Paul D. Rawson
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EDUCATION

1996	Ph.D., Biological Sciences	University of South Carolina, Columbia.
1989	M.Sc., Marine Science	University of South Carolina, Columbia.
1984	B.A., Aquatic Biology (Honors)	University of California, Santa Barbara

PROFESSIONAL EXPERIENCE

1998-present	Assistant Professor	University of Maine
1996-1998	Postdoctoral Research Fellow	Scripps Institution of Oceanography
1996	Postdoctoral Research Associate	University of South Carolina
1987-1996	Graduate Assistant	University of South Carolina
1989	Lecturer	Ft. Jackson, SC Continuing Education Program,
1984-1986	Fisheries Extension Officer	U.S. Peace Corps-Nepal

FUNDING

U.S. Department of Agriculture/Northeast Regional Aquaculture Center. 7/1/06-6/30/08. $249,431. Cross-Breeding and Field Trials of Disease Resistant Eastern Oysters, *Crassostrea virginica.* **P. D. Rawson**, X. Guo, and S. Lindell.

U.S. Department of Commerce/Maine Sea Grant Program. 4/1/04-3/31/06. $110,000. Population Structure of Sea Scallops, *Placopecten magellanicus*, in Two Coastal Embayments in Maine. **P. D. Rawson**.

National Science Foundation/Population Biology Program. 8/15/03 to 8/14/06. $232,000. Collaborative Research: Extreme discordance between allozyme and non-allozyme introgression in Baltic mussels. Selection on allozymes? **P. D. Rawson** (University of Maine), C. Riginos and C. Cunningham (Duke University).

Maine Technology Institute. 4/01/02 to 12/31/04. $286,945. Oyster Industry Cooperative Broodstock Program. **P. D. Rawson**.

National Science Foundation CAREER Award (Ecological and Evolutionary Physiology Program). 4/1/02 to 3/31/07. $500,000. Physiological Genetics of the Dwarf Surf Clam, *Mulinia lateralis*. **P. D. Rawson**.

National Science Foundation/Biological Oceanography Program. 8/01/02 to 7/31/05. $342,662. Linking Bioturbation and Sensory Biology: Chemoreception Mechanisms in Deposit-Feeding Polychaetes. S. M. Lindsay and **P. D. Rawson**.

National Science Foundation/Biological Oceanography Program.1/01/02 to 12/21/04. $335,739. Collaborative Research: Determinants of Male Reproductive Success in Natural Spawns. P. O. Yund, **P. D. Rawson** (University of Maine) and J. Savage (University of New Orleans).

Caretta Research Project. 8/15/01 to 8/14/02. $1,300. Phylogeography of the Barnacle, *Chelonibia*

testudinaria, a Pioneer Species in the Fouling Community of Sea Turtles. **P. D. Rawson**.

U.S. Dept of Commerce/Maine Sea Grant. 2/00 to 1/02. $79,999. Molecular Genetic Characterization of Blue Mussel Populations in the Gulf of Maine. **P. D. Rawson**.

Maine Agriculture and Forestry Experiment Station Hatch Funds. 9/99 to 8/04. $16,000. Population and Quantitative Genetics of Commercially Cultured Marine Bivalves. **P. D. Rawson**.

Maine Science and Technology Foundation Challenge Grant Fund. 7/99 to 6/01. $79,717. Equipment in Support of Aquaculture Research, Development and Outreach at the Darling Marine Center of the University of Maine. B. J. Barber, **P. D. Rawson** and I. Kornfield.

National Science Foundation/Alfred P. Sloan Foundation Postdoctoral Research Fellowship in Molecular Evolution. 8/97 to 7/99. $80,000. **P. D. Rawson**.

PUBLICATIONS

Burton, R. S., R. J. Byrne, and **P. D. Rawson.** 2007. Three divergent mitochondrial genomes from California populations of the copepod, *Tigriopus californicus*. Gene 403:53-59. (doi:10.1016/j.gene.2007.07.026).

Rawson, P. D., P. O. Yund and S. M. Lindsday. 2007. Technical comment on divergent induced responses to an invasive predator in marine mussel populations. Science 316: 5821 (doi:10.1126/science.1135099).

Wannamaker, A. D., K. J. Kreutz, H. W. Borns Jr., D. S. Introne, S. F. Feindel, S. Funder, **P. D. Rawson** and B. J. Barber. 2007. Experimental determination of salinity, temperature, growth, geographic (Maine and Greenland) and metabolic effects on shell isotope chemistry of *Mytilus edulis*. Paleoceanography 22 (2): Art. No. Pa2217 Jun 23 2007.

Rawson, P. D. and R. S. Burton. 2006. Molecular evolution at the cytochrome oxidase subunit 2 gene among divergent populations of the intertidal copepod, *Tigriopus californicus.* Journal of Molecular Evolution 62: 753-764.

Rawson, P. D. 2005**.** Nonhomologous recombination between the large unassigned region of the male and female mitochondrial genomes in the mussel, *Mytilus trossulus.* Journal of Molecular Evolution 61: 717-732.

Rawson, P.D., A. McGowen, and C. Bartlett. 2004. Temporal variation in the settlement of blue mussels (*Mytilus edulis* C. Linnaeus, 1758 and *M. trossulus* Gould 1850) in Eastern Maine. Journal of Shellfish Research 23: 521-528.

Rawson, P.D., C. Slaugher, and P.O. Yund. 2003. Patterns of gametic incompatibility between the blue mussels *Mytilus edulis* and *M. trossulus*. Marine Biology 143: 317-325.

Rawson, P.D., R. Macnamee, M.G. Frick, and K.L.Williams. 2003. Phylogeography of the coronulid barnacle, *Chelonibia testudinaria* from loggerhead sea turtles, *Caretta caretta*. Molecular Ecology 12 (10): 2697-2706.

Maloy, A.P., B.J. Barber, and **P.D. Rawson**. 2003. Gametogenesis in a sympatric population of blue mussels, *Mytilus edulis* and *Mytilus trossulus*, from Cobscook Bay, Maine (USA). Journal of Shellfish Research 22: 119-123.

Rawson, P.D. and R.S. Burton. 2002. Functional coadaptation between cytochrome c and cytochrome c oxidase within allopatric populations of a marine copepod. Proceedings of the National Academy of Sciences, USA 99: 12955-12958.

Rawson, P.D., S. Hayhurst and B. VanScoyoc. 2001. Species composition of blue mussel populations in the Northeastern Gulf of Maine. J. Shellfish Res. 20: 31-38.

Rawson, P.D. and R.S. Burton. 2000. Isolation and characterization of cytochrome c from the marine

intertidal copepod *Tigriopus californicus.* Gene 248: 15-22.

Rawson, P.D., V. Agrawal and T.J. Hilbish. 1999. Evidence of a steep genetic break among blue mussel (*Mytilus* spp.) populations associated with Cape Mendocino, CA, USA. Marine Biology 134: 201-212.

Burton, R.S., **P.D. Rawson** and S. Edmands. 1999. Genetic architecture of physiological phenotypes: empirical evidence for coadapted gene complexes. American Zoologist 39: 451-462.

Hilbish, T.J., A. Mullinax, S.I. Dolven, A. Meyer, R.K. Koehn, and **P.D. Rawson**. 1999. Origin of the antitropical distribution pattern in marine mussels (*Mytilus* spp.): routes and timing of trans-equatorial migration. Marine Biology 136: 69-77.

Rawson, P.D. and T.J. Hilbish. 1998. Asymmetric introgression of female and male lineage mitochondrial DNA (mtDNA) haplotypes within the European hybrid zone between *Mytilus edulis* and *M. galloprovincialis*. Evolution 52: 100-108.

Rawson, P.D., C.L. Secor and T.J. Hilbish. 1996. The effects of natural hybridization on the regulation of doubly uniparental mtDNA inheritance in marine mussels (*Mytilus* spp.). Genetics 144: 241-248.

Rawson, P.D., K.L. Joyner, K. Meetze and T.J. Hilbish. 1996. Evidence for intragenic recombination within a novel genetic marker that distinguishes mussels in the *Mytilus edulis* species complex. Heredity 77: 599-607.

Rawson, P.D. and T.J. Hilbish. 1995. Evolutionary relationships among the male and female mitochondrial DNA lineages in the *Mytilus edulis* species complex. Molecular Biology and Evolution 12: 893-901.

Rawson, P.D. and T.J. Hilbish. 1995. The distribution of male and female mtDNA lineages in populations of the blue mussel (*Mytilus trossulus* and *M. galloprovincialis*) along the Pacific Coast of North America. Marine Biology 124: 245-250.

Heath, D.D., **P.D. Rawson** and T.J. Hilbish. 1995. PCR-based nuclear markers identify alien blue mussel (*Mytilus spp*.) genotypes on the west coast of Canada. Canadian Journal of Fisheries and Aquatic Science 52: 2621-2627.

Hilbish, T.J., E.P. Winn and **P.D. Rawson**. 1992. The genetic architecture of growth in *Mercenaria mercenaria*: Genetic variation and covariation during development. Marine Biology 115: 97-104.

Rawson, P.D. and T.J. Hilbish. 1991. Genotype-environment interaction for juvenile growth rate in the hard clam, *Mercenaria mercenaria*. Evolution 45: 1924-1935.

Rawson, P.D. and T.J. Hilbish. 1990. Heritability of juvenile growth for the Hard Clam, *Mercenaria mercenaria*. Marine Biology 105: 429-436.

INVITED SEMINARS

"Hybridization and Incipient Speciation in Blue Mussels". Department of Biological Sciences, University of South Carolina. April 10, 2006.

"Hybridization among Blue Mussels in the genus *Mytilus*". School of Marine Sciences, University of Maine. December 16, 2005.

"Molecular markers for the identification of *M. trossulus* and *M. edulis.* First Annual Workshop on the *Mytilus edulis/M. trossulus* problem in Mussel Aquaculture." Gaspé, Quebec, Canada, October 18-20, 2000.

"Progress on identifying mechanisms regulating the distribution of *M. trossulus* in the Gulf of Maine. First Annual Workshop on the *Mytilus edulis/M. trossulus* problem in Mussel Aquaculture." Gaspé, Quebec, Canada, October 18-20, 2000.

"Progress on identifying mechanisms regulating the distribution of *M. trossulus* in the Gulf of Maine."

Maine Sea Grant Policy Advisory Committee Meeting. Jan. 11, 2001. Island Institute, Rockland, ME.
"Population Genetics, Hybridization and the Formation of Coadapted Gene Complexes among Two Groups of Pacific Coast Marine Invertebrates." California State University at Los Angeles. Jan. 1998.
"The Genetic Architecture of Physiological Phenotypes: Genotype x Environment Interactions and Intergenomic Coadaptation." University of Maine, Orono. Feb. 1998.
"The Genetic Architecture of Physiological Phenotypes: Genotype x Environment Interactions and Intergenomic Coadaptation." Virginia Institute of Marine Science. March 1998.
"The Maintenance of Genetic Differentiation between the Blue Mussel Species *Mytilus trossulus* and *M. galloprovincialis* along the Pacific Coast of North America." Scripps Institution of Oceanography. Feb. 1997.

SYNERGISTIC ACTIVITIES

Development of summer content institutes on Genetics in Aquaculture and Aquaculture Research for Secondary School Science Teachers.
Chair, USDA Western Coordinating Committee (WCC-099) on Broodstock Management, Genetics and Breeding Programs for Molluscan Shellfish (2004).
Coordinator of University of Maine Oyster Broodstock Development Program.
Training and working with high school interns at the University of Maine through the Foundation for Blood Research MERITS and the Upward Bound programs.

HONORS AND SERVICE

- National Science Foundation CAREER Award. 1/02.
- Sigma Xi Graduate Career Achievement Award in the Natural Sciences. University of South Carolina Chapter. 5/96.
- Developed and Presented Summer Content Institutes in Genetics and Aquaculture for Secondary School Science Teachers, 8/03 to 6/07.
- *Chair*, USDA Western Coordinating Committee (WCC-099) on Broodstock Management, Genetics and Breeding Programs for Molluscan Shellfish, 4/03 – 4/04.
- Coordinator of University of Maine Oyster Broodstock Development Program (on-going).
- Organized Invited Papers Session "Blue Mussel Biology and Culture" for the 94th Annual Meeting of the National Shellfisheries Society, Mystic CT. 4/02.
- *Chair*, Graduate Admissions Committee, School of Marine Sciences 8/01 to 7/03.
- Coordinated and participated in the School of Marine Sciences demonstration on "Careers in Marine Science" for approximately 120 6th grade students in the Gear-up program at the University of Maine, 10/9/01.
- Organized School of Marine Sciences Seminar Series 5/99 to 5/00 and 5/05 to 5/07.
- Student Presentations Judge: Society for Integrative and Comparative Biology & National Shellfisheries Society.

- Reviewer for the *Journal of Experimental Marine Biology and Ecology*, *Marine Ecology Progress Series*, *Marine Biology*, *Molecular Ecology*, *Molecular Biology and Evolution*, *Genetics*, *Hydrobiologia*, *Proceedings of the Royal Society of London*, and *Biological Bulletin*.
- Reviewed Proposals for National Science Foundation (Biological Oceanography and Population Biology Programs), U. S. Department of Agriculture (Animal Genome and Genetic Mechanisms Program), Smithsonian Institution's Scholarly Studies Program, NSERC Discovery Grant Program, and Florida, New Jersey, and Viginia Sea Grant Programs.
- President, Graduate Association of the Biological Sciences. University of South Carolina. 1994-1995.
- Vice-President, Graduate Association of the Biological Sciences. University of South Carolina. 1993-1994.

SOCIETY MEMBERSHIPS

American Association for the Advancement of Science
Sigma Xi
Society for the Study of Evolution
National Shellfisheries Association
Society for Integrative and Comparative Biology

COLLABORATORS (4 yrs)

Kathy Boettcher (Univ. Maine), Ron Burton (Scripps Institution of Oceanography), Cliff Cunningham (Duke University), Thomas Hilbish (Univ. South Carolina), Irv Kornfield (Univ. Maine), Sara Lindsay (Univ. Maine), Cynthia Riginos (Univ. of Queensland), Phil Yund (Univ. of New England), Michael McCartney (Univ. North Carolina at Wilmington).

GRADUATE AND POSTDOCTORAL ADVISORS

Thomas J. Hilbish, University of South Carolina, Masters and Doctoral Advisor.
Ronald S. Burton, Scripps Institution of Oceanography, Post-Doctoral Advisor.

POST DOCTORAL AND GRADUATE STUDENTS ADVISED

MS students - Matthew Gordon, Susan Hayhurst, Susan Limbeck, Jay Caponera
PhD students – Erin Fisher, Valerie Moreau, Eugene Katsman
Post Doctoral Researchers - Dr. Fiona Harper

UNDERGRADUATE AND HIGH SCHOOL STUDENTS MENTORED (4 yrs)

Afton McGowan (Univ. New Hampshire), Rachel Mcnamee (Univ. Maine), Michele Phillips (Univ. Maine), Elizabeth Pomerlau (Univ. Maine), Jared Brown (Hampden Academy), Laura Donley (Stearns High School), Lisa Kranich (Stearns High School), Brendan Horton (Old Town High School), Christain Slaughter (REU: California State University, Northridge).

CONFERENCE PRESENTATIONS (since 1998)

Riginos, C., A. S. Cavallaro and P. D. Rawson. “Linking Allozyme and Nucleotide Variation at PGM in Blue Mussels”. Annual Meeting of the Society for the Study of Evolution. Christchurch, New Zealand. June 2007.

Rawson, P. D., C. V. Davis, K. J. Boettcher and S. C. Feindel. “PCR-based Monitoring of Probiotic Treatments Seeking to Mitigate the Impact of Juvenile Oyster Disease (JOD) in Eastern Oysters, *Crassostrea virginica*.” Invited Paper in Experimental Biology of Molluscs: from Cells to Organisms session at the Annual Meeting of the National Shellfisheries Society. San Antonio, TX. February 2007.

Rawson, P. D., C. V. Davis, B. J. Barber, R. O. Hawes and S. C. Feindel. “Oyster Broodstock Development in Maine: A Cooperative Effort between Maine’s Oyster Industry and the University of Maine.” Invited Paper in Broodstock Propagation and Management session at the World Aquaculture Conference, San Antonio, TX. February 2007.

Owen, E. F., A. D. Wannamaker, C. Dibacco, S. C. Feindel and **P. D. Rawson**. “Putative Growth-Related Effect on Sea Scallop, *Placopecten magellanicus*, Larval Shell Geochemistry: Implications for Reconstructing Environmental History”. Annual Meeting of the American Society of Limnology and Oceanography. June 2006.

Pomerlau, E. A., F. M. Harper, and **P. D. Rawson**. “Isolation of Species-Specific Egg-Borne Proteins from the Blue Mussels, *Mytilus edulis* and *M. trossulus*.” Benthic Ecology Meeting. Quebec City, Quebec, CA. March 2006.

Owen, E. F., A. D. Wannamaker, and **P. D. Rawson**. “Growth-Related Effects on Geochemical Compostion of Larval Shell Aragonite of the Sea Scallop, *Placopecten magellanicus*.” Larval Shell Geochemistry: Implications for Reconstructing Environmental History”. Benthic Ecology Meeting. Quebec City, Quebec, CA. March 2006.

Harper, F. M., E. A. Pomerlau and **P. D. Rawson**. “Species-specific Egg-borne Proteins in the blue mussels, *Mytilus edulis* and *M. trossulus*.” Annual Meeting of the Society for Integrative and Comparative Biology. Orlando, FL. January 2006.

Rawson, P. D. and F. M. Harper. “Trans-Acrtic Gene Flow in the Blue Mussel *Mytilus trossulus*.” Coordinating Research in the North Atlantic (NSF: CORONA). Roscoff, France. July 2005.

Rawson, P. D. “Male Lineage D-Loop Sequence Insertion in the Female Lineage Mitochondrial DNA Control Region of the Blue Mussel *Mytilus trossulus*.” Annual Meeting of the Society for the Study of Evolution. Ft. Collins, CO. June 2004.

Limbeck, S. and **P. D. Rawson**. “Physiological factors regulating blue mussel species distributions within the Gulf of Maine”. National Shellfisheries Association Annual Meeting. New Orleans, LA April 2003.

Rawson, P. D. “Larval Ecology: Molecular Tools for the Big Black Box”. National Shellfisheries

Association Annual Meeting. New Orleans, LA April 2003.

Rawson, P.D. "Cladistic analysis of genetic differentiation between populations of the blue mussel, Mytilus trossulus". Annual Meeting of the National Shellfisheries Association, Mystic, CT, April 2002

McGowen, A., M. Gordon, and **P.D. Rawson**. "Species-specific settlement patterns of blue mussels in Cobscook Bay, Maine". Annual Meeting of the National Shellfisheries Association, Mystic, CT, April 2002.

Limbeck, S. and **P. D. Rawson.** "Physiological factors regulating blue mussel species distributions within the Gulf of Maine". Benthic Ecology Meetings, Groton, CT, March 2003.

Rawson, P.D. , C. Slaughter, and P. Yund. "Asymmetric Gametic Incompatibility Among Two Species of Marine Mussel". Annual meeting of the Society for Integrative and Comparative Biology, Anaheim, CA. Jan 2002.

Slaughter, C., **P.D. Rawson**, and P. Yund. "Variation in gametic compatibility between the blue mussels *Mytilus edulis* and *Mytilus trossulus*. Annual meeting of the Western Society of Naturalists, Ventura, CA. Nov. 2001.

Rawson, P.D. "Current Status of the Oyster Broodstock Development Program at the University of Maine." Annual Meeting of the USDA/Western Coordinating Committee on Bivalve/Aquacultural Genetics. Orlando, FL. Jan. 2001.

Hayhurst, S., **P. D. Rawson**, B. VanScoyoc, and A. McGowen. "Life at the Edge: Potential Factors Controlling the Distribution of *Mytilus trossulus* in the Gulf of Maine." 93rd Annual Meeting of the National Shellfisheries Association, Orlando, FL Jan. 2001.

Gordon, M.P, and **Rawson, P. D.** "Patterns of nucleotide variation at the *Gpi* locus in the blue mussel, *Mytilus edulis*." 93rd Annual Meeting of the National Shellfisheries Association, Orlando, FL Jan. 2001.

Maloy, A., B. J. Barber and **P. D. Rawson**. 2001. Temporal Variation in the Gametogenic Cycle of Mussels, *Mytilus edulis* and *Mytilus trossulus*, in Cobscook Bay, ME. 93rd Annual Meeting of the National Shellfisheries Association, Orlando, FL Jan. 2001.

Gordon, M.P, and **Rawson, P.D.** Patterns of nucleotide variation at the *Gpi* locus in the blue mussel, *Mytilus edulis*. 92nd Annual Meeting of the National Shellfisheries Association, Seattle, WA March 19-23, 2000.

Riordan, T.J., **Rawson, P.D.**, and Lindsay, S.M. Chemoreceptor gene expression in two Spionids, *Streblospio benedicti* and *Polydora quadrilobata*. 29th Annual Benthic Ecology Meetings, Wilmington, NC. March 9-12, 2000.

Rawson, P.D. Molecular Genetic Characterization of Gulf of Maine Blue Mussel Populations. National Shellfisheries Association Annual Meeting, Halifax, Nova Scotia, Canada. April 1999.