invited talk for the Acoustics Seminar Series, Engineering Department, University of Texas at Austin. Host: Dr. Preston Wilson. November 10, 2006.

Predator use of prey cues: Frog-eating bats and frog calls. Page RA. Biology Department, Texas A&M University. Host: Dr. Michael Smotherman. November 6, 2006.

Sensory mode switching in prey detection by the frog-eating bat, *Trachops cirrhosus*. Page RA. 35th Annual North American Symposium on Bat Research, Wilmington, NC, October 18-21, 2006.

Predator use of prey cues: Frog-eating bats and frog calls. Page RA. Invited talk at the University of Tübingen, Germany. Host: Dr. Björn Siemers and Dr. Hans-Ulrich Schnitzler. February 2, 2006.

Whisper in my pinna: Social learning, persistence, and memory in the frog-eating bat, *Trachops cirrhosus*. Page RA. 35th Annual North American Symposium on Bat Research, Sacramento, CA, October 19-22, 2005.

Flexibility in foraging: Tales of a frog-eating bat. Page RA. Bambi seminar, Smithsonian Tropical Research Institute, Barro Colorado Island, Panama, May 5, 2005.

Frogs, toads, or Bob Marley? Flexibility and learning in the frog-eating bat, *Trachops cirrhosus*. Page RA. 34th Annual North American Symposium on Bat Research, Salt Lake City, UT, October 27-30, 2004.

Behavioral flexibility in the frog-eating bat, *Trachops cirrhosus*. Page RA. Invited talk at the University of Ulm, Germany. Host: Dr. Elisabeth Kalko. August 31, 2004.

Foraging flexibility and response to prey mating calls in the frog-eating bat, *Trachops cirrhosus.* Page RA, Ryan MJ. Invited talk in Sensory Ecology in Bat Foraging Behaviour Symposium, 13th International Bat Research Conference, Mikolajki, Poland, August 23-27, 2004.

Behavioral flexibility in the frog-eating bat, *Trachops cirrhosus*. Page RA. Smithsonian Tropical Research Institute Science Symposium, Panama City, Panama, July 8-9, 2004.

Eavesdroppers are listening: Convergent acoustic preferences in frogs, bats, and flies. Page RA, Bernal XE. Invited talk in Sexual Communication in Túngara Frogs Symposium, 41st Animal Behavior Society Meeting, Oaxaca, Mexico, June 13-16, 2004.

Prey preferences and localization performance: Behavioral flexibility in a frog-eating bat. Page RA. Tupper talk, Smithsonian Tropical Research Institute, Panama, June 2003.

TEACHING, MENTORSHIP AND CONSERVATION

Masters and PhD advisor (2009 to present). Smithsonian Tropical Research Institute, Panamá. Since my start as a STRI staff scientist, I have co-advised thesis research for numerous Masters and PhD students. I host students in the field; advise on experimental design, data analysis and manuscript writing; participate in committee meetings and evaluate thesis defenses. Institutes I have partnered with include:

- *University of Texas at Austin, McGill University, Purdue University, University of Chicago, Max Plank Institute of Animal Behavior, University of Costa Rica*

Field course teacher (2009 to present). Smithsonian Tropical Research Institute, Panamá. My team and I give lectures and lead bat components for the many graduate and undergraduate field courses that come through STRI each year. For example:

- *McGill-STRI Neotropical Environment Option (NEO)* field course, part of STRI's partnership with McGill University (www.mcgill.ca/neo/).
- *STRI's Gigante Course*, a course designed for Latin American students to gain experience in tropical research (stri.si.edu/academic-programs/programs-and-field-courses).

Intern mentor (2009-present). Smithsonian Tropical Research Institute, Panama. I host numerous interns in my lab, guiding them through the basics of experimental design and tropical field biology, often mentoring through graduate school applications and the publication of their first manuscript. Since my arrival at STRI, I have hosted over 75 interns, the majority from underrepresented groups (women and Latin American scientists).

CONSERVATION AND OUTREACH

In addition to the activities listed below, many more can be found on our **RESOURCES FOR KIDS** page (http://www.noseleaf.org/resources-for-kids.html), as well as on our **BAT STORIES** page (http://www.noseleaf.org/lab-stories.html).

Bat Conservation (2014 to present). I serve on the board of directors for Merlin Tuttle's Bat Conservation, an organization dedicated to bat conservation worldwide.

Bat Night (2015 to present). Every month, our lab hosts an outreach event, Bat Night (www.noseleaf.org/bat-night.html), sharing with the public the wonder and fascination of Neotropical bats. Visitors join us mistnetting in the forest understory where they see the diversity of bat species up close. We discuss sensory and morphological adaptations for distinct foraging niches, and the critical role bats play in maintaining balanced, healthy ecosystems. Bat Night, a fully bilingual event conducted in both Spanish and English, has become extremely popular in Panamá, with large numbers of visitors attending each month, of all age ranges and walks of life. Bat Night has been featured on Panamanian national television, and has been written up by the Huffington Post as one of the top ten ways to discover wildlife in Panamá.

PEER REVIEWER FOR

- Acta Chiropterologica
- Animal Behaviour
- Behavioral Ecology
- Behavioral Ecology and Sociobiology
- Behavioural Processes
- Biological Reviews
- Biology Letters
- Biotropica
- Current Biology
- Ecology
- Ethology
- Evolutionary Ecology
- Frontiers in Ecology and Evolution
- Functional Ecology
- Journal of Experimental Biology
- Journal of Mammalogy
- Journal of the Acoustical Society of America
- Mammalia
- Nature
- PLOS One
- PNAS
- Proceedings of the Royal Society, Series B
- Science
- Science Advances
- The American Naturalist