

CHARLES L. NUNN

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CURRENT POSITION

Professor, Department of Evolutionary Anthropology and The Duke Global Health Institute, Duke University. July 2013 to present.

Director, Triangle Center for Evolutionary Medicine (TriCEM), November 2014 to present.

PREVIOUS ACADEMIC APPOINTMENTS

Associate Professor, Department of Human Evolutionary Biology, Harvard University. July 2008 to June 2013.

Research Scientist (C3 “Group Leader”), Department of Primatology, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany, 2005-2008.

Assistant Adjunct Professor, Department of Integrative Biology, University of California Berkeley, 2004-2008.

Postdoctoral Researcher, Section of Evolution and Ecology, University of California Davis, 2001-2004. Mentors: Michael Sanderson and Monique Borgerhoff Mulder

Postdoctoral Research Associate, Department of Biology, University of Virginia, 1999-2001. Mentors: Janis Antonovics and John Gittleman

EDUCATION

Ph.D., Duke University, Department of Biological Anthropology and Anatomy, 1993-1999
Advisor: Carel van Schaik

Postbaccalaureate Student, Biology and Anthropology, University of Washington, 1992

B.A., Dartmouth College, 1987-1991

HONORS

David and Janet Vaughan Brooks Award (2019-20 academic year, Duke University).

Gosnell Family Professorship in Global Health (Duke Global Health, 2019 to present).

Duke Global Health Undergraduate Professor of the Year (2018-19, student-nominated).

Langford Lectureship, Duke University (Provost's Office and Committee on Appointments and Promotions).

Burke Fellowship, Harvard Initiative in Global Health, 2010-2012. Funding to develop an undergraduate course in "Primate Disease Ecology and Evolution" (HEB 1333).

Finalist for a Levenson Prize for Teaching (Student Nominated), Harvard University, 2010-2011.

J.H. Crook "Named Instructorship," Duke University, 1998-1999, University-wide competition. Course Title: The Comparative Method in Animal Behavior (1 year stipend).

Sherwood L. Washburn Prize Student Competition, American Association of Physical Anthropologists. Salt Lake City, UT, 1998 (\$100).

RESEARCH SUPPORT

Current Research Support:

NIH-NSF-NIFA R01 in Ecology and Evolution of Infectious Disease multi-agency program, "The Impact of Land Use Change on Transmission Potential Networks and Disease Spread in Rural Madagascar" (1R01-TW011493-01, PI, with Randall Kramer, James Moody, Peter Mucha, and Hillary Young as co-PIs, \$2,496,912).

Duke Collaboratory, "Identifying Infectious Disease Transmission Pathways for Improved Population Health and Pandemic Preparedness" (PI, with Randall Kramer, Linfa Wang, and James Moody, \$228,206).

Duke Bass Connections Program in Global Health, "Socio-Ecological Networks and Zoonotic Disease in Rural Madagascar" (Herrera, J., **C.L. Nunn**, and R. Kramer, \$25,000)

Past Research Support:

National Science Foundation (DEB-1556288), "Collaborative Research: The Role of Watering Holes in Concentrating Parasites in a Changing Climate" (PIs: H. Young and **C.L. Nunn**, \$150,000, May 1, 2016 to April 30, 2019).

National Science Foundation (BCS-1613482), "Doctoral Dissertation Research: Drought, Dehydration, and Disease: Water as a Selective Pressure in the Evolution of Primate Behavior" (PIs: C. Amoroso and **C.L. Nunn**, \$31,682).

Duke Bass Connections Program in Global Health, "How do people affect zoonotic disease dynamics in Madagascar?" (Herrera, J., **C.L. Nunn**, and R. Kramer, \$25,000)

National Science Foundation (BCS-1355902, Biological Anthropology), "Using Primate Comparative Biology to Understand Human Uniqueness" (PI: **C.L. Nunn**, \$234,495, April 1, 2014 to March 31, 2017).

Duke Bass Connections Program in Global Health, "Cookstoves and Air Pollution in Madagascar: Finding 'Winning' Solutions for Human Health and Biodiversity" (PI: **C.L. Nunn**, C. Welsh, and S. Pattanayak, \$48,000).

NC State Research Innovation Seed Funding, "Untangling human-animal transmission of cutaneous leishmaniasis" (PI: M. Levy, \$25,000).

Duke Bass Connections Program in Global Health (\$34,000), "Shining Evolutionary Light on Global Health Challenges" (PIs: **C.L. Nunn**, D. Schmitt and A. Rodrigo).

National Evolutionary Synthesis Center, “The AnthroTree Workshop 2013,” (PI: **C.L. Nunn**, \$5000 in support of the AnthroTree Workshop).

Harvard University Center for the Environment (HUCE) Fellows Program, “The Effects of Wildlife Loss and Land Use Change on Rodent-Borne Disease Risk in East Africa” (postdoctoral support for two years for Dr. Hillary Young, September 2011 to August 2013). Role: Mentor in the fellows program, and active research collaboration with the HUCE Fellow.

National Science Foundation (EF-0723939/0904359, Ecology of Infectious Disease Program), “Microparasite-Macroparasite Interactions: Dynamics of Co-Infection and Implications for Disease Control” (PIs: V. Ezenwa, G.H. Luikart, **C.L. Nunn** and A.E. Jolles, \$116,279 to CLN; October 2007 to September 2012).

National Science Foundation (BCS-0923791, Physical Anthropology), “Phylogenetic Comparative Methods in Biological Anthropology” (PI: **C.L. Nunn**, September 2009 to August 2012, \$317,474).

National Evolutionary Synthesis Center (NESCent) Working Group, “How Does Cognition Evolve?” (PIs: **C.L. Nunn** and B. Hare)

Publication Fund Harvard University, “The Comparative Method in Evolutionary Anthropology and Biology.” (\$4,782).

Clark Fund (FAS Harvard), for support of collaborative research on, “Within-Host Dynamics as a Driver of Global Patterns of Infectious Disease.” (\$5,720).

National Institutes of Health (RO1-MH070415-01A1), “The Phylogeny of Sleep” (PIs: P. McNamara, **C.L. Nunn** and R. Barton; total \$1,082,064, \$316,113 to CLN)

Center for Applied Biodiversity Science at Conservation International, “The Role of Pathogens in the Conservation of Biological Diversity (Renewal)” (\$84,100, \$26,000 to CLN)

National Science Foundation (DEB-0211908, Ecology), “Understanding the Diversity of Parasites and Infectious Diseases in Three Mammalian Orders” (PIs: **C.L. Nunn** and S. Altizer, July 2001-June 2006, total: \$441,060, \$251,948 to C.L.N.)

Center for Applied Biodiversity Science at Conservation International, “The Role of Pathogens in the Conservation of Biological Diversity” (July 2002-June 2004, \$84,300)

National Center for Ecological Analysis and Synthesis (NCEAS), Working Group (PIs: **C.L. Nunn** and S. Altizer, October 2000-June 2003, \$60,080 to cover four meetings)

National Science Foundation Postdoctoral Research Fellowship in Biological Informatics (\$100,000)

National Science Foundation (BCS-0323793), “Comparative Method Development Within Anthropology” (PIs: M. Borgerhoff Mulder and **C.L. Nunn**, August 2003-July 2004, \$50,174)

National Science Foundation (BCS-0132927), “Comparative Methods in Anthropology” (PIs: M. Borgerhoff Mulder and **C.L. Nunn**, July 2002-June 2004, \$120,003)

National Science Foundation Graduate Student Fellowship (3 years stipend + tuition)

National Science Foundation Dissertation Improvement Grant (\$5800).

Fieldwork and Travel Grants in Graduate School (\$7850): Conservation International Primate Action Fund, Sigma Xi, Latin American Studies Tinker Field Grant, Center for International Studies at Duke University, Duke University Graduate School.

EDITORIAL SERVICE

Editor-in-Chief: *Evolution, Medicine and Public Health* (2017 to present)

Senior Editor: *Evolution, Medicine and Public Health* (2012 to 2017)

Associate Editor: *EcoHealth* (2007 to 2016)

Associate Editor: *Behavioral Ecology and Sociobiology* (2001 to 2011)

Editorial Board: *Biology Letters* (2005 to 2010)

Associate Editor: *Journal of Animal Ecology* (2008 to 2009)

BOOKS AND EDITED VOLUMES / SPECIAL ISSUES

Young, H., **C.L. Nunn**, C. Wood, M. Kilpatrick, K. Lafferty, and J. Vincent, editors (2017). Theme Issue: Biodiversity, Conservation, and Infectious Disease – Scientific Evidence and Policy Implications. *Philosophical Transactions of the Royal Society B. Biological Sciences* **372**.

Kappeler, P.M. and **C.L. Nunn**, editors (2015). Theme Issue: The Health-Sociality-Fitness Nexus. *Philosophical Transactions of the Royal Society B. Biological Sciences*.

Nunn, C.L. (2011). *The Comparative Approach in Evolutionary Anthropology and Biology*. University of Chicago Press.

McNamara, P., R.A. Barton and **C.L. Nunn**, editors (2009). *Evolution of Sleep: Phylogenetic and Functional Perspectives*. Cambridge University Press.

Nunn, C.L. and S.M. Altizer (2006). *Infectious Diseases in Primates: Behavior, Ecology and Evolution*. Oxford University Press (*Series in Ecology and Evolution*).

JOURNAL PUBLICATIONS AND PEER-REVIEWED BOOK CHAPTERS

176. Solis, A. and **C.L. Nunn** (in revision). One Health Disparities and COVID-19. *Evolution, Medicine, and Public Health*.

175. Amoroso, C.R. and **C.L. Nunn** (in revision). Epidemiological transitions in human evolution altered the richness of viruses relative to helminths and protozoa. *Evolution, Medicine and Public Health*.

174. Herrera, J., N. Wickenkamp, M. Turpin, F. Baudino, P. Tortosa, S.M. Goodman, V. Soarimalala, T.N. Ranaivoson, **C.L. Nunn** (2020). Effects of land use, habitat characteristics, and small mammal community composition on *Leptospira* prevalence in northeast Madagascar. *PLOS Neglected Tropical Diseases*.

173. Herrera, J., J. Moody, and **C.L. Nunn** (in review). Predictors of primate-parasite associations. *Ecology Letters*.

172. Herrera, J., R. Jean Yves, N.A.F. Ravelomanantsoa, M. Metz, C. France, A. Owens, M. Pender, **C.L. Nunn**, and R.A. Kramer (in review). Food insecurity related to agricultural practices and household characteristics in rural communities of northeast Madagascar.

171. Werner, C. and **C.L. Nunn** (2020). The effect of urban habitat use on parasitism in mammals: a meta-analysis. *Proceedings of the Royal Society B*. **287**: 20200397.

170. **Nunn, C.L.**, A. Solis, O.S. Rakotonarivo, C.D. Golden, and R.A. Kramer (in press). One Health Research and Practice in Madagascar, in *Natural History of Madagascar* (ed. S. Goodman).
169. Teitlebaum, C.S., C. Amoroso, S. Huang, T.J. Davies, J. Rushmore, J.M. Drake, P.R. Stephens, J.E. Byers, A.A. Majewska, and **C.L. Nunn** (2020). A comparison of diversity estimators applied to a database of host-parasite associations. *Ecography*.
168. Gogarten, J., S. Calvignac-Spencer, **C.L. Nunn**, M. Ulrich, Markus, N. Saiepour, H. Nielsen, T. Deschner, C. Fichtel, P. Kappeler, S. Knauf, N. Müller-Klein, J. Ostner, M. Robbins, S. Sangmaneedet, O. Schülke, M. Surbeck, R. Wittig, A. Sliwa, C. Strube, F. Leendertz, C. Roos, A. Noll (2020). Metabarcoding of eukaryotic parasite communities describes diverse parasite assemblages spanning the primate phylogeny. *Molecular Ecology Resources* **20**:204-215.
167. Amoroso, C.R., P.M. Kappeler, C. Fichtel, & **C.L. Nunn** (2020). Water availability impacts habitat use by red-fronted lemurs: an experimental and observational study. *International Journal of Primatology* **41**: 61–80.
166. Samson, D.R., L.A. Loudon, K. Gerstner, S. Wiley, B. Lake, B.J. White, **C.L. Nunn**, K.D. Hunt (2019). Chimpanzee sleep, sociality, and vector-borne disease: experimental support of the encounter-dilution effect. *International Journal of Primatology*, **40**:647–659.
165. Amoroso, C.R., P.M. Kappeler, C. Fichtel, and **C.L. Nunn** (in press). Wild red-fronted lemurs avoid fecal contamination and reduce travel costs in their waterhole choices. *Behavioral Ecology and Sociobiology*.
164. Amoroso, C.R., P.M. Kappeler, C. Fichtel, and **C.L. Nunn** (in review). Temporal differentiation of waterhole use between wild red-fronted lemurs and their predators. *Journal of Mammalogy*.
163. Melvin, E.M, D.R. Samson, and **C.L. Nunn** (2019). Eulerian videography technology improves classification of sleep architecture in primates. *American Journal of Primatology*.
162. Herrera, J.P., D. Chakraborty, J. Rushmore, S. Altizer, and **C.L. Nunn** (2019). How does captivity influence parasitism? A comparative study of wild and captive primates. *American Journal of Primatology*.
161. Samson, D.R., A. Vining, and **C.L. Nunn** (in revision). Enhanced sleep environments improve lemur sleep quality. *American Journal of Primatology*.
160. Samson, D.R., A. Vining, and **C.L. Nunn** (2019). Sleep influences cognitive performance in lemurs. *Animal Cognition* **22**: 697–706.
159. Miller, I.F., S.E. Churchill, and **C.L. Nunn** (2019). Speeding in the slow lane: phylogenetic comparative analyses reveal that not all human life history traits are exceptional. *Journal of Human Evolution* **130**:36-44.
158. Dallas, T., B.A. Han, **C.L. Nunn**, A.W. Park, P.R. Stephens, J.M. Drake (2019). Host traits associated with species roles in parasite sharing networks. *OIKOS* **128**:23-32.

157. Kappeler, P.M., **C.L. Nunn**, A.Q. Vining, and S.M. Goodman (2019). Evolutionary dynamics of sexual size dimorphism in non-volant mammals following their independent colonization of Madagascar. *Scientific Reports* 9:1454.
156. Miller, I.F, R.A. Barton, and **C.L. Nunn** (2019). Quantitative uniqueness of human brain evolution revealed through phylogenetic comparative analysis. *eLife* 8:e41250.
155. Kelly, C., A.M. Stoehr, **C.L. Nunn**, K.N. Smyth, Z.M. Prokop (2018). Sexual dimorphism in immunity across animals: a meta-analysis. *Ecology Letters* 21: 1885-1894.
154. Sumner, K.M., C.M. McCabe, and **C.L. Nunn** (2018). Network size, structure, and pathogen transmission: a simulation study comparing different community detection algorithms. *Behaviour* 155: 639-670.
153. Samson, D.R., A.N. Crittenden, I.A. Mabulla, A.Z.P. Mabulla, and **C.L. Nunn** (2018). Does the moon influence sleep in small-scale societies? *Sleep Health* 4:509–514.
152. Manus, M.B., G. Bloomfield, A.S. Leonard, L.N. Guidera, D.R. Samson, and **C.L. Nunn** (2018). High prevalence of hypertension in an agricultural village in Madagascar. *PLoS One* 13(8): e0201616.
151. Miller, I.F., I. Schneider-Crease, **C.L. Nunn**, and M.P. Muehlenbein (2018). Estimating infection prevalence: Best practices and their theoretical underpinnings. *Ecology and Evolution* 8: 6738–6747.
150. Yu, J., M.B. Manus, O. Mueller, S.C. Windsor, J.E. Horvath, **C.L. Nunn** (2018). Antibacterial soap use impacts skin microbial communities in rural Madagascar. *PLoS One* 13:e0199899.
149. **Nunn, C.L.**, and D. R. Samson (2018). Sleep in comparative context: Investigating how human sleep differs from sleep in other primates. *American Journal of Physical Anthropology* **166**:601-612.
148. Samson, D. R., J. Bray, and **C.L. Nunn** (2018). The cost of deep sleep: environmental influences on sleep regulation are greater for diurnal lemurs. *American Journal of Physical Anthropology* **166**:578-589.
147. McCabe, C. and **C.L. Nunn** (2018). Effective network size predicted from simulations of pathogen outbreaks through social networks provides a novel measure of structure-standardized group size. *Frontiers in Veterinary Medicine* **5**:71.
146. Park, A.W., M.J. Farrell, J.P. Schmidt, S. Huang, T.A. Dallas, P. Pappalardo, J.M. Drake, P.R. Stephens, R. Poulin, **C.L. Nunn**, T.J. Davies (2018). Characterizing the phylogenetic specialism–generalism spectrum of mammal parasites. *Proceedings of the Royal Society B*.
145. Amoroso, C.R., A.G. Frink, and **C.L. Nunn** (2017). Water choice as a behavioural counterstrategy to infectious disease in lemurs. *Behaviour* 154: 1239-1258.
144. Young, H. S., C. L. Wood, A. M. Kilpatrick, K. D. Lafferty, **C. L. Nunn** and J. R. Vincent (2017). Conservation, biodiversity and infectious disease: scientific evidence and policy implications. *Philosophical Transactions of the Royal Society B: Biological Sciences* **372**:1-4.

143. Manus, M.B., J.J. Yu, L.P. Park, O. Mueller, S.C. Windsor, J.E. Horvath, and **C.L. Nunn** (2017). Environmental influences on the skin microbiome of humans and cattle in rural Madagascar. *Evolution, Medicine and Public Health*, doi.org/10.1093/emph/eox013.
142. Stephens, P.R., Pappalardo P., Huang S., Byers J.E., Farrell M.J., Gehman A., Ghai R.R., Haas S.E., Han B., Park A.W., Schmidt J.P., Altizer S., Ezenwa V.O., **Nunn C.L.** (2017). Global Mammal Parasite Database Version 2.0. *Ecology* **98**:1476.
141. Schneider-Crease, I., R.H. Griffin, M.A. Gomery, P. Dorny, J. C. Noh, S. Handali, P.P. Wilkins, **C.L. Nunn**, N. Snyder-Mackler; J.C. Beehner, T. J. Bergman (2017). Identifying wildlife reservoirs of neglected taeniid tapeworms: Non-invasive diagnosis of endemic *Taenia serialis* infection in a wild primate population. *PLOS Neglected Tropical Diseases* **11**: e0005709.
140. Dallas, T., S. Huang, **C.L. Nunn**, A. Park, and J. Drake (2017). Estimating parasite host range. *Proceedings Royal Society B*, **284**: 20171250.
139. Springer, A., P.M. Kappeler, and **C.L. Nunn** (2017). Dynamic vs. static social networks in models of parasite transmission: Predicting *Cryptosporidium* spread in wild lemurs. *Journal of Animal Ecology* **86**:419–433.
138. Samson, D.R., A.N. Crittenden, I.A. Mabulla, A.Z.P. Mabulla and **C.L. Nunn** (2017). Evidence that humans evolved to be natural, nighttime sleep sentinels. *Proceedings of the Royal Society B*. **284**: 20170967.
137. Nesse, R.M., C.E. Finch, and **C.L. Nunn** (2017). Does selection for short sleep duration explain human vulnerability to Alzheimer’s disease? *Evolution, Medicine, and Public Health* **2017**: 39-46.
136. Samson, D.R., A. Crittenden, I. Mabulla, A. Mabulla, and **C.L. Nunn** (2017). Hadza sleep ecology: evidence for flexible sleep-wake patterns in hunter-gatherers. *American Journal of Physical Anthropology* **162**:573–582.
135. Young H., D.J. McCauley, R. Dirzo, **C.L. Nunn**, M.G. Campana, B. Agwanda, E.R. Otarola-Castillo, E.R. Castillo, R.M. Pringle, K.E. Veblen, D.J. Salkeld, K. Stewardson, R. Fleischer, E.F. Lambin, T.M. Palmer, K.M. Helgen (2017). Interacting effects of land use and climate on rodent-borne pathogens in central Kenya. *Philosophical Transactions of the Royal Society B*. **372**: 20160116.
134. Samson, D.R., M. Manus, A. Krystal, E. Fakir, J.J. Yu and **C.L. Nunn** (2017). Segmented sleep in a non-electric, small-scale agricultural society in Madagascar. *American Journal of Human Biology* **29**: 10.1002/ajhb.22979.
133. Bray, J., D.R. Samson, and **C.L. Nunn** (2017). Evidence from seven captive lemur species that cathemerality is the ancestral state of Lemuridae. *American Journal of Primatology*, in press.
132. Young, H., I.M. Parker, G.S. Gilbert, A.S. Guerra, and **C.L. Nunn** (2017). The role of introduced species in biodiversity-disease relationships. *Trends in Ecology and Evolution* **32**:41-54.
131. Dunn, R.R., **C.L. Nunn**, and J.E. Horvath (2017). The Global Synanthrome Project: A call for an exhaustive study of human associates. *Trends in Parasitology* **33**: 4-7.

130. Vining, A. Q. and **C.L. Nunn** (2016). Evolutionary change in physiological phenotypes along the human lineage. *Evolution, Medicine, and Public Health* **2016**: 312-324.
129. Borries, C., A.A. Sandel, A Koenig, E. Fernandez-Duque, J.M. Kamilar, C.R. Amoroso, R.A. Barton, J. Bray, A. Di Fiore, I.C. Gilby, A.D. Gordon, R. Mundry, M. Port, L.E. Powell, A.E. Pusey, A. Spriggs, **C.L. Nunn** (2016). Transparency, usability, and reproducibility: a four-step plan toward improved comparative databases using primates as examples. *Evolutionary Anthropology* **25**:232–238.
128. Samson, D.R., A.N. Crittenden, G. Yetish, I. Mabulla, A.Z.P. Mabulla, and **C.L. Nunn** (2016). What is segmented sleep? Actigraphy field validation for daytime sleep and nighttime wake. *Sleep Health* **2**:341-347.
127. MacLean, E.L. and **C.L. Nunn** (2017). Phylogenetic approaches for research in comparative cognition. In J. Call, G. Burghardt, I. Pepperberg, C. Snowdon & T. Zentall (Eds.), *APA Handbook of Comparative Psychology*. American Psychological Association.
126. **Nunn, C.L.**, D.R. Samson and A. Krystal (2016). Shining evolutionary light on human sleep and sleep disorders. *Evolution, Medicine and Public Health* **2016**: 227–243.
125. Stephens, P.R., S Altizer, K.F. Smith, A.A. Aguirre, J. H. Brown, S.A. Budischak, J.E. Byers, T.A. Dallas, T.J. Davies, J.M. Drake, V.O. Ezenwa, M.J. Farrell, J.L. Gittleman, B.A. Han, S. Huang, R.A. Hutchinson, P. Johnson, **C.L. Nunn**, D. Onstad, A. Park, G.M. Vazquez-Prokopec, J.P. Schmidt, and R. Poulin (2016). The macroecology of infectious diseases: a new perspective on global-scale drivers of pathogen distributions and impacts. *Ecology Letters*.
124. Sandel, AA, J.A. Miller, J.C. Mitani, **C.L. Nunn**, S.K. Patterson, and L.Z. Garamszegi (2016). Assessing sources of error in comparative analyses of primate behavior: intraspecific variation in group size and the social brain hypothesis. *Journal of Human Evolution* **94**:126-133.
123. **Nunn, C.L.** and T. Gillespie (2016). Infectious disease and primate conservation. Pp. 157 to 168 in: *An Introduction to Primate Conservation*, edited by S.A. Wich and A.J. Marshall. Oxford University Press.
122. Samson, D.R. and **C.L. Nunn** (2015). Sleep intensity and the evolution of human cognition. *Evolutionary Anthropology* **24**:225-237.
121. Capellini, I, **C.L. Nunn**, R.A. Barton (2015). Microparasites and placental invasiveness in Eutherian mammals. *PLOS One* **10**: e0132563.
120. Young, H.S., R. Dirzo, K.M. Helgen, D.J. McCauley, **C.L. Nunn**, T.P. Young, S. Zhao, V.O. Ezenwa (2015). Large wildlife removal drives redistribution of immune defenses in rodents. *Functional Ecology* **30**:799–807.
119. **Nunn, C.L.**, S.C. Alberts, C.R. McClain, S.R. Meshnick, T.J. Vision, B.M. Wiegmann, A.G. Rodrigo (2015). A new center linking evolution, ecology and health: The Triangle Center for Evolutionary Medicine (TriCEM). *BioScience* **65**:748-749.
118. **Nunn, C.L.**, I.J. Wallace, C.M. Beall (2015). Connecting evolution, medicine and public health. *Evolutionary Anthropology* **24**:127–129.

117. Kappeler, P.M., S. Cremer, and **C.L. Nunn** (2015). Sociality and health: impacts of sociality on disease susceptibility and transmission in animal and human societies. *Philosophical Transactions of the Royal Society B. Biological Sciences* **370**: 2014.0116.
116. **Nunn, C.L.**, M.E. Craft, T.R. Gillespie, M. Schaller and P.M. Kappeler (2015). The sociality-health-fitness nexus: Synthesis, conclusions and future directions. *Philosophical Transactions of the Royal Society B. Biological Sciences* **370**: 2014.0115.
115. **Nunn, C.L.**, F. Jordan, C.M. McCabe, J.L. Verdolin, J.H. Fewell (2015). Infectious disease and group size: more than just a numbers game. *Philosophical Transactions of the Royal Society B. Biological Sciences* **370**: 20140111.
114. **Nunn, C.L.** and N. Cooper (2015). Investigating evolutionary lag using the species-pairs evolutionary lag test (SPELT). *Evolution* **69**: 245-253.
113. Pilosof, S., S. Morand, B. Krasnov, and **C. L. Nunn** (2015). Potential parasite transmission in multi-host networks based on parasite sharing. *PLOS ONE* **10**: e0117909.
112. McCabe, C., S. Reader, and **C.L. Nunn** (2015). Infectious disease, behavioral flexibility, and the evolution of culture in primates. *Proceedings of the Royal Society B* **282**: 20140862.
111. MacLean, E.L., B. Hare, **C.L. Nunn**, and 53 others (2014). The evolution of self-control. *Proceedings of the National Academy of Sciences USA* **111**: E2140–E2148.
110. **Nunn, C.L.** and L. Zhu (2014). Phylogenetic prediction to identify “evolutionary singularities.” Pages 481 to 514 in: *Modern Phylogenetic Comparative Methods and their Application in Evolutionary Biology: Concepts and Practice*. L.Z. Garamszegi, ed. Springer-Verlag.
109. **Nunn, C.L.**, E.J. Scully, N. Kutsukake, J. Ostner, O. Schuelke, and P.H. Thrall (2014). Mating competition, promiscuity, and life history traits as predictors of sexually transmitted disease risk in primates. *International Journal of Primatology* (Special Issue on “Male Mating Competition”) **35**: 764-786.
108. **Nunn, C.L.**, C. Brezine, A.E. Jolles and V.O. Ezenwa (2014). Interactions between micro- and macro-parasites predict microparasite richness across primates. *American Naturalist* **183**: 494-505.
107. **Nunn, C.L.**, P.H. Thrall, and P. Kappeler (2014). Shared resources and disease dynamics in socially structured populations. *Ecological Modeling* **272**:198-207.
106. Gómez, J.M., **Nunn, C.L.** and Verdú, M. (2013) Centrality in primate-parasite networks reveals the potential for the transmission of emerging infectious diseases to humans. *Proceedings of the National Academy of Sciences USA* **119**:7738-7741.
105. Cooper, N. and **C.L. Nunn** (2013). Identifying future zoonotic disease threats: Where are the gaps in our understanding of primate infectious diseases? *Evolution, Medicine, and Public Health* **1**:27-36.
104. Young, H., R. Griffin, C. Wood, and **C.L. Nunn** (2013). Does habitat disturbance increase infectious disease risk for primates? *Ecology Letters* **16**: 656–663.

103. Matthews, L.J., J. Edmonds, W.J. Wildman, and **C. L. Nunn** (2013). Cultural inheritance or cultural diffusion of religious violence? A quantitative case study of the Radical Reformation. *Religion, Brain & Behavior* **2**:1-13.
102. **Nunn, C.L.** and B. Hare (2012). Pathogen flow: What we need to know (Commentary). *American Journal of Primatology* **12**:1084-1087.
101. Cooper, N., R. Griffin, M. Franz, M. Omotayo, and **C.L. Nunn** (2012). Phylogenetic host specificity and understanding parasite sharing in primates. *Ecology Letters* **15**:1370-1377.
100. Garamszegi, L.Z., **C.L. Nunn**, and C.M. McCabe (2012). Informatics approaches to develop dynamic meta-analyses. *Evolutionary Ecology* **26**:1275-1276
99. Cooper, N., J.M. Kamilar, and **C.L. Nunn** (2012). Host longevity and parasite species richness in mammals. *PLoS ONE* **7**:e42190.
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81. Franz, M. and **C.L. Nunn** (2010). Investigating the impact of observation errors on the statistical performance of network-based diffusion analysis. *Learning and Behavior* **38**:235-242.
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15. **Nunn, C.L.**, C.P. van Schaik and D. Zinner (2001). Do exaggerated sexual swellings function in female mating competition in primates? A comparative test of the reliable indicator hypothesis. *Behavioral Ecology* **5**:646-654.
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12. **Nunn, C.L.** (2000). Maternal recognition of infant calls in ring-tailed lemurs. *Folia Primatologica* **71**: 142-146.
11. **Nunn, C.L.**, and C.P. van Schaik (2000). Intersexual conflict and ecological factors in primate social evolution. In: *Infanticide by Males and its Implications*, C.P. van Schaik and C. Janson, eds., pp. 388-419 Cambridge: Cambridge University Press.
10. **Nunn, C.L.**, and R.A. Barton (2000). Allometric slopes and independent contrasts: A comparative test of Kleiber's law in primate ranging patterns. *American Naturalist* **156**:519-533.
9. **Nunn, C.L.**, and M.E. Pereira (2000). Group histories and offspring sex ratios in ringtailed lemurs (*Lemur catta*). *Behavioral Ecology and Sociobiology* **48**: 18-28.
8. **Nunn, C.L.**, J.L. Gittleman and J. Antonovics (2000). Promiscuity and the primate immune system. *Science* **290**:1168-1170.
7. van Schaik, C.P., K. Hodges and **C.L. Nunn** (2000). Paternity confusion and the ovarian cycles of female primates. In: *Infanticide by Males and its Implications*, C.P. van Schaik and C. Janson, eds., pp. 361-387. Cambridge: Cambridge University Press.
6. Deaner, R.O., and **C.L. Nunn** (1999). How quickly do brains catch up with bodies? A comparative method for detecting evolutionary lag. *Proceedings of the Royal Society, London B.* **266**: 687-694.
5. **Nunn, C.L.** (1999). The evolution of exaggerated sexual swellings in primates and the graded signal hypothesis. *Animal Behaviour* **58**: 229-246.
4. **Nunn, C.L.** (1999). The number of males in primate groups: a comparative test of the socioecological model. *Behavioral Ecology and Sociobiology* **46**: 1-13.
3. van Schaik, C.P., M.A. van Noordwijk and **C.L. Nunn** (1999). Sex and social evolution in primates. In: *Primate Socioecology*, P.C. Lee, ed., pp. 204-240. Cambridge: Cambridge University Press.
2. **Nunn, C.L.** and K.K. Smith (1998). Statistical analyses of developmental sequences: The craniofacial region in marsupial and placental mammals. *American Naturalist* **152**: 82-101.

1. **Nunn, C.L.** (1995). A simulation test of Smith's "degrees of freedom" correction for comparative studies. *American Journal of Physical Anthropology* **98**: 355-367.

GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS

Abigail Turner, Masters of Global Health, Project: Small Mammal Ecology and Infectious Disease in Madagascar (October 2019 to present).

Kuleni Abebe, Masters of Global Health, Project: Human Ecology and Infectious Disease Risk in Madagascar (October 2019 to present)

Alma Solis, Ph.D. Student. Project: Infectious Disease Ecology at the Human-Animal Interface in Madagascar (September 2019 to present).

James Herrera, Postdoctoral Associate. Project: Infectious Disease Ecology and Evolution (July 2017 to present).

Natalie Wickenkamp, Masters of Global Health, Project: Landuse Change, Community Ecology and Infectious Disease in Madagascar (September 2016 to May 2018).

Caroline Amoroso, Ph.D. Student, Project: Water scarcity, distribution, and quality as drivers of lemur behavior (September 2013 to May 2019).

Randi Griffin, Ph.D. Student, Project: The Evolution of Cranial Morphology (September 2013 to May 2018).

India Schneider-Crease, Ph.D. Student, Project: Gelada Disease Ecology (September 2013 to May 2017).

Collin McCabe, Graduate Student, Thesis: Behavioral correlates of parasite risk among humans, primates, and other mammals: Social contact, exploratory tendency, and the foundations of culture (September 2010 to May 2017)

Melissa Manus, Masters of Global Health, Project: The Skin Microbiome in Health and Disease in Rural Madagascar (September 2014 to May 2016).

Debapriyo Chakraborty, Fulbright-Nehru Visiting Scholar, Project: Community Ecology and Disease Risk at the Human-Wildlife Interface (November 2014 to October 2016).

David Samson, Postdoctoral Research Associate. Project: The Evolution of Primate Sleep (July 2014 to July 2017).

Hillary Young, Postdoctoral Research Fellow through the Harvard University Center for the Environment, Project: The Effects of Wildlife Loss and Land Use Change on Rodent-Borne Disease Risk in East Africa (September 2011 to August 2013).

Natalie Cooper, Postdoctoral Researcher, Project: Primate Parasites and Predicting Risks of Cross-Species Transmission (September 2010 to August 2011)

Luke Matthews, Postdoctoral Researcher, Project: Comparative Methods for Anthropology (September 2008 to April 2011)

Brian Preston, Postdoctoral Researcher, Project: Evolution of Sleep (May 2006 to June 2008)

Patrik Lindenfors, Postdoctoral Researcher, Project: Primate Brain Evolution and Parasites of Carnivores (June 2006 to June 2007)

Alberto Acerbi, Postdoctoral Researcher, Project: Social Learning and Culture (January 2007 to July 2008)

Matthias Franz, Ph.D. Student, Project: Cultural Transmission and Evolution (January 2007 to March 2010)

Christian Arnold, Masters Student University of Leipzig, Project: Phylogenetic Targeting: A Systematic Approach and Computer Program for Targeting Research Effort in Comparative Evolutionary Biology (completed in June 2008)

FIELD WORK AND OTHER RESEARCH EXPERIENCE

Research in Marojejy National Park (Madagascar) 2012-present. Research on global health and vector-borne disease risk.

Research in Kirindy Reserve (Madagascar) 2006-present. Research on spread of gastrointestinal parasites in two species of lemurs and links between infectious disease and sleep.

Research in Taï National Park (Côte d'Ivoire) 2006. Collaborative research aimed at understanding the spread of infectious disease in wild primates.

Projects on inter-group interactions, ranging patterns and vocalizations in semi-free-ranging ringtailed lemurs at the Duke Primate Center, Durham, NC, 1994 to 2000.

Behavioral fieldwork on mantled howler monkeys in Guanacaste Province, Costa Rica, July, 1994. Research led by Dr. K.E. Glander, Duke University.

Paleontological field work in Montana, USA, July, 1993. Research led by Dr. M.C. Maas, Duke University.

ORGANIZED WORKING GROUPS AND SYMPOSIA

Pathogens Gone Global: Disease Ecology and Evolution in a Changing World (Duke University, symposium and working group, September 2019).

Awakening to the Significance of Sleep and Health Disparities (Duke University, symposium and working groups, December 2016).

Duke University Provost Forum on Conservation and Health (Duke University, three debate-discussion style events in 2015-2016).

The *AnthroTree Workshop* (Amherst MA, four meetings funded 2010-2014, for 26 total participants each year).

National Center for Evolutionary Synthesis (NESCent), “How Does Cognition Evolve?” (3 meetings, 2008-2011, with Brian Hare).

Conservation International Working Group on “The Role of Pathogens in the Conservation of Biological Diversity (4 meetings, 2002-present, with Sonia Altizer, Andy Dobson and John Gittleman).

National Center for Ecological Analysis and Synthesis (NCEAS), “Understanding the role of infectious disease in mammalian mating and social systems” (1 meeting and funding from 2003-2004, with Sonia Altizer; extension of previous NCEAS working group).

Ecological Society of America, Symposium on “Parasites and Host Social Organization: Ecological and Evolutionary Perspectives” (August, 2004, with Sonia Altizer).

National Center for Ecological Analysis and Synthesis (NCEAS), “Understanding the ecology and evolution of infectious diseases in mammalian mating and social systems” (3 meetings, 2000-2003, with Sonia Altizer).

INVITED SEMINARS

Institute of Science and Technology (Vienna), 2019

Washington University Anthropology, 2019

Museum of Anthropology, University of Zurich (C. van Schaik Retirement), 2018

Duke Network Analysis Center, 2018

Children’s Health Discovery Institute, Duke University, 2018

One Health Collaborative, Research Triangle Park NC, 2018

Biology Department, University of Copenhagen, 2018

Interacting Minds Center, University of Aarhus (Denmark), 2018

University of North Carolina, Sleep Research Group, 2018

Duke University, Department of Pediatrics, 2018

University of Kentucky, Department of Biology, 2017

European Society for Evolutionary Biology, Symposium Lead Speaker, 2017.

Emory University, 2017

One Past Health: Workshop on zoonotic diseases and ancient DNA, Plön Germany, 2017

Center for Academic Research and Training in Anthropogeny, UC Davis, San Diego, 2016

Duke Lemur Center 50th Anniversary, Durham NC, 2016

Max Planck Institute for Evolutionary Anthropology, Leipzig Germany, 2016

University Goettingen (Germany), Sociobiology, 2016.

Lunch Talk, Sigma Xi RTP, 2016

UCSB Ecology and Evolution, 2016

ASU Center for Evolutionary Medicine, 2016

NC Museum of Natural Sciences, 2016

East Carolina University, Biology, 2015.

University of Michigan, Biological Anthropology, 2015.

Modern Phylogenetic Comparative Methods, Seville Spain, Plenary Speaker, 2014

National Evolutionary Synthesis Center, Director’s Seminar, 2014

Rutgers University, Anthropology Department, 2014

Goettinger Freilandtage, Goettingen Germany, 2013

Duke University, Biology Department, 2013

Langford Lecture, Duke University, 2013

American Association of Physical Anthropologists, Symposium, 2013

Indiana University, Animal Behavior, 2012.

University of Massachusetts Amherst, Biology, 2012

Duke University, Evolutionary Anthropology, 2011

University of Chicago, Evolutionary Morphology, 2011
 American Association of Physical Anthropologists, Symposium, 2011
 University of North Carolina, Department of Biology / Curriculum for the Environment and Ecology, Speaker, 2011
 University of Iowa, Darwin Day Speaker, 2010 (declined)
 Stanford University, Sleep Medicine Grand Rounds, 2010 (declined)
 American Society of Primatologists, Featured Speaker, 2010
 American Society of Parasitologists, Invited Speaker, 2010 (declined)
 British Society of Parasitologists, Invited Speaker, 2010 (declined)
 American Association of Physical Anthropologists, Symposium, 2010
 McGill University, Biology Department, 2010.
 International Summit on Interdisciplinary Solutions to Evolutionary Challenges in Food, Health and the Environment, Australia, 2010 (declined)
 Porto Alegre Biological Evolution Workshops, 2009 (declined)
 3rd International Congress on the Future of Animal Research: Biomedical and Field Research with Non-human Primates, 2009 (declined)
 Workshops on Evolution and Diseases of Civilization, Berlin, 2009 (declined)
 Arizona State University, School of Human Evolution and Social Change, 2009
 University of Chicago, Animal Behavior Seminar Series, 2009
 University of Massachusetts Amherst, Organismal and Evolutionary Biology, 2009
 University of Georgia, Odum School of Ecology and Anthropology, 2009
 SUNY Stony Brook, Behavioral Ecology Group, 2009
 Notre Dame, "Evolution of Age" Symposium (student-initiated symposium on Darwinism), 2009
 Yale University, Department of Anthropology, 2008
 Australian Society of Parasitologists (Plenary Talk), Adelaide Australia, 2008
 NYCEP Symposium in Primatology, 2008
 California State University, 2008 (declined)
 Duke University, Department of Biological Anthropology, 2008
 Max Planck Institute for Demography, Rostock, Germany, 2007
 Harvard University, Department of Anthropology (Biological Anthropology Wing), 2007
 University of Sheffield, Department of Animal and Plant Sciences, 2006.
 21st Congress of the International Primatological Society, Symposium on "Primate Disease Ecology and Conservation," 2006.
 Anthropological Institute and Museum, University of Zürich, 2005.
 International Mammalogical Congress, Symposium on "Emerging zoonoses from mammals," Sapporo, Japan, 2005.
 Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany, 2005.
 University of California, Berkeley, Department of Environmental Science, Policy and Management, 2005.
 University of Pennsylvania, Department of Biology, 2005.
 University of Durham, Department of Anthropology, 2005.
 Cambridge University, Department of Biological Anthropology 2005.
 University of California, Berkeley, Integrative Biology Seminar Series, 2004.
 Deutsches Primatenzentrum (German Primate Center), Göttingen, Germany, 2004.
 University of California, Riverside, Department of Biology, 2004.
 Ecological Society of America, Organized Session on "Parasites and Host Social Organization: Ecological and Evolutionary Perspectives." Co-organizer and participant on three papers, 2004.
 University of Louisville, 2004.
 University of California, Davis, Section of Evolution and Ecology, 2004.
 Arizona State University, School of Life Sciences, 2004.
 Emory University, Anthropology Department and the Graduate Program in Population Biology, 2004.
 University of Washington, Biology Department, 2004.

Syracuse University, 2004.
 Ecology and Evolution of Infectious Disease Symposium, Society for the Study of Evolution, Chico, Calif., 2003.
 University of California, Berkeley, Integrative Biology Seminar Series, 2003.
 Southern California Primate Research Forum, Keynote speaker, Oceanside, Calif., 2003.
 Centre for Ecology and Evolution Workshop, “Evolutionary and Ecological Aspects of Disease and Parasitism.” Keynote speaker, London, 2002.
 University of Michigan, Department of Anthropology, 2002.
 Göttinger Freilandtage III. Sexual Selection, Göttingen, Germany, 2001.
 University of California, Davis, Population Biology Group, 2001.
 SUNY Stony Brook, Behavioral Ecology Group, 2001.
 Bay Area Biosystematists, University of California, Berkeley, 2001.
 Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany, 2001.
 University of Durham, Evolutionary Anthropology Seminar Series, 2001.
 University of Oxford, Evolution Group, 2001.
 Cornell University “Lunch Bunch” Behavioral Ecology Seminar, 2001.
 University of California, Davis, Department of Anthropology, 2001.
 Smithsonian National Zoological Park, Department of Zoological Research Seminar Series, 2001.
 Harvard University, Department of Anthropology Seminar Series, 2000.
 University of Virginia, Population Biology Group, 1999.
 Duke University, Department of Biological Anthropology and Anatomy Seminar Series, 1998.
 University College London, Center for Ecology and Evolution, 1998.
 Cambridge University, Department of Biological Anthropology Seminar Series, 1998.
 University of Liverpool, Centre for Economic Learning and Social Evolution Research Seminars in Population Biology and Behavioural Ecology, 1998.
 University of St. Andrews, Animal Behavior Group, 1998.
 Bucknell University, Department of Biology, 1998.
 Göttinger Freilandtage I, Primate Males, Göttingen, Germany, 1997.

TEACHING EXPERIENCE

Human Health in Evolutionary Perspective: Course taught at Duke University (Evolutionary Anthropology 285, counts toward Global Health Major)

Primate Disease Ecology and Global Health: Course taught at Duke University (Evolutionary Anthropology 385, counts toward Global Health Major).

Evolutionary Medicine: Course taught in the General Education curriculum, Harvard University (SLS-21).

Primate Disease Ecology and Evolution: Course taught at Harvard University (HEB 1333).

Comparison and Adaptation in Primate Evolutionary Biology: Research seminar taught at Harvard University (HEB 1331).

Graduate Seminar in General Education: Evolutionary Medicine. Course taught at Harvard University, aimed at training graduate students and developing lectures for a course (HEB 2311).

Academic Survivorship: A seminar taught at the Max Planck Institute for Evolutionary Anthropology, focusing on issues related to authorship, collaboration, giving presentations, and other skills that are essential for academic success.

Research Reviews in Animal Behavior: Behavior Review. Instructor for discussion and research seminar at UC Berkeley, participation by graduate and undergraduate students (20 students, Fall 2006).

Phylogenetics and Comparative Techniques: Two-year graduate research seminar at UC Berkeley (taught in academic years 2004-2005 and 2005-2006).

Infectious Disease in Primates: Behavior, Ecology and Evolution. Graduate seminar at UC Berkeley (Spring, 2005).

Workshop in Applied Phylogenetics: invited lecturer on comparative methods (20-30 graduate students). Held at Bodega Bay Marine Lab and taught through UC Davis (Spring 2003 and 2004).

Introduction to Animal Behavior: Instructor for a large, introductory course at the University of Virginia in 1999 (137 students).

The Comparative Method in Animal Behavior: Instructor for a graduate seminar at Duke University in 1999.

Introduction to Biological Anthropology: Instructor for an introductory course to 20 summer-session students at Duke University in 1996.