

CURRICULUM VITAE OF SAMANTHA A. PRICE

Department of Evolution and Ecology, 1 Shields Avenue, University of California Davis,
Davis, CA 95616, USA

- Office Telephone: (+1) 530-752-4720 ● Email: saprice@ucdavis.edu
 - Webpage: www.evovert.com
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EDUCATION

- 2001 - 2006 Ph.D. **University of Virginia, USA.** “*Cetartiodactyla: Phylogeny, Macroevolution and Conservation*”. Supervisor: John Gittleman. Conferred January 2006.
- 1998 - 2001 B.A. Hons. Biological Sciences. **Saint Peter’s College, University of Oxford, UK.** 2:1 including supplementary subject: History and Philosophy of Science.

ACADEMIC POSITIONS

- 2011 – present Assistant Project Scientist. **Department of Evolution and Ecology, UC Davis, USA.** Advisor: Peter Wainwright.
- 2008 – 2011 Post-Doctoral Researcher. **Department of Evolution and Ecology, UC Davis, USA.** Post-Doc Advisor: Peter Wainwright.
- 2005 – 2008 Post-Doctoral Fellow **National Evolutionary Synthesis Center, USA** (NESCent, www.nescent.org). “*Cetartiodactyl evolution: understanding the evolutionary transition from the terrestrial to the aquatic biome*”. 2 year fellowship renewed for a 3rd year.

VISITING ACADEMIC POSITIONS

- November 2015 Visitor: Departamento de Zoología, Universidad de Concepción, Chile.

GRANTS/AWARDS

- 2016 **NSF DEB-1556953.** Collaborative Research: “*Disentangling the ecological drivers of teleost body form diversity*” PI: **Price, S.A** & Co-PI: Wainwright, P.C. (\$603,000). Funding starts May 2016.

- 2013 **NSF DEB-1256894-0**. Collaborative Research: “*Integrating Fossil And Modern Evidence To Determine The Role Of Diet In Mammalian Diversification*” PI Hopkins, S. S. B. & Co-PI **Price, S. A.** (\$395,000)
- 2013 **NESCent Academy workshop** “*Paleobiological and Phylogenetic Approaches to Macroevolution*” **S.A. Price**, Schmitz, L. & Slater, G. funded to run a workshop in 2014 on macroevolutionary methods for both biologists and geologists.
- 2013 **Society for the Study of Evolution Symposium** for 2014 annual meeting "Reuniting fossil and extant approaches to macroevolution" Slater, G., **Price, S. A.** & Schmitz, L.
- 2012 **NESCent Catalysis Meeting** “*Integrating approaches to macroevolution: combining fossils and phylogenies*”. **S.A. Price**, Schmitz, L. & Slater, G. funded to bring together 35 biologists and geologists from all over the world from graduate students to full professors.
- 2010 **NESCent short-term visitor award**: “*Evolution of mammalian dietary strategies and the importance of omnivory*”
- 2005 - 2008 **NESCent Post-Doctoral Fellowship**, funded by NSF #EF-0423641
- 2008 **NESCent informatics white paper**: “*Comparative methods in ‘R’ hackathon*”, funded to hold a hands-on software development meeting for programmers: December 2008. **Price, S.A.** & Zanne, A.

PUBLICATIONS

Peer-reviewed articles (h index = 17)

- 2016 **Price, S. A.** & Schmitz, L. A promising future for integrative biodiversity research: an increased role of scale-dependency and functional biology. Theme issue ‘The regulators of biodiversity in deep time’ compiled and edited by Thomas Ezard, Tiago Quental and Michael Benton. *Philosophical Transactions of the Royal Society of London, B*. 371(1691), DOI 10.1098/rstb.2015.0228
- 2016 Friedman, S. T., **Price, S. A.**, Hoey, A. S. & Wainwright, P. C. Ecomorphological Convergence in Planktivorous Surgeonfishes. *Journal of Evolutionary Biology*, online early 12 Feb DOI: 10.1111/jeb.12837
- 2015 **Price, S. A.**, Friedman, S. T. & Wainwright, P. C. How predation shaped fish: the impact of fin spines on body form evolution across teleosts. *Proceedings of the*

Royal Society of London, B. online early DOI: 10.1098/rspb.2015.1428. *Media coverage – Discovery News:* <http://news.discovery.com/animals/these-fish-are-oddly-shaped-for-a-reason-photos-151110.htm>, *phys.org:* <http://phys.org/news/2015-11-relationship-predation-prey-fish-body.html> and *Science:* <http://news.sciencemag.org/evolution/2015/11/spiny-fish-grow-shapes-are-hard-swallow>

- 2015 **Price, S. A.**, Claverie, T., Near, T. J. & Wainwright, P.C. Phylogenetic insights into the history and diversification of fish on reefs. *Coral Reefs* 34(4), 997-1009.
- 2015 **Price, S.A.** & Hopkins, S.S.B. The macroevolutionary relationship between diet and body mass across mammals. *Biological Journal of the Linnean Society* 15(1), 173-184
- 2015 Famoso, N. A., Davis, E. B., Feranec, R. S., Hopkins, S. S. B., & **Price, S. A.** Are hypsodonty and occlusal enamel complexity evolutionarily correlated in ungulates? *Journal of Mammalian Evolution* 23(1), 43-47.
- 2014 **Price, S. A.**, Schmitz, L., Oufiero, C. E., Eytan, R.I., Dornburg, A., Smith, W.L., Friedman, M., Near, T.J., Wainwright, P.C. Two waves of colonization straddling the K-Pg boundary formed the modern reef fish fauna. *Proceedings of the Royal Society of London, B.* 281(1783): 20140321. *5th most read article in April the month it was published on Proc. Roy. Soc. B website. Media coverage – New Scientist article by Colin Barras* <http://www.newscientist.com/article/dn25345-dinokilling-asteroid-cleared-way-for-modern-reef-fish.html> - .U0KfKdx3tFJ.
- 2013 Near, T.J., Dornburg, A., Eytan, R.I., Keck, B.P., Smith, W.L., Kuhn, K.L., Moore, J.A., **Price, S.A.**, Burbrink, F.T., Friedman, M., Wainwright, P.C. Tempo of diversification in the superradiation of spiny-rayed fishes. *Proceedings of the National Academy of Sciences*, 110(31), 12738-12743.
- 2013 **Price, S. A.***, Tavera, J. J.*, Near, T. J. & Wainwright, P.C. Elevated rates of morphological and functional diversification in reef-dwelling haemulid fishes. *Evolution* 67(2), 417-428.
- 2012 **Price, S. A.***, Hopkins, S. S. B.*, Smith, K. K & Roth, V. L. Tempo of trophic evolution and its impact on mammalian diversification. *Proceedings of the National Academy of Sciences* 109(18), 7008-7012. * Equal contributions. *Media coverage – NPR ‘The Salt’ blog by Nancy Shute* <http://www.npr.org/blogs/thesalt/2012/04/20/150817741/for-most-of-human-history-being-an-omnivore-was-no-dilemma>.
- 2012 Wainwright, P.C., Smith, L. W., **Price, S. A.**, Tang, K. L., Sparks, J. L., Ferry, L. A., Kuhn, K. L. & Near, T. J. The evolution of pharyngognath: a phylogenetic and functional appraisal of the pharyngeal jaw key innovation in labroid fishes

and beyond. *Systematic Biology* 61(6), 1001-1027.

- 2012 Holzman, R., Collar, D.C., **Price, S. A.**, Hulsey, C. D., Thompson, R. C. & Wainwright, P. C. Biomechanical trade-offs bias rates of evolution in the feeding apparatus of fishes. *Proceedings of the Royal Society of London, B.* 279 (1732), 1287-1292.
- 2011 **Price, S.A.**, Holzman, R. & Wainwright, P.C. Coral reefs promote the evolution of morphological diversity and ecological novelty in fishes. *Ecology Letters* 14(5), 462-469.
- 2010 **Price, S.A.**, Wainwright, P.C., Bellwood, D.R, Kazancioglu, E., Collar, D.C. & Near, T.J. Functional innovations and morphological diversification in parrotfishes. *Evolution*, 64(10), 3057-3068.
- 2010 Slater, G.J.*, **Price, S.A.***, Santini, F. & Alfaro, M.E. Early adaptive diversification in body size without rapid cladogenesis in modern cetaceans. *Proceedings of the Royal Society of London, B.* 277, 3097-3104
* joint 1st Authorship. Media coverage – Science online (<http://news.sciencemag.org/sciencenow/2010/05/whale-diversity-driven-by-diet.html>), featured Proc. Roy. Soc. B. article, Earth & Sky podcast & radio interview).
- 2009 **Price, S.A.** & Bininda-Emonds, O.R.P. A comprehensive phylogeny of extant horses, rhinos and tapirs (Perissodactyla) through data combination. *Zoosystematics and Evolution* 85(2), 277-292.
- 2009 Sidlauskas, B., Ganapathy, G., Hazkani-Covo, E., Jenkins, K.P., Lapp, H., McCall, L.W., **Price, S.A.**, Scherle, R., Spaeth, P.A., Kidd, D.M. Linking big: the continuing promise of evolutionary synthesis. *Evolution* 64(4), 871-880.
- 2009 Jones, K.E., Bielby, J., Cardillo, M., Fritz, S.A., O'Dell, J., Orme, C.D.L., Safi, K., Sechrest, W., Boakes, E.H., Carbone, C., Conolly, C., Cutts, M.J., Foster, J.K., Grenyer, R., Habib, M., Plaster, C.A., **Price, S. A.**, Rigby, E.A., Rist, J., Teacher, A., Bininda-Emonds, O.R.P., Gittleman, J.L., Mace, G.M. & Purvis, A. "PanTHERIA: A species-level database of life-history, ecology and geography of extant and recently extinct mammals". *Ecology* 90(9), 2648.
- 2007 **Price, S.A.** & Gittleman, J.L. Hunting to extinction: biology and regional economy influence artiodactyl extinction risk and the impact of hunting. *Proceedings of the Royal Society of Science B*, 274, 1845-1851.
- 2007 Bininida-Emonds, O.R.P., Cardillo, M., Jones, K.E., MacPhee, R.D.E., Beck, R.M.D., Grenyer, R., **Price, S.A.**, Vos, R., Gittleman, J.L., Purvis, A. The delayed

rise of present-day mammals. *Nature* 446, 507-512.

Media coverage (selected): The New York Times, BBC news, CNN, ABC.

- 2006 Ezenwa, V.O., **Price, S.A.**, Altizer, S., Vitone, N.D. & Cook, K.C. Host traits and parasite species richness in even and odd-toed hoofed mammals, Artiodactyla and Perissodactyla. *Oikos*, 115 (3), 526-536.
- 2005 **Price, S.A.**, Bininda-Emonds, O.R.P & Gittleman, J.L. A complete phylogeny of the whales, dolphins and even-toed hoofed mammals (*Cetartiodactyla*). *Biological Reviews* 80 (3), 445-473.
- 2003 Bininda-Emonds, O.R.P., Jones, K.E., **Price, S.A.**, Grenyer, R., Cardillo, M., Habib, M., Purvis, A. & Gittleman, J.L. Supertrees are a necessary not-so-evil: A comment on Gatesy et al. *Systematic Biology* 52, 724-729.

Under Review

- In Review Wainwright, P. C. & Price, S. A. The ecology and evolution of organismal Innovation. *Integrative and Comparative Biology*

Book chapters, commentaries & reviews

- In Review Wainwright, P. C. & Price, S. A. Innovation and Diversity of the Feeding Mechanism in Parrotfishes. In *The Biology and Ecology of Parrotfishes* (ed. A. Hoey, D. Bellwood & R. Bonaldo) Sciences Publishers.
- 2012 **Price, S.A.** A review of ‘The Comparative Approach in Evolutionary Anthropology and Biology’ by Charles L. Nunn. *Systematic Biology*, 61(6), 1085-1086.
- 2010 **Price, S.A.** A review of ‘Biodiversity 101’ by Melina F. Laverty, Eleanor J. Sterling, Amelia Chiles & Georgina Cullman. *Quarterly Review of Biology* 85(1), 96.
- 2007 **Price, S.A.** A review of ‘Horns, Flippers and Feet’ by D. Prothero and R. Schoch. *Aquatic Mammals*.
- 2006 Bininda-Emonds, O.R.P., Beck, R.M.D., Cardillo, M., Gittleman, J.L., Jones, K.E., Mace, G.M., **Price, S.A.** & Purvis, A. The Mammalian Tree of Life. In *The Encyclopedia of Mammals* (ed. D.W. Macdonald.) Oxford University Press, Oxford.
- 2004 Gittleman, J.L., Jones, K.E. & **Price, S.A.** Supertrees: using complete phylogenies in comparative biology. In *Phylogenetic Supertrees: Combining*

Information to Reveal the Tree of Life. (ed. O.R.P. Bininda-Emonds), pp 439-460. Kluwer Academic, Dordrecht.

- 2004 Bininda-Emonds, O.R.P., Jones, K.E., **Price, S.A.**, Cardillo, M., Grenyer, R. & Purvis, A. Garbage in, garbage out: data issues in supertree construction. In *Phylogenetic Supertrees: Combining Information to Reveal the Tree of Life.* (ed. O.R.P. Bininda-Emonds), pp. 267-280. Kluwer Academic, Dordrecht.

INVITED WORKSHOPS

Integrating Molecular Phylogenies and the Fossil Record. France-Berkeley fund, University of California Berkeley, CA, USA, Sept. 2013

Synergistic Evolutionary Learning Consortium: Evolution in AcTION (SELECTION). National Evolutionary Synthesis Center, Durham, NC, USA, Dec 2006.

Role of pathogens in the conservation of biological diversity. CABS-Conservation International, Washington D.C., USA, January 2004, November 2002

Phylogeny and conservation. National Center for Ecological Analysis and Synthesis, University of California, USA, February 2003 and September 2002 (at the University of Virginia).

INVITED ACADEMIC PRESENTATIONS (selected)

- Aug. 2015 Comparative approaches to the origin of biodiversity symposium at the Systematics Association Biennial meeting, Oxford, UK. "*Did predation shape fish? Disentangling the complex drivers of fish body form diversity*"
- Nov. 2014 Keynote Speaker: Modern Phylogenetic Comparative Methods and their Application in Evolutionary Biology. Seville, Spain. "*Phylogenies, fossils and the future of macroevolution*"
- June 2014 Reuniting fossil and extant approaches to macroevolution symposium at the Society for the Study of Evolution, Raleigh, NC, USA. "*Do fossil and extant phylogenies agree upon patterns of mammalian evolution?*"
- Oct. 2012 Phylogenetic and Comparative Paleobiology - New Quantitative Approaches to the Study of Vertebrate Macroevolution Symposium at the Society for Vertebrate Paleontology annual meeting, Raleigh NC, USA. "*Understanding mammalian dietary evolution using a phylogenetic and comparative approach*".
- April 2009 Center for Population Biology, Seminar Series, UC Davis, USA. "*Synthesising mammalian macroevolution: a data mining approach*"

March 2008 Earth History and Planetary Sciences, Seminar Series, Harvard University, USA.
“*Elucidating mammalian macroevolution through phylogenetics and data mining*”

Conferences (selected)

- July 2015 Society for the Study of Evolution, Guarujá, Brazil. Talk "*Carnassial tooth morphology suggests different evolutionary histories for cats and dogs*"
- Jan 2015 Society for Integrative and Comparative Biology, West Palm Beach, FL. Talk "*Phylogeny, ecology and the shape of bony fishes* ”
- June 2013 Society for the Study of Evolution, Snowbird, UT. Talk "*Assembly and early diversification of modern reef fishes*"
- Jan. 2013 Society for Integrative and Comparative Biology, San Francisco, CA. Talk "*Comparing disparity between traits using the Ornstein-Uhlenbeck model: A test of functional constraint on the eyes of labrid fishes*"
- July 2012 Society for the Study of Evolution, Ottawa, Canada. Talk "*Do fish eyes evolve more slowly than fins, teeth and jaws? The promises and pitfalls of comparing disparity amongst traits*"
- June 2011 Society for the Study of Evolution, Norman, OK. Talk "*Reef habitats promote the evolution of morphological diversity in fishes*"
- Jan. 2011 Society for Integrative and Comparative Biology, Salt Lake City, UT. Talk "*Coral reefs promote the evolution of morphological diversity and ecological novelty in labrid fishes*"
- June 2010 Society for the Study of Evolution, Portland, OR. Talk "*You are what you eat: diet and body mass evolution in mammals*"
- June 2008 Society for the Study of Evolution, Minneapolis, MN. Talk "*Body size evolution in the aquatic environment: how body size and its associated traits have evolved across the whales and dolphins (Cetacea)*"
- Oct. 2006 The Early Radiation of the Neoceti Symposium at the Society for Vertebrate Palaeontology Annual Meeting, Ottawa, Canada. Talk "*Extrapolating from Extant to Extinct: reconstructing neocete life history strategies*"

WORK EXPERIENCE

2002 – 2004 Editorial Assistant *Animal Conservation* and *Journal of Zoology*,

TEACHING

Instructor

Biodiversity of Fishes. University of California Davis, EVE 198 directed group study for 15 undergraduates. I've developed a curriculum and will be teaching a lab-based fish biodiversity course aimed specifically at utilising museum collections. (March - June 2016).

Introduction to R and evolutionary analysis. University of California Davis, EVE 198 directed group study for 9 undergraduates as well as a graduate student, postdoc and visiting faculty member. I developed curriculum for and taught a hands-on practical introduction to the R programming language and evolutionary analyses covering data formats, plotting, basic statistics, phylogenetic visualization and simple comparative methods. (October - Dec 2014).

Bodega Bay Applied Phylogenetics Workshop. Invited instructor, teaching morphological diversification and rates of evolution for the past seven years and last year I taught continuous trait evolution, as well as discrete trait evolution (March 7-14th 2015).

NESCent Academy workshop “Paleobiological and Phylogenetic Approaches to Macroevolution”. I funded, organised and taught this methods workshop for postgraduate students and faculty from geological and biological backgrounds (July 22-29th 2014). I taught continuous trait evolution as well as discrete trait evolution.

AnthroTree workshop. Invited instructor teaching phylogenetic approaches to studying morphological evolution. (May 30-June 4th 2012).

Evolutionary analysis in R (statistical software) - Center for Population Biology Workshop UC Davis. I devised and taught with another postdoctoral researcher an 8 hour workshop on implementing phylogenetic comparative methods in R (May 2010).

Computational Phylogenetic Comparative Methods Lab. I devised and taught the computing laboratory section of an upper-level undergraduate and postgraduate course in Macroevolution. (August – December 2002) Department of Biology, University of Virginia.

Mentoring

At UC Davis I am currently mentoring two undergraduate research projects “*Artiodactyla phylogenetics using total evidence for fossil and extant species*” and “*How hypocarnivory shaped Carnivora carnassial tooth morphology*” and both students will be presenting their work at the Society for the Study of Evolution annual meetings in June. During 2014-2015 I mentored an undergraduate working on a project “*Investigating the utility of geometric morphometrics for identifying the diet of fossil carnivorans*”, he presented his research at the Society for Integrative Biology meeting in Jan. 2015 and received a commendation from the department for his research. For the past two years I have also worked with four work-study students on “*morphological data for mammalian phylogenetics*”. Previously, I mentored an undergraduate working on “*Macroevolution of percomorph fishes*” (Jan 2010 – July 2010); for her work in our lab she received an undergraduate research award from UC Davis. In addition, I have acted as

primary advisor to on an undergraduate research project at Duke University on “*Cetacean arthropod parasites and phoreses*” (August 2006 – December 2006) and worked with two work-study undergraduates. I have also acted as co-advisor to undergraduates at the University of Virginia on: “*Predator-prey coevolution: carnivores and artiodactyls*” (August 2004 – May 2005). “*Host correlates of cetacean helminth species richness*” (August 2003 – May 2004) “*Cetacean palaeontology – evolutionary perspective*” (January – May 2002) “*Perissodactyl behavioural ecology*” (January – May 2002).

Curriculum Development.

I worked as part of the Synergistic Evolutionary Learning Consortium: Evolution in ACTION (SELECTION) funded by NESCent to develop a curriculum for teaching evolution through applied evolutionary research (2006-2009). This curriculum emphasizes teaching of evolution through its application to real-world problems such as forensics, crop breeding and medicine and is written up in the journal of the International Union of Biology teachers:

biologyinternational.org/wp-content/uploads/2010/11/Jungck-Vol-47.pdf

Development of online teaching resources.

I was invited to participate in the DryadLab Workshop (Dec 2011) to develop online educational materials associated with the Dryad online data repository (www.datadryad.org). The module I developed along with the Understanding Evolution website, allows students to interact with and analyze data in a large classroom or lecture setting. It teaches students about extinction as an evolutionary process and its relationship to current conservation issues. Following field testing (Fall 2015) through a faculty mentor network organized by Dryad the revised module will be made available online.

Guest Lectures

- *Think Evolution! High-school biology teachers workshop* at University of California, Berkeley Museum of Paleontology. (August 2014) 1 hour lecture on my research focusing on the utility of phylogenies and fossils for understanding evolution.
- *Setting conservation priorities and the role of evolution.* 2-hour lecture and group exercise on setting conservation priorities for an upper-level undergraduate course in Conservation Biology (April 2008) University of North Carolina Pembroke – a minority serving university (Native American).
- *Mammalian extinctions past and present.* 2-hour lecture including a section on careers in conservation for an upper-level undergraduate course in Conservation Biology (April 2007), University of North Carolina Pembroke – a minority serving university (Native American).
- *Molecular phylogenetics.* 2-hour lecture and computing lab for upper-level undergraduate course in Bioinformatics (April 2007), North Carolina Agricultural and Technical College - a minority serving university (African American).
- *Phylogenetic conflict resolution.* 1-hour lecture high school student class on Topics in Evolution (Feb. 2007) North Carolina School of Science and Math.
- *Principles of sustainability.* 1-hour lecture for an upper-level undergraduate course in Conservation Biology (April 2005), University of Virginia.

- *Phylogenetics and supertree methodology*. 1-hour lecture for an upper-level undergraduate and graduate course in Macroevolution. (October 2004), University of Virginia.

Outreach

- *Mentor: undergraduate diversity at SSE/SSB program* (2008, 2009, 2010, 2013, 2014, 2016).
- *Earth & Sky podcast*: <http://earthsky.org/biodiversity/samantha-price-says-blue-whales-size-linked-to-diet-of-tiny-creatures>
- *NESCent Education Outreach Group (EOG)*. I was an active participant in the EOG especially in minority outreach. I volunteered to give guest lectures at local universities and was also interviewed for a CD on Macroevolution produced by NESCent for the National Association of Biology Teachers 2006.
- *Voluntary teacher pre-school through to age 12*. During my graduate work I volunteered at a local natural area teaching an introduction to ecology, and the natural history of Virginia to local children.

ACADEMIC SERVICE

EvoED Digital Library Editorial Review Board. I have just agreed to become a reviewing editor for a new digital repository for online evolution education resources, which will form part of the Life Discovery Digital Library (<http://evoed.evolutionsociety.org/>).

Reviewer for Kluwer Academic Dordrecht, Cambridge University Press, *Animal Conservation, Evolution, Biological Conservation, American Naturalist, Molecular Phylogenetics & Evolution, Current Biology, Proceedings of the Royal Society B, PLoS Biology, Proceedings of the National Academy of Science, Journal of Evolutionary Biology, Biological Journal of the Linnean Society, Global Ecology and Biogeography* and NSF.

Organizer NESCent Academy workshop July 2014 "Paleobiological and phylogenetic approaches to Macroevolution"

NESCent Operations Committee Member, I was elected as the postdoctoral representative. Fall 2007 – Fall 2008.

Organizer NESCent Comparative Methods in 'R' hackathon December 2007. (http://hackathon.nescent.org/R_Hackathon_1).