PETER C. WAINWRIGHT

CURRICULUM VITAE

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EDUCATION:

1988 Ph.D. (Anatomy). University of Chicago. (George Lauder, major professor).
1980 B.Sc. (Zoology). Duke University.

PROFESSIONAL EMPLOYMENT & APPOINTMENTS:

July 1, 2015 – July 31, 2016. Interim Dean, College of Biological Sciences, UC, Davis.
2013-2015 Executive Associate Dean for Research & Resources, College of Biological Sciences, University of California, Davis
2011 –2013 Chair, Department of Evolution and Ecology, University of California, Davis
2002 – Professor of Evolution and Ecology, University of California, Davis
2001- 2007 Chair, Population Biology Graduate Group, University of California, Davis
1999- 2002 Associate Professor, Evolution and Ecology, University of California, Davis
1996 – 1998 Associate Professor of Biological Science, Florida State University
1991- 1996 Assistant Professor of Biological Science, Florida State University
1990-1991 Assistant Professor of Biological Sciences, Florida International University
1988-1990 Postdoctoral Researcher with Dr. Albert F. Bennett, U. of California, Irvine

AWARDS & HONORS:

2017 UC Davis Faculty Research Lecture Award
2016-Present Distinguished Professor, University of California, Davis
2015 Fellow of the American Academy of Arts and Sciences
2015-16 President, Society for Integrative and Comparative Biology
2010 Fellow of the California Academy of Sciences
2009 Distinguished Teaching Award, College of Biological Sciences U. C. Davis.
2008 Distinguished Teaching Award, Academic Senate, University of California, Davis.
1998 Developing Scholar Award, Florida State University.
1997 Fellow of the American Association for the Advancement of Science.
1995 Teaching Incentive Program Award, State of Florida.
1994 George Bartholomew Award in comparative physiology, American Society of Zoologists.

1987 D. Dwight Davis Award for best student paper in Vertebrate Morphology, American Society of Zoologists.
1986 Stoye Award for best student paper in Ecology, Ethology and Environmental Physiology, American Society of Ichthyologists and Herpetologists.

RESEARCH INTERESTS:

1. Diversification of functional morphology and biomechanics in vertebrates.
2. Evolution of fishes.
3. Functional morphology, ecology and evolution of feeding in fishes.
4. Phylogenetics and comparative methods.

GRANTS:

2016-2019. National Science Foundation. Disentangling the drivers of body form diversity in teleost fish species. DEB-1556953. $643,300 (co-PI with Samantha Price, PI).
2015-2017. National Science Foundation. DISSERTATION RESEARCH: Innovation and constraint: the evolution of power-amplified feeding in syngnathiform fishes. DEB-1010849. $20,290.
2011-2014. National Science Foundation. Causes and consequences of exceptional diversity in spiny-rayed fishes. DEB-1061981. $297,000.
2010. National Science Foundation. Fitness landscapes in a recent adaptive radiation of *Cyprinodon* pupfishes. DEB- 1010849. $20,364
2009-2014. National Science Foundation. Suction feeding evolution: Functional morphology, biomechanics and performance. IOS-0924489. $807,000.
2008-2011. National Science Foundation. The evolution of cranial forms in anguilliform fishes. IOS-0819009. $342,000. (co-PI with Rita Mehta, PI)
2007-2010 National Science Foundation. Phylogenetics and key innovations in labroid fishes. DEB-0717009. $276,000.
2007 National Science Foundation. Dissertation Research: Factors contributing to the morphological diversification of darters (Teleostei: Percidae). DEB – 0710394. with Rose Carlson. $5,556.
2007 National Science Foundation. Workshop: Evolution of motor patterns. IOB-0716834. $46,141.
2006 National Science Foundation. ROA- Biomechanics of suction feeding in teleost fishes. IOB-0610310. $15,619.
2005-2008 National Science Foundation. Biomechanics of suction feeding in teleost fishes. (with co-PI Angela Cheer) IOB-0444554 $440,653.
2004 Smithsonian Institution Caribbean Coral Reef Ecosystem. Quantitative assessment of herbivorous reef fish populations near Carrie Bow Cay: $2,380.
2003-2005 National Science Foundation. SGER: Biomechanics of suction feeding in teleost fishes. IBN-0326968 $99,954.
2001-2002 Faculty Research Grant, U.C. Davis. Biomechanical constraints on suction feeding fishes. $11,415.
2001-2003 National Science Foundation. Dissertation Research: Testing for disruptive competition in solitary populations of the three-spined stickleback. DEB-0105147. $10,000. (Dan Bolnick, Doctoral Student)
2000-2003 National Science Foundation. Evolution of the pharyngeal jaw apparatus in ray-finned

fishes. IBN-0076436. $209,157.

1998-2001 Australia Research Council. Biomechanical diversity, performance and ecology of feeding in labrid fishes from the Great Barrier Reef and Caribbean. A19802057. AU $212,430. (co-PI with David Bellwood).

1997-1999. National Science Foundation. Dissertation Research: Convergent evolution of mollusc crushing in teleost fishes. IBN-9766042. $9,487. (Justin Grubich, Doctoral Student)

1993-1999. National Science Foundation. Evolution of organismal design: functional morphology of tetraodontiform fishes. IBN-9306672 $500,000.

PROFESSIONAL SOCIETIES:

American Society of Ichthyologists and Herpetologists
Society for the Study of Evolution
Society for Integrative and Comparative Biology
Society for Systematic Biology

RECENT FIELD SITES:

Venice Florida, 2017
Kona, Hawaii, 2013, 2014
La Paz, Mexico, 2010
Curacao, 2010
Panama, 2005
Belize, 2004, 2005 & 2006
Palau, 2003 & 2008
Florida, 2002 & 2003
Pohnpei, Micronesia, 2001
Moorea and Tahiti, 2000
Bonaire, 1999
Bahamas, Lee Stocking Island, 1999
Australia, Great Barrier Reef – Lizard Island Research Station, 1998

NATIONAL SERVICE:

Society and Board Service:

National Evolutionary Synthesis Center. Board of Advisors. 2005-2008.

Society for Integrative and Comparative Biology (formerly American Society of Zoologists). President Elect (2013-2015), Division of Vertebrate Morphology: Division Chair 1997-1999. Division of Systematic Biol. 1992-1995 Program Officer.

AAAS. Council Delegate in Biological Sciences. 1998-2001.

American Society of Ichthyologists and Herpetologists:
2007-2012 Board of Governors. 1987-1989 Committee on Graduate Student Participation.

Grant Review and National Science Foundation Service:

Workshop Organizer: Evolution of Motor Patterns (funded by and held at the National

Science Foundation, June 5-6, 2007)
Austrian Science Fund – 2 grant reviews
Panelist since 1992: Ecological and Evolutionary Physiology (1 panel, invited 3 additional times), Environmental Biology Dissertation Improvement Awards (2 panels), Sensory Systems and Movement (4 panels, 2005, 2007, 2010, 2013).
1992-present. Research Proposal Peer Review: 44 proposals for Ecological and Evolutionary Physiological Panel, Systematic Biology Panel.
1992: Systematics 2000 (NSF - Advisory Panel).

Journal Activities:

2011 - 2015. Senior Advisory Board & Deputy Editor. Journal of Morphology
2008 – 2011. Associate Editor, Functional Ecology
2005 - 2007. Editorial Board, Integrative and Comparative Biology
2005 – 2009. Editorial Advisory Board, Zoology
2002 – 2005. Associate Editor, American Naturalist
2002 – 2005. Associate Editor, Evolution
1995- 1997. Assistant Editor, Systematic Biology.
1991-present. I have reviewed manuscripts for the following 83 journals: *Acta Anatomica, Acta Zoologica Bulgarica, Acta Ichthyologica et Piscatoria, Anatomical Record, Animal Behavior, American Naturalist, American Zoologist, Aquaculture, Behavior & Brain Research, Belgian Journal of Zoology, Biological Bulletin, Bioscience, Biological Journal of the Linnean Society, Biology Letters, BMC Ecology, BMC Evolutionary Biology, Bulletin of Marine Science, Canadian Journal of Fisheries and Aquatic Sciences, Canadian Journal of Zoology, Comparative Biochemistry and Physiology, Contributions to Zoology, Copeia, Coral Reefs, Current Biology, Ecology, Ecology of Freshwater Fishes, Ecosphere, Environmental Biology of Fishes, Evolution, Evolutionary Biology, Evolutionary Ecology Research, Functional Ecology, Genome Biology, Global Ecology and Biogeography*, *Heredity, Ichthyological Research, Israel Journal of Zoology, Journal of Anatomy, Journal of Applied Ichthyology, Journal of Biogeography, Journal of Comparative Physiology A, Journal of Comparative Physiology B, Journal of Crustacean Biology, Journal of Experimental Biology, Journal of Experimental Zoology, Journal of Fish Biology, Journal of the Marine Biological Association of the United Kingdom, Journal of the Royal Society - Interface, Journal of Morphology, Journal of Theoretical Biology, Limnology & Oceanography, Marine Ecology Progress Series, Marine Environmental Research, Molecular Ecology, Molecular Phylogenetics & Evolution, Nature, Nature Communications, Naturwissenschaften*, *Netherlands Journal of Zoology, Oecologia, Oikos, Palaeontology, Palaios, Paläontologische Zeitschrift, Philosophical Transactions of the Royal Society, Physiological Zoology, PLoS One, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, Sciene Advances, Southwestern Naturalist, Systematic Biology, Transactions of the American Fisheries Society, Transactions of the Royal Society of London B, ZACS, Zoological Journal of the Linnean Society, Zoology*, *Zoological Letters, Zoological Science*, *Zoological Studies*, *Zoologischer Anzeiger, Zootaxa*.
1991-present. I have reviewed book chapters or book proposals for the following publishers: BIOS, Oxford University Press, Stanford University Press, University of Chicago Press, Wadsworth Publishing (book proposal)
1991-present. I have reviewed book manuscripts for the following publishers: Academic

Press, University of Chicago Press.

COURSES TAUGHT AT UNIVERSITY OF CALIFORNIA, DAVIS:

1. Comparative Vertebrate Anatomy, EVE 105. 1999, 2000, 2004, 2008, 2010, 2013, 2015.
2. Physiological Ecology, ECL 203. Spring 2000, 2001, 2003, 2005 (co-taught with Joe Cech).
3. Applied Phylogenetics EVE 211, Spring 2000, '01, '02, '03, '04, '05, '06, '07, '08, '09, '10, '11, '12, '13, '14. (currently co-organized with Brian Moore).
4. Biological Sciences 1B, Introductory Evolution & Metazoan Diversity. Fall 2001, 2003, 2006, 2007, Phylogenetics and the Tree of Life BIS 2C. Fall 2009, Spring 2014
5. Population Biology 200C macroevolution. Spring 2002, 2007, 2008, 2009, 2010, 2011, 2012, 2013.

COURSES TAUGHT AT FLORIDA STATE UNIVERSITY:

1. Human Gross Anatomy, ZOO 5735C. Summer 1992, 1993, 1994, 1995, 1996, 1997.
2. Comparative Vertebrate Anatomy, ZOO 3713C. Fall 1994. Spring, 1997
3. Evolutionary Morphology, PCB 5938. Fall, 1992
4. Human Evolution, Senior Tutorial (5 Students with senior status), BSC-4921. Fall 1994, Spring 1996.
5. Advanced Field Biology, PCB 5938. (one of four sections) Fall 1992.

LABORATORY PERSONNEL

Post-doctoral Researchers:

Ralph Turingan, 1993-1995, Currently Professor Biological Science, Florida Institute of Technology.
John Friel, 1995-1998. Currently Director of the Alabama Museum of Natural History.
Lara Ferry-Graham, 1999-2003. Currently Associate Professor Arizona State University West.
Mike McCay, 2001-2003. PhD from University of California, Berkeley.
Thomas Near, 2001-2003. Currently Associate Professor, Yale University.
Michael Alfaro, 2001-2003. Currently Professor, University of California Los Angeles.
Steven Day, 2003-2005. Currently Associate Professor, Rochester Institute of Technology.
Kristin Bishop, 2007-2009. Currently Assistant Professor, Florida International University.
Rita Mehta, 2005-2010. Currently, Associate Professor, University of California, Santa Cruz.
Roi Holzman, 2006-2010. Currently Associate Professor, University of Tel Aviv.
Lars Schmitz, 2009-2012. Currently Assistant Professor Keck Science Center, Claremont Colleges.
Chris Oufiero, 2010-2012. PhD University of California, Riverside. Currently Assistant Professor, Towson University.
Thomas Claverie, 2012-2013. Currently Assistant Professor University of Mayote.
Samantha Price, 2008-2017 Currently Assistant Professor at Clemson Univeristy.
Luke Mahler, 2011-2014. Currently Assistant Professor, University of Toronto.
Jose Tavera, 2012-2015. PhD Centro de investigations Biológicas del Noroeste, Mexico. Currently Assistant Professor, University of Cali, Colombia.
Hannah Wood, 2012-2014, PhD University of California, Berkeley, Currently Assistant Curator, National Museum of Natural History.
David Collar, 2013-2014, PhD University of California Davis. Currently Assistant Professor at

Christopher Newport University.
Jennifer Hodge, 2014-present. PhD James Cook University.
Christopher Martinez, 2016-present. PhD Stony Brook University.
Anthony Barley, 2017-present. PhD University of Kansas.
Edward Burress, 2017-present. PhD Auburn University

Graduate Students:

Barton Richard, MSc 1994. Scaling of feeding functional morphology in largemouth bass, *Micropterus salmoides*.
Kellie Rebello, MSc 1995. Functional morphology and ecology of feeding in pufferfishes.
Steve Schenk, MSc 2001. Functional basis of claw diversity in brachyuran crabs.
Justin Grubich, Ph.D. 2001. Biomechanical bases of convergent evolution of mollusk crushing in teleost fishes. Currently with Pew Charitable Trust.
Thomas Waltzek, MSc 2002. Functional morphology of extreme jaw protrusion in cichlid fishes. Currently Assistant Professor, University of Florida.
Daniel I. Bolnick, Ph.D. 2003. Intraspecific competition and niche width. Professor, Ecology & Evolution, University of Texas at Austin.
C. Darrin Hulsey, Ph.D. 2004. Evolution of Central American cichlid fishes.
Andrew M. Carroll, Ph.D. 2005. The Muscular basis of suction feeding performance in fishes. Andrew died in 2010.
Tim E. Higham, Ph.D. 2006. Functional morphology and mechanics of suction feeding in fishes. Currently, Associate Professor, University of California Riverside.
David C. Collar, Ph.D. 2007. Evolution of morphological and functional diversity in centrarchid fishes. Currently Assistant Professor at Christopher Newport University.
Rose L. Carlson, Ph.D. 2008 Diversification of darters (Teleostei: Percidae). Currently Assistant professor at Fordham University.
Dan L. Warren, Ph.D. 2009. Methodological advances in the construction and application of environmental niche model*s.* Currently postdoctoral researcher at Macquarie University.
Tomomi Takada, M.Sc. 2012.
Christopher H. Martin, Ph.D. 2013. Adaptive radiation in fishes. Currently Assistant Professor, Department of Biology, University of North Carolina Chapel Hill.
Matthew McGee, Ph.D. 2014, Currently Postdoctoral Fellow in Switzerland with Ole Seehausen
Patrick Fuller, M.Sc. 2014
Sarah Longo, Ph.D. 2017, Currently postdoc at Duke University with Sheila Patek
Lauren Miller, Ph.D. exp 2019
Sarah Friedman, Ph.D. exp 2020
Katherine Corn, Ph.D. exp 2021

I have had at least one undergraduate conducting research in my lab every term since 1991.

Student Committee Service. I have served on numerous graduate student committees. In addition I was outside reader for a dissertation from University of Leiden (Dr. Jaap de Visser), and on Oct. 27, 2000 I was Opponent for Joakim Hjelm's dissertation at University of Umeå in Sweden. I was External Examiner for the PhD dissertation of Brent Gurd at Simon Fraiser University in April 2005, and an external committee member for Matthew Travis at Stony Brook, 2006; external committee member in 2011 for PhD students at

UCLA, UC Irvine and University of Toronto (2012), for one PhD student at Brown University in 2012, and one PhD student at University of Louisiana in 2015. I am outside committee member for one PhD student at UC Santa Cruz.

INVITED SEMINARS (Since 1996):

2017: University of British Columbia, two seminars.
2016. University of California, Berkeley
2015: Florida Institute of Technology, Yale University, University of California, Irvine
2014: Louisiana State University, Michigan State University, Kellogg Biological Station
2013: Claremont Colleges
2012: Southeastern Louisiana University, Brown University, University of Chicago (Sewall Wright Lecturer), American Museum of Natural History, University of Hawaii.
2011: Clemson University, Oklahoma University (Sutton Lecturer), University of Montana, University of Toronto.
2010: University of Akron, Harvard University
2009: Bodega Marine Laboratory, University of Texas, Austin, Moss Landing Marine Laboratory, University of California, Davis (Ecology & Evolution Seminar Series)
2008: University of Oregon, University of Louisiana Lafayette
2007: Washington State University; College of Charleston (plenary speaker, graduate student colloquium)
2006: University of California, Los Angeles; California State University Sacramento, SUNY Stony Brook.
2005: Florida State University, Florida Institute of Technology, University of California, Irvine.
2004: University of California, Berkeley; Tulane University/ University of New Orleans; Colorado State University.
2003: Texas A&M University, Palau International Coral Reef Center.
2002: University of Michigan.
2001: University of California, Santa Cruz; University of New Hampshire
2000: University of Umeå, Sweden; Scripps Institute of Oceanography; Wake Forest University; Bodega Marine Laboratory
1999: University of California, Berkeley
1998: University of California, Davis; James Cook University
1997: University of Michigan; Queen's University; University of Cincinnati.
1996: University of Florida; Ohio University; Duke University; University of California, Davis

PUBLICATIONS:

Lewis, S.M. and P.C. Wainwright. 1985. Herbivore abundance and grazing intensity on a Caribbean coral reef. Journal of Experimental Marine Biology and Ecology. 87: 215-228.

Wainwright, P.C. 1986. Motor correlates of learning behaviour: feeding on novel prey by pumpkinseed sunfish (*Lepomis gibbosus*). Journal of Experimental Biology. 126: 237-247.

Wainwright, P.C. and G.V. Lauder. 1986. Feeding biology of sunfishes: patterns of variation in the feeding mechanism. Zoological Journal of the Linnean Society. 88: 217-228.

Lauder, G.V., P.C. Wainwright and E. Findeis. 1986. Physiological mechanisms of aquatic prey capture in sunfishes: functional determinants of buccal pressure changes. Comparative Biochemistry and Physiology. 84A: 729-734.

Wainwright, P.C. 1987. Biomechanical limits to ecological performance: mollusc crushing by the Caribbean hogfish, *Lachnolaimus maximus* (Labridae). Journal of Zoology, London. 213: 283-298.

Wainwright, P.C. 1988. Morphology and ecology: the functional basis of feeding constraints in Caribbean labrid fishes. Ecology. 69: 635-645.

Wainwright, P.C. 1989. Prey processing in haemulid fishes: patterns of variation in pharyngeal jaw muscle activity. Journal of Experimental Biology. 141: 359-376.

Wainwright, P.C. 1989. Functional morphology of the pharyngeal jaws in perciform fishes: an experimental analysis of the Haemulidae. Journal of Morphology. 200: 231-245.

Wainwright, P.C., C. J. Sanford, S. M. Reilly and G. V. Lauder. 1989. Evolution of motor patterns: aquatic feeding in salamanders and ray-finned fishes. Brain, Behavior and Evolution. 34:329-341.

10. Westneat, M.W. and P.C. Wainwright. 1989. The feeding mechanism of the sling-jaw wrasse, *Epibulus insidiator* (Labridae; Teleostei): evolution of a novel functional system. Journal of Morphology. 202: 129-150.

Wainwright, P.C. 1990. Evolution of organismal complexity. Review of: Complex Organismal Functions: Integration and Evolution in Vertebrates. D. B. Wake and G. Roth (eds.). Cladistics. 6:315-316.

Jayne, B. C., G. V. Lauder, S. M. Reilly and P. C. Wainwright. 1990. The effect of sampling rate on the analysis of digital electromyograms from vertebrate muscle. Journal of Experimental Biology. 154:557-565.

Wainwright, P. C., C. W. Osenberg and G. G. Mittelbach. 1991. Trophic polymorphism in the pumpkinseed sunfish (*Lepomis gibbosus*): environmental effects on ontogeny. Functional Ecology. 5:40-55.

Wainwright, P. C., D. M. Kraklau and A. F. Bennett. 1991. Kinematics of tongue projection in *Chamaeleo oustaleti*. Journal of Experimental Biology. 159:109-133.

Wainwright, P. C. 1991. Ecological morphology: experimental functional anatomy for ecological problems. American Zoologist. 31:680-693.

Wainwright, P. C., G.V. Lauder, C. W. Osenberg and G. G. Mittelbach. 1991. The functional basis

of intraspecific trophic diversification in sunfishes. In The Unity of Evolutionary Biology, ed, E. Dudley, pp. 515-529. Dioscorides Press, Portland, OR.

So, K.-K. J., Wainwright, P. C. and A. F. Bennett. 1992. Kinematics of prey processing in *Chamaeleo jacksonii*: conservation of function with morphological specialization. Journal of Zoology, London. 226:47-64.

Osenberg, C. W., G. G. Mittelbach and P. C. Wainwright. 1992. Two-stage life histories in fish: The interaction between juvenile competition and adult performance. Ecology. 73: 255-267.

Mittelbach, G. G., C. W. Osenberg and P. C. Wainwright. 1992. Variation in resource abundance affects diet and feeding morphology in the pumpkinseed sunfish (*Lepomis gibbosus*). Oecologia 90:8-13.

20. Wainwright, P. C. and A. F. Bennett. 1992. The mechanism of tongue projection in chameleons. I. electromyographic tests of functional hypotheses. Journal of Experimental Biology. 168:1-22.

Wainwright, P. C. and A. F. Bennett. 1992. The mechanism of tongue projection in chameleons. II. role of shape change in a muscular hydrostat. Journal of Experimental Biology. 168:23-40.

Wainwright, P. C. and G. V. Lauder. 1992. The evolution of feeding biology in sunfishes (Centrarchidae). In: R. L. Mayden (ed.) Systematics, Historical Ecology, and North American Fishes. American Society of Ichthyologists and Herpetologists. Stanford University Press, Stanford. pp. 472-491.

Lauder, G. V. and P. C. Wainwright. 1992. Function and history: the pharyngeal jaw apparatus in primitive ray-finned fishes. In: R. L. Mayden (ed.) Systematics, Historical Ecology, and North American Fishes. American Society of Ichthyologists and Herpetologists. Stanford University Press, Stanford. pp. 445-471.

Turingan, R. G. and P. C. Wainwright. 1993. Morphological and functional bases of durophagy in the queen triggerfish, *Balistes vetula* (Pisces, Tetraodontiformes). Journal of Morphology 215:101-118.

Wainwright, P. C. and R. G. Turingan. 1993. Coupled vs uncoupled functional systems: motor plasticity in the queen triggerfish, *Balistes vetula* (Teleostei, Balistidae). Journal of Experimental Biology 180:209-227.

Wainwright, P. C. and S. M. Reilly. 1994. (editors) Ecological morphology: integrative organismal biology. Chicago, University of Chicago Press.

Wainwright, P. C. 1994. Functional morphology as a tool in ecological research. In Ecological Morphology: Integrative Organismal Biology. eds, P. C. Wainwright and S. M. Reilly. Chicago, Univ. Chicago Press. pp 42-59.

Wainwright, P. C. and S. M. Reilly. 1994. Introduction. In Ecological Morphology: Integrative Organismal Biology. eds, P. C. Wainwright and S. M. Reilly. Chicago, Univ. Chicago Press. pp 1-9.

Reilly, S. M. and P. C. Wainwright. 1994. Conclusion: Ecological morphology and the power of integration. In Ecological Morphology: Integrative Organismal Biology. eds, P. C. Wainwright and S. M. Reilly. Chicago, Univ. Chicago Press. pp 339-354.

30. Richard, B. A. and P. C. Wainwright. 1995. Scaling the feeding mechanism of largemouth bass (*Micropterus salmoides*): kinematics of prey capture. Journal of Experimental Biology. 198:419-433.

Wainwright, P.C. and B.A. Richard. 1995. Scaling the feeding mechanism of the largemouth bass (*Micropterus salmoides*): motor patterns. Journal of Experimental Biology. 198:1161-1171.

Turingan, R.G., P.C. Wainwright, and D. Hensley. 1995. Interpopulation variation in prey use and feeding biomechanics in Caribbean triggerfishes. Oecologia 102:296-304.

Wainwright, P. C., R. G. Turingan, and E. L. Brainerd. 1995. Functional morphology of pufferfish inflation: mechanism of the buccal pump. Copeia. 1995:614-625.

Wainwright, P. C. and B. A. Richard. 1995. Predicting patterns of prey use from morphology with fishes. Environmental Biology of Fishes 44:97-113.

Wainwright, P. C. and R. G. Turingan. 1996. Muscular basis of buccal pressure: inflation behavior in the striped burrfish, *Chilomycterus schoepfi*. Journal of Experimental Biology. 199:1209-1218.

Wainwright, P. C. 1996. Ecological explanation through functional morphology: the feeding biology of sunfishes. Ecology. 77:1336-1343.

Wainwright, P. C. and R. G. Turingan. 1997. Evolution of pufferfish inflation behavior. Evolution. 51:506-518.

Friel, J. P. and P. C. Wainwright. 1997. A model system of structural duplication: Homologies of the adductor mandibulae muscles in tetraodontiform fishes. Systematic Biology. 46:441-463.

Grubich, J. R. and P. C. Wainwright. 1997. Motor basis of feeding performance in largemouth bass (*Micropterus salmoides*). Journal of Experimental Zoology. 277:1-13.

40. Bergert, B. and P. C. Wainwright. 1997. Morphology and kinematics of feeding in syngnathid fishes. Marine Biology 127:563-570.

Ralston, K. R. and P. C. Wainwright. 1997. Functional consequences of trophic specialization in pufferfishes. Functional Ecology 11:43-52.

Friel, J. P. and P. C. Wainwright. 1998. Evolution of motor pattern in Tetraodontiform fishes: Does muscle duplication lead to functional diversification? Brain, Behavior and Evolution 53:159-170.

Mittelbach, G. G., C. Osenberg and P. C. Wainwright. 1999. Variation in feeding morphology between pumpkinseed populations: phenotypic plasticity or evolution? Evolutionary Ecology Research 1:1-18.

Friel, J. P. and P. C. Wainwright. 1999. Evolution of complexity in motor patterns and jaw musculature of tetraodontiform fishes. Journal of Experimental Biology 202:867-880.

Wainwright P. C. and Shaw, S. S. 1999. Morphological basis of kinematic diversity in feeding sunfishes. Journal of Experimental Biology 202:3101-3110.

Wainwright, P. C. 1999. Ecomorphology of prey capture in fishes. In. E. Saksena (ed.) Advances in Ichthyological Research. Jiwaji University Press, Gwalior India. Pp. 375-387.

Wainwright, P. C. 1999. Review of: Nature's Purposes: Analyses of Function and Design in Biology (C. Allen, M. Bekoff, and G. Lauder eds). Quarterly Review of Biology 74:458-459.

Wainwright, P. C. and J. P. Friel. 2000. Effects of prey type on motor pattern variance in tetraodontiform fishes. Journal of Experimental Zoology 286:563-571.

Wainwright, P. C., Westneat, M. W., and Bellwood, D. R. 2000. Linking feeding behavior and jaw mechanics in fishes. In: Biomechanics in Animal Behavior. (eds. P. Domenici and R. Blake). 2000 BIOS Scientific Publishers Ltd, Oxford, U.K. Pp. 207-221.

50. Wilga, C. D., Wainwright, P. C., and Motta, P. J. 2000. Evolution of jaw depression mechanics in aquatic vertebrates: insights from Chondrichthys. Biological Journal of the Linnean Society. 71: 165-185.

Ferry-Graham, L. A., P. C. Wainwright, and D. R. Bellwood. 2001. Prey capture in long-jawed butterflyfishes (Chaetodontidae): the functional basis of novel feeding habits. Journal of Experimental Marine Biology and Ecology. 256:167-184.

Ferry-Graham, L. A., P. C. Wainwright, C. D. Hulsey, and D. R. Bellwood. 2001. Evolution and mechanics of long jaws in butterflyfishes (Family Chaetodontidae). Journal of Morphology 248:120-143.

Ferry-Graham, L. A., P. C. Wainwright, M. W. Westneat and D. R. Bellwood. 2001. Modulation of prey capture kinematics in the cheeklined wrasse, *Oxycheilinus digrammus* (Teleostei: Labridae). Journal of Experimental Zoology 290:88-100.

Fulton, C. J., D. R. Bellwood and P. C. Wainwright. 2001. The relationship between swimming ability and habitat use in wrasses (Labridae). Marine Biology 139:25-33.

Schenk, S. C. and P. C. Wainwright. 2001. Dimorphism and the functional basis of claw strength

in six brachyuran crabs. Journal of Zoology, London. 255:105-119.

Wainwright, P. C., L. A. Ferry-Graham, T. B. Waltzek, A. M. Carroll, C. D. Hulsey, and J. R. Grubich. 2001. Evaluating the use of ram and suction during prey capture by cichlid fishes. Journal of Experimental Biology 204: 3039-3051.

Bellwood, D. R. and P. C. Wainwright. 2001. Swimming ability in labrid fishes: Implications for habitat use and cross-shelf distribution on the Great Barrier Reef. Coral Reefs 20:139-150.

Wainwright, P. C. and J. P. Friel. 2001. Behavioral characters and historical properties of motor patterns. In: The Character Concept. (ed. G. Wagner). Academic Press, San Diego. Pp 285-301.

Wilga, C. D. R. E. Hueter, P. C. Wainwright, and P. J. Motta. 2001. Evolution of jaw protrusion mechanisms in elasmobranchs. American Zoologist 41:1248-1257.

60. Wainwright, P. C. and Bellwood, D. R. 2002. Ecomorphology of feeding in coral reef fishes. pp. 33-55. In: "Coral Reef Fishes. Dynamics and diversity in a complex ecosystem" (P.F. Sale, ed.), Academic Press, San Diego.

Bellwood, D. R. and Wainwright, P. C. 2002. The history and biogeography of fishes on coral reefs. pp. 5-32. In: "Coral Reef Fishes. Dynamics and diversity in a complex ecosystem" (P.F. Sale, ed.), Academic Press, San Diego.

Ferry-Graham, L. A. and P. C. Wainwright. 2002. Evaluating suction feeding performance in fishes: Implications for evolutionary diversification. In: Biomechanics in Evolution. (ed. V.L. Bels, J.P. Gasc and A. Casinos). BIOS, Oxford. Pp. 101-116.

Hulsey, C. D. and P. C. Wainwright. 2002. Mapping mechanics into morphospace: disparity in the jaws of labrid fishes. Proceedings of the Royal Society, London, B. 269:317-326.

Ferry-Graham, L. A., D. I. Bolnick, and P. C. Wainwright. 2002. Using functional morphology to examine the ecology and evolution of specialization. Journal of Integrative and Comparative Biology. 42:265-277.

Wainwright, P. C., D. R. Bellwood and M. W. Westneat. 2002. Ecomorphology of locomotion in labrid fishes. Environmental Biology of Fishes 65:47-62.

Sanford, C. P. J. and P. C. Wainwright. 2002. Use of sonomicrometry demonstrates link between prey capture kinematics and suction pressure in largemouth bass. Journal of Experimental Biology. 205: 3445-3457.

Bellwood, D. R., P. C. Wainwright, C. J. Fulton and A. Hoey. 2002. Assembly rules and functional groups at global biogeographic scales. Functional Ecology 16:557-562.

Ferry-Graham, L. A., P. C. Wainwright, M. W. Westneat, and D. R. Bellwood. 2002. Mechanisms of benthic prey capture in labrid fishes. Marine Biology 141:819-830.

Wainwright, P.C. 2002. The evolution of feeding motor patterns in vertebrates. Current Opinion in Neurobiology 12:691-695.

70. Svanbäck, R., P. C. Wainwright, and L. A. Ferry-Graham. 2002. Linking cranial kinematics, buccal pressure and suction feeding performance in largemouth bass. Physiological and Biochemical Zoology 75:532-543.

Carroll, A. M. and P. C. Wainwright. 2003. Functional morphology of feeding in the sturgeon, *Scaphirhyncus albus*. Journal of Morphology 256:270-284.

Waltzek, T. B. and P. C. Wainwright. 2003. Functional morphology of extreme jaw protrusion in neotropical cichlids. Journal of Morphology 257:96-106.

Ferry-Graham, L.A., P. C. Wainwright and G.V. Lauder. 2003. Quantification of flow during suction feeding in bluegill sunfish. Zoology 106:159-168.

Wainwright, P. C., D. R. Bellwood, M. W. Westneat, J. R. Grubich & A. S. Hoey. 2004. A functional morphospace for the skull of labrid fishes: patterns of diversity in a complex biomechanical system. Biological Journal of the Linnean Society. 82:1-25.

Alfaro, M. E., D. I. Bolnick and P. C. Wainwright. 2004. Evolutionary dynamics of complex biomechanical systems. Evolution. 58:495-503.

Near, T. J., D. I. Bolnick and P. C. Wainwright. 2004. Investigating phylogenetic relationships of the Centrarchidae (Actinopterygii: Perciformes) using DNA sequence from mitochondrial and nuclear genes. Molecular Phylogenetics & Evolution 32:344-357.

Carroll, A. M., P. C. Wainwright, S. H. Huskey, D. C. Collar and R. G. Turingan. 2004. Morphology predicts suction feeding performance in centrarchid fishes. Journal of Experimental Biology 207:3873-3881.

Korff, W. L. and P. C. Wainwright. 2004. Motor pattern control for increasing crushing force in the striped burrfish (*Chilomycterus schoepfi*). Zoology. 107(4): 335-346.

Wainwright, P. C., M. Alfaro, D. I. Bolnick and C. D. Hulsey. 2005. Many-to-one mapping of form to function: a general principle in organismal design? Integrative and Comparative Biology. 45(2):256-262.

80. Alfaro, M. E., D. I. Bolnick and P. C. Wainwright. 2005. Evolutionary consequences of many-to-one mapping of jaw morphology to mechanics in labrid fishes. American Naturalist. 165(6):E140-E154.

Fulton, C. J., D. R. Bellwood & P. C. Wainwright. 2005. Wave energy and swimming performance shape coral reef fish assemblages. Proceedings of the Royal Society, London. Ser B. 272:827-832.

Westneat, M. W., M. E. Alfaro, P. C. Wainwright, D. R. Bellwood, J. R. Grubich, J. Fessler, K. D.

Clements, & L. Smith. 2005. Repeated convergence of skull biomechanics in coral reef fishes. Proceedings of the Royal Society, London. Ser B. 272:993-1000.

Wainwright, P. C. 2005. Functional morphology of the pharyngeal jaw apparatus. In: Biomechanics of Fishes (R. Shadwick and G. V. Lauder, eds) Pp. 77-101. Academic Press.

Day, S. W., T. E. Higham, A. Y. Cheer & P. C. Wainwright. 2005. Spatial and temporal flow patterns during suction feeding of bluegill sunfish (*Lepomis macrochirus*) by Particle Image Velocimetry. Journal of Experimental Biology. 208:2661-2671.

Higham, T. E., S. W. Day and P. C. Wainwright. 2005. Sucking while swimming: evaluating the effects of ram speed on suction generation in bluegill sunfish (*Lepomis macrochirus*) using digital particle image velocimetry. Journal of Experimental Biology. 208:2653-2660.

Near, T. J., D. I. Bolnick and P. C. Wainwright. 2005. Fossil calibrations and molecular divergence time estimates in centrarchid fishes (Teleostei: Centrarchidae). Evolution. 59:1768-1782.

Collar, D. C., T. J. Near and P. C. Wainwright. 2005. Comparative analysis of morphological diversity: trophic evolution in centrarchid fishes. Evolution. 59:1783-1794.

Bellwood, D. R., P. C. Wainwright, C. J. Fulton, and A. S. Hoey. 2006. Functional versatility supports coral reef biodiversity. Proceedings of the Royal Society, London. Ser. B. 273: 101-107.

Wainwright, P. C., S. H. Huskey, R. G. Turingan, and A. M. Carroll. 2006. Ontogeny of suction feeding capacity in snook, *Centropomus undecimalis*. Journal of Experimental Zoology. 305A: 246-252.

90. Carroll, A. M. and P. C. Wainwright. 2006. Muscle function and power output during suction feeding in largemouth bass, *Micropterus salmoides*. Comparative Biochemistry and Physiology. 143A: 389-399.

O'Meara, B. C., C. M. Ané, M. J. Sanderson and P. C. Wainwright. 2006. Testing for different rates of continuous trait evolution in different groups using likelihood. Evolution 60: 922-933.

De Vries, M. S. and P. C. Wainwright. 2006. Effect of acute temperature change on prey capture kinematics in largemouth bass, *Micropterus salmoides*. Copeia 2006(3): 436-443.

Bolnick, D. I., T. J. Near and P. C. Wainwright. 2006. Comparative evidence that ecological divergence promotes post-zygotic reproductive isolation. Evolutionary Ecology Research 8:903-913.

Higham, T. E., S. W. Day and P. C. Wainwright. 2006. Multidimensional analysis of suction feeding performance in fishes: fluid speed, acceleration, strike accuracy and the ingested

volume of water. Journal of Experimental Biology. 209: 2713-2725.

Higham, T. E., S. W. Day and P. C. Wainwright. 2006. The pressures of suction feeding: the relation between buccal pressure and induced fluid speed in centrarchid fishes. Journal of Experimental Biology. 209: 3281-3287.

Collar, D. C. and P. C. Wainwright. 2006. Discordance between morphological and mechanical diversity in the feeding mechanism of centrarchid fishes. Evolution 60:2575-2584.

Mehta, R. S. and P. C. Wainwright. 2007. Biting releases constraints on moray eel feeding kinematics. Journal of Experimental Biology. 210: 495-504.

Wainwright, P. C., A. M. Carroll, D. C. Collar, S. W. Day, T. E. Higham and R. A. Holzman. 2007. Suction feeding mechanics, performance and diversity in fishes. Integrative & Comparative Biology. 47:96-106.

Wainwright, P. C. 2007. Functional versus morphological diversity in macroevolution. Annual Review of Ecology, Evolution & Systematics. 38:381-401.

100. Wainwright, P. C. and S. W. Day. 2007. The forces exerted by aquatic suction feeders on their prey. Journal of the Royal Society: Interface. 4:553-560.

Mehta, R. S. and P. C. Wainwright. 2007. Raptorial pharyngeal jaws help moray eels swallow large prey. Nature. 449:79-82.

Holzman, R., S. W. Day and P. C. Wainwright. 2007. Timing is everything: Effects of kinematic variation on the force exerted by suction feeding bluegill on their prey. Journal of Experimental Biology. 210:3328-3336.

Day, S. W., T. E. Higham and P. C. Wainwright. 2007. Time resolved measurements of the flow generated by suction feeding fish. Experiments in Fluids. 43:713-724.

Collar, D. C., P. C. Wainwright, and M. E. Alfaro. 2008. Integrated diversification of locomotion and feeding in labrid fishes. Biology Letters. 4:84-86.

Konow, N., D. R. Bellwood, P. C. Wainwright and A. M. Kerr. 2008. Novel jaw joints promote trophic diversity in coral reef fishes. Biological Journal of the Linnean Society. 93:545-555.

Bolnick, D. I., M. Turelli, H. Lopez-Fernandez, P. C. Wainwright and T. J. Near. 2008. Accelerated mitochondrial evolution and "Darwin's corollary": Asymmetric viability of F1 hybrids in centrarchid fishes. Genetics 178:1037-1048.

Mehta, R. S. and P. C. Wainwright. 2008. Functional morphology of the pharyngeal jaw apparatus in moray eels. Journal of Morphology. 269:604-619.

Holzman, R., D. C. Collar, S. W. Day, K. L. Bishop & P. C. Wainwright. 2008. Scaling of suction-induced flows in bluegill: morphological and kinematic predictors for the ontogeny of

feeding performance. Journal of Experimental Biology 211:2658-2668.

Wainwright, P. C. 2008. Review of "The origins of major clades" by Rui Diogo. Quarterly Review of Biology. 83:321.

110. Bishop, K. L., P. C. Wainwright and R. Holzman. 2008. Anterior to posterior wave of buccal expansion in suction feeding fish is critical for optimizing fluid flow velocity profile. Journal of the Royal Society, Interface. 5:1309-1316.

Holzman, R., S.W. Day, R. S. Mehta & P. C. Wainwright. 2008. Jaw protrusion enhances forces exerted on prey by suction feeding fishes. Journal of the Royal Society, Interface. 5:1445-1457. Written up by Science News: http://www.sciencenews.org/view/generic/id/33079/title/Suction_hunters_

Holzman, R., S. W. Day, R. S. Mehta & P. C. Wainwright. 2008. Integrating the determinants of suction feeding performance in fishes. Journal of Experimental Biology. 211:3295-3305.

Wainwright, P. C., R. S. Mehta and T. E. Higham. 2008. Stereotypy, flexibility and coordination: central concepts in behavioral functional morphology. Journal of Experimental Biology. 211:3523-3528.

Carlson, R. L., P. C. Wainwright, and T. J. Near. 2009. Relationship between species co-occurrence and rate of morphological change in darters (Teleostei: Etheostomatinae). Evolution 63:767-778.

Collar, D. C. and P. C. Wainwright. 2009. The ecomorphology of centrarchid fishes. Pp. 70-89. In: S. Cook ed. Centrarchid Fishes: Biology, Diversity and Conservation. Blackwell Publishing, West Sussex, UK.

Wainwright, P. C. 2009. Innovation and diversity in functional morphology. In: Form and Function in Evolutionary Biology. (M. D. Laubichler and M. Ruse eds). Cambridge University Press. Pp. 132-152.

Collar, D. C., B. O'Meara, P. C. Wainwright and T. J. Near. 2009. Has an adaptive peak limited trophic diversity in *Micropterus* (Teleostei: Centrarchidae)? Evolution 63:1557-1573.

Kazancioglu, E., T. J. Near, R. Hanel, and P. C. Wainwright. 2009. Influence of feeding functional morphology and sexual selection on diversification rate of parrotfishes (Scaridae). Proceedings of the Royal Society, Series B. 276:3439-3446.

Carroll, A. M. & P. C. Wainwright. 2009. Energetic limitations on suction feeding performance in Centrarchidae. Journal of Experimental Biology. 212: 3241-3251.

120. Holzman, R. & Wainwright, P. C. 2009. How to surprise a copepod: Strike kinematics reduce hydrodynamic disturbance and increase stealth of suction feeding fishes. Limnology and Oceanography 54, 2201–2212.

Alfaro M. E., C. D. Brock, B. Banbury, P. C. Wainwright. 2009. Does evolutionary innovation in

pharyngeal jaws lead to adaptive radiation in labrid fishes? BMC Evolutionary Biology 9, 255.

Skorczewski, T., P. C. Wainwright, A. Cheer, S. Cheung. 2010. Use of computational fluid dynamics to study forces exerted on prey by aquatic suction feeders. Journal of the Royal Society, Interface. 7:475-484.

Carlson, R. L. & P. C. Wainwright. 2010. The ecological morphology of darter fishes (Percidae: Etheostomatinae). Biological Journal of the Linnean Society. 100: 30-45.

Tran, H. Q., R. S. Mehta & P. C. Wainwright. 2010. Effects of ram speed on prey capture kinematics of the Indo-Pacific tarpon, *Megalops cyprinoides*. Zoology. 113: 75-84.

Price, S. A., P. C. Wainwright, D. R. Bellwood, E. Kazancioglu, D. C. Collar & T. J. Near. 2010. Functional innovations and morphological diversification in parrotfishes. Evolution. 64:3057-3068.

Mehta, R. S., A. B. Ward, M. E. Alfaro & P. C. Wainwright. 2010. Elongation of the body in eels. Integrative & Comparative Biology. 50:1091-1105.

Price, S. A., Holzman, R., Near, T. J. & Wainwright, P. C. 2011. Coral reefs promote the evolution of morphological diversity and ecological novelty in labrid fishes. Ecology Letters. 14:462-469.

Holzman, R. S., D. C. Collar, R. S. Mehta & P. C. Wainwright. 2011. Mechanical complexity can mitigate evolutionary trade-offs. American Naturalist. 177:E69-E83.

Schmitz, L. and P. C. Wainwright. 2011. Ecomorphology of the eyes and skull in zooplanktivorous labrid fishes. Coral Reefs. 30: 415-428.

130. Martin, C. H. and P. C. Wainwright. 2011. Trophic novelty is linked to exceptional rates of morphological diversification in two adaptive radiations of *Cyprinodon* pupfishes. Evolution. 65:2197-2212.

Carroll, A. M. and P. C. Wainwright. 2011. Scaling of *in vivo* velocity during feeding in the largemouth bass, *Micropterus salmoides* (Centrarchidae). Physiological and Biochemical Zoology. 84:618-624.

Schmitz, L. and P. C. Wainwright. 2011. Nocturnality limits morphological and functional diversity in the eyes of reef fishes. BMC Evolutionary Biology 11:338.

Holzman, R., D. C. Collar, R. S. Mehta & P. C. Wainwright. 2012. An integrative approach to elucidate suction feeding performance. Journal of Experimental Biology. 215:1-13.

Holzman, R., D. C. Collar, S. A. Price, C. D. Hulsey, R. C. Thomson & P. C. Wainwright. 2012. Biomechanical trade-offs bias rates of evolution in the feeding apparatus of fishes. Proceedings of the Royal Society, B. 279:1287-1292.

Staab, K. L., R. Holzman, L. P. Hernandez & P. C. Wainwright. 2012. Independently evolved upper jaw protrusion shows convergent hydrodynamic function in teleost fishes. Journal of Experimental Biology. 215:1456-1463.

Near, T. J., M. Sandel, K. L. Kuhn, P. J. Unmack, P. C. Wainwright and W. L. Smith. 2012. Nuclear gene-inferred phylogenies resolve the relationships of the enigmatic pygmy sunfishes, Elassoma (Teleostei: Percomorpha). Molecular Phylogenetics and Evolution. 63:388-395.

Skorczewski, T., A. Cheer and P. C. Wainwright. 2012. The benefits from flat circular mouths on suction feeding performance. Journal of the Royal Society, Interface. 9:1767-1773.

Wainwright, P. C., W. L. Smith, S. A. Price, K. L. Tang, L. A. Ferry, J. S. Sparks and T. J. Near. 2012. The evolution of pharyngognathy: a phylogenetic and functional appraisal of the pharyngeal jaw key innovation in labroid fishes and beyond. Systematic Biology 61:1001-1027.

Near, T. J., R. I. Eytan, A. Dornburg, K. L. Kuhn, J. A. Moore, M. P. Davis, P. C. Wainwright, M. Friedman and W. L. Smith. 2012. Resolution of ray-finned fish phylogeny and timing of diversification. Proceedings of the National Academy of Sciences 109:13698-13703.

140. Oufiero, C. E., R. A. Holzman, F. A. Young & P. C. Wainwright. 2012. New insights from serranid fishes on the role of trade-offs in suction feeding diversification. Journal of Experimental Biology 215:3845-3855.

Dornburg, A. J.A. Moore, R. Webster, D.L. Warren, M.C. Brandley, T.L. Iglesias, P.C. Wainwright, T.J. Near. 2012. Molecular phylogenetics of squirrelfishes (Teleostei: Beryciformes: Holocentridae): reconciling more than 100 years of taxonomic confusion. Molecular Phylogenetics and Evolution 65:727-738.

Boettiger, C., D. Temple-Lang and P. C. Wainwright. 2012. rfishbase: exploring, manipulating and visualizing FishBase data in R. Journal of Fish Biology 81:2030-2039.

Grosberg, R. K., G. Vermeij and P. C. Wainwright. 2012. Transitions among marine, freshwater and terrestrial environments. Current Biology 22:900-902.

Price S. A., J. Tavera, T. J. Near and P. C. Wainwright. 2013. Elevated rates of morphological and functional diversification in reef-dwelling haemulid fishes. Evolution 67:417-428.

Martin, C. H. and P. C. Wainwright. 2013. Multiple fitness peaks on the adaptive landscape drive adaptive radiation in the wild. Science 339:208-211.

Schmitz, L., R. Motani, C. E. Oufiero, C. H. Martin, M. D. McGee, A. R. Gamarra, J. J. Lee, P. C. Wainwright. 2013. Allometry indicates giant eyes of Giant Squid are not exceptional. BMC Evolutionary Biology 13:45.

McGee, M. D. and P. C. Wainwright. 2013. Sexual dimorphism in the feeding kinematics of threespine stickleback. Journal of Experimental Biology. 216:835-840.

McGee, M. D. and P. C. Wainwright. 2013. Convergent evolution as a generator of phenotypic diversity in threespine stickleback. Evolution. 67:1204-1208.

Near, T.J., A. Dornburg, R.I. Eytan, B.P. Keck, W.L. Smith, K.L. Kuhn, J.A. Moore, S.A. Price, F.T. Burbrink, M. Friedman and P.C. Wainwright. 2013. Phylogeny and tempo of diversification in the superradiation of spiny-rayed fishes. Proceedings of the National Academy of Sciences. doi/10.1073/pnas.1304661110

150. Fulton, C. J., S. A. Binning, P. C. Wainwright and D. R. Bellwood. 2013. Phenotypic diversity within a coral reef fish reveals local adaptation to environmental stress. Coral Reefs. DOI 10.1007/s00338-013-1039-8.

Wainwright, P. C. Evolution of form and function. In (D. Futuyma ed.) The Princeton Guide to Evolution. Princeton University Press.

Martin, C. H. and P. C. Wainwright. 2013. On the measurement of ecological novelty: scale-eating pupfish are separated by 168 my from other scale-eating fishes. PLoS One 8(8):e71164.

Martin, C. H. and P. C. Wainwright. 2013. A remarkable species flock of *Cyprinodon* pupfishes endemic to San Salvador Island, Bahamas. Bulletin of the Peabody Museum. 54:231-240.

Friedman, M T., B. P. Keck, A. Dornburg, R. I. Eytan, C. H. Martin, C. D. Hulsey, P. C. Wainwright, T. J. Near. 2013. Molecular and fossil evidence place the origin of cichlid fishes long after Gondwanan rifting. Proceedings of the Royal Society, Series B. 280:UNSP:20131733.

Jamniczky, H.A., E.E. Harper, R. Garner, W.A. Cresko, P.C. Wainwright, B. Hallgrimsson and C.B. Kimmel. 2014. Association between integration structure and functional evolution in the opercular four-bar apparatus of the threespine stickleback, *Gasterosteus aculeatus* (Pisces, Gasterosteidae). Biological Journal of the Linnean Society. 111:375-390.

McGee, M. D., D. Schluter and P. C. Wainwright. 2013. Functional basis of ecological divergence in sympatric stickleback. BMC Evolutionary Biology. 13:277.

Schmitz, L., R. Motani, C. E. Oufiero, C. H. Martin, M. D. McGee, P. C. Wainwright. 2013. Potential enhanced ability of giant squid to detect sperm whales is an exaptation tied to their large body size. BMC Evolutionary Biology 13:226.

Collar, D. C., J. S. Reece, M. E. Alfaro, P. C. Wainwright and R. S. Mehta. 2014. Imperfect convergence in morphological systems: variable responses among cranial structures underlie transitions to durophagy in moray eels. American Naturalist. 183:168-184.

Price, S. A, L. Schmitz, C. E. Oufiero, R. I. Eytan, A. Dornburg, W. L. Smith, M. Friedman , T. J. Near, and P.C. Wainwright. 2014. Two waves of niche-filling straddling the K-Pg boundary formed the modern reef fish fauna. Proceedings of the Royal Society, Series B. 281:UNSP:20140321.

160. Rocha, L. A. , A. Aleixo, G. Allen, F. Almeda, C. Baldwin, M. Barclay, J. Bates, F. Benzoni, C. Berns, M. Berumen, D. Blackburn, S. Blum, R. Bowie[1], R. Britz, R. Brown[1], D. Cadena[1], K. Carpenter[1], P. Chakrabarty, J. H. Choat, K. Clements, B. Collette, A. Collins, J. Cracraft, T. Daniel, M. R. de Carvalho, K. de Queiroz, F. di Dario, R. Drewes, J. Dumbacher, A. Engilis Jr, M. Erdmann, W. Eschmeyer, C. Feldman, B. Fisher, J. Fjeldså, P. Fritsch, J. Fuchs, A. Getahun, A. Gill, M. Gomon, T. Gosliner, G. Graves, C. Griswold, R. Guralnick, K. Helgen, H. Ho, D. Iskandar, T. Iwamoto, Z. Jaafar, H. James[4], D. Johnson, D. Kavanaugh, N. Knowlton, E. Laicey, H. Larson, P. Last, J. Leis, H. Lessios, J. Liebherr, M. Lowman, D. L. Mahler, K. Matsuura, A. Matus, H. Mays, J. McCosker, R. McDiarmid, J. McGuire, M. Miller, R. Mooi, R. D. Mooi, C. Moritz, P. Myers, M. Nachman, D. O'Foighil, L. Parenti, J. Parham, E. Paul, G. Paulay, J. Pérez-Emán, S. Poe, J. Pogonoski, D. Rabosky, J. E. Randall, J. Reimer, D. R. Robertson, M. Roedel, P. Roopnarine, L. Rüber, M. Ryan, F. Sheldon, G. Shinohara, A. Short, B. Simison, W. Smith-Vaniz, V. Springe, M. Stiassny, J. Tello, C. Thompson, T. Trnski, P. Tucker, T. Valqui, M. Vecchion, E. Verheyen, P.C. Wainwright, T. Wheeler, W. White, J. T. Williams, E. O. Wilson, K. Winker, R. Winterbottom, C. Witt. 2014. Letter to Science: Specimen collection: an essential tool. Science 344:814-815.

Collar, D. C., P. C. Wainwright, M. E. Alfaro, L. J. Revell, and R. S. Mehta. 2014. A novel feeding mode disrupts evolutionary integration of the skull in eels. Nature Communications. 5:5505. DOI: 10.1038/ncomms6505.

Claverie, T. and P. C. Wainwright. 2014. A morphospace for reef fishes: Elongation is the dominant axis of body shape evolution. PLoS One. 9(11): e112732. DOI: 10.1371/journal.pone.0112732.

Wood, H.M., R.G. Gillespie, C.E. Griswold and P. C. Wainwright. 2015. Why is Madagascar special? The extraordinarily slow adaptive radiation in pelican spiders (Araneae, Archaeidae). Evolution. 69:462-481.

Wainwright, P. C. 2015. News & Views. Perspective: Why are marine adaptive radiations rare in Hawai'i? Molecular Ecology. 24:523-524.

Wainwright, P.C., M.D. McGee, S.A. Longo and L.P. Hernandez. 2015. Suction feeding in vertebrates: origins, innovations and diversification. Integrative and Comparative Biology. 55:134-145. (doi:10.1093/icb/icv026).

Martin, C.H., J.S. Cutler, J.P. Friel, C. Dening T., G. Coop, and P.C. Wainwright. 2015. Complex histories of repeated colonization and hybrization cast doubt on the clearest examples of sympatric speciation in the wild. Evolution. 69:1406-1422 (doi:10.1111/evo.12674).

Higham, T.E., W.J. Stewart and P.C. Wainwright. 2015. Turbulence, temperature, and turbidity: The ecomechanics of predator-prey interactions in fishes. Integrative and Comparative Biology. 55:6-20 (doi:10.1093/icb/icv052)

Motani, R. and P.C. Wainwright. 2015. How warm is too warm for the life cycle of actinopterygian fishes? Scientific Reports. 5:11597 (doi:10.1038/srep11597).

McGee, M. D., J. W. Reustle, C. E. Oufiero and P. C. Wainwright. 2015. Intermediate kinematics produce inferior feeding performance in a classic case of natural hybridization. American Naturalist. 186:807-814.

170. Cohn, B. A., S. P. Collin, P. C. Wainwright, L. Schmitz. In Press. Retinal topography maps in R: new tools for the analysis and visualization of spatial retinal data. Journal of Vision.

Eytan, R. I., B. R. Evans, A. Dornburg, A. R. Lemmon, E. M. Lemmon, P. C. Wainwright and T. J. Near. 2015. Are 100 Enough? Inferring acanthomorph teleost phylogeny using anchored hybrid enrichment. BMC Evolutionary Biology. 15:113. (doi:10.1186/s12862-015-0415-0).

Near, T.J., A. Dornburg, R. C. Harrington, C. Oliveira, T. W. Pietsch, C. E. Thacker, T. P. Satoh, E. Katayama, P. C. Wainwright, J. T. Eastman and J. M. Beaulieu. 2015. Identification of the notothenioid sister lineage illuminates the biogeographic history of an Antarctic adaptive radiation. BMC Evolutionary Biology. 15:109 (doi:10.1186/s12862-015-0362-9).

Price, S.A., T. Claverie, T.J. Near and P.C. Wainwright. 2015. Phylogenetic insights into the history and diversification of fishes on reefs. Coral Reefs. 34:997-1009. (doi 10.1007/s00338-015-1326-7).

Wainwright, P.C. and S.A. Price. In Press. Innovation and diversity of the feeding mechanism in parrotfishes. In: *The Biology and Ecology of Parrotfishes* (A. S. Hoey ed). CRC Press.

Price, S.A., S.T. Friedman and P.C. Wainwright. 2015. How predation shaped fish: the impact of fin spines on body form evolution across teleosts. Proceedings of the Royal Society, Series B. 282:20152620. DOI: 10.1098/rspb.2015.2620.

McGee, M.D., S.R. Borstein, R.Y. Neches, O. Seehausen and P.C. Wainwright. 2015. A pharyngeal jaw evolutionary innovation facilitated cichlid extinction after the Nile perch invasion of Lake Victoria. Science. 350:1077-1079.

Longo, S. J., M. D. McGee, C. E. Oufiero, T. B. Waltzek and P. C. Wainwright. 2016. Ram, not suction, is the primary axis of suction feeding diversity. Journal of Experimental Biology. 219:119-128.

McGee, M.D., B.C. Faircloth, S.R. Borstein, J. Zheng, C.D. Hulsey, P.C. Wainwright, and M.E. Alfaro. 2016. Replicated divergence in cichlid radiations mirrors a major vertebrate innovation. Proceedings of the Royal Society, series B. 283:Article # 20151413.

Friedman, S. T., Price, S. A., A. S. Hoey and P. C. Wainwright. 2016. Ecomorphological convergence in zooplanktivorous surgeonfishes. Journal of Evolutionary Biology. 29:965-978.

180. Wainwright, P.C., and S.A. Price. 2016. The impact of organismal innovation on functional and ecological diversification. Integrative and Comparative Biology. 56:479-488. DOI: 10.1093/icb/icw081

Fulton, C.J., P.C. Wainwright, A.S. Hoey and D.R. Bellwood. 2017. Global ecological success of *Thalassoma* fishes in extreme coral reef habitats. Ecology and Evolution. 7: 466-472. DOI: 10.1002/ece3.2624

Dornburg, A., J.P. Townsend, W.R. Brooks, E. Spriggs, R.I. Eytan, J.A. Moore, P.C. Wainwright, A. Lemmon, E. M. Lemmon, T.J. Near. 2017. New insights on the sister lineage of percomorph fishes with an anchored hybrid enrichment dataset. Molecular Phylogenetics and Evolution. 110:27-38.

Wainwright, P C. and S. J. Longo. 2017. Functional innovations and the conquest of the oceans by acanthomorph fishes. Current Biology. 27:R550-R557.

Longo, S.J, B.C. Faircloth, A. Meyer, M.W. Westneat, M.E. Alfaro, P.C. Wainwright. 2017. Phylogenomic analysis of a rapid radiation of misfit fishes (Syngnathiformes) using ultraconserved elements. Molecular Phylogenetics and Evolution. 113:33-48. DOI: 10.1016/j.ympev.2017.05.002

Tavera, J., A. Acero and P. C. Wainwright. Manuscript. Multilocus phylogeny, divergence times, and a major role for the benthic-to-pelagic axis in diversification of grunts (Haemulide). Molecular Phylogenetics and Evolution

Wainwright, P.C., F. Santini, D.R. Bellwood, D.R. Robertson, L.A. Rocha, M.E. Alfaro. Manuscript. Phylogenetics and geography of speciation in New World *Halichoeres* wrasses. Molecular Phylogenetics and Evolution

Hernandez, L.P., D. Adriaens, C.H. Martin, P.C. Wainwright, B. Masschaele, and M. Dierick. In Revision. A flock of biters: Trophic specializations within a recent species flock of *Cyprinodon* in San Salvador Island, Bahamas

CONTRIBUTED ORAL PAPERS SINCE 2010:

2016 International Congress for Vertebrate Morphology, Bethesda. One symposium contribution.
2016 Society for Integrative and Comparative Biology, Portland. One symposium presentation.
2015 Society for Integrative and Comparative Biology, West Palm Beach. One symposium contribution, 5 additional co-authored papers.
2014 American Society of Naturalists, Asilomar. One symposium presentation.
2014 Society for Integrative and Comparative Biology, Austin. Four co-authored papers.
2013 Joint Meetings of Ichthyologists and Herpetologists, Albuquerque. One presentation.
2013 Indo-Pacific Fishes Conference, Okinawa, Japan. One symposium presentation and Co-author on a second paper.
2013 Society for the Study of Evolution, Snow Bird. Co-author on two papers
2013 Society for Integrative and Comparative Biology, San Francisco. Co-author on nine papers
2012 Society for the Study of Evolution, Ottawa. Co-author on five papers.
2012 Society for Integrative and Comparative Biology, Charleston, SC. Co-author on five papers
2011 Joint Meetings of Ichthyologists and Herpetologists, Minneapolis. One paper.
2011 SICB, Seattle. Co-author on five papers, presented one.

SYMPOSIA ORGANIZED SINCE 1991:

1991. Reilly, S. M. and P. C. Wainwright. Ecological Morphology: Integrative Organismal Biology. American Society of Zoologists.

1993. Nishikawa, K. and P.C. Wainwright. Ecology and Evolution of Feeding Systems in Lower Vertebrates. American Society of Ichthyologists and Herpetologists.

2005. Wainwright, P.C., T.J. Near and D.I. Bolnick. Evolution and Ecology of Centrarchidae. American Society of Ichthyologists and Herpetologists, Tampa.

2015. Wainwright, PC. And T. E. Higham. Recent advances in the Biomechanics of Suction Feeding. Society for Integrative and Comparative Biology, West Palm Beach.

RESEARCH INTERESTS:

I am broadly interested in the evolution of organismal design. I focus on the feeding mechanisms of teleost fishes as a model system in the evolution of muscle-skeleton systems and the behaviors they are used to perform. I seek to identify general patterns, repeating themes, and principles of how the complex muscle-skeleton system of fishes is modified during evolution to produce the diversity we see in function and ecology. My general strategy is to contrast patterns of modifications at several levels of organization in the feeding mechanism across members of a tight phylogenetic group. We use electromyography to document patterns of muscle use, high speed video to document movement of skeletal elements during prey capture, catheter tipped pressure transducers to measure pressure inside the oral cavity during suction feeding, and sonomicrometry to study the movement of structures inside the head that cannot be seen in external view.