

Curriculum Vitae – Revised Nov 2009

Philip Kraft Stoddard

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Born 10 April 1957 (Washington, DC), married, one child

Education

B.A. Biology, Swarthmore College, 1979
Ph.D. Psychology, University of Washington, 1989
Neural Systems & Behavior summer course, Marine Biological Laboratory, 1989

Employment since PhD

Professor, Dept. Biological Sciences, FIU, 2005-present.
Associate Professor, Dept. Biological Sciences, FIU, 1998-2005.
Assistant Professor, Dept. Biological Sciences, FIU, 1993-1998.
Postdoc, Dept. Neurobiology and Behavior, Cornell University. 1990-1992.
Visiting Assistant Professor, Dept. Biology, Swarthmore College. Fall 1989.

Primary Research Area

Neural mechanisms, behavior, ecology, and evolution of animal communication.

Research Grants and Fellowships

NIH-NHLBI 2S06GM008205 2004-2008, \$1.1m
“Social regulation of circadian output systems”
NIH-NIMH K01 to Michael Markham (Stoddard as mentor/co-PI) 2003-2007
“Ion Channels in Regulation of Excitable Membranes” \$497k
NIH-NIGMS 2S06GM008205 2000-2004, \$904k.
“Behavioral regulation of membrane excitability”
NIH-NIGMS/NINDS 2S06GM008205 1996-1999, \$437k.
“Sensory mechanisms of bioelectric signal processing”
Florida Fish and Game Commission 1996-1998. \$50k.
“Raptor migration in the Florida Keys”.
FIU Foundation / Provost’s Award, summer 1995. \$11k.
“Sensing and Coding of Objects by Vertebrate Neural Networks”
NIMH Individual NRSA Postdoctoral Fellowship. 1991. \$28k.
“Neural basis of communication in the gymnotiform electric fish *Hypopomus*”
USIECC-NSF travel award, 1991. \$1k.
To attend the 22nd International Ethology Conference, Kyoto, Japan.
NIMH Institutional NRSA Postdoctoral Training Fellowship. 1990. \$37k.
NIMH Institutional Fellowship. 1989. \$2k. To attend the Neural Systems & Behavior course at the Marine Biological Laboratory, Woods Hole.

Peer-reviewed Publications

- Markham MR, McAnelly ML, Stoddard PK, Zakon HH (2009) Circadian and social cues regulate ion channel trafficking. *PLoS Biology* 7(9), e1000203.
- Salazar VL, Stoddard PK (2009). Social competition affects electric signal plasticity and steroid levels in the gymnotiform fish *Brachyhypopomus gauderio*. *Hormones and Behavior* 56:399-409.
- Allee SJ, Markham MR, Stoddard PK (2009). Androgens enhance plasticity of an electric communication signal in female knifefish, *Brachyhypopomus pinnicaudatus*. *Hormones and Behavior* 56, 264-273.
- Markham MR, Allee SJ, Goldina A, Stoddard, PK (2009) Melanocortins regulate the electric waveforms of gymnotiform electric fish. *Hormones and Behavior*, 55: 306-313. DOI: 10.1016/j.yhbeh.2008.11.002
- Miranda M, Silva AC, Stoddard PK (2008) Use of space as an indicator of social behavior and breeding systems in the gymnotiform electric fish *Brachyhypopomus pinnicaudatus*. *Environmental Biology of Fishes* 83:379–389. DOI:/10.1007/s10641-008-9358-2
- Stoddard PK & Markham MR (2008) Signal cloaking in electric fish. *Bioscience* 58:415-42. DOI: 10.1641/B580508
- Salazar VL, Stoddard PK (2008) Sex differences in energetic costs explain sexual dimorphism in the circadian rhythm modulation of the electrocommunication signal of the gymnotiform fish *Brachyhypopomus pinnicaudatus*. *Journal of Experimental Biology* 211:1012-1020. DOI: 10.1242/jeb.014795
- Allee SJ, Markham MR, Salazar VL, Stoddard PK (2008) Opposing actions of 5HT1A and 5HT2-like serotonin receptors on modulations of the electric signal waveform in the electric fish *Brachyhypopomus pinnicaudatus*. *Hormones and Behavior* 53:481-8.
- Albert JS, Zakon HH, Stoddard PK, Unguez GA, Holmberg SKS, Sussman MR (2008) The case for sequencing the genome of the electric eel *Electrophorus electricus*. *Journal of Fish Biology* 72:331-354.
- Stoddard PK, Markham MR, Salazar VL, Allee S (2007) Circadian rhythms in electric waveform structure and rate in the electric fish *Brachyhypopomus pinnicaudatus*. *Physiology & Behavior* 90:11-20. DOI:10.1016/j.physbeh.2006.08.013
- Stoddard PK, Zakon HH, Markham MR, McAnelly L (2006) Regulation and modulation of electric waveforms in gymnotiform electric fish. *Journal of Comparative Physiology A* 192(6): 613-24. DOI: 10.1007/s00359-006-0101-1
- Markham MR, Stoddard PK (2005). Adrenocorticotrophic hormone enhances the masculinity of an electric communication signal by modulating the waveform and timing of action potentials within individual cells. *Journal of Neuroscience* 25:8746-8754; DOI:10.1523/JNEUROSCI.2809-05
- Reid JM, Arcese P, Cassidy ALEV, Hiebert SM, Smith JNM, Stoddard PK, Marr AB, Keller LF, (2005). Fitness correlates of song repertoire size in free-living song sparrows (*Melospiza melodia*). *American Naturalist*, 165(3):299-310
- Reid JM, Arcese P, Cassidy ALEV, Hiebert SM, Smith JNM, Stoddard PK, Keller LF, Marr AB, (2004) Song repertoire size predicts initial mating success in male song sparrows (*Melospiza melodia*). *Animal Behaviour*, 68:1055-1063
doi:10.1016/j.anbehav.2004.07.003
- Curtis CC, Stoddard PK (2003) Active mate choice in an electric fish, *Brachyhypopomus pinnicaudatus*. *Animal Behaviour* 66:329-336
- Stoddard PK, Markham MR, Salazar VL (2003) Serotonin modulates the electric waveform of the gymnotiform electric fish, *Brachyhypopomus pinnicaudatus*. *Journal of Experimental Biology*. 206:1353-1362

- Stoddard PK (2002) The evolutionary origins of electric signal complexity. *Journal of Physiology – Paris* 96:485-491.
- Stoddard PK. (2002) Electric signals: predation, sex, and environmental constraints. *Advances in the Study of Behaviour* 31:201-242. Academic Press.
- Franchina CR, Salazar V, Volmar CH, Stoddard PK (2001) Plasticity of the electric organ discharge waveform of male *Brachyhyppopomus pinnicaudatus*: II. social effects. *Journal of Comparative Physiology A*. 187:45-52
- Stoddard PK (1999) Predation enhances complexity in the evolution of electric fish signals. *Nature* 400, 254-256
- Stoddard PK, Rasnow B, Assad C (1999) Electric organ discharges of the gymnotiform fishes: III. *Brachyhyppopomus*. *Journal of Comparative Physiology A*. 184:609-630
- Kroodsma DE, Byers BE, Halkin S, Hill S, Minis D, Bolsinger JR, Dawson J, Donelan E, Farrington J, Gill F, Houlihan P, Innes D, Keller G, Macaulay L, Marantz CA, Ortiz J, Stoddard PK, Wilda K. (1999) Geographic variation of black-capped chickadee songs and singing behavior in North America. *Auk*. 116:387-402
- Assad C, Rasnow B, Stoddard PK (1999) Electric organ discharges and electric images during electrolocation. *Journal of Experimental Biology*. 202:1185-1193
- Franchina CR, Stoddard PK (1998) Plasticity of the electric organ discharge waveform of the electric fish *Brachyhyppopomus pinnicaudatus*: I. Quantification of day-night changes. *Journal of Comparative Physiology A* 183:759-768
- Assad C, Rasnow B, Stoddard PK, Bower JM (1998) Electric organ discharges of the gymnotiform fishes: II. *Eigenmannia*. *Journal of Comparative Physiology A* 183(4):419-432
- Stoddard PK (1998) Detection of multiple stimulus features forces a trade-off in the pyramidal cell network of a gymnotiform electric fish's electrosensory lateral line lobe. *Journal of Comparative Physiology A* 182:103-113
- Nelson BS, Stoddard PK (1998) Accuracy of auditory perception of distance and azimuth by a passerine bird. *Animal Behaviour*. 56:467-477
- Beecher MD, Stoddard PK, Campbell SE, Horning CL (1996) Repertoire matching between neighbouring song sparrows. *Animal Behaviour* 51:917-923.
- Beecher MD, Campbell SE, Stoddard PK (1994) Correlation of song learning and territory establishment strategies in the song sparrow. *Proceedings of the National Academy of Sciences, USA*. 91:1450-1454
- Medvin MB, Stoddard PK, Beecher MD (1993) Signals for parent-offspring recognition: a comparative analysis of the begging calls of cliff swallows and barn swallows. *Animal Behaviour* 45:841-850
- Horning CL, Beecher MD, Stoddard PK, Campbell SE (1993) Song perception in the song sparrow: importance of different parts of the song in song type classification. *Ethology* 94:46-58
- Stoddard PK, Beecher MD, Loesche P, Campbell ES (1992) Memory does not constrain individual recognition in a bird with song repertoires. *Behaviour* 122:274-287
- Stoddard PK, Beecher MD, Campbell SE, Horning CL (1992) Song type matching in the song sparrow. *Canadian Journal of Zoology* 70:1440-1444
- Loesche P, Beecher MD, Stoddard PK (1992) Perception of cliff swallow calls by birds and humans. *Journal of Comparative Psychology* 106:239-249
- Medvin MB, Stoddard PK, Beecher MD (1992) Signals for parent-offspring recognition: strong sib-sib call similarity in cliff swallows but not barn swallows. *Ethology* 90:17-28
- Loesche P, Stoddard PK, Higgins BJ, Beecher MD (1991) Adaptations for individual vocal recognition by voice in swallows. *Behaviour* 118:15-25

- Stoddard PK, Beecher MD, Horning CL, Campbell SE (1991) Recognition of individual neighbors by song in the song sparrow, a bird with song repertoires. *Behavioral Ecology & Sociobiology* 29:211-215
- Stoddard PK, Beecher MD, Horning CL, Willis M (1990) Strong neighbor-stranger discrimination in song sparrows. *Condor* 92:1051-1056
- Stoddard PK. (1990) Audio computers: theory of operation and guidelines for selection of systems and components. *Bioacoustics* 2:217-239
- Hiebert SM, Stoddard PK, Arcese P (1989) Repertoire size, territory acquisition and reproductive success in the song sparrow. *Animal Behaviour* 37:266-273
- Stoddard PK, Loftus G (1988) An IBM XT-compatible, computer based slide projector laboratory. *Behavior Research Methods, Instruments and Computers*. 20:541-551
- Stoddard PK, Beecher MD, Willis M. (1988) Response of territorial male song sparrows to song types and variations. *Behavioral Ecology & Sociobiology* 22:125-130
- Stoddard PK (1988) A rare avian food signal: the cliff swallow bugs call. *Condor* 90:714-715
- Arcese P, Stoddard PK, Hiebert SM (1988) Female song in the song sparrow. *Condor* 90:44-50
- Stoddard PK (1987) Inexpensive solid state peck key for the operant conditioning of small birds. *Behavior Research Methods, Instruments and Computers* 19:383-388
- Beecher MD, Medvin MB, Stoddard PK, Loesche P (1986) Acoustic adaptations for parent-offspring recognition in swallows. *Journal of Experimental Biology* 45:179-193
- Beecher MD, Stoddard PK, Loesche P (1984) Recognition of parents' voices by young Cliff Swallows. *Auk* 102:600-605
- Stoddard PK, Beecher MD (1983) Parental recognition of offspring in the Cliff Swallow. *Auk* 100:795-799
- Stoddard PK (1983) Violation of optimal nest placement: Cliff swallows entombed in their own excrement. *Wilson Bulletin* 95:674-675
- Stoddard PK, Marsden JE, Williams TC (1983) Computer simulation of autumnal bird migration over the western North Atlantic. *Animal Behaviour* 31:173-180

Peer-reviewed publications by students under my supervision

- Nelson BS (2000) Spectro-temporal variables enable sound pressure level as a distance cue and carrier of information. *Animal Behaviour*. 59:57-67
- Franchina CR (1997) Ontogeny of the electric organ discharge and the electric organ in the weakly electric pulse fish *Brachyhypopomus pinnicaudatus* (Hypopomidae, Gymnotiformes). *Journal of Comparative Physiology A* 181:111-119

Book Chapters

- Stoddard PK (2009) Electric signals. In: *Encyclopedia of Animal Behavior. Communication, ch. 2*. M. Breed, J. Moore, eds. Elsevier, Inc.
- Stoddard PK (2006) Plasticity of the electric organ discharge waveform: contexts, mechanisms, and implications for electrocommunication. In: *Communication in Fishes*. ch. 22, pp 623-646. F. Ladich, S.P. Collin, P. Moller, B.G. Kapoor, eds. Science Publisher, Inc., Enfield, NH, USA
- Stoddard PK (2002) Using empirical games in teaching animal behavior. In: *Exploring Animal Behavior in Laboratory and Field: An Hypothesis-testing Approach to the Development, Causation, Function, and Evolution of Animal Behavior*. Bonnie J. Ploger and Ken Yasukawa, eds. Academic Press. New York. pp 379-385.

Book Chapters (continued)

- Stoddard PK. (1998) Application of filters in bioacoustics. In: *Animal Acoustic Communication*. Ch. 4, pp105-127. Hopp SL, Owren, & Evans CS (eds). Springer-Verlag, New York, Berlin.
- Stoddard PK (1996) Vocal recognition in territorial passerines. In: *Ecology and Evolution of Acoustic Communication in Birds*. Ch. 20, pp 356-374. Kroodsma DE & Miller EH (eds.) Cornell Univ. Press, Ithaca NY
- Beecher MD, Stoddard PK (1990) The role of bird song and calls in individual recognition: contrasting field and laboratory perspectives. In: *Comparative Perception*, Vol. 2. pp 375-408. Stebbins WC, Berkeley MA (eds) . John Wiley & Sons, Inc., New York
- Beecher MD, Loesche P, Stoddard PK, Medvin MB (1989) Individual recognition by voice in swallows: signal or perceptual adaptation? In: *Comparative Psychology of Complex Acoustic Perception*. pp 277-292. Dooling R, Hulse S (eds). Erlbaum, New York

Book Reviews

- Stoddard PK, (2002) Animal Behavior: An Evolutionary Approach, 7th edn. By John Alcock. *Animal Behaviour* 63:1195-6.
- Stoddard PK, (1998) Animal Behavior: An Evolutionary Approach, 6th edn. By John Alcock. *Animal Behaviour* 56(4): 1058-9.

Reports

- Brashear CB, Stoddard PK, (2001) Autumn raptor migration through the Florida Keys with special focus on the peregrine falcon. Florida Fish and Wildlife Conservation Commission, Project NG96-101.

Published Research Abstracts

- Goldina A, Markham MR, Stoddard PK (2006) Evolution of circadian and melanocortin-induced plasticity in the communication signals of Gymnotiform electric fish. Atlanta GA: Society for Neuroscience.
- Markham MR, Stoddard PK (2005) The melanocortin ACTH modulates an electric communication signal by modulating the waveform and timing of action potentials in individual cells. 1001.8 Washington, DC: Society for Neuroscience.
- Markham MR, Haskell-Luevano C, Stoddard PK (2004) A melanocortin receptor modulates electrocyte action potentials via a cAMP/PKA pathway. *Soc. Neuroscience Abstracts* 334.7
- Markham MR, Stoddard PK (2003) A melanocortin receptor modulates the amplitude and repolarization time of electrocyte action potentials in male electric fish, *Brachyhypopomus pinnicaudatus*. *Soc. Neuroscience Abstracts* 828.16
- Salazar VL, Markham MR, Stoddard PK (2002) Serotonin rapidly enhances sexually dimorphic characters of the electric waveform of the gymnotiform electric fish *Brachyhypopomus pinnicaudatus*. *Soc. Neuroscience Abstracts* 87.8
- Stoddard PK, Kilburn MD, Patterson KH (1996) Complex electric signal structure in reproducing gymnotiform electric fish. *Soc Neurosci Abstr* 22(179.6),450
- Stoddard PK, Rasnow B, Assad C (1995) Electric organ discharges of the gymnotiform fish *Brachyhypopomus* spp. *Nervous Systems and Behavior, Proc. 4th Intl. Congress of Neuroethology*. 417. Theimme Medical Publishers, New York
- Stoddard PK (1994) Low frequency electric field production and concealment in gymnotiform fish with pulsed electric organ discharges. *Soc Neurosci Abstr* 24(159.5),370

- Assad C, Rasnow B, Stoddard P, Bower JM (1994) Maps of the electric organ discharges of several gymnotiform fish. *Soc Neurosci Abstr* 24(159.6),370
- Stoddard PK (1992) Discrimination of different electric waveforms in the ELL of *Hypopomus pinnicaudatus*, a weakly electric fish with pulsed waveforms. *Proc. 3rd Intl Congress of Neuroethology*. 170

Invited Symposium Presentations

- Symposium on the evolution of sensory and signaling systems, Animal Behavior Society, Saltlake City (2006) "*Evolution from obsolete parts: signal plasticity in electric communication.*"
- Keynote Address. 12th Florida Ecology and Evolution Symposium, Archbold Biological Station. (2006) "*Evolution of electric fish songs, or, why a behavioral ecologist willingly entered the darkened mine shaft of molecular biology.*"
- IX Curso Basis Biologicas de la Conducta, Universidad Nacional Autonoma de Mexico, in Oaxaca Mexico (2004) "*Integrative study of communication: from ecology to molecules.*"
- Symposium on evolution of communication, Animal Behavior Society, Univ. Indiana, Bloomington (2002) "*Electric communication signals: evolution and mechanisms.*"
- Keynote Address. 8th Florida Ecology and Evolution Symposium, Archbold Biological Station. (2002) "*Evolution of electric communication.*"
- Conference on Electrosensory Organisms. 6th Intl. Congress Neuroethology, Univ. Bonn, Germany. (2001) "*Evolution of electric signals.*"
- XXV International Ethology Conference, Vienna, Austria (1997) "*Quantification of auditory distance assessment and identification of salient cues.*"
- 2nd International Symposium on Bird Vision and Hearing. Keio University, Tokyo, Japan (1991) "*Auditory memory and perception.*"
- Migration-Orientation Symposium, Rockefeller University (1980) "*Computer simulation of autumnal trans-Atlantic bird migration.*"

Invited Seminars

- 2007 Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay (Neuroscience)
- 2006 UC Santa Barbara (Biology)
- 2005 McGill University (Biology)
- 2004 University of Wisconsin (Psychology)
- 2004 University of Miami (Biology)
- 2003 Instituto de Ecología A.C., Mexico
- 2003 Auburn University (Biology)
- 2002 Georgia State Univ (Biology)
- 2002 Florida State Univ (Zoology)
- 2001 sabbatical leave– invitations declined
- 2000 University of Miami (Physiology & Biophysics)
- 2000 University of Maryland, Balt. Co. (Biological Sciences)
- 2000 University of Missouri (Biology)
- 1999 University of Richmond (Biology)
- 1998 University of Texas at Austin (Zoology)
- 1998 Florida Atlantic University (Biology)
- 1997 University of Miami (Biology)
- 1996 University of Pennsylvania (Biology)
- 1996 University of Central Connecticut (Biology)
- 1995 University of Miami (Biology)

1994 Florida Atlantic University (Biology)
1993 Johns Hopkins University (Psychology)
1993 University of Miami (Biology)
1992 University of Pennsylvania (Psychology)
1992 University of Arizona (Ecology & Evolutionary Biology)
1988 Rockefeller University (Millbrook Field Station)

Professional Service

Animal Behavior Society –
Senior Program Officer (2003-2005)
Junior Program Officer (2001-2003)
Executive Committee (2001-2005)

NSF Integrative Organismal Systems, Animal Behavior panel, 2007
NSF-IGERT review panel, 2002
NIH-NIGMS (MBRS) Neurobiology study section, 2000– 2003

Grant reviewer:

National Institutes of Health
National Science Foundation
Smithsonian Institution
National Geographic Society
Florida Dept. Fish & Wildlife

Consulting Editor, Journal of Comparative Psychology (1993-2003)

Manuscript Reviewer:

American Journal of Primatology
Animal Behaviour
Auk
Autonomous Robots
Behavioral Ecology
Behavioral Ecology and Sociobiology
Behaviour
Bioscience
Brain Behavior and Evolution
Comparative Biochemistry and Physiology
Condor
Currents in Ornithology
Developmental Neurobiology
Environmental Biology of Fishes
Ethology
Hormones and Behavior
Hydrobiologia
Ibis
Journal of Avian Biology
Journal of Comparative Physiology A
Journal of Comparative Psychology
Journal of Experimental Biology
Journal of Experimental Psychology

Journal of Field Ornithology
Journal of Fish Biology
Journal of Neurobiology
Journal of the Acoustical Society of America
Nature
Naturwissenschaften
Oecologia
Oxford University Press
Pharmacology, Biochemistry and Behavior
Physiology and Behavior
Science
Smithsonian Institution Publications
Zoology

Public Education, Nature Films, Zoo Exhibits:

“Amazon Voyage” museum exhibit: Miami Museum of Science, Smithsonian, Philadelphia Academy of Science. Designed exhibits, wrote & recorded media. BBC, 2001. Supervised studio recordings of electric fish courtship for film documentary series on animal communication.

Miami Metro Zoo, 2000-2003. Scientific consultant for aviary.

Miami Metro Zoo, 2003. Co-wrote film script on avian evolution.

BBC, 2000. Recorded electric eel hunting signals for documentary film on Amazonia.

National Zoological Park, 1995. Scientific reviewer of "Think Tank" animal cognition exhibit.

Numerous school presentations on various aspects of science.

Active Scientific Organization Memberships

Animal Behavior Society

International Society for Neuroethology

J. B. Johnston Club (publishes Brain Behavior & Evolution)

Sigma Xi

Society for Behavioral Neuroendocrinology

Society for Neuroscience

University Service

IACUC (chair and member)

Faculty Senate

Building & Environment Committee

Annual Tenure Workshop (organizer for 7 years)

see <http://www.fiu.edu/~stoddard/tenure/>

College Faculty Assembly Steering Committee

Dean Search & Screen Committee

Department Service

Graduate Committee

Personnel Committee (chair)

Facilities Committee

Strategic Planning Committee

Search & Screen Committees (numerous, chair & member)

Curriculum Development

QBIC – Quantifying Biology in the Classroom – ongoing initiative to implement recommendations of the National Academy of Sciences report “Bio 2010”.
I am one of the principle organizers and faculty participants in this program.

University Courses Taught

Biological Rhythms & Circadian Rhythms (grad)	XII Escuela Latinoamericana de Neurociencias, Montevideo, Uruguay
Animal Behavior	FIU, Swarthmore
Comparative Neurobiology (grad)	FIU
C Programming Language	Cornell
Experimental Zoology Seminar	FIU
Field Research in Animal Behavior	Univ. Washington
General Biology	FIU
Introduction to Biological Research (grad)	FIU
Scientific programming with MATLAB (grad)	FIU
Ornithology	FIU, Swarthmore
Workshop in avian capture methods (grad)	FIU
QBIC – reading scientific literature	FIU
Quantitative Methods in Biol. Research (grad)	FIU
Senior Evolution Seminar	Swarthmore
Undergraduate Seminar	FIU

Teaching Awards

Excellence in Teaching Award (\$5000 raise), College of Arts & Sciences, FIU, 1999

Completed Graduate Students

Susan Allee, PhD, 2007
Manuela Miranda, MS, 2007
Vielka Salazar, MS, 2003
Caroline Curtis, MS, 1999
Brian Nelson, MS, 1998
Cindy Brashear, MS, 1998
Cheryl Franchina, PhD, 1997

Current Graduate Students

Sat Gavassa (PhD)
Anna Goldina (PhD)
Vielka Salazar (PhD)
Christine Munoz (MS)

Postdocs Advised

Cheryl Franchina, Ph.D.
Michael Markham, Ph.D.
Jandouwe Villinger, Ph.D.
Arthur Martin, Ph.D.