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MICHAEL D. BEECHER

Professor, Departments of Psychology & Biology,  
Neurobiology & Behavior Program,  
& Bloedel Hearing Research Center,  
University of Washington  
Seattle, Washington 98195 (206/543-6545)  
(email: beecher@u.washington.edu)

PERSONAL

Wife: Inger Mornestam Beecher (occupation: veterinarian)

Children: Eileen, Daniel, Devin

Home address: 2625 Perkins Lane, Seattle, WA 98199 (206/285-2040)

EDUCATION

B.A., Reed College (1963)

Ph.D., Boston University (1969)

Postdoctoral, New England Regional Primate Center, Harvard Medical School

Awards: NSF Graduate Fellowships ('65-'69), NIH Postdoctoral Fellowship ('69-'71)

ACADEMIC POSITIONS

1969-71 Harvard Medical School, Visiting Scientist

1971-78 Eastern Michigan University (Associate Professor 1975)

University of Michigan (adjunct)

1978- University of Washington (Professor 1987; Chair Psychology 1993-2002)

RESEARCH AND TEACHING INTERESTS

Evolution and behavior

Animal communication

Bioacoustics and hearing

Development of behavior

## CURRENT RESEARCH

Research in my lab uses the song sparrow (*Melospiza melodia*) to investigate the function of song and song learning. Song function is examined in the field, via a long-term banding and recording program, radio-tracking studies and field experiments (mostly 'playback' studies). Our song learning studies in the field are designed to identify the ecological correlates of song learning, and in particular, to relate the bird's strategies of song learning and territory establishment.

Our laboratory developmental studies focus on social factors and have employed multiple live tutors (vs. tape tutors or single live tutors). We are currently examining the relative importance of directly interacting with the song tutor versus overhearing (eavesdropping on) such song interaction. As part of our goal of analyzing social factors in song learning, we have developed a "virtual tutor" which simulates adult counter-singing birds and also interacts with the young bird.

We examine functional correlates of song via playback experiments and by attempting to correlate life history and song parameters (e.g. years on territory with degree of song sharing, repertoire size). We examine female influence on song by examining sexual responses (solicitations) of female song sparrows evoked by song in the lab, using birds that have been taken from known field contexts (hence we can compare her response to the songs of her mate vs. those of her neighbors, etc.). We examine female influence also by correlating extra-pair fertilizations (the epf rate is about 25%) with song parameters of the mate and the extra-pair male.

We are also doing integrative, collaborative studies of the role of neural song centers in song perception and production (collaborative with Eliot Brenowitz). A current interest is the role of sex hormones in song development and crystallization.

## EXTRAMURAL RESEARCH GRANTS

- 1974-1977: “Characteristics of Hearing and its Evolution in Primates” Co-P.I., with  
W. C. Stebbins & D. B. Moody *National Science Foundation*
- 1977-1981: “Characteristics of Hearing and its Evolution in Vertebrates” Co-P.I., with  
W. C. Stebbins & D. B. Moody *National Science Foundation*
- 1981-1984: “Mechanisms of Kin Recognition” *National Science Foundation*
- 1984-1987: “Individual Recognition by Voice in Animal Communication Systems” *National  
Science Foundation*
- 1987-1988: “Bird Song: Learning, Perception and Function” *National Science Foundation*
- 1988-1989: “Avian spatial memory” *National Institute of Mental Health*
- 1988-1991: “Bird Song: Perception, Learning and Function” *National Science Foundation*
- 1992-1996: “Integrative Studies of Song Learning” *National Science Foundation*
- 1996-2001: “Integrative Studies of a Model Learning System” *National Science Foundation*
- 2002-2006: “Social, Ecological and Genetic Variables in a Model Learning System” *National  
Science Foundation*
- 2006-2007: “Field Studies of Passerine Learning” *National Science Foundation*
- 2007-2011: “Social Factors in Vocal Development” *National Science Foundation*

## SELECTED PROFESSIONAL

Organizer, “Symposium on Individual and Species Recognition”, American Society of  
Zoologists Meeting, Seattle, Dec 1980 (and PI on support grant from NSF).

*American (Executive) Editor, Animal Behaviour, 1994-97*

*President, Animal Behavior Society (ABS), 2002 (President elect etc 1999-2003)*

*Fellow, Animal Behavior Society*

*Distinguished Service Award, Animal Behavior Society, 2005*

*Exemplar Award, Animal Behavior Society, 2007*

*Animal Behavior Panel, National Science Foundation, 1992 -1995, 2001 - 2005*

*Program Director, Animal Behavior, Division of Integrative Biology, National Science Foundation  
2006-2007*

## SELECTED TALKS

“Bird song repertoires: Aural peacock's tail, ‘language’, or something else alltogether?”,  
University of Idaho, April 28, 2009.

“How song sparrows communicate via song”; “Bird song learning as a social process”, Cornell  
University, March 26 & 27, 2009.

“Different song-learning strategies in eastern and western song sparrows?”. Invited paper in  
symposium *Individual adaptation, population differentiation, and conservation of adaptive  
variation in song sparrows*. American Ornithologists' Union, Portland, OR, July 2008

“Bird song learning is a social process”. Invited paper in symposium *Cognitive Ecology II*,  
Animal Behavior Society, Burlington, Vermont, July 2007.

“Social factors in song learning”. Plenary talk in symposium *Animal Social Learning*, St.  
Andrews University, Scotland, June 2005.

“Social factors in song learning in the song sparrow”. Fellows Address, Animal Behavior  
Society Meeting, Indiana University, Bloomington, Indiana, July 2002.

“Social factors in song Learning in the song sparrow”. Plenary Address, Eastern Bird Song  
Meeting, Rockefeller University, Millbrook, NY, July 2002.

“Bird song learning as an evolved strategy”. Invited paper in symposium *Characterizing Psychological  
Adaptations*. Ciba Foundation, London, England, October 1996.

“The song learning strategy of the song sparrow”. Invited paper in symposium *Bird song, brain and  
behavior*. International Ornithological Congress, Vienna, Austria, August 1994.

“Song perception and song learning: Intersecting views from the field and the laboratory”. Invited paper  
in symposium *Cognitive Ecology*, Animal Behavior Society, Seattle, July 1994.

“Correlation of song learning and territory establishment strategies in a songbird”, International Society  
of Behavioral Ecology, Princeton, NJ, August 1992.

“Song learning strategy of the song sparrow”. Invited paper in *Animal communication: evolution, ecology & development*, Univ of California, Davis, June 1992.

“Song repertoires and neighbor recognition in song sparrows”, International Society of Behavioral Ecology, Uppsala, Sweden, August 1990.

“Successes and failures of parent-offspring recognition”, “Song repertoires and individual recognition in songbirds”. Invited papers, Distinguished Speakers Series, Cornell University, April 1989.

“Kin Recognition in birds”. Invited paper in *Kin recognition in animals: Empirical studies & conceptual issues*, American Society of Zoologists, New Orleans, Dec 1987.

“Evolution of parent-offspring recognition in swallows”. International Ethological Congress, Madison, Wisconsin, Aug 1987.

Invited papers, Winter Animal Behavior Conference, Park City, Utah, Jan 1982, 1983, 1984, 1985, 1987.

Competitive papers, Animal Behavior Society Meetings, 2008 (Snowbird, Utah), 2007 (Burlington, VT), 2005 (Snowbird, Utah), 2003 (Boise State U), 1996 (NAU, Flagstaff, Az), 1994 (UW, Seattle), 1992 (Queen's U, Kingston, Ontario), 1989 (N Kentucky U), 1988 (U Montana), 1987 (Williams College), 1986 (U Arizona), 1984 (E Washington U), 1982 (U Minn), 1978 (UW, Seattle), 1975 (U North Carolina, Wilmington).

Acoustic adaptations for individual recognition in birds: Field and laboratory studies. Invited paper in Symposium *Comparative perception of complex sounds*, Association for Research in Otolaryngology, Clearwater, Feb 1985.

Evolutionary theory and psychology. Invited address, Division 6, APA Meetings, Anaheim, Aug 1983.

Organizer of the Symposium, “From individual to species recognition: Theories and mechanisms,” American Society of Zoologists Meetings, Dec 1980

## SELECTED PUBLICATIONS

- Harrison, J. M. & Beecher, M. D. (1969). Control of responding by the location of an auditory stimulus: Role of rise time of the stimulus. Journal of the Experimental Analysis of Behavior, **12**, 217-227.
- Beecher, M. D. & Harrison, J. M. (1971). Rapid acquisition of an auditory localization discrimination by rats. Journal of the Experimental Analysis of Behavior, **16**, 193-199.
- Beecher, M. D. (1971). Operant conditioning in the bat *Phyllostomus hastatus*. Journal of the Experimental Analysis of Behavior, **16**, 219-223.
- Beecher, M. D. (1974). Pure-tone thresholds of the squirrel monkey (*Saimiri sciureus*). Journal of the Acoustical Society of America, **33**, 196-198.
- Beecher, M. D. (1974). Hearing in the owl monkey (*Aotus trivirgatus*): Auditory sensitivity. Journal of Comparative and Physiological Psychology, **86**, 898-901.
- Beecher, M. D. & Jackson, D. E. (1976). Rate-dependent effect of amphetamine: Extension to between-subjects effect. Psychopharmacologica, **46**, 307-309.
- Beecher, M. D. (1976). Studies on the hearing of the owl monkey (*Aotus trivirgatus*). In N. King & A. Jones (Eds.), "Symposium on the Owl Monkey", Laboratory Animal Science, **26**, 1068-1072.
- Moody, D. B., Beecher, M. D. & Stebbins, W. C. (1976). Behavioral methods in auditory research. In D. Smith & J. Vernon (Eds.), Handbook of Auditory Research, Charles C. Thomas: Springfield, Ill.
- Sinnott, J. M., Beecher, M. D., Moody, D. B. & Stebbins, W. C. (1976). Speech sound discrimination by monkeys and humans. Journal of the Acoustical Society of America, **60**, 687-695.
- Brown, C. H., Beecher, M. D., Moody, D. B., & Stebbins, W. C. (1978). Localization of pure tones by Old World monkeys. Journal of the Acoustical Society of America, **63**, 1484-1492.

- Brown, C. H., Beecher, M. D., Moody, D. B., & Stebbins, W. C. (1978). Localization of primate calls by Old World monkeys. Science, **201**, 753-754.
- Petersen, M. R., Beecher, M. D., Zoloth, S. R., Moody, D. B., & Stebbins, W. C. (1978). Neural lateralization of species-specific vocalizations by Japanese macaques. Science, **202**, 324-327.
- Beecher, M. D., Petersen, M. R., Zoloth, S. R., Moody, D. B., & Stebbins, W. C. (1979). Perception of conspecific vocalizations by Japanese macaques: Evidence for selective attention and neural lateralization. Brain, Behavior & Evolution, **16**, 443-460.
- Brown, C. H., Beecher, M. D., Moody, D. B., & Stebbins, W. C. (1979). Locatability of vocal signals in Old World monkeys: Design features for the communication of position. Journal of Comparative and Physiological Psychology, **93**, 806-819.
- Zoloth, S. R., Petersen, M. R., Beecher, M. D., Green, S., Marler, P., Moody, D. B., & Stebbins, W. C. (1979). Species-specific processing of vocal sounds by monkeys. Science, **204**, 870-873.
- Beecher, M. D. & Beecher, I. M. (1979). Sociobiology of bank swallows: Reproductive strategy of the male. Science, **205**, 1282-1285.
- Brown, C. H., Beecher, M. D., Moody, D. B., & Stebbins, W. C. (1980). Localization of noise bands by Old World monkeys. Journal of the Acoustical Society of America, **68**, 127-132.
- Beecher, M. D., Beecher, I. M., & Lumpkin, S. (1981). Parent-offspring recognition in bank swallows (*Riparia riparia*): I. Natural history. Animal Behaviour, **29**, 86-94.
- Beecher, M. D., Beecher, I. M., & Hahn, S. (1981). Parent-offspring recognition in bank swallows (*Riparia riparia*): II. Acoustic basis. Animal Behaviour, **29**, 95-101.
- Beecher, M. D. (1981). Development of parent-offspring recognition in birds. In Aslin, R., Alberts, J., & Petersen, M. R. (Eds.), Development of Perception, Academic, pp. 45-61.
- Beecher, M. D. (1982). From individual to species recognition: Theories and mechanisms. American Zoologist, **22**, 475-476.

- Beecher, M. D. (1982). Signature systems and kin recognition. American Zoologist, **22**, 477-490.
- Beecher, I. M. & Beecher, M. D. (1983). Sibling recognition in bank swallows. Zeitschrift fur Tierpsychologie (Ethology), **62**, 145-150.
- Stoddard, P. K. & Beecher, M. D. (1983). Parental recognition of offspring in the Cliff Swallow. Auk, **100**, 795-799.
- Petersen, M. R., Beecher, M. D., Zoloth, S. R., Green, S., Marler, P., Moody, D. B., & Stebbins, W. C. (1984). Neural lateralization of vocalizations by Japanese macaques: Communicative significance is more important than acoustic structure. Behavioral Neuroscience, **98**, 779-790.
- Beecher, M. D., Stoddard, P. K., & Loesche, P. (1985). Recognition of parents' voices by young cliff swallows. Auk, **102**, 600-605.
- Medvin, M. B., & Beecher, M. D. (1986). Parent-offspring recognition in the barn swallow. Animal Behaviour, **34**, 1627-1639.
- Beecher, M. D., Medvin, M. B., Stoddard, P. K., & Loesche, P. (1986). Acoustic adaptations for parent-offspring recognition in swallows. Experimental Biology, **45**, 179-193.
- Medvin, M. B., Beecher, M. D. & Andelman, S. A. (1987). Extra adults at the nest in barn swallows. Condor, **89**, 179-182.
- Beecher, M. D. (1988). The adaptationist approach to learning. In Bolles, R. C. & Beecher, M. D. (Eds.), Evolution and Learning, Erlbaum.
- Bolles, R. C. & Beecher, M. D. (1988). Evolution and Learning, Erlbaum.
- Stoddard, P. K., Beecher, M. D. & Willis, M. S. (1988). Response of territorial male song sparrows to song types and variations. Behavioral Ecology and Sociobiology, **22**, 125-130.
- Beecher, M. D. (1988). Kin recognition in birds. Behavior Genetics, **18**, 465-482.

- Beecher, M. D. (1988). Spectrographic analysis of bird vocalizations: Implications of the uncertainty principle. Bioacoustics, **1**, 187-208.
- Beecher, M. D. (1989). Signaling systems for individual recognition: an information theory approach. Animal Behaviour, **38**, 248-261.
- Beecher, M. D., Loesche, P., Stoddard, P. K. & Medvin, M. B. (1989). Individual recognition by voice in swallows: signal or perceptual adaptation? In Dooling, R. J. & Hulse, S. H. (Eds.), The Comparative Psychology of Audition: Perceiving Complex Sounds, Erlbaum.
- Beecher, M. D. (1989). Evolution of parent-offspring recognition in swallows. In D. A. Dewsbury (Ed.), Contemporary issues in Comparative Psychology, pp. 360-380, Sunderland, Mass.: Sinauer.
- Beecher, M. D. & Stoddard, P. K. (1990). The role of bird song and calls in individual recognition: Contrasting field and laboratory perspectives. In Berkley, M. & Stebbins, W. C. (Eds.), Comparative Perception--Vol. II: Complex Signals, pp. 375-408, New York: Wiley.
- Stoddard, P. K., Beecher, M. D., Horning, C. H. & Willis, M. S. (1990). Strong neighbor-stranger discrimination in song sparrows. Condor, **97**, 1051-1056.
- Beecher, M. D. (1991). Successes and failures of parent-offspring recognition systems in animals. In P. G. Hepper (Ed.), Kin Recognition, pp. 94-124, Cambridge University Press.
- Schwagmeyer, P. L., Mock, D. W., Lamey, T. C., Lamey, C. S. & Beecher, M. D. (1991). Effects of sibling conflict on hatch timing in an asynchronously hatching bird. Animal Behaviour, **41**, 887-894.
- Stoddard, P. K., Beecher, M. D., Horning, C. H. & Campbell, S. E. (1991) Recognition of individual neighbors by song in the song sparrow, a bird with song repertoires. Behavioral Ecology and Sociobiology, **29**, 211-215.
- Loesche, P., Stoddard, P. K., Higgins, B. J. & Beecher, M. D. (1991). Signature vs. perceptual adaptations for individual vocal recognition in swallows. Behaviour, **118**, 15-25.

- Medvin, M. B., Stoddard, P. K. & Beecher, M. D. (1992). Signals for parent-offspring recognition: Strong sib-sib call similarity in cliff swallows but not barn swallows. Ethology, **90**, 17-28.
- Loesche, P., Beecher, M. D. & Stoddard, P. K. (1992). Perception of cliff swallow calls by birds and humans. Journal of Comparative Psychology, **106**, 239-247.
- Stoddard, P. K., Beecher, M. D., Horning, C. H. & Campbell, S. E. (1992). Song type matching in the song sparrow. Canadian Journal of Zoology, **70**, 1440-1444.
- Stoddard, P. K., Beecher, M. D., Loesche, P. & Campbell, S. E. (1992). Memory does not constrain individual recognition in a bird with song repertoires. Behaviour, **122**, 274-287.
- Medvin, M. B., Stoddard, P. K. & Beecher, M. D. (1993). Signals for parent-offspring recognition: A comparative information analysis of the calls of cliff swallows and barn swallows. Animal Behaviour, **45**, 841-850.
- Horning, C. L., Beecher, M. D., Stoddard, P. K. & Campbell, S. E. (1993). Song perception in the song sparrow: Importance of different parts of the song in song type classification. Ethology, **94**, 46-58.
- Marean, G. C., Burt, J., Beecher, M. D. & Rubel, E. W (1993). Hair cell regeneration in the European starling (Sturnus vulgaris): Recovery of pure-tone detection threshold. Hearing Research, **71**, 125-136.
- Beecher, M. D., Campbell, S. E. & Stoddard, P. K. (1994). Correlation of song learning and territory establishment strategies in the song sparrow. Proceedings of the National Academy of Sciences, **91**, 1450-1454.
- Beecher, M. D., Campbell, S. E. & Burt, J. (1994). Song perception in the song sparrow: Birds classify by song type but not by singer. Animal Behaviour, **47**, 1343-1351.
- Marean, G. C., Cunningham, D., Burt, J., Beecher, M. D. & Rubel, E. W (1995). Regenerated hair cells in the European starling: Are they more resistant to kanamycin ototoxicity than original hair cells? Hearing Research, **82**, 267-276.

- Beecher, M. D., Stoddard, P. K., Campbell, S. E., & Horning, C. L. (1996). Repertoire matching between neighbouring song sparrows. Animal Behaviour, **51**, 917-923.
- Beecher, M. D. (1996). Bird song learning in the laboratory and the field. In D. E. Kroodsma & E. L. Miller (Eds.), Ecology and Evolution of Acoustic Communication in Birds, pp. 61-78, Ithaca, NY: Cornell.
- O'Loghlen, A. L. & Beecher, M. D. (1997). Sexual preferences for mate song types in female song sparrows. Animal Behaviour, **53**, 835-841.
- Smith, G. T., Brenowitz, E. A., Beecher, M. D. & Wingfield, J. C. (1997). Seasonal changes in testosterone, neural attributes of song control nuclei, and song structure in wild songbirds. Journal of Neuroscience, **17**, 6001-6010.
- Beecher, M. D., Campbell, S. E. & Nordby J. C. (1997). Bird song learning as an evolved strategy. In M. Daly (Ed.), Characterizing Psychological Adaptations, pp. 269-281, Chichester, UK: Wiley.
- Owings, D. H., Beecher, M. D. & Thompson, N. S. (Eds.) (1997). Perspectives in Ethology, Vol. 12: Communication. New York: Plenum Press.
- Beecher, M. D., Nordby J. C., Campbell, S. E., Burt, J. M., Hill, C. E. & O'Loghlen, A. O. (1997). What is the function of song learning in songbirds? In Owings, D. H., Beecher, M. D. & Thompson, N. S. (Eds.), Perspectives in Ethology, Vol. 12: Communication, pp. 77-97, New York: Plenum Press.
- Beecher, M. D., Campbell, S. E. & Nordby J. C. (1998). The cognitive ecology of song communication and song learning in the song sparrow. In R. Dukas (Ed.), Cognitive Ecology, pp. 175-199, Chicago: Univ. of Chicago Press.
- Marean, G. C., Burt, J., Beecher, M. D. & Rubel, E. W. (1998). Auditory perception following hair cell regeneration in the European starling (Sturnus vulgaris): Frequency and temporal resolution. Journal of the Acoustical Society of America, **103**, 3567-3580.
- Nordby J. C. , Campbell, S. E & Beecher, M. D. (1999). Ecological correlates of song learning in song sparrows. Behavioral Ecology, **10**, 287-297.

- O'Loughlen, A. L. & Beecher, M. D. (1999). Mate, neighbour and stranger songs: a female song sparrow perspective. Animal Behaviour, **58**, 13-20.
- Hill, C. E., Campbell, S. E., Nordby, J. C., Burt, J. M. & Beecher, M. D. (1999). Song sharing in two populations of song sparrows. Behavioral Ecology & Sociobiology, **46**, 341-349.
- Burt, J. M., Lent, K. L., Beecher, M. D. & Brenowitz, E. A. (2000). Lesions of avian song nucleus IMAN in female canaries affect song perception in an operant task. Journal of Neurobiology, **42**, 1-13.
- Beecher M. D., Campbell, S. E., Burt, J. M., Hill, C. E. & Nordby, J. C. (2000). Song-type matching between neighbouring song sparrows. Animal Behaviour, **59**, 21-27.
- Beecher, M. D., Campbell, S. E. & Nordby J. C. (2000). Territory tenure in song sparrows is related to song sharing with neighbors, but not to repertoire size. Animal Behaviour, **59**, 29-37.
- Nordby, J. C., Campbell, S. E., Burt, J. M. & Beecher M. D. (2000) Social influences during song development in the song sparrow: a laboratory experiment simulating field conditions. Animal Behaviour, **59**, 1187-1197.
- Peters, S., Searcy, W. A., Beecher, M. D. & Nowicki, S. (2000) Geographic variation in the organization of song sparrow repertoires. Auk, **117**, 936-942.
- Nordby, J. C., Campbell, S. E. & Beecher M. D. (2001) Late song learning in song sparrows. Animal Behaviour, **61**, 835-846.
- Burt, J. M., Campbell, S. E. & Beecher, M. D. (2001) Song type matching as threat: a test using interactive playback. Animal Behaviour, **62**, 1163-1170.
- Nordby, J. C., Campbell, S. E. & Beecher M. D. (2002) Adult song sparrows do not alter their song repertoires. Ethology, **108**, 39-50.
- Burt, J. M., Bard, S. C., Campbell, S. E. & Beecher, M. D. (2002) Alternative forms of song matching in song sparrows. Animal Behaviour, **63**, 1143-1151.

- Reeves, B. J., Brenowitz, E. A. & Beecher, M. D. (2003) Seasonal changes in avian song control circuits do not cause seasonal changes in song discrimination in song sparrows. Journal of Neurobiology, **57**, 119-129.
- Beecher, M. D. & Burt, J. M. (2004) The role of social interaction in bird song learning. Current Directions in Psychological Science, **13**, 224-228.
- Beecher, M. D. & Brenowitz, E. A. (2005) Functional aspects of song learning in birds. Trends in Ecology & Evolution, **20**, 143-149.
- Brenowitz, E. A. & Beecher, M. D. (2005) Song learning in birds: Diversity and plasticity, opportunities and challenges. Trends in Neuroscience, **28**, 127-132.
- Beecher, M. D. & Campbell, S. E. (2005) The role of unshared songs in singing interactions between neighbouring song sparrows. Animal Behaviour, **70**, 1297-1304.
- Beecher, M. D., Burt, J. M., O'Loughlen, A. L., Templeton, C. N. & Campbell, S. E. (2007) Bird song learning in an eavesdropping context. Animal Behaviour, **73**, 929-935.
- Burt, J. M., O'Loughlen, A. L., Templeton, C. N., Campbell, S. E. & Beecher, M. D. (2007) Assessing the importance of social factors in bird song learning: A test using computer-simulated tutors. Ethology, **113**, 917-925.
- Nordby, J. C., Campbell, S. E. & Beecher M. D. (2007) Selective attrition and individual song repertoire development in song sparrows. Animal Behaviour, **74**, 1413-1418.
- Burt, J. M. & Beecher, M. D. (2008) The social interaction role of song in song sparrows: implications for signal designs. Comparative Cognition & Behavior Reviews, **3**, 86-98.
- Beecher, M. D. (2008) Function and mechanisms of song learning in song sparrows. Advances in Animal Behavior, **38**, 167-225.
- Beecher, M. D. & Burt, J. M. (2008) More on the cognitive ecology of song communication and song learning in the song sparrow. In R. Dukas & J. Ratcliffe (eds.), Evolutionary ecology of learning, memory & information use, Univ. of Chicago, in press.

Akçay, C., Wood, W. E., Searcy, W. A., Templeton, C. N., Campbell, S. E. & Beecher, M. D. (2009) Good neighbour, bad neighbour: Song sparrows retaliate against aggressive rivals. Animal Behaviour, **78**, 97-102.

Searcy, W. A. & Beecher, M. D. (In press) Song as an aggressive signal in songbirds. Animal Behaviour, in press.

Templeton, C. N., Akçay, C., Campbell, S. E. & Beecher, M. D. (Submitted) Juvenile sparrows preferentially eavesdrop on song contests.

Akçay, C., Templeton, C. N., Campbell, S. E. & Beecher, M. D. (In prep.) Song sparrows eavesdrop on and subsequently retaliate against potentially aggressive neighbors.

Hill, C. E., Akçay, C., Campbell, S. E. & Beecher, M. D. (In prep.) Does female choice select for male song repertoires? Female choice of extra-pair mates and male song characteristics in the song sparrow.