

NATHAN MOREHOUSE

School of Life Sciences
Arizona State University
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EDUCATION

Arizona State University August 2002 – Present
School of Life Sciences, Tempe, AZ
Doctoral Candidate, Ph.D. Program
Major Advisor: Dr. Ronald L. Rutowski
University Graduate Scholar GPA: 4.0

Cornell University August 1996 – May 2000
College of Agriculture and Life Sciences, Ithaca, NY
Bachelor of Sciences, Biological Sciences, May 2000
Distinction in Research GPA: 3.44

Charles G. Finney Corporate High School September 1992 – June 1996
Rochester, NY
Regents and Honors Diplomas, June 1996
Valedictorian GPA: 4.0

RESEARCH EXPERIENCE

Division of Graduate Studies Dissertation Fellow August 2007 – May 2008
School of Life Sciences, Arizona State University, Tempe, AZ

Graduate Research Assistant January – August 2006
School of Life Sciences, Arizona State University, Tempe, AZ

Graduate Research Assistant Summers, 2003-2005
University Graduate Scholarship
School of Life Sciences, Arizona State University, Tempe, AZ

Independent Research/ Honors Thesis May 1999 – May 2000
Professor Cole Gilbert
Dept. of Entomology, Cornell University, Ithaca, NY

Field Assistant July 1999, January 2000
Research Assistant October 1998 – June 1999
Professor Alison Power
Dept. of Ecology, Cornell University, Ithaca, NY

TEACHING EXPERIENCE

Graduate Teaching Assistant August – December 2008
IND 464: Collaborative Design and Development I
Innovation Space, College of Design, Arizona State University, Tempe, AZ
innovationspace.asu.edu

TEACHING EXPERIENCE (CONT.)

Graduate Teaching Assistant	May – August 2008
School of Life Sciences Undergraduate Research Program	May – August 2007
Arizona State University, Tempe, AZ	
Faculty Associate	August 2006 – May 2007
Center for Research on Education in Science, Mathematics, Engineering and Technology	
Arizona State University, Tempe, AZ	
cresmet.asu.edu	
NSF GK-12 Fellow	
Graduate Partners in Science Education, Program Coordinator	August 2005 – May 2006
Phoenix Preparatory Academy, Phoenix, AZ	
Desert Eagle Secondary School, 7 th and 8 th Grade Science	June 2003 – May 2004
Salt River Pima Maricopa Indian Community, AZ	
gk12.asu.edu	
Graduate Teaching Assistant	January – May 2005
Bio 100: Introductory Biology for Non-Majors	August 2002 – May 2003
Bio 415: Biometry	August – December 2004
School of Life Sciences, Arizona State University, Tempe, AZ	
Substitute Science Teacher	January – June 2001
Wilson Magnet High School	
Rochester City School District, Rochester, NY	

SERVICE

Program Consultant	August 2007 – Present
Program Co-Founder/Director	October 2004 – August 2007
Graduate Partners in Science Education (GPSE)	
School of Life Sciences, Arizona State University, Tempe, AZ	
gpse.asu.edu	
Steering Committee Member	August 2008 – Present
WoodStoich 2009	
Tohoku University, Sendai, Japan	
meme.biology.tohoku.ac.jp/woodstoich/	
Entomology Correspondent	August 2003 - Present
“Ask a Biologist” Science Outreach Program	
School of Life Sciences, Arizona State University, Tempe, AZ	
askabiologist.asu.edu	
Webmaster	January 2003 - Present
Rutowski Lab	
School of Life Sciences, Arizona State University, Tempe, AZ	
www.public.asu.edu/~atrlr	
Committee Member	October 2005 – May 2008
Web Advisory Committee	
School of Life Sciences, Arizona State University, Tempe, AZ	
Conference Organizer	February 2007 – February 2008
Iridescence: More Than Meets the Eye, February 6-9, 2008	
Frontiers in Life Sciences Conference Series	
School of Life Sciences, Arizona State University, Tempe, AZ	
sols.asu.edu/frontiers/2008/	

SERVICE (CONT.)

Grant Reviewer Graduate and Professional Students Association Research Grant Competition Arizona State University, Tempe, AZ	September 2007
Committee Member Campus Health Services Advisory Committee Arizona State University, Tempe, AZ	July 2006 – August 2007
Committee Member Health and Counseling Student Action Committee Arizona State University, Tempe, AZ	July 2006 – August 2007
Student Body President Graduate Scholars in the School of Life Sciences School of Life Sciences, Arizona State University, Tempe, AZ	May 2006 – May 2007
Committee Member Undergraduate Programs Committee School of Life Sciences, Arizona State University, Tempe, AZ	January – May 2007
Chair Campus Health Advisory Board, Graduate and Professional Students Association Arizona State University, Tempe, AZ	January – May 2007
Committee Member Graduate Programs Committee School of Life Sciences, Arizona State University, Tempe, AZ	August 2006 – May 2007
Student Mentor/Event Judge Central Arizona Regional Science and Engineering Fair Phoenix Public Schools, Phoenix, AZ azsef.asu.edu	January 2004 – April 2007
Coordinator Sexual Selection Reading Group School of Life Sciences, Arizona State University, Tempe, AZ	January 2005 – May 2006
Special Symposium Coordinator Partnerships Between STEM Research and K-12 Classrooms AAAS-SWARM 81 st Annual Meeting, Tulsa, OK, April, 2006	October 2005 – April 2006
Committee Member Graduates in Earth, Life and Social Sciences Annual Symposium School of Life Sciences, Arizona State University, Tempe, AZ www.asu.edu/clubs/gelss	August 2002 – August 2006
Coordinator/Webmaster Graduate Student Seminar Series School of Life Sciences, Arizona State University, Tempe, AZ	August 2003 – May 2004
Curriculum/Professional Development NSF Partners Paving Pathways Program Life Cycle of the Butterfly Curriculum Development Gilbert Elementary School District, Gilbert, AZ	June – August 2003

CAREER DEVELOPMENT

Selected Participant

June 2008

Aligning the Preparation of Graduate Students for STEM Early Faculty Careers
Center for Integration of Research, Teaching and Learning Forum 2008, University of
Wisconsin, Madison

Selected Participant

August 2005 – May 2007

Preparing Future Faculty Program
Division of Graduate Studies, Arizona State University, Tempe, AZ

PUBLICATIONS

Shawkey, M.D., **Morehouse, N.I.** and Vukusic, P. 2009. *A protean palette: colour materials and mixing in birds and butterflies*. Journal of the Royal Society Interface.
doi:10.1098/rsif.2008.0459.focus

Meadows, M.G., Butler, M.W., **Morehouse, N.I.**, Taylor, L.A., Toomey, M.B., McGraw, K.J. and Rutowski, R.L. 2009. *Iridescence: views from many angles*. Journal of the Royal Society Interface. doi:10.1098/rsif.2009.0013.focus

McGraw, K.J., Toomey, M.B., Nolan, P.M., **Morehouse, N.I.**, Massaro, M. and Jouventin, P. 2007. *A description of unique fluorescent yellow pigments in penguin feathers*. Pigment Cell Research, **20**, 301-304. doi:10.1111/j.1600-0749.2007.00386.x

Rutowski, R.L., Macedonia, J., Merry, J., **Morehouse, N.I.**, Yturralde, K., Taylor-Taft, L., Gaalema, D., Kemp, D.J. and Papke, R.S., 2007. *Iridescent ultraviolet signaling in the Orange Sulphur butterfly (Colias eurytheme): Spatial, temporal and spectral properties*. Biological Journal of the Linnean Society, **90**, 349-364.

Morehouse, N.I., Vukusic, P. and Rutowski, R.L. 2007. *Pterin pigment granules are responsible for both broadband light scattering and wavelength selective absorption in the wing scales of pierid butterflies*. Proceedings of the Royal Society of London B, **274**, 359-366. doi:10.1098/rspb.2006.3730

Merry, J., **Morehouse, N.I.**, Yturralde, K., and Rutowski, R.L., 2006. *Eyes of a patrolling butterfly: Visual field and eye structure in the Orange Sulphur, Colias eurytheme (Lepidoptera, Pieridae)*. Journal of Insect Physiology, 52(3), 240-248. doi:10.1016/j.jinsphys.2005.11.002

Rutowski, R.L., Macedonia, J., **Morehouse, N.I.** and Taylor-Taft, L., 2005. *Pterin pigments amplify iridescent ultraviolet signal in males of the orange sulphur butterfly, Colias eurytheme*. Proceedings of the Royal Society of London B, **272**, 2329-2335. doi:10.1098/rspb.2005.3216

Lindstedt, C., **Morehouse, N.I.**, Pakkanen, H., Casas, J., Christides, J.P., Kempainen, K., Lindström, L. and Mappes, J. In revision. *Pigment composition of a variable warning signal of Parasemia plantaginis larvae (Arctiidae)*.

Van Gossum, H., Hammers, M., Katleen, H. and **Morehouse, N.I.** Submitted. *Reflectance spectra and morph mating frequencies support intraspecific mimicry in the female colour polymorphic damselfly Ischnura elegans*.

Stoehr, A.M., **Morehouse, N.I.**, and Kemp, D.J. Submitted. *Colour, colour production and sexual selection: Butterflies as model systems*.

PRESENTATIONS

Morehouse, N.I. and Rutowski, R.L. *Female choice for a nitrogen-rich color ornament in a nitrogen limited butterfly*. Oral presentation, 12th International Behavioral Ecology Congress, International Society for Behavioral Ecology, Ithaca, NY, August, 2008. **Awarded the Pitelka Prize for best student spoken paper.

PRESENTATIONS (CONT.)

Morehouse, N.I., Butler, M.W. and Webber, A. *Community outreach as a core training experience in graduate education*. Poster presentation, Center for the Integration of Research, Teaching, and Learning Forum 2008, University of Wisconsin, Madison, June, 2008.

Morehouse, N.I., Giraldo, M.A., Rutowski, R.L. and Stavenga, D.G. *Diverse color production mechanisms are responsible for convergent blue structural coloration in a butterfly mimicry complex*. Oral presentation, Iridescence: More Than Meets the Eye, International conference, Tempe, AZ, February, 2008.

Morehouse, N.I., Giraldo, M.A., Rutowski, R.L. and Stavenga, D.G. *Convergent evolution of blue structural coloration in a butterfly mimicry complex*. Oral presentation, 9th Annual Symposium, Graduates in Earth, Life and Social Sciences, Tempe, AZ, February, 2008. **Awarded the prize for Best Oral Presentation.

Morehouse, N.I. *The nutrient ecology of bright butterfly colors: Currencies, costs and evolutionary considerations*. Invited speaker, Evolution and Development of Colour Patterns Symposium, 5th International Conference on the Biology of Butterflies, Rome, Italy, July, 2007.

Morehouse, N.I. *Flying colors: New insights in to the world of bright butterfly coloration*. Invited speaker, Emeritus College Colloquia Series, Arizona State University, February, 2007.

Morehouse, N.I., Rutowski, R.L. and Vukusic, P. *Innovative optics of bright wing colors in pierid butterflies: morphological determinants and implications for use as visual signals*. Oral presentation, Annual Meeting, Society for Integrative and Comparative Biology, Phoenix, AZ, January, 2007.

Morehouse, N.I., and Davis, J.R. *A science mentoring model for partnerships between graduate research communities and public school classrooms*. Poster presentation, Annual Meeting, Society for Integrative and Comparative Biology, Phoenix, AZ, January, 2007.

Morehouse, N.I., Rutowski, R.L. and Vukusic, P. *Pigments as structural colors: Optical properties and evolutionary implications of pterin deposition in pierid butterflies*. Oral presentation, 11th International Behavioral Ecology Congress, International Society for Behavioral Ecology, Tours, France, July, 2006.

Morehouse, N.I. *Innovation on the wing: the fascinating world of butterfly wing colors*. Invited speaker, Ecology Explorers seminar, Global Institute of Sustainability, Arizona State University, Tempe, AZ, July, 2006.

Morehouse, N.I. and Ramakrishna, B. *Sustainable partnerships between graduate and K-12 education: Science mentoring outreach as a case study*. Oral presentation, AAAS-SWARM 81st Annual Meeting, Tulsa, OK, April, 2006.

Morehouse, N.I., Rutowski, R.L. and Vukusic, P. *Pigments as structural colors: Optical properties and evolutionary implications of pterin deposition in pierid butterflies*. Oral presentation, 7th Annual Symposium, Graduates in Earth Life and Social Sciences, Tempe, AZ, February, 2006.

Morehouse, N.I., Davis, J.R. and Ramakrishna, B. *Sustainable partnerships between graduate and K-12 education: Science mentoring outreach as a case study*. Oral presentation, 7th Annual Symposium, Graduates in Earth Life and Social Sciences, Tempe, AZ, February, 2006.

Morehouse, N.I., Rutowski, R.L. and Vukusic, P. *Pigments as structural colors: Optical properties and evolutionary implications of pterin deposition in pierid butterflies*. Oral presentation, Annual meeting, Animal Behavior Society, Snowbird, UT, August 2005.

Morehouse, N.I. and Rutowski, R.L. *Age-related degradation of butterfly coloration*. Poster session, Annual conference, Arizona Imaging and Microanalysis Society, Tempe, AZ, March, 2005.

PRESENTATIONS (CONT.)

Morehouse, N.I. and Rutowski, R.L. *Age-related degradation of butterfly coloration: Causes and implications*, Oral presentation, 6th Annual Symposium, Graduates in Earth Life and Social Sciences, Tempe, AZ, February, 2005.

Morehouse, N.I. *Ephemeral beauty: Age-related degradation of butterfly coloration*. Invited speaker, Hexapodium, Center for Insect Science, University of Arizona, Tucson, AZ, November, 2004.

Morehouse, N.I. *Insects in the classroom*. Invited speaker, Ecology Explorers seminar, Center for Environmental Studies, Arizona State University, Tempe, AZ, July, 2004.

Morehouse, N.I. and Rutowski, R.L. *Age-related degradation of butterfly coloration*. General poster session, 10th International Behavioral Ecology Congress, International Society for Behavioral Ecology, Jyväskylä, Finland, July 2004.

Morehouse, N.I. *Local buggers: An inquiry-based approach to local insect populations*. Education poster session, Annual meeting, American Association for the Advancement of Science, Seattle, WA, February 2004.

Morehouse, N.I. *Inquiry-based approaches to local insect populations*. Invited poster session, Annual meeting, Western Association of Graduate Schools, Phoenix, AZ, April, 2004.

Morehouse, N.I. and Rutowski, R.L. *Age-related degradation of visual signals in the Alfalfa Butterfly (Colias eurytheme)*. General poster session, Annual meeting, Animal Behavior Society, Boise, ID, July 2003.

FUNDING, AWARDS AND FELLOWSHIPS

Pitelka Prize, International Society for Behavioral Ecology, 2008
Marie Curie International Incoming Fellowship, European Union Seventh Research Framework Programme, 2008
International Research Fellowship, National Science Foundation, funding offered but declined, 2008
Travel Grant, International Society for Behavioral Ecology, \$500, 2008
Travel Grant, School of Life Sciences, ASU, \$250, 2008
Travel Grant, Graduate and Professional Students Association, ASU, \$214, 2008
Best Oral Presentation, Graduates in Earth Life and Social Sciences Annual Symposium, ASU, 2008
Division of Graduate Studies Dissertation Fellowship, ASU, \$19,000, 2007-2008
Student Research Grant, Animal Behavior Society, \$1,000, 2007
Grant in Aid of Research, Sigma Xi, ASU Chapter, \$400, 2007
Travel Grant, Graduate College, ASU, \$350, 2007
Travel Grant, School of Life Sciences, ASU, \$400, 2007
University Graduate Fellowship, Arizona State University, 2007
Doctoral Dissertation Improvement Grant, National Science Foundation, \$12,000, 2007
Division of Graduate Studies Workshop Grant, ASU, \$2,000, 2007
Frontiers in Life Sciences Workshop Grant, School of Life Sciences, ASU, \$30,000, 2007
Graduate and Professional Students Association Research Grant, ASU, \$2,000, 2006
Faculty Emeriti Fellowship, Preparing Future Faculty Program, ASU, \$1,500, 2006
Preparing Future Faculty Travel Grant, Division of Graduate Studies, ASU, \$300, 2006
University Graduate Fellowship, Arizona State University, 2006
Grant In Aid of Research Award, Sigma Xi, \$500, 2006
Mentorship Award, Graduate and Professional Students Association, ASU, \$500, 2006
Teaching Excellence Award Nominee, Graduate and Professional Students Association, ASU, 2006
Travel Grant, School of Life Sciences, ASU, \$350, 2006
NSF GK-12 Fellowship, Arizona State University, \$15,000, 2005-2006
Travel Grant, School of Life Sciences, ASU, \$350, 2005

FUNDING, AWARDS AND FELLOWSHIPS (CONT.)

Who's Who Among Students in American Universities and Colleges, 2005
Teaching Excellence Award Nominee, Graduate and Professional Students Association, ASU, 2005
NSF Graduate Research Fellowship, Honorable Mention, 2004
Travel Grant, Center for Insect Science, University of Arizona, \$500, 2004
Travel Grant, Graduate College, ASU, \$350, 2004
Travel Grant, School of Life Sciences, ASU, \$350, 2004
Travel Grant, Center for Environmental Studies, ASU, \$900, 2004
NSF GK-12 Fellowship, Arizona State University, \$27,500, 2003-2004
NSF Partners Paving Pathways Honoree, 2003
Grant in Aid of Research, Vision Research Award, Sigma Xi, \$2,000, 2003
Travel Grant, Graduate College, ASU, \$350, 2003
Travel Grant, Department of Biology, ASU, \$350, 2003
University Graduate Scholarship, Arizona State University, 2002-2005
Distinction in Research, Cornell University, 2000
Howard Hughes Undergraduate Research Fellowship, Cornell University, 1999
Dean's List, Cornell University, 1997-2000
National Merit Scholarship, 1996
Xerox Award for Excellence in the Humanities and Social Sciences, 1996
Valedictorian, C.G. Finney High School, 1996

PROFESSIONAL SOCIETY MEMBERSHIPS

American Association for the Advancement of Science
Animal Behavior Society
International Society for Behavioural Ecology
Lepidopterists' Society
Sigma Xi, The Scientific Research Society
Xerces Society for Invertebrate Conservation