

*Biography and curriculum vitae of*

## **Matthew S. Weeg, Ph.D.**

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### **Short biography:**

Dr. Matt Weeg is an Associate Professor of Biology and Director of the Center of Excellence for Teaching and Learning at Southern Utah University. He received his B.S. in Biology from the University of Idaho, and Ph.D. in Neurobiology and Behavior from Cornell University. Dr. Weeg teaches general biology, physiology, animal behavior, and neurobiology courses, and mentors undergraduate students in a variety of research projects.

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### **Current Position:**

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| 2017-present | Associate Professor, Biology Department, Southern Utah University                |
| 2017-present | Director, Center of Excellence for Teaching & Learning, Southern Utah University |

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### **Education:**

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| University of Idaho | Biology                   | B.S. 1995  |
| Cornell University  | Neurobiology and Behavior | Ph.D. 2002 |

### ***Dissertation Research:***

Title: *Anatomical and Physiological Investigation of the Lateral Line System in the Plainfin Midshipman, Porichthys notatus*

Committee: Drs. Andrew Bass (major advisor), Bruce Halpern, Chris Clark, David McCobb

My dissertation research explored the neurobiology of the lateral line system in a vocal fish. I used anatomical and physiological techniques to investigate the structure, function, and behavioral relevance of the lateral line system, as well as interactions between the lateral line and auditory systems.

### ***Postdoctoral Research:***

Title: *Interactions between the vocal motor and auditory systems of a sound producing fish*

Mentor: Dr. Andrew Bass (Cornell University)

My postdoctoral research combined the expertise in sensory biology I gained in graduate school with new techniques in motor systems to investigate the response of sensory systems to self-generated stimuli.

### ***Current Research Keywords:***

Audition, Lateral Line, Communication, Neuroethology

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**Professional Appointments:**

2017 – present Associate Professor, Biology Department, Southern Utah University, Cedar City, UT 84720  
2017 – present Director, Center of Excellence for Teaching & Learning, Southern Utah University, Cedar City, UT 84720  
2011 – 2017 Assistant Professor, Biology Department, Southern Utah University, Cedar City, UT 84720  
2016 – 2017 Associate Director, Center of Excellence for Teaching & Learning, Southern Utah University, Cedar City, UT 84720  
2008 – 2011 Assistant Professor of Biology, Division of Mathematics and Natural Sciences, Penn State Altoona, Altoona, PA 16601  
2007 – 2008 Visiting Assistant Professor, School of Forest Resources and Environmental Science, Michigan Technological University, Houghton, MI  
2007 Lecturer, Department of Education, Michigan Technological University, Houghton, MI  
2005 – 2006 Visiting Assistant Professor, Department of Biology, Colorado State University, Fort Collins, CO  
2002 – 2004 Postdoctoral Associate, Department of Neurobiology and Behavior, Cornell University, Ithaca, NY  
2001 Visiting Scholar, Parmly Hearing Institute, Loyola University Chicago, Chicago, IL

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**Courses Taught:**

BIOL1020 Human Biology, Biology Department, Southern Utah University  
BIOL1025 Human Biology Lab, Biology Department, Southern Utah University  
BIOL1610 General Biology I, Biology Department, Southern Utah University  
BIOL1615 General Biology I Lab, Biology Department, Southern Utah University  
BIOL2170 Introduction to Pathophysiology, Biology Department, Southern Utah University  
BIOL2420 Human Physiology, Biology Department, Southern Utah University  
BIOL2425 Human Physiology Lab, Biology Department, Southern Utah University  
BIOL3270 Vertebrate Physiology, Biology Department, Southern Utah University  
BIOL3275 Vertebrate Physiology Lab, Biology Department, Southern Utah University  
BIOL4410 Animal Behavior, Biology Department, Southern Utah University  
BIOL141 Physiology, Division of Mathematics and Natural Sciences, Penn State Altoona  
BIOL429 Animal Behavior, Division of Mathematics and Natural Sciences, Penn State Altoona  
BIOL469 Neurobiology, Division of Mathematics and Natural Sciences, Penn State Altoona  
BIOL472 Mammalian Physiology, Division of Mathematics and Natural Sciences, Penn State Altoona  
BIOL473 Physiology Laboratory, Division of Mathematics and Natural Sciences, Penn State Altoona  
FW1050 Natural Resources Seminar, School of Forest Resources & Environmental Science, Michigan Technological University  
FW2010 Vegetation of North America, School of Forest Resources & Environmental Science, Michigan Technological University  
FW5020 Identification & Biology of Forest Vegetation, School of Forest Resources & Environmental Science, Michigan Technological University  
PSY3060 Physiological Psychology, Department of Education, Michigan Technological University  
LSCC102 Attributes of Living Systems, Department of Biology, Colorado State University  
BZ300 Animal Behavior, Department of Biology, Colorado State University  
BZCC110 Principles of Animal Biology, Department of Biology, Colorado State University

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**Peer-Reviewed Publications (\* indicates undergraduate student):**

- Weeg MS** and Grant JB. 2016. A reliable, non-invasive technique for measuring growth in tadpoles exposed to salt. *Environmental Toxicology & Pharmacology* **45**: 95-97.
- Wagstaff H\*, Maman S\*, Tufte MJ, & **Weeg MS**. 2016. The effect of *Umbellularia californica* essential oil on blood vessel diameter in frogs. *American Journal of Undergraduate Research* **13**: 59-64.
- Weeg MS**, Land BR, and Bass AH. 2005. Vocal pathways modulate efferents to the inner ear and lateral line. *Journal of Neuroscience* **25**: 5967-5974.
- Weeg MS**, Fay RR, and Bass AH. 2002. Directionality and frequency tuning of primary saccular afferents of a vocal fish, the plainfin midshipman (*Porichthys notatus*). *Journal of Comparative Physiology* **188**: 631-641.
- Weeg MS** and Bass AH. 2002. Frequency response properties of lateral line superficial neuromasts in a vocal fish, with evidence for acoustic sensitivity. *Journal of Neurophysiology* **88**: 1252-1262.
- Weeg MS** and Bass AH. 2002. Structural and functional evidence for acoustic-lateral line interactions in a vocal fish. *Bioacoustics* **12**: 161-163.
- Weeg MS** and Bass AH. 2000. Central lateral line pathways in a vocalizing fish. *Journal of Comparative Neurology* **418**: 41-64.
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**Research Presentations (\* indicates undergraduate student):**

- Albrecht M\*, Orme B\*, Tufte MJ, & **Weeg MS**. 2017. The effects of *Umbellularia californica* produced terpenoids on blood vessel diameter in frogs. National Conference on Undergraduate Research (talk)
- Albrecht M\*, Buck S\*, Tufte MJ, & **Weeg MS**. 2017. The effect of eucalyptol on blood vessel diameter in frogs. Utah Conference on Undergraduate Research (talk)
- Grant JB, **Weeg MS**, Wallace H\*, Carlson A\*, Feng Y, & Burian S. 2017. Use of green infrastructure to increase invertebrate biodiversity in the built environment. Utah Conference on Undergraduate Research (poster)
- Albrecht M\*, Orme B\*, Tufte MJ, & **Weeg MS**. 2017. The effects of *Umbellularia californica* produced terpenoids on blood vessel diameter in frogs. SUU Festival of Excellence (talk)
- Buck S\*, Albrecht M\*, Tufte MJ, & **Weeg MS**. 2016. The effect of eucalyptol on blood vessel diameter in frogs. WMG COSE Research Symposium (talk)
- Jensen B\*, Buck S\*, Osborne J\*, Tufte MJ, & **Weeg MS**. 2016. The effects of *Umbellularia californica* produced terpenoids on vascular smooth muscle. Utah Conference on Undergraduate Research (talk).
- Maman S\*, Wagstaff H\*, Tufte MJ, & **Weeg MS**. 2015. The effects of *Umbellularia californica* essential oil on the cutaneous vasculature of frogs. National Conference on Undergraduate Research (talk).
- Maman S\*, Wagstaff H\*, Tufte MJ, & **Weeg MS**. 2015. The effects of *Umbellularia californica* essential oil on the cutaneous vasculature of frogs. Utah Conference on Undergraduate Research (talk).
- Wagstaff H\*, Maman S\*, Tufte MJ, & **Weeg MS**. 2014. The effects of *Umbellularia californica* essential oil on the cutaneous vasculature of frogs. The American Physiological Society Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology (poster).
- Mogensen M\* and **Weeg MS**. 2014. *Asthma and omega-3 fatty acids*. Utah Conference on Undergraduate Research (talk).
- Barney M\*, Keeler J\*, and **Weeg MS**. 2013. *Fire retardant as an environmental risk factor contributing to Parkinson's disease*. Utah Conference on Undergraduate Research (talk).
- Samra GA\*, **Weeg MS**, and Grant JB. 2010. *The effects of salt on anti-predator escape behaviors and size in green frog tadpoles (*Rana clamitans*)*. Ecological Society of America Meetings (poster).
- Weeg MS**, Grant JB, and Samra GA\*. 2010. *Effects of elevated salinity on the morphology and behavior of green frog tadpoles*. Joint Meeting of Ichthyologists and Herpetologists (poster).

- Weeg MS** and Bass AH. 2003. *Modulation of auditory and lateral line efferents during fictive vocalization*. Society for Neuroscience Annual Meeting (poster).
- Weeg MS** and Bass AH. 2001. *Structural and functional evidence for acoustic-lateral line interactions in a vocal fish*. Fish Bioacoustics Meeting (poster).
- Weeg MS** and Bass AH. 2000. *Frequency response characteristics of the posterior lateral line nerve in a vocal fish*. Society for Neuroscience Annual Meeting (poster).
- Weeg MS** and Bass AH. 1997. *Morphophysiological identification of lateral line inputs to the midbrain in a vocal fish*. Society for Neuroscience Annual Meeting (poster).

### **Invited Seminars:**

- 2011 Hey you, want to fight? Understanding the neural mechanisms of aggression. College of Science & Engineering, Southern Utah University
- 2011 What can “simple” brains tell us about complex behaviors? Biology Department, Southern Utah University
- 2010 The effects of salinity on tadpole size and behavior. School of Forest Resources, The Pennsylvania State University
- 2008 The life and times of plainfin midshipman fish (*Porichthys notatus*). Penn State Altoona Biology Club
- 2008 Modulation of the inner ear during vocalization. Division of Mathematics and Natural Sciences, Penn State Altoona
- 2004 Modulation of the inner ear during vocalization in a fish. Department of Biology, Swarthmore College
- 2001 Hearing without ears? Frequency response characteristics of the lateral line system in a vocal fish. Department of Neurobiology & Behavior, Cornell University
- 2001 Central lateral line pathways in a vocal fish. Parmly Hearing Institute, Loyola University Chicago
- 2001 Frequency response properties of the lateral line system in a vocal fish. Parmly Hearing Institute, Loyola University Chicago

### **Authored Grants:**

#### *Funded*

|      |   |          |
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| 2015 | National Science Foundation: “Enhancing biodiversity, water conservation, and urban agriculture through green roof infrastructure: J.B. Grant (co-PI), M.S. Weeg (co-PI), Y. Feng (co-PI), & S. Burian (co-PI). | \$15,807 |
| 2014 | Southern Utah University Faculty Scholarly Support Fund: Travel funds to attend the American Physiological Society Intersociety Meeting   | \$1372   |
| 2013 | Southern Utah University Faculty Scholarly Support Fund: “The neural basis of aggression in Siamese fighting fish”.   | \$1676   |
| 2010 | Penn State Altoona Research Development Grant: “Serotonin and aggression in Siamese fighting fish ( <i>Betta splendens</i> )”.  | \$1552   |
| 2010 | Pennsylvania Department of Conservation and Natural Resources: “Identification of amphibian species most at risk from climate change”. J.B. Grant (co-PI), M.W. Kaye (co-PI) & M.S. Weeg (co-PI).               | \$30,000 |
| 2010 | Penn State Altoona Undergraduate Research Award   | \$500    |
| 2010 | Penn State Altoona Research Development Grant: “The effects of salt on tadpole escape behaviors”  | \$3015   |
| 2010 | Penn State Altoona Undergraduate Research Award   | \$500    |
| 2009 | Penn State Altoona Undergraduate Research Award   | \$500    |
| 2000 | Cornell University Graduate School Conference Travel Grant  | \$600    |
| 1999 | NIMH: Integrative Training Grant  | \$14,000 |
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| 1997 | NIMH: Integrative Training Grant                           | \$13,000 |
| 1997 | Cornell University Graduate School Conference Travel Grant | \$600    |
| 1996 | NIMH: Integrative Training Grant                           | \$13,000 |

*Not funded*

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|------|---|-------------|
| 2016 | Wildlife Acoustics Scientific Products Grant: “Comparison of alarm calls between established and newly translocated colonies of Utah prairie dogs”. M.S. Weeg (PI). | \$3934      |
| 2009 | NIH: “Effects of attention on the mechanisms of auditory grouping”. H. Farris (PI) & M.S. Weeg (subcontractor).   | \$1,791,500 |
| 2009 | NSF: “Collaborative research: Mechanisms of attention and auditory object formation: An integrative approach”. H. Farris (co-PI) & M.S. Weeg (co-PI).               | \$654,421   |
| 2008 | NIH: “Anisotropic Conduits for Peripheral Nerve Regeneration”. R. Gilbert (PI), M.S. Weeg (Co-PI), and M. Mullins (Co-PI).  | \$410,689   |

**Professional Societies:**

American Physiological Society

**Academic Service:**

*Faculty senator:* Southern Utah University

*Member:* Walter M. Gibson Research Fellowship Committee, Southern Utah University

*Member:* Circle 4 Scholarship Committee, Southern Utah University

*Chair:* Biology Department Faculty Development Committee, Southern Utah University

*Faculty senator:* Penn State Altoona

*Member:* Research Committee, Penn State Altoona

*Member:* Academic Affairs Committee, Division of Mathematics and Natural Sciences, Penn State Altoona

*Reviewer:* National Science Foundation

*Reviewer:* Journal of Neuroscience

*Reviewer:* Journal of Experimental Biology

*Reviewer:* Journal of Comparative Physiology

*Reviewer:* Behavioral Ecology

*Reviewer:* Sigma Xi Graduate Research Grants, Cornell University

*Vice-President:* Dept. of Neurobiology and Behavior Graduate Student Association, Cornell University

*Social Chair:* Dept. of Neurobiology and Behavior Graduate Student Association, Cornell University

*Student/Faculty Liaison:* Dept. of Neurobiology and Behavior Graduate Student Association, Cornell University

**Popular Press Coverage:**

2005 How fish hear and make sounds at same time. ScienceDaily, July 5, 2005

<http://www.sciencedaily.com/releases/2005/07/050705010239.htm>

2005 First direct link between ear and brain’s vocal control found by Cornell researchers in fish that hear and make sounds at same time. Krishna Ramanujan, Cornell University News Service, June 29, 2005.

<http://www.news.cornell.edu/stories/July05/Bass.kr.html>