

**Stephen Nowicki**  
*CURRICULUM VITAE*

**Education:**

B.S.	Tufts University, <i>summa cum laude</i>	1977
M.S.	Tufts University	1978
Ph.D.	Cornell University	1985
	Harvard University	
	Institute for Management and Leadership in Education	2010

**Professional Positions:**

Bass Fellow and Professor of Biology and Psychology & Neuroscience (Trinity College of Arts & Sciences) and Professor of Neurobiology (Duke Medical Center), 2002–present  
Dean and Vice Provost for Undergraduate Education, Duke University, 2007–2018  
Dean of the Natural Sciences, Duke University, 2004–2007  
Anne T. and Robert M. Bass Professorship, 1999  
Gästforskare, Ekologiska Institutet, Lund University, Sweden, 1999  
Associate Professor, Duke University, 1994–2002  
Assistant Professor, Duke University, 1989–1994  
Assistant Professor, Rockefeller University, 1986–1989  
Postdoctoral Research Fellow, Rockefeller University, 1984–1986

**Honors:**

Faculty Special Recognition Award, Duke Hispanic/Latino Alumni Association, 2017  
Outstanding Faculty Award, Duke Center for LGBT Life, 2012  
Elected Fellow, American Association for the Advancement of Science, 2010  
Klaus Immelmann Lectureship, Bielefeld University, Germany, 2006  
Distinguished Scientist Lectureship, Trinity University, 2006  
Eminent Biologist Lectureship, Pittsburgh EcoForum, 2001  
John Simon Guggenheim Fellow, 1999  
Elected Fellow, Animal Behavior Society, 1998  
Robert B. Cox Trinity College Distinguished Teaching Award, 1992  
Alfred P. Sloan Foundation Fellow, 1990–1992  
Kenneth Roeder Memorial Lectureship, Tufts University, 1990  
Mary Flagler Cary Charitable Trust Fellowship, 1987–1989  
Henry Sage Fellowship, Cornell University, 1982–1983  
Andrew D. White Fellowship, Cornell University, 1977–1981  
Sigma Xi, Cornell University, 1980  
Phi Beta Kappa, Tufts University, 1975

**Institutional Grants and Awards**

Howard Hughes Medical Institute Undergraduate Science Education Award, “The COMPASS Project” (52008095) P.I. 2014–2020  
Howard Hughes Medical Institute Undergraduate Science Education Award, “Inquiry across scale: From genes to cognition” (52006922) Co-P.I. 2010–2011, P.I. 2011–2014  
National Science Foundation, “Undergraduate neurosciences summer program in mechanisms of behavior” P.I. with W.G. Hall & M.M. Nijhout, 1993–1996;  
P.I. with W. Meck (DBI-98320514), 1997–2001

**Research Grants and Awards:**

- National Science Foundation, “Neural codes for vocal sequences” (IOS-1326858, Co-PI with R. Mooney), 2014–2020
- National Science Foundation, “Cognition and signaling in songbirds” (IOS-1144991), 2012–2016
- U.S. Fish & Wildlife Service, “Characterizing the population genetics of yellow-shouldered blackbirds on Isla de Mona” (USFWS Agreement 3430488, with I. Liu), 2014–2016
- National Science Foundation, “The role of mating system in sperm competition and protein evolution in *Agelaius* blackbirds” (IOS-1110782, with I. Liu), 2011–2014
- U.S.P.H.S., National Institutes of Deafness and Communicative Disorders, “Influence of early nutrition on neural mechanisms of signal processing” (5F32-HD056981, with K. Sewall and E. Jarvis), 2010–2013
- National Science Foundation, “Selective pressures shaping aggressive behavior in females: an experimental approach” (IOS-0710118, with K. Rosvall), 2007–2009
- National Science Foundation, “Developmental and receiver-dependent costs of avian signals” (IBN-0315377), 2003–2007
- National Science Foundation, “Sources of selection on song in white-crowned sparrows (*Zonotrichia leucophrys*)” (IOS-0508611, with E. Derryberry), 2005–2007
- U.S.P.H.S., National Institutes of Neurological Disorders and Stroke, “Single neuron correlates of learned song” P.I.: R. Mooney (R21 NS046583-01), 2003–2005
- National Science Foundation, “Implications of production constraints for the function of vocal performance in mate choice” (IBN-0407966, with B. Ballentine), 2004–2006
- National Science Foundation, “Fitness cost of nest defense in a passerine bird: A trade-off with offspring care” (IBN-0407952, with R. Duckworth), 2004–2006
- National Science Foundation, “Complexity and information in avian signals” (IBN-9974743), 1999–2003
- National Science Foundation, “Function of multiple signals in avian vocal communication” (IBN-0104973, with M. Beebee), 2001–2003
- National Science Foundation, “Sound production in spiny lobsters (Paninuridae): morphological constraints and the evolution of signal diversity” (IBN-9972597, with S. Patek), 1999–2001
- John Simon Guggenheim Foundation, “Nutrition and song learning in birds,” 1999 – 2000
- National Science Foundation, “Perception, function and development of complex vocal signals” (IBN-9408360), 1995–1999
- National Science Foundation, “Functional analysis of female reproductive coloration” (IBN-9623869, with S. Weiss), 1996–1999
- U.S.P.H.S., National Institutes of Deafness and Communicative Disorders, “Comparative study of mechanisms of vocal production” (R01 DC-00402-06), 1992–1996
- U.S.P.H.S., National Institutes of Deafness and Communicative Disorders, “Comparative study of mechanisms of vocal production” (“FIRST” award, R29 DC-00402-01), 1987–1992
- Alfred P. Sloan Foundation Fellowship Award, 1990–1992
- Duke University Research Council Awards, 1990, 1991, 1992, 1998
- Irma T. Hirschl Foundation Career Scientist Award, 1987–1989
- Whitehall Foundation Grant-in-Aid, 1986
- U.S.P.H.S. Postdoctoral Research Fellowship, 1984–1986
- U.S.P.H.S. Predoctoral Research Fellowship, 1983–1984

**Professional Service:**

KIPP ENC Board of Visitors, 2015–present  
Venice International University, Academic Council member, 2013–present  
University of Pittsburgh Pymatuning Lab of Ecology, Strategic Plan Task Force, 2019  
Consortium on Financing Higher Education, Assembly Representative, 2009–2018  
Programming Committee Chair, 2010–2011; Assembly Chair, 2014–2016  
Carolina Friends School, Board of Trustees, 2007–2013  
Animal Behavior Society, Presidential Cycle, 2003–2007  
Animal Behavior Society, Executive Committee Member-at-Large, 2000–2003  
National Science Foundation, IBN/IOS Proposal Review Panels, 1999–2002, 2004  
National Science Foundation, IGERT Proposal Review Panel, 2001  
Leiden University, Institute of Biology, External Ph.D. Examiner, 2004  
Copenhagen University, Zoological Institute, External Ph.D. Examiner, 2001, 2002  
National Institute of Mental Health, Psychobiology, Behavior and Neuroscience Proposal Review Panel, 1994–1998  
Society for Integrative and Comparative Biology, Division of Animal Behavior, Chair, 1996–2000  
Project Kaleidoscope Consultant, 1997–1998

**University Service:**

Duke Initiative for Science & Society, Associate, 2018–present  
Duke University Basketball Pep Band, 2004–2006, 2007–2018  
Phi Beta Kappa, Beta Chapter of North Carolina, *President*, 2009–2020  
Quality in Innovative Learning and Teaching (QUILT) Committee, *Convener*, 2011–2016  
Franklin Humanities Institute Advisory Board, 2009–2016  
University Athletics Council, 2007–2011  
Vice President for Public Affairs and Government Relations Search Committee, 2007  
Southern Association of Colleges and Schools Reaccreditation, Quality Enhancement Plan Committee, 2007–2009  
Campus Culture Initiative Task Force, 2006–2007  
Oak Ridge National Laboratory Liaison, 2004–2007  
Information Science/Information Studies, Faculty Board Member, 2003–2005  
University Curriculum 2000 Review Committee, *Chair*, 2003–2004  
Bass Chair Selection Committee, 2002–2004  
Primate Center Internal Advisory Committee, 2002–2004  
University Union Board, 2002–2004  
Academic Council, 1991–1992, 1994–1995, 1998–004  
Executive Committee, 1998–2000  
Board of Trustees Student Affairs Committee, Faculty Representative, 1999–2002  
University Writing Program Task Force, 1998–1999  
Undergraduate Neurosciences Program, Co-Director, 1992–2004  
Southern Association of Colleges and Schools Reaccreditation Steering Committee, Undergraduate Education Subcommittee, *Chair*, 1996–1998  
University Task Force on Reorganization of the Biological Sciences, 1996–1997  
Executive Committee of the Graduate School, 1994–1996  
Institutional Animal Care and Use Committee, 1989–1994; *Vice Chair*, 1991–1994

**Teaching – Duke University Courses and Other Activities:**

Mechanisms of Animal Behavior, 2019–present  
How Organisms Communicate, 2013–present  
How Darwin and DNA Changed the World, 2009–2011  
Translating Science, 2006–2008  
Introductory Biology (“The Science of Life”), 1996–2003, 2007  
Principles of Neurobiology, 1990–1995  
Animal Communication and Social Behavior, 1992–2005  
Integrative Biology: The View from the Organism, 1992  
Field Behavioral Ecology, 1991  
National Science Foundation Chautauqua Short Course for College Teachers:  
    “Mechanisms of Animal Behavior,” Organizer and Instructor, 1994  
Isle of Shoals Marine Laboratory, Lecturer, 1985–1988, 1990  
Rocky Mountain Biological Laboratory, Instructor, 1983, 1984

**Invited Research Lectures** (last 10 years):

Dartmouth College, 2019  
Cornell University, 2019  
Tufts University, 2019  
Florida Atlantic University, 2019  
University of Maryland, 2018  
University of Tennessee, 2018  
University of Pittsburgh Pymatuning Laboratory of Ecology, 2018  
University of Cincinnati, 2017  
University of Maryland Baltimore County, 2017  
Duke University Marine Lab, 2017  
University of California Davis, 2016  
Otterbein University, 2015  
University of Central Florida, 2014  
University of California Irvine, 2011  
University of Montana, 2011  
Indiana University, 2010  
Northwestern University, 2010  
Binghamton University, 2010  
Wesleyan University, 2009  
University of Michigan, 2009

**Books and Other Major Published Works:**

Nowicki, S. 2008, 2012, 2017. *Biology*. Houghton Mifflin Harcourt: Austin, TX.  
    [An introductory text book for high school students.]  
Searcy, W. A. & S. Nowicki. 2005. *The Evolution of Animal Communication: Reliability and Deception in Signaling Systems*. Princeton University Press: Princeton, NJ.  
Nowicki, S. 2004. *Biology: The Science of Life*. The Teaching Company: Chantilly, VA.  
    [72 half-hour lectures available on DVD, CD, and digital download.]

**Journal Articles and Book Chapters:**

- Caves, E. M., Schweikert, L. E., Green, P. A., Taboada, C., Zipple, M. N., Peters, S., Nowicki, S. & S. Johnsen. Variation in retinal carotenoids correlates with individual variation in perception of carotenoid-based signal colouration. *Behavioral Ecology*, in review.
- Dinh, J., Peters, S. & S. Nowicki. Vocal warm-ups in a songbird: swamp sparrows improve vocal performance during dawn choruses. *Animal Behaviour*, in review.
- Green, P. A., N. C. Brandley & S. Nowicki. Categorical perception in animal communication and decision-making. *Behavioral Ecology*, in review.
- Peniston, J., P. A. Green, M. N. Zipple & S. Nowicki. Threshold assessment, categorical perception, and the evolution of reliable signaling. *American Naturalist*, in review.
- Searcy, W. A. & S. Nowicki. Animal Communication. In: *The Behaviour of Animals: Mechanisms, Function, and Evolution*, 2<sup>nd</sup> Edition, Bolhuis, J., Hogan, J. & T. Piersma (eds.), John Wiley & Sons, in press.
- Zipple, M. N., Peters, S., Searcy, W. A. & S. Nowicki. Attendance to senescence-related changes in the songs of a wild bird. *Proceedings of the Royal Society London B*, in press
- Caves, E. M., Nowicki, S. & S. Johnsen. 2019. Von Uexküll revisited: Addressing human biases in the study of animal perception. *Integrative and Comparative Biology* icz073, <https://doi-org.proxy.lib.duke.edu/10.1093/icb/icz073>.
- Searcy, W. A. & S. Nowicki. 2019. The raised-by-wolves predicament. *Current Biology* 29: R1224–R1251. doi.org/10.1016/j.cub.2019.09.064.
- Searcy, W. A. & S. Nowicki. 2019. Birdsong learning, avian cognition, and the evolution of language. *Animal Behaviour* doi.org/10.1016/j.anbehav.2019.01.015.
- Searcy, W. A. & S. Nowicki. 2019. Signal reliability and intraspecific deception. In: *Encyclopedia of Animal Behavior*, 2<sup>nd</sup> Edition, Choe, J.C. (ed.), vol. 1, pp. 589–597. Elsevier, Academic Press.
- Searcy, W. A., Ocampo, D. & S. Nowicki. 2019. Constraints on song type matching in a songbird. *Behavioral Ecology and Sociobiology* 73:102. doi.org/10.1007/s00265-019-2708-6.
- Soha, J., Peters, S., Anderson, R. C., Searcy, W. A. & S. Nowicki. 2019. Performance on tests of cognitive ability is not repeatable across years in a songbird. *Animal Behaviour* 158: 281-288. doi.org/10.1016/j.anbehav.2019.09.020.
- Zipple, M. N., E. M. Caves, P. A. Green, S. Peters, S. Johnsen & S. Nowicki. 2019. Categorical perception across non-signaling versus signaling color ranges in a songbird. *Proceedings of the Royal Society London B* 286: 20190524. dx.doi.org/10.1098/rspb.2019.0524.
- Zipple, M. N., Nowicki, S., Searcy, W. A. & S. Peters. 2019. Full life course analysis of bird song reveals maturation and senescence of highly repeatable song characteristics. *Behavioral Ecology* 30: 1761-1768. doi:10.1093/beheco/arz146.
- Caves, E. M., P. A. Green, M. N. Zipple, S. Peters, S. Johnsen & S. Nowicki. 2018 Categorical perception of carotenoid-based coloration in an assessment signal. *Nature* 560: 365-367 doi.org/10.1038/s41586-018-0377-7.
- DuBois, A. L., S. Nowicki, S. Peters, K. D. Rivera-Caceres & W. A. Searcy. 2018. Song is not a reliable signal of general cognitive ability in a songbird. *Animal Behaviour* 137: 205-213.

- Lachlan, R. F., O. Ratmann & S. Nowicki. 2018. Cultural conformity generates extremely stable traditions in bird song. *Nature Communications* 9: 2417 DOI: 10.1038/s41467-018-04728-1.
- Liu, I., J. Soha & S. Nowicki. 2018. Song type matching and vocal performance in territorial signaling by male swamp sparrows. *Animal Behaviour*, 139: 117-125.
- Niederhauser, J. M., DuBois, A. L., Searcy, W. A., Nowicki, S. & R. C. Anderson. 2018. A test of the eavesdropping avoidance hypothesis as an explanation for low amplitude aggressive signaling in the song sparrow. *Behavioral Ecology and Sociobiology* 72: 47 doi.org/10.1007/s00265-018-2469-7.
- Sewall, K. B., R. C. Anderson, J. Soha, S. Peters & S. Nowicki. 2018. Early life conditions that impact song learning in male zebra finches also impact neural and behavioral responses to song in females. *Developmental Neurobiology* 78: 785-798.
- Anderson, R. A, W. A. Searcy, S. Peters, M. Hughes, A. L. DuBois & S. Nowicki. 2017. Song learning and cognitive ability are not related in a songbird. *Animal Cognition* 20: 309-320.
- Peters, S. & S. Nowicki. 2017. Overproduction and attrition: the fates of songs memorized during song learning in songbirds. *Animal Behaviour* 124: 255-261.
- DuBois, A. L., S. Nowicki & W. A. Searcy. 2016. A test for repertoire matching in eastern song sparrows. *Journal of Avian Biology* 47: 146–152.
- Klofstad, C. A., S. Nowicki & R. C. Anderson. 2016. How voice pitch influences our choice of leaders. *American Scientist*, 104: 282-287.
- Akçay, C., R. C. Anderson, S. Nowicki, M. D. Beecher & W. A. Searcy. 2015. Quiet threats: Soft song as an aggressive signal in song sparrows and other songbirds. *Animal Behaviour* 105: 267-274.
- Klofstad, C. A., R. C. Anderson & S. Nowicki. 2015. Perceptions of competence, strength, and age influence humans to select leaders with lower-pitched voices. *PLOS One* 10(8): e0133779. doi:10.1371/journal.pone.0133779
- Lachlan, R. F. & S. Nowicki. 2015. Context-dependent categorical perception in a songbird. *Proceedings of the National Academy of Sciences, USA* 112: 1892-1897.
- Liu, I.A., J.E. Jhondrow, J. Abe, S. Lüpold, K. Yasukawa, D.F. Westneat, and S. Nowicki. 2015. Genetic diversity does not explain extra-pair paternity in multiple populations of a songbird. *Journal of Evolutionary Biology* 28:1156-1169.
- Anderson, R. C., S. Peters & S. Nowicki. 2014. Effects of early auditory experience on the development of local song preference in female swamp sparrows. *Behavioral Ecology and Sociobiology* 68: 437-447.
- Lachlan, R. F., R. C. Anderson, S. Peters, W. A. Searcy & S. Nowicki. 2014. Prototypical versions of learned swamp sparrow songs are more effective signals than are outliers. *Proceedings of the Royal Society, London B* 281: 20140252.
- Nowicki, S. & W. A. Searcy. 2014. The evolution of vocal learning. *Current Opinion in Neurobiology* 28: 48–53.
- Peters, S., W. A. Searcy & S. Nowicki. 2014. Developmental stress, song learning, and cognition. *Integrative and Comparative Biology* 54: 555–567.
- Searcy, W. A., C. Akçay, S. Nowicki, & M. D. Beecher. 2014. Aggressive signaling in song sparrows and other songbirds. *Advances in the Study of Behavior* 46: 89-125.
- Searcy, W. A., K. Sewall, J. Soha, S. Nowicki & S. Peters. 2014. Song-type sharing in a population of song sparrows in the eastern United States. *Journal of Field Ornithology* 85: 206-212.

- Anderson, R. C., A. L. Dubois, D. K. Piech, W. A. Searcy & S. Nowicki. 2013. Receiver response to an aggressive visual signal, the wing-wave display, in swamp sparrows. *Behavioral Ecology and Sociobiology* 67: 593-600.
- Searcy, W. A., Anderson, R. C., Ballentine, B. & S. Nowicki. 2013. Limits to reliability in avian aggressive signals. *Behaviour* 150: 1129-1145.
- Searcy, W. A., A. Dubois, K. Rivera Cáceres & S. Nowicki. 2013. A test of a hierarchical signaling model in song sparrows. *Animal Behaviour* 86: 309-315.
- Sewall, K., J. Soha, S. Peters & S. Nowicki. 2013. Potential trade-off between vocal ornamentation and spatial ability in a songbird. *Biology Letters* 9: 20130344.
- Anderson, R.C., M. Hughes, W. A. Searcy & S. Nowicki. 2012. The receiver-dependent cost of soft song – a signal of aggressive intent in songbirds. *Animal Behaviour* 83: 1443-1448.
- Lachlan, R. F. & S. Nowicki. 2012. Can assessment of song learning accuracy be a reliable signaling system? *American Naturalist* 180: 751-761.
- Peters, S., E. P. Derryberry & S. Nowicki. 2012. Songbirds learn songs least degraded by environmental transmission. *Biology Letters* 8: 736-739.
- Prather, J.F., S. Peters, R. Mooney & S. Nowicki. 2012. Sensory constraints on birdsong syntax: neural responses to swamp sparrow songs with accelerated trill rates. *Animal Behaviour* 83: 1411-1420.
- Boogert, N., R. C. Anderson, S. Peters, W. A. Searcy & S. Nowicki. 2011. Song repertoire size in male song sparrows correlates with detour-reaching, but not with other cognitive measures. *Animal Behaviour* 81: 1209-1216.
- DuBois, A., S. Nowicki & W. A. Searcy. 2011. Discrimination of vocal performance by male swamp sparrows. *Behavioral Ecology and Sociobiology* 65: 717-726.
- Nowicki, S. & W. A. Searcy. 2011. Are better singers smarter? *Behavioral Ecology* 22: 10-11.
- Prather, J.F., S. Peters, S. Nowicki & R. Mooney. 2010. Persistent representation of juvenile experience in the adult songbird brain. *Journal of Neuroscience* 30:10586-10598.
- Searcy, W. A., S. Peters, S. Kipper & S. Nowicki. 2010. Female sparrows use song to assess male developmental history. *Behavioral Ecology and Sociobiology* 64: 1343-1349.
- DuBois, A., S. Nowicki & W. A. Searcy. 2009. Swamp sparrows modulate vocal performance in an aggressive context. *Biology Letters* 5: 163-165.
- Prather, J. F., S. Nowicki, R. C. Anderson, S. Peters & R. A. Mooney. 2009. Neural correlates of categorical perception in learned vocal communication. *Nature Neuroscience* 12: 121-128.
- Searcy, W. A. & S. Nowicki. 2009. Consequences of brain development for sexual signalling in songbirds. In: Dukas, R & J. Ratcliffe (eds.) *Cognitive Ecology II*, University of Chicago Press, Chicago, pp 71-87.
- Searcy, W. A. & S. Nowicki. 2009. Sexual selection and the evolution of animal signals. In: Larry R. Squire (Ed.) *Encyclopedia of Neuroscience*, vol. 8, pp. 769-776, Academic Press: Oxford.
- Anderson, R. C., W. A. Searcy, S. Peters & S. Nowicki. 2008. Soft song in song sparrows: acoustic structure and implications for signal function. *Ethology* 114: 662-676.
- Anderson, R. C., W. A. Searcy & S. Nowicki. 2008. Testing the function of song matching in birds: responses of eastern male song sparrows *Melospiza melodia* to partial song matching. *Behaviour* 154: 347-363.
- Ballentine, B., W. A. Searcy & S. Nowicki. 2008. Reliable aggressive signalling in swamp sparrows. *Animal Behaviour* 75: 693-703.
- Prather, J. F., S. Peters, S. Nowicki & R. Mooney. 2008. Precise auditory-motor mirroring in neurons for learned vocal communication. *Nature* 451: 305-310.

- Searcy, W. A., R. C. Anderson & S. Nowicki. 2008. Is bird song a reliable signal of aggressive intent? A reply. *Behavioral Ecology and Sociobiology* 62: 1213-1216.
- Searcy, W. A. & S. Nowicki. 2008. Bird song and the problem of signal reliability. *American Scientist* 96: 114-121.
- Anderson, R., S. Nowicki & W. A. Searcy. 2007. Soft song in song sparrows: response of males and females to an enigmatic signal. *Behavioral Ecology and Sociobiology* 61: 1267-1274.
- Hughes, M., R. C. Anderson, W. A. Searcy, L. M. Bottensek & S. Nowicki. 2007. Song type sharing and territory tenure in eastern song sparrows: implications for the evolution of song repertoires. *Animal Behaviour* 73: 701-710.
- Searcy, W. A. & S. Nowicki. 2006. Signal interception and the use of soft song in aggressive interactions. *Ethology* 112: 865-872.
- Searcy, W. A., R. Anderson & S. Nowicki. 2006. Bird song as a signal of aggressive intent. *Behavioral Ecology and Sociobiology* 60: 234-241.
- Nowicki, S. & W. A. Searcy. 2005. Adaptive priorities in brain development: Theoretical comment on Pravosudov (2005). *Behavioral Neuroscience* 119: 1415-1418.
- Anderson, R. C., W. A. Searcy & S. Nowicki. 2005. Partial song matching in an eastern population of song sparrows (*Melospiza melodia*). *Animal Behaviour* 69: 189-196.
- Nowicki, S. & W. A. Searcy. 2005. Song and mate choice in birds: How the development of behavior helps us understand function. *Auk*, 122: 1-14.
- Ballentine, B., J. Hyman & S. Nowicki. 2004. Singing performance influences female response to male bird song: an experimental test. *Behavior Ecology*, 15: 163-168.
- Hyman, J., M. Hughes, W. A. Searcy & S. Nowicki. 2004. Individual variation in the strength of territory defense in song sparrows: correlates of age, territory tenure, and neighbor aggressiveness. *Behaviour*, 141: 15-27.
- Nowicki, S. & W. A. Searcy. 2004. Song function and the evolution of female preferences: Why birds sing and why brains matter. *Ann. N.Y. Acad. Sci.*, 1016: 704-723.
- Podos, J. & S. Nowicki. 2004. Beaks, adaptation, and vocal evolution in Darwin's finches. *BioScience* 54: 501-510.
- Podos, J. & S. Nowicki. 2004. Performance limits on birdsong production. In: Marler, P & H. Slabbekoorn (Eds.) *Nature's Music: The Science of Birdsong*, pp. 318-341. Elsevier/Academic Press: New York.
- Podos, J., S. Peters & S. Nowicki. 2004. Calibration of song learning targets during vocal ontogeny in swamp sparrows (*Melospiza georgiana*). *Anim. Behav.* 68: 929-940.
- Searcy, W. A., S. Peters & S. Nowicki. 2004. Effects of early nutrition on growth rate and adult size in song sparrows. *J. Avian Biol.*, 35: 269-279.
- Searcy, W.A., S. Nowicki & S. Peters. 2003. Phonology and dialect discrimination in song sparrows (*Melospiza melodia*). *Ethology* 109: 23-35.
- Nowicki, S., W. A. Searcy & S. Peters. 2002. Brain development, song learning and mate choice in birds: a review and experimental test of the "nutritional stress hypothesis." *J. Comp Physiol. A* 188: 1003-1014.
- Nowicki, S., W. A. Searcy & S. Peters. 2002. Quality of song learning affects female response to male bird song. *Proc. Roy. Soc. Lond. B* 269: 1949-1954.
- Nowicki, S, W.A. Searcy, T. Krueger & M. Hughes. 2002. Individual variation in response to simulated territorial challenge among territory-holding song sparrows. *J. Avian Biol.* 33: 253-259.
- Searcy, W.A., S. Nowicki, M. Hughes & S. Peters. 2002. Geographic song discrimination in relation to dispersal distances in song sparrows. *Amer. Natur.* 159: 221-230.



- Hoese, W.J. & S. Nowicki. 2001. Using "the organism" as a conceptual focus in an introductory biology course. *Amer. Biol. Teacher* 63: 176-182.
- Mooney, R., W.J. Hoese & S. Nowicki. 2001. Auditory representation of the vocal repertoire in a songbird with multiple song types. *Proc. Natl. Acad. Sci. USA* 98: 12798-12783.
- Nowicki, S., W. A. Searcy, M. Hughes & J. Podos. 2001. The evolution of bird song: male and female response to song innovation in swamp sparrows. *Anim. Behav.* 62: 1189-1195.
- Hoese, W.J., J. Podos, N.C. Boetticher & S. Nowicki. 2000. Vocal tract function in birdsong production: experimental manipulation of beak movements. *J. Exp. Biol.* 203: 1845-1855.
- Nowicki, S., D. Hasselquist, S. Bensch & S. Peters. 2000. Nestling growth and song repertoire size in great reed warblers: evidence for song learning as an indicator mechanism in mate choice. *Proc. Roy. Soc. Lond. B* 267: 2419-2424.
- Peters, S., W.A. Searcy, M.D. Beecher & S. Nowicki. 2000. Geographic variation in the organization of song sparrow repertoires. *Auk* 117: 936-942.
- Podos, J. & S. Nowicki. 2000. Mechanical limits and the evolution of vocalizations in birds. In: Maria Alice dos Santos Alves, et al. (Eds.) *A Ornithologia no Brasil: Pesquisa Atual e Perspectivas*, do Congresso Brasileiro de Ornitologia, pp. 251-271. EdUERJ: Rio de Janeiro.
- Searcy, W.A. & S. Nowicki. 2000. Male-male competition and female choice in the evolution of vocal signaling. In: Y. Espmark, T. Amundsen & G. Rosenqvist (Eds.) *Animal Signals: Signalling and Signal Design in Animal Communication*, pp. 301-315. Tapir Academic Press: Trondheim.
- Searcy, W.A., S. Nowicki & C. Hogan. 2000. Song type variants and aggressive context. *Behav. Ecol. Sociobiol.* 48: 358-363.
- Nowicki, S., S. Peters, W.A. Searcy & C. Clayton. 1999. The development of song variation in song sparrows. *Anim. Behav.* 57: 1257-1264.
- Podos, J., S. Nowicki & S. Peters. 1999. Permissiveness in vocal syntax learning in the swamp sparrow. *Anim. Behav.* 58: 93-103.
- Searcy, W.A. & S. Nowicki. 1999. Functions of song variation in song sparrows. In: M. Konishi & M. Hauser (eds.) *The Design of Animal Communication*, pp. 577-595. MIT Press: New York.
- Searcy, W.A., S. Nowicki & S. Peters. 1999. Song types as fundamental units in vocal repertoires. *Anim. Behav.* 58: 37-44.
- Nowicki, S., S. Peters & J. Podos. 1998. Song learning, early nutrition and sexual selection in songbirds. *Amer. Zool.* 38: 179-190.
- Nowicki, S., W.A. Searcy & M. Hughes. 1998. The territory defense function of song in song sparrows: a test with the speaker occupation design. *Behaviour* 135: 615-628.
- Hughes, M., S. Nowicki, W.A. Searcy & S. Peters. 1998. Song type sharing in song sparrows: Implications for repertoire function and song learning. *Behav. Ecol. Sociobiol.* 42: 437-446.
- Hughes, M., S. Nowicki & B. Lohr. 1998. Call learning in black-capped chickadees (*Parus atricapillus*): The role of experience in the development of "chick-a-dee" calls. *Ethology* 104: 232-249.
- Erickson, C. J., S. Nowicki, L. Dollar & N. Goehring. 1998. Percussive foraging: Stimuli for prey location by aye-ayes (*Daubentonia madagascariensis*). *Int. J. Primatol.* 19: 111-122.
- Gaunt, A.S. & S. Nowicki. 1998. Birdsong: acoustics and physiology revisited. In: Hopp, S. L. M. J. Owren & C. S. Evans (eds.), *Animal Acoustic Communication*, Springer-Verlag, Heidelberg, pp. 291-321.

- Searcy, W.A., M. Hughes & S. Nowicki. 1997. The response of male and female song sparrows to geographic variation in song. *Condor* 99: 651-657.
- Nowicki, S. 1997. Bird acoustics. In: M. J. Crocker (ed.) *Encyclopedia of Acoustics*. John Wiley & Sons, New York, Chapter 150, pp. 1813-1817.
- Peters, S. & S. Nowicki. 1996. Development of tonal quality in birdsong: Further evidence from song sparrows. *Ethology* 102: 323-335.
- Strote, J. & S. Nowicki. 1996. Responses to songs with altered tonal quality by adult song sparrows (*Melospiza melodia*). *Behaviour* 130: 1-15.
- Podos, J., J. K. Shearer, S. Peters & S. Nowicki. 1995. Ontogeny of vocal tract movements during song production in song sparrows. *Anim. Behav.* 50: 1287-1296.
- Searcy, W.A., J. Podos, S. Peters & S. Nowicki. 1995. Discrimination of song types and variants in song sparrows. *Anim. Behav.* 49: 1219-1226.
- Lohr, B., R. Weisman & S. Nowicki. 1994. The role of pitch cues in song recognition by Carolina chickadees (*Parus carolinensis*). *Behaviour* 130: 1-15.
- Nowicki, S., J. Podos & F. Valdés. 1994. Temporal patterning of within-song type and between-song type variation in song repertoires. *Behav. Ecol. Sociobiol.* 34: 329-335.
- Nowicki, S. & J. Podos. 1993. Complexity, coupling and contingency in birdsong. In: *Perspectives in Ethology*, vol.10 (P.P.G. Bateson, P. Klopfer & N. Thompson, eds.), pp. 159-186, Plenum Press, New York.
- Westneat, M.W., J.H. Long, Jr., W. Hoese & S. Nowicki. 1993. Kinematics of birdsong: Functional correlation of cranial movements and acoustic features in sparrows. *J. Exp. Biol.* 182: 147-171.
- Jacobs, M., D.P. Nowacek, G. Cannon, S. Nowicki & R.B. Forward. 1993. Seasonal changes in vocalizations during behavior of the Atlantic bottlenose dolphin. *Estuaries* 16: 241-246.
- Nowicki, S., M. Westneat & W. Hoese. 1992. Birdsong: Motor function and the evolution of communication. *Seminars in Neurosci.* 4: 385-390.
- Nowicki, S., P. Marler, A. Maynard & S. Peters. 1992. Is the tonal quality of birdsong learned? Evidence from song sparrows. *Ethology* 90: 225-235.
- Peters, S., P. Marler & S. Nowicki. 1992. Song sparrows learn from limited exposure to song models. *Condor* 94: 1016-1019.
- Podos, J., S. Peters, T. Rudnický, P. Marler & S. Nowicki. 1992. The organization of song repertoires in song sparrows: Themes and variations. *Ethology* 90: 89-106.
- Nowicki, S., M. Hughes & P. Marler. 1991. Flight songs of swamp sparrows: Alternative phonology of an alternative song category. *Condor* 93: 1-11.
- Lohr, B., S. Nowicki & R. Weisman. 1991. Pitch production in Carolina chickadee songs. *Condor* 93: 197-199.
- Nowicki, S. & D.A. Nelson. 1990. Defining natural categories in acoustic signals: Comparison of three methods applied to 'chick-a-dee' call notes. *Ethology* 86: 89-101.
- Ball, G.F. & S. Nowicki. 1990. Assessment of song quality in photorefractory and photosensitive song sparrows. *Anim. Behav.* 40: 986-987.
- Nowicki, S. & G.F. Ball. 1989. Testosterone induction of song in photosensitive and photorefractory male sparrows. *Horm. and Behav.* 23: 514-525.
- Nowicki, S. J.C. Mitani, D.A. Nelson & P. Marler. 1989. The communicative significance of tonality in birdsong: Responses to songs produced in helium. *Bioacoustics* 2: 35-46.
- Nowicki, S. 1989. Vocal plasticity in captive black-capped chickadees: The acoustic basis and rate of call convergence. *Anim. Behav.* 37: 64-73.
- Nowicki, S. & P. Marler. 1988. How do birds sing? *Music Perception* 5: 391-426.

- Nowicki, S. 1987. Vocal tract resonances in oscine bird sound production: evidence from birdsongs in a helium atmosphere. *Nature* 325: 53-55.
- Nowicki, S. & R.R. Capranica. 1986. Bilateral syringeal coupling during phonation of a songbird. *J. Neuroscience* 6: 3595-3610.
- Nowicki, S. & R.R. Capranica. 1986. Bilateral syringeal interaction in the vocal production of an oscine bird sound. *Science* 231: 1297-1299.
- Nowicki, S. 1985. Spider. In: *McGraw-Hill Yearbook of Science and Technology* (S.P. Parker, editor-in-chief), pp. 410-412, New York: McGraw-Hill Inc.
- Nowicki, S. 1984. A question of identity: the call of the black-capped chickadee. *Living Bird Quart.* 3(1): 30.
- Nowicki, S. 1983. Flock-specific recognition of chickadee calls. *Behav. Ecol. Sociobiol.* 12: 317-320.
- Eisner, T. & S. Nowicki. 1983. Spider web protection through visual advertisement: The role of the "stabilimentum." *Science* 219: 185-187.
- Nowicki, S. & T. Eisner. 1983. Predatory capture of bombardier beetles by a tabanid fly larva. *Psyche* 90: 119-122.
- Jackman, R., S. Nowicki, D.J. Aneshansley & T. Eisner. 1983. Predatory capture of toads by fly larvae. *Science* 222: 515-516.
- Jefson, M., J. Meinwald, S. Nowicki, K. Hicks & T. Eisner. 1983. Chemical defense of a rove beetle (*Creophilus maxillosus*). *J. Chem. Ecol.* 9: 159-180.
- Jain, S.C., S. Nowicki, T. Eisner & J. Meinwald. 1982. Insect repellents for vetiver oil: Zizanal and epizizanal. *Tetr. Letters* 23: 4639-4642.
- Mammen, D.L. & S. Nowicki. 1981. Individual differences and within-flock convergence in chickadee calls. *Behav. Ecol. Sociobiol.* 9: 179-186.
- Eisner, T., S. Nowicki, M. Goetz & J. Meinwald. 1980. Red cochineal dye (Carminic acid): Its role in nature. *Science* 208: 1038-1040.
- Nowicki, S. & K.B. Armitage. 1979. Behavior of juvenile yellow-bellied marmots: Play and social integration. *Z. Tierpsychol.* 51: 85-105.

#### **Undergraduate Convocation Speeches:**

found at: <http://sites.biology.duke.edu/nowicki/books-speeches.html>

#### **Ph.D. and Postdoctoral Students Supervised** (chronological order):

Mark Westneat, postdoc 1991–1992; Present position: Professor, Organismal Biology and Anatomy, University of Chicago

Melissa Hughes, postdoc 1994–1996; Present position: Professor, Department of Biology, College of Charleston

Bernard Lohr, PhD 1995; Dissertation: Production and recognition of acoustic frequency cues in chickadees; Present position: Associate Professor, Department of Biological Sciences, University of Maryland, Baltimore County

Jeffrey Podos, PhD 1996; Dissertation: Performance limits on vocal evolution in songbirds (Passeriformes: Emberizidae); Present position: Professor, Department of Biology, University of Massachusetts, Amherst

John Rowden, PhD 1996; Dissertation: The evolution of display behavior in the parrot genus *Neophema* (Aves: Psittaciformes); Present position: Senior Director, Community Conservation, National Audubon Society

- Tammy L. Windfelder, PhD 1997; Dissertation: Polyspecific association and interspecific communication between two neotropical primates: saddle-back tamarins (*Saguinus fuscicollis*) and emperor tamarins (*Saguinus imperator*); Present position: Associate Professor, Department of Biology, Drew University
- William J. Hoese, PhD 1998; Dissertation: Functional morphology and biomechanics of jaw operation in sparrows; Present position: Professor, Department of Biological Sciences, California State University, Fullerton
- Denise S. Pope, PhD 1998; Dissertation: The fiddler crab claw waving display: function and evolution of a sexually selected signal; Present position: Education Research Scientist, SimBio Company
- Stacey L. Weiss, PhD 1999; Dissertation: The function and regulation of reproductive color of female striped plateau lizards (*Sceloporus virgatus*); Present position: Professor, Department of Biology, University of Puget Sound
- Sheila Patek, PhD 2001; Dissertation: Signal producing morphology and the evolution of Palinurid lobster acoustic communication; Present position: Professor, Department of Biology, Duke University
- Christopher Sturdy, postdoc 2000–2002 (with Dr. Richard Mooney); Present position: Professor, Department of Psychology, University of Alberta
- Valerie B. Simon, PhD 2002; Dissertation: Predation, risk assessment and signaling behavior in Anolis lizards; Present position: Boat-builder, Key West, FL.
- Martin D. Beebee, PhD 2003; Song complexity and avian communication; Present position: Martin Beebee Photography, Forestville, CA
- Silke Kipper, postdoc 2004–2005; Present position: Research Associate, Technische Universität München, Munich
- Barbara E. Ballentine, PhD 2006; Production constraints in assessment signaling and the evolution of birdsong; Present position: Associate Professor, Western Carolina University
- Jeremy D. Hyman, postdoc 2002–2006; Intrasexual signaling and territoriality; Present position: Professor, Department of Biology, Western Carolina University
- Renée Duckworth, PhD 2006; Ecological determinants of population-level variation in aggression in bluebirds; Present position: Associate Professor, University of Arizona
- Elizabeth Derryberry, PhD 2007; Song evolution in white-crowned sparrows: Patterns and processes; Present position: Associate Professor, University of Tennessee
- Jonathan Prather, postdoc 2003–2009 (with Dr. Richard Mooney); Present position: Associate Professor, University of Wyoming
- Kim Rosvall, PhD 2009; Costs and benefits of intrasexual aggression in females: An experimental approach; Present position: Assistant Professor, Indiana University
- Kendra Sewell, postdoc 2010 – 2012; Present position: Assistant Professor, Virginia Tech
- Rob Lachlan, postdoc 2007–2013; Present position: Assistant Professor, Royal Holloway University of London
- Rindy Anderson, postdoc 2008–2014; Present position: Assistant Professor, Florida Atlantic University
- Irene Liu, PhD 2014; Molecular causes and consequences of sperm competition in Agelaius blackbirds; Present position: Story Researcher/Associate Producer, Cornell University Laboratory of Ornithology
- Eleanor Caves, postdoc 2018–2019; Present position: Marie Skłodowska-Curie Postdoctoral Fellow, University of Exeter
- Patrick Green, postdoc 2018–2019; Present position: Human Frontiers Science Program Postdoctoral Fellow, University of Exeter