

# CURRICULUM VITAE

## HEIDI SCHUTZ

---

Biology Department  
Pacific Lutheran University  
Tacoma, WA 98447

Phone: [\(253\)535-7094](tel:(253)535-7094)  
E-mail: [schutzha@plu.edu](mailto:schutzha@plu.edu)  
<https://sites.google.com/site/schutzheidi/>

### EDUCATION AND TRAINING

|     |                                                                   |      |
|-----|-------------------------------------------------------------------|------|
| PhD | Ecology and Evolutionary Biology, University of Colorado, Boulder | 2008 |
| MS  | Museum and Field Studies, University of Colorado, Boulder         | 2002 |
| BA  | Anthropology, University of California, Santa Cruz                | 1997 |

### PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

|                                                                                               |              |
|-----------------------------------------------------------------------------------------------|--------------|
| Pacific Lutheran University, Biology Department<br>Assistant Professor                        | 2013-Present |
| Whitman College, Biology Department<br>Visiting Assistant Professor                           | 2012 - 2013  |
| Cal Poly San Luis Obispo, Biological Sciences<br>Lecturer                                     | 2010 - 2012  |
| University of California Riverside, Department of Biology<br>Research Associate               | 2010 - 2011  |
| University of California Riverside, Department of Biology<br>Chancellor's Postdoctoral Fellow | 2008 - 2010  |

### PEER REVIEWED PUBLICATIONS

2014

Labocha, M. K., **Schutz, H.** and Hayes, J. P. (2014), Which body condition index is best? *Oikos*. 123(1): 111-119.

2013

Dlugosz, E.M., **H. Schutz**, T. H. Meek, W. Acosta C. J. Downs E. G. Platzer, M. A. Chappell and T. Garland Jr. Immune response to a *Trichinella spiralis* infection in house mice from lines selectively bred for high voluntary wheel running. *The Journal of Experimental Biology* 216 (10): 4212-4221

2012

Downs, C.J., **H. Schutz**, T.H. Meek, E.M. Dlugosz, W. Acosta K.S. de Wolski, J.L. Malisch, J.P. Hayes and T. Garland Jr. Within-lifetime Trade-offs but Evolutionary Freedom for Hormonal and Immunological traits: Evidence from Mice Bred for High Voluntary Exercise. *The Journal of Experimental Biology* 215 (10): 1651-1661

Templeman, N.M., **H. Schutz**, T. Garland, Jr., and G. B. McClelland. Do Mice Selectively Bred for High Locomotor Activity Have a Greater Reliance on Lipids to Power Submaximal Aerobic Exercise? *American Journal of Physiology* 303 (1): R101-R111.

2011 Garland T. Jr., **H. Schutz**, M. A. Chappell, B. K. Keeney, T. H. Meek, L. E. Copes, W. Acosta, C. Drenowatz, R. C. Maciel, G. van Dijk, C. M. Kotz and J. C. Eisenmann. The Biological Control of Voluntary Exercise, Spontaneous Physical Activity and Daily Energy Expenditure in Relation to Obesity: Human and Rodent Perspectives. *The Journal of Experimental Biology*. 214: 206-229.

2010 Hannon R.M., T.H. Meek, W. Acosta, R.C. Maciel, **H. Schutz** and T. Jr. Garland. Sex-Specific Heterosis in Line Crosses of Mice Selectively Bred for High Locomotor Activity. *Behavioral Genetics*. 41 (4) : 615-624.

2009 **Schutz, H.**, E.R. Donovan, and J. P. Hayes. Effects of Parity on Pelvic Size and Shape Dimorphism in *Mus*. *Journal of Morphology* 270 (7) 834-842.

**Schutz, H.**, P.D. Polly, J.D. Krieger and R.P. Guralnick. Differential Sexual Dimorphism: Size and Shape in the Cranium and Pelvis of Gray Foxes (*Urocyon*). *Biological Journal of the Linnean Society* 96 (2): 339-353.

2007 **Schutz, H.** and Robert. P. Guralnick. Postcranial element shape and function: assessing locomotor mode in extant and extinct mustelid carnivorans. *Zoological Journal of the Linnean Society* 150 (4):895-914.

#### **In Review**

Copes L.E., **H. Schutz**, E.M. Dlugosz, W. Acosta, M. A. Chappell and T. Garland, Jr. Increased food consumption caused by voluntary exercise (wheel running) is not fully compensated by reduced spontaneous physical activity in mice: results from an artificial selection experiment. *International Journal of Obesity*

**Schutz, H.**; H. Jamnizcky, B. Halgrímsson and T.Garland Jr. Shape-shift: semicircular canal morphology responds to selective breeding for increased locomotor activity. *Evolution*

#### **In Preparation**

**Schutz, H.;** R.P. Guralnick; T.Garland Jr. Functional trade-offs in Mammalian Pelvic Dimorphism. *Evolution*.

**Schutz, H.;** G. Ordonez, and T. Garland Jr. Responses of scapular and pelvic Size and shape to exercise and selective breeding for high activity in *Mus*. *The Journal of Morphology*.

## MEETING ABSTRACTS

2014 **Schutz, H.;** G. Ordonez, and T. Garland Jr. Differential morphological responses to selection for high voluntary wheelrunning in the scapula and os coxae of mice. *The FASEB Journal*. 28 (supplement 1).

2012 Ercoli, M.D. and **H. Schutz** Análisis de la morfología del extremo distal del húmero y del extremo proximal del fémur en mustélidos fósiles y vivientes en relación al sustratos y estilos locomotors. *26<sup>th</sup> Conference of Jornadas Argentinas de Paleontología de Vertebrados*.

**Schutz, H.,** H.A. Jamniczky, B. Hallgrímsson and T. Garland Jr. Changes in semicircular canal morphology in response to selective breeding for high voluntary wheel running. Abstract 2683. *Annual Meeting of the American Association of Anatomists (AAA)*.

Wone B., **H. Schutz** , T.H. Meek, and T. Garland Jr. Mitochondrial DNA haplotype association in mice selectively bred for high voluntary wheel running. *Annual Meeting of the American Physiology Society (APS)*.

Copes L.E., E.M. Dlugosz, K. Jepsen, S. Judex, S. Lublinksy, **H. Schutz**, S.M. Tommasini, A. Trinward and T. Garland Jr. Rodents and Monkeys and Apes, Oh My: Comparative and experimental investigations of systemic skeletal robusticity in rodents and primates. *81<sup>st</sup> Annual Meeting of the American Association of Physical Anthropologists (AAPA)*.

2011 Copes L.E, **H. Schutz**, E.M. Dlugosz, W. Acosta, M.A. Chappell and T. Garland Jr. Voluntary exercise, spontaneous physical activity, and food consumption in High Runner lines of mice. *Annual Meeting of the American Physiology Society (APS)*.

Copes L.E., **H. Schutz**, E.M. Dlugosz and T. Garland Jr. Voluntary exercise, spontaneous physical activity, and systemic skeletal robusticity in high endurance-running mice. *Annual Meeting of the American Association of Anatomists (AAA)*.

Copes L.E., **H. Schutz**, E.M. Dlugosz, T. Garland Jr., M.R. Brown, A. Oldak and K. Whitmore. Experimental investigations of the effects of exercise, hormones, and diet on cranial vault thickness. *80<sup>th</sup> Annual Meeting of the American Association of Physical Anthropologists (AAPA)*.

- Copes L.E., M.R. Brown, E.M. Dlugosz, S. Judex, S. Lublinsky, A. Oldak, H. Schutz, S.M. Tommasini, K. Whitmore, T. Garland, Jr. Diet and Exercise Do Not Affect Cranial, Robusticity in Mice. *Annual Meeting of the American Society of Bone and Mineral Research*.
- Dlugosz, E.M., **H. Schutz**, T.H. Meek, W. Acosta, C. J. Downs, E.G. Platzer, M.A. Chappell and T. Garland Jr. Immune response to a *Trichinella spiralis* infection in high-runner mice. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- Downs, C.J., **H. Schutz**, T.H. Meek, E.M. Dlugosz, W. Acosta and T. Garland Jr. Innate immune function in mice selectively breed for high voluntary wheel-running behavior. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- 2010 Rios, M., V. Morales, **H. Schutz** and K. Weaver. Utilizing Shell Morphometrics and Radula Count for species identification in the land snail *Oreohelix*. *Annual Meeting of the Society for the Study of Evolution (SSE)*.
- Schutz, H.**, R.P. Guralnick and T. Garland Jr. Functional trade-offs and pelvic sexual dimorphism in mammals. *Annual Meeting of the Society for the Study of Evolution (SSE)*.
- Templeman, N., **H. Schutz**, T. Garland Jr. and G. B. McClelland. Effect of selective breeding for high locomotor activity on metabolic fuel selection. *Annual Meeting of the Canadian Zoologists (CSZ)*.
- Schutz, H.**, J.D. Krieger, R.P. Guralnick and T. Garland Jr. Pelvic Sexual Dimorphism in the Carnivora: A Phylogenetic Approach. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- Schutz, H.**, R.A. III Escobar, and T. Garland Jr. Responses of Scapular Size and Shape to Exercise and Selective Breeding for High Activity in *Mus*. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- Acosta, W., **H. Schutz**, E.M. Dlugosz, , T.H. Meek, R.M. Hannon, B.K. Keeney, B.E. Radojcic, R.C. Maciel and T. Garland Jr. Food Choice in Mice Selectively Bred for High Voluntary Wheel Running. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- 2009 Pamplin, J. II (*undergraduate*), **H. Schutz**, B.E. Radojcic, and T. Garland Jr. Sexual Dimorphism in Pelves of Selectively Bred *Mus domesticus*. *Annual Biomedical Research Conference for Minority Students (ABRCMS)*.
- 2007 Donovan, E. R., **H. Schutz** and J. P. Hayes. Effects of Parity on Pelvic Shape Dimorphism in *Mus*. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.

- Labocha M. K., **H. Schutz** and J. P. Hayes. Evaluating the accuracy of morphometric indices of body condition. *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*.
- 2006 **Schutz, H.**, Cranial and Pelvic Shape Dimorphism in the grey and island grey fox. *Annual Meeting of the American Society of Mammalogists (ASM)*.
- 2004 **Schutz, H.** The Implications of Pelvic Dimorphism in the Carnivora. *Annual Meeting of the American Society of Mammalogists (ASM)*.
- 2002 **Schutz, H.** and R. P. Guralnick Using Morphometrics to Predict Locomotor Mode and Phylogenetic Position of an Extinct Plio-Pleistocene Mustelid. *Annual Meeting of the Geological Society of America (GSA)*.
- 2001 **Schutz, H.** Landmark-based Morphometric Analysis of Mustelid Post-crania and its Application to the Interpretation of Extinct Taxa. *61<sup>st</sup> Annual Meeting, Society of Vertebrate Paleontology (SVP)*.
- Schutz, H.** Landmark-based Morphometric Analysis of Modern Mustelid Post-crania and its Application to the Interpretation of Locomotion in the Extinct Taxon, *Trigonictis*. *81<sup>st</sup> Annual Meeting, American Society of Mammalogists (ASM)*.

## HONORS AND AWARDS, GRANTS AND FELLOWSHIPS

### Honors and Awards

- 2006 Department of Ecology and Evolutionary Biology Teaching award  
University of Colorado Boulder \$200
- 2004 Department of Ecology and Evolutionary Biology Teaching award  
University of Colorado Boulder \$200
- 2003 Department of Ecology and Evolutionary Biology Teaching award  
University of Colorado Boulder \$200

### Grants

- 2013 NSCI Undergraduate Research Program  
Pacific Lutheran University \$15,200  
How selection for high voluntary activity affects levels of skeletal sexual dimorphism
- 2012 External Funding Initiative Grant  
Cal Poly San Luis Obispo \$16,507  
Exploring the Effects of Climate Change on Morphology, Behavior, and Dispersal in an Aquatic Predatory Insect (*Notonecta*). Co-PI with Shannon McCauley
- 2012 Professional Development Travel Grant  
Cal Poly Center for Teaching and Learning \$300

2006 Beverly Sears Grant  
University of Colorado Boulder \$1,500

2005 Grant in Aid of Research  
ASM (American Society of Mammalogists) \$1,433

2005 Departmental Graduate Research Grant  
University of Colorado Boulder \$1,600

2004 Departmental Graduate Research Grant  
University of Colorado Boulder \$1,200

2003 William H. Burt Fund Grant  
University of Colorado Museum of Natural History \$1,500

2003 Walker Van Riper Grant  
University of Colorado Museum of Natural History \$1,000

2001 Collie Fund  
University of Colorado Museum of Natural History \$950

2000 William H. Burt Fund Grant  
University of Colorado Museum of Natural History \$950

2000 Beverly Sears Grant  
University of Colorado Boulder \$750

1999 William H. Burt Fund Grant  
University of Colorado Museum of Natural History \$1,000

### **Fellowships**

2008 Chancellor's Postdoctoral Fellowship  
For Cultivating Diversity in Science, Engineering and Mathematics  
University of California Riverside \$96,000

2006 Graduate Fellowship  
Department of Ecology and Evolutionary Biology \$15,000

2005 Environmental Internship  
Edna Bailey Sussman Foundation 3,000

2005 Research Fellowship  
Leadership Alliance / Schering Plough \$4,000

2003 Graduate Diversity Fellowship  
University of Colorado Boulder \$2,500

2003 Graduate Fellowship  
NIH Maximizing Student Diversity Program (MSDP) \$21,000  
for students from groups underrepresented in biomedical and behavioral  
research

2002 Graduate Fellowship  
NSF Alliances for Graduate Education in the Professoriate (AGEP)  
program for underrepresented minorities in S.T.E.M. disciplines \$21,000

1999 Arnold Trust Diversity Fellowship  
University of Colorado Boulder \$2,500

## INVITED PRESENTATIONS, TALKS AND WORKSHOPS

- 2012 Effects of Selection for High Voluntary Wheel Running on Semicircular Canal Morphology  
Cal Poly San Luis Obispo, San Luis Obispo, CA
- 2012 Evolutionary Ecology  
Cal Poly San Luis Obispo, San Luis Obispo, CA
- 2011 Evolutionary Morphology: Artificial Selection and Morphological Change  
Grand Valley State University, Grand Rapids, MI
- 2010 Effects of Artificial Selection for High Activity in Mice  
Bella Vista Middle School, Murrieta, CA
- 2009 Pelvic Dimorphism in the Carnivora  
California State University, San Bernardino
- 2006 Animal Bones  
Highline Academy Charter School, Denver, CO
- 2005 Workshop: Geometric Morphometrics in a Forensic Setting  
U.S. National Fish and Wildlife Service Forensic Laboratory
- 2005 Morphometrics and Paleobiology  
University of Colorado Museum of Natural History
- 2003 The Advisor/ Advisee relationship  
C.U. Boulder Preparing Future Faculty Program
- 2003 Reconstructing the Locomotor Habits of a Plio-Pleistocene Mustelid  
EEB Spring Symposium, C.U. Boulder

## TEACHING EXPERIENCE

- Pacific Lutheran University** 2013-present  
Assistant Professor  
Anatomy and Physiology  
Comparative Vertebrate Anatomy  
Capstone
- Whitman College** 2012 - 2013  
Instructor  
Animal Physiology  
Introductory Biology
- California Polytechnic State University, San Luis Obispo** 2010 - 2012  
Instructor  
Anatomy and Physiology  
Introductory Biology
- University of Laverne** 2010  
Instructor

S.T.E.M. Summer Camp for high school students

**Truckee Meadows Community College**

2008

Instructor

Anatomy and Physiology

**University of Colorado Boulder**

2002 - 2008

Teaching Assistant

Non-Majors Biology

Introduction to Biology

Vertebrate Zoology

EBIO Writing Lab

Mammalogy

Human Anatomy

Departmental Lead Graduate Teaching Assistant

**Denver Museum of Natural History**

Volunteer Teaching Assistant

2000

Comparative Osteology

**University of California, Santa Cruz**

Undergraduate Teaching Assistant

1996

Primate behavior/ Anatomy labs

**MENTORING EXPERIENCE**

|           |                                                                                 |                                                                                                                                                                                                                        |
|-----------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2014      | Christopher Higginbotham<br>Kejersten Braaten-Fierros                           | NSCI Undergraduate Research Program, Pacific<br>Lutheran University                                                                                                                                                    |
| 2012-2013 | Kathryn Roberts,                                                                | Undergraduate, Whitman College                                                                                                                                                                                         |
| 2011-2012 | Michael Maples<br>Rebecca Ur<br>Andrew Govea<br>Christina Pelfini<br>Amanda Hoj | Master's Student, Cal Poly San Luis Obispo<br>Undergraduate, Cal Poly San Luis Obispo<br>Undergraduate, Cal Poly San Luis Obispo<br>Undergraduate, Cal Poly San Luis Obispo<br>Undergraduate, Cal Poly San Luis Obispo |
| 2010-2011 | Barbara Frota                                                                   | Undergraduate, Cal Poly San Luis Obispo                                                                                                                                                                                |
| 2010      | Genesis Ordoñez                                                                 | College of Natural and<br>Agricultural Sciences Freshman Scholars Program,<br>UC Riverside                                                                                                                             |
| 2009      | John Pamplin II                                                                 | Mentoring Summer Research Internship Program,<br>UC Riverside                                                                                                                                                          |

**PROFESSIONAL SERVICE**

**Reviewing Activities**



Global Ecology and Biogeography, Evolution (International Journal of Organic Evolution),  
Journal of Morphology, Mammalia, Journal of Zoology, McGraw Hill Publishing

### **University Service**

- 2013-2014     Committee Member  
                  IACUC (Institutional Animal Care and Use Committee)
- 2012            Faculty Mentor  
                  First-Generation and Working-Class student support group  
                  Whitman College
- 2011            Organization of LGBTQ Ally training workshop for the Biological Sciences  
                  Department  
                  Cal Poly San Luis Obispo
- 2009-2010     Postdoctoral Representative  
                  Research Strategies Workgroup of the UC Commission on the Future  
                  <http://ucfuture.universityofcalifornia.edu/research.html>
- 2004            Graduate Representative  
                  Faculty Search for a Curator of Vertebrate Zoology  
                  C.U. Museum and EEB Department
- 2002            Graduate Representative  
                  Faculty Search for a Curator of Vertebrate Paleontology  
                  C.U. Museum and Geology Department

### **COMMUNITY INVOLVEMENT / OUTREACH**

- 2012            Marine Mammal Center  
                  Mammal Stranding Rescue
- 2010            Riverside Schools Science Fair  
                  Volunteer Judge
- 2003            University of Colorado Museum of Natural History  
                  “Museum in the Dark” bilingual (Spanish) presenter

### **LANGUAGES**

Spanish: native speaker