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**Education**

2011 **Ph.D. (Biological Oceanography)** Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in Oceanography: Applied Ocean Science and Engineering

Dissertation Title: “Functional connectivity of coral reef fishes in a tropical seascape assessed by compound-specific stable isotope analyses.” *Advisor: Dr. Simon Thorrold (Biological Oceanography)*

2005 **B.Sc. (Biology)** Bates College, Summa Cum Laude

Honors Thesis Title: “The impact of a changing food supply on Arctic benthos: digestibility of ice algae and phytoplankton” *Advisors: Dr. William Ambrose Jr. (Biology) and Dr. Beverly Johnson (Geology)*

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**Professional Appointments**

2013 - present **Postdoctoral Scholar:** Ocean Sciences Department, University of California, Santa Cruz, Santa Cruz, CA USA  
*Supervisors: Dr. Mathew McCarthy and Dr. Thomas Guilderson*

2011 - 2012 **Postdoctoral Fellow:** Red Sea Research Center, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia and Biology Department, Woods Hole Oceanographic Institution, Woods Hole, MA, USA  
*Supervisors: Dr. Michael Berumen (KAUST) and Dr. Simon Thorrold (WHOI)*

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**Publications**

13. **McMahon KW**, Hamady L, Thorrold SR (2013) Ocean ecogeochemistry – A review. *Oceanography and Marine Biology: An Annual Review* **51**:327-374
12. **McMahon KW**, Hamady L, Thorrold SR (2013) A review of ecogeochemistry approaches to estimating movements of marine animals. *Limnology and Oceanography* **58**:697-714
11. **McMahon KW**, Berumen ML, Thorrold SR (2012) Linking habitat mosaics and connectivity in a coral reef seascape. *Proceedings of the National Academy of Science* **109**:15372-15376

10. **McMahon KW**, Berumen ML, Mateo I, Elsdon TS, Thorrold SR (2011) Carbon isotopes in otolith amino acids identify residency of juvenile snapper (Family: Lutjanidae) in coastal nurseries. *Coral Reefs* **30**:1135-1145 (2011 Best Paper Award finalist)
9. **McMahon KW**, Fogel ML, Johnson BJ, Houghton LA, Thorrold SR (2011) A new method to reconstruct fish diet and movement patterns from  $\delta^{13}\text{C}$  values in otolith amino acids. *Canadian Journal of Fisheries and Aquatic Sciences* **68**:1330-1340
8. **McMahon KW**, Fogel ML, Elsdon T, Thorrold SR (2010) Carbon isotope fractionation of amino acids in fish muscle reflects biosynthesis and isotopic routing from dietary protein. *Journal of Animal Ecology* **79**:1132-1141
7. Elsdon T, Ayvazian S, **McMahon KW**, Thorrold SR (2010) Experimental evaluation of stable isotope fractionation in fish muscle and otoliths. *Marine Ecology Progress Series* **408**:195-205
6. Graham BS, Koch PL, Newsome SD, **McMahon KW**, and Aurioles D (2009) Using isoscapes to trace the movements and foraging behavior of top predators in oceanic ecosystems. In *Isoscapes: Understanding Movement, Pattern and Process on Earth Through Isotope Mapping* (eds. J. West, G. J. Bowen, T. E. Dawson, K. P. Tu). pp. 299-318, *Springer*, New York
5. Skomal GB, Zeeman SI, Chisholm JH, Summers EL, Walsh HJ, **McMahon KW**, Thorrold SR. (2009) Mesopelagic trans-equatorial migrations by basking sharks in the western Atlantic Ocean. *Current Biology* **19**:1019-1022
4. Carroll M, Johnson B, Henkes G, **McMahon KW**, Voronkov A, Ambrose W, Denisenko S. (2009). Bivalves as indicators of environmental variation and potential anthropogenic impacts in the southern Barents Sea. *Marine Pollution Bulletin* **59**:193-206
3. Ambrose WG, Carroll ML, Greenacre M, Thorrold SR, **McMahon KW**. (2006) Variation in bivalve growth in a Norwegian high-Arctic fjord: Evidence for local- and large-scale climatic forcing. *Global Change Biology* **12**:1595-1607
2. **McMahon KW**, Ambrose WG, Johnson BJ, Sun M-Y, Lopez GR, Clough LM, Carroll ML (2006) Benthic community response to ice algae and phytoplankton in Ny Ålesund, Svalbard. *Marine Ecology Progress Series* **310**:1-14 (Issue's feature article)
1. **McMahon KW**, Johnson BJ, Ambrose WG. (2005). Diet and movement of the killifish, *Fundulus heteroclitus*, in a Maine salt marsh assessed using gut contents and stable isotope analyses. *Estuaries* **28**:966-973

***Publications near completion, submitted and in review***

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- a. **McMahon KW**, Elsdon T, Thorrold SR, McCarthy M (in review) Quantifying nitrogen isotope fractionation of amino acids in fish muscle: an experimental approach. *Limnology*

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*and Oceanography*

- b. **McMahon KW**, Reynolds M, Johnson BJ, Ambrose WG, Clough LM, (in prep) Terrestrial organic matter fuels Arctic coastal lagoon food webs.
- c. **McMahon KW**, Thorrold SR, Houghton LA, Berumen ML (in prep) Tracing carbon flow through food webs in tropical seascapes: a compound-specific carbon isotope approach.
- d. **McMahon KW**, Thorrold SR, Berumen ML (in prep) Extreme niche partitioning starts at the base of the food web for a congeneric mixed species school of snapper.

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***Research Grants and Fellowships***

- 2012 King Abdullah University of Science and Technology Postdoctoral Fellowship research grant (\$25,000)
- 2008 International Society for Reef Studies/Ocean Conservancy Coral Reef Research Fellowship (\$14,546)
- 2008 Ocean Life Institute Student Research Grant (\$2,340)
- 2008 Isoscapes Conference Travel Grant (\$400)
- 2006-9 National Science Foundation Graduate Research Fellowship (\$121,500)
- 2005-6 Ocean Life Fellowship (\$28,446)
- 2005 Howard Hughes Travel Grant (\$500)
- 2004-5 Howard Hughes Summer Fellowship (\$3,000)
- 2004 Bates College Student Research Grant (\$3,000)
- 2004 Howard Hughes Student-Faculty Research Grant (\$12,000)
- 2004 Howard Hughes Travel Grant (\$500)
- 2003 Bates College Student Research Grant (\$3,000)

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***Academic Honors and Awards***

- 2011 Coral Reefs Volume 30 Best Paper Award finalist
- 2009 Best Student Paper Award at the 4<sup>th</sup> International Otolith Symposium
- 2009 Sally Richardson Best Student Paper Award at the 33<sup>rd</sup> Annual Larval Fish Conference
- 2005 Summa Cum Laude at Bates College
- 2005 Honors Distinction in Biology at Bates College
- 2005 Phi Beta Kappa Honor Society
- 2001-5 Dean's Honors List at Bates College (8 consecutive semesters)
- 2001 Arthur Crafts Award

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***Teaching Experience***

- 2013 **Guest Lecturer**, UC-Santa Cruz, Ocea290J Topics in Marine Organic Geochemistry, multiple lectures for graduate students
- 2012 **Guest Lecturer**, Bates College, Bio313 Marine Ecology, advanced undergraduates
- 2012 **Guest Lecturer**, Bates College, Geo340 Stable Isotope Geochemistry, advanced undergraduates

- 2012 **Guest Lecturer**, King Abdullah University of Science and Technology, MarSE 221 Marine Life, graduate students
- 2010 **Guest Lecturer**, Sea Education Association, advanced undergraduates
- 2010 **Teaching Assistant**, MIT/WHOI Joint Program: 7.43 Biological Oceanography, graduate students
- 2010 **Guest Lecturer**, Connecticut College: Biology/Botany 294 Seminar Series, advanced undergraduates
- 2009 **Co-Instructor**, Woods Hole Oceanographic Institution: Developed and co-taught three week course “Human Impacts on the Marine Environment,” advanced undergraduates
- 2008 **Guest Lecturer**, Mullen-Hall Elementary School: Multiple lessons on ocean science, Elementary School
- 2008 **Guest Lecturer**, Brown University: BIOL1880 Comparative Biology of Vertebrates, advanced undergraduates
- 2007 **Guest Lecturer**, Codman Academy: Marine Biology Course, high school students
- 2005 **Co-Instructor**, Hillview Head Start Program, Lewiston, ME, developed and taught afterschool activity program for K-12 Head Start Program
- 2004-5 **Technical Writing Assistant**, Bates College: Biological Principles, Ecology, Cellular and Molecular Biology, undergraduate students
- 2004-5 **Academic Tutor**, Bates College: Organic Chemistry I and II, Calculus I and II, Biological Principles, Ecology, undergraduate students
- 2003-5 **Teaching Assistant**, Bates College: Organic Chemistry I and II, Biological Principles, Ecology, undergraduate students

### *Academic Advising*

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- 2014 **ASLO mentor**: Elizabeth Hetherington (UC-San Diego) and Amanda McCutcheon (U. of Guam), Ocean Sciences Meeting, Honolulu, HI 2014
- 2013 **Graduate student mentor**: Emily Brault, John Schiff, UC-Santa Cruz
- 2013 **Undergraduate mentor**: Melissa Hanson, UC-Santa Cruz
- 2013 **High school mentor**: Anastasia Leopold, High School Summer Intern program, UC-Santa Cruz
- 2012 **Undergraduate mentor**: Elizabeth Sonshine, Bates College Career Discovery in Practice
- 2011 **Thesis committee member**:Carolynn Harris, Undergraduate honors thesis, Bates College
- 2010-11 **High school mentor**: MacKenzie Tasha, Falmouth High School Volunteer in Public Schools (VIPS)
- 2008-11 **MIT-WHOI Graduate Student mentor**: Li Ling Hamady, Santiago Herrera, Katherine Pitz, Maya Yamato

### *Conference Presentations*

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Oral Presentation: “Decadal to century scale changes in North Pacific Ocean phytoplankton communities assessed by  $\delta^{13}\text{C}$  compound-specific stable isotope analysis of deep-sea corals.” Ocean Sciences Meeting, February 2014, Honolulu, HI, USA (Session 153 F organizer and chair)

- Oral Presentation: “Unraveling carbon flow pathways on coral reefs with compound specific stable isotope analysis.” 8<sup>th</sup> Annual Isotope Ecology Conference, August 2012, Brest, France
- Oral Presentation: “Seascape connectivity in a Red Sea coral reef ecosystem.” 12<sup>th</sup> International Coral Reef Symposium, July 2012, Cairns, Australia
- Oral Presentation: “Functional connectivity of coral reef fishes in a Red Sea coral reef seascape assessed by compound specific stable isotope analysis.” Ocean Sciences Meeting, February 2012, Salt Lake City, UT, USA
- Poster Presentation: “Revisiting the source of carbon fueling fisheries on coral reefs.” Ocean Sciences Meeting, February 2012, Salt Lake City, UT, USA
- Oral Presentation: “Functional connectivity of coral reef fishes in a Red Sea tropical seascape.” Living Oceans Foundation Symposium on Coral Reef Conservation in the Red Sea, January 2012, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
- Oral Presentation: “Ontogenetic migration and trophic dynamics.” Red Sea Research Center Symposium, April 2011, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
- Poster Presentation “A new tool for inferring trophic interactions and fish movement using stable carbon isotope analysis of otolith amino acids.” Ocean Sciences Meeting, February 2010, Portland, OR, USA
- Oral Presentation: “Stable carbon isotope analysis of amino acids in otolith protein: a new tool for tracking fish movement.” 4<sup>th</sup> International Otolith Symposium, August 2009, Monterey, CA, USA (Best Student Paper Award)
- Oral Presentation: “Carbon isotope fractionation of amino acids of a marine fish.” 33<sup>rd</sup> Annual Larval Fish Conference, July 2009, Portland, OR, USA (Sally Richardson Best Student Paper Award)
- Oral Presentation: “Patterns in carbon isotope fractionation of amino acids between diet and consumer in a model fish species.” 6<sup>th</sup> Annual Isotope Ecology Conference, August 2008, Honolulu, HI, USA
- Poster Presentation “Ocean ecogeochemistry applied to connectivity analyses in marine populations.” Isoscapes Conference, April 2008, Santa Barbara, CA, USA
- Oral Presentation: “The impacts of a changing food supply on Arctic benthos: digestibility of ice algae and phytoplankton.” 34<sup>th</sup> Annual Benthic Ecology Meeting. April 2005, Williamsburg, VA, USA

Oral Presentation: “The Impacts of a changing food supply on Arctic benthos.” Mount David Research Symposium, March 2005, Lewiston, ME, USA

Poster Presentation: “Contributions of local food items to the diet of *Fundulus heteroclitus*: analysis of  $\delta^{13}\text{C}/\delta^{15}\text{N}$  and gut contents.” 33<sup>rd</sup> Annual Benthic Ecology Meeting. March 2004, Mobile, AL, USA

Poster Presentation: “Contributions of local food items to the diet of *Fundulus heteroclitus*” Mount David Research Symposium, March 2004, Lewiston, ME, USA

Poster Presentation: “Impacts of *Phragmites* control on selected ecological functions within tidelands of the Lieutenant River.” Connecticut College Research Symposium, August 2003, New London, CT, USA

### ***Invited Talks and Seminars***

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Environmental Systems Seminar, January 2014, University of California-Merced, Merced, CA USA

Environmental Earth System Science Seminar, December 2013, Stanford University, Palo Alto, CA, USA

Southwest Fisheries Science Center Seminar, November 2013, NOAA Fisheries Service, Santa Cruz, CA, USA

Ocean Science Department Seminar, May 2013, University of California-Santa Cruz, Santa Cruz, CA, USA

Red Sea Research Center Department Seminar, December 2012, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia

Biology Department Seminar, Oct 2012, Bates College, Lewiston, ME, USA

Workshop II: Sampling animal tissues for stable isotope analysis, August 2012, 8<sup>th</sup> Annual Isotope Ecology Conference, Brest, France. Workshop co-organizer and presenter.

ARC Centre of Excellence Coral Reef Studies Seminar, June 2011, James Cook University, Townsville, Australia

Sea Education Association, June 2010, Woods Hole, MA, USA

Biology Department Seminar, February 2010, Connecticut College, New London, CT, USA

Biology Department Seminar, November 2009, Woods Hole Oceanographic Institution, Woods Hole, MA

Ocean Science Journalism Fellows Lecture, September 2009, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

Biology Department Seminar, February 2009, Bates College, Lewiston, ME, USA

Trustee and Corporation Member Lecture, October 2008, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

Ocean Science Journalism Fellows Lecture, September 2008, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

School of Marine and Atmospheric Sciences Lecture, April 2005, Stony Brook University, Stony Brook, NY, USA

Ecology and Evolutionary Biology Department Lecture, October 2004, Cornell University, Ithaca, NY, USA

### ***Synergistic Activities***

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- 2014 Organizer and Chair, Section F Session 153: Using Compound-Specific Stable Isotope Analysis to Advance Population and Community Ecology, Ocean Sciences Meeting (Honolulu, HI, Feb 2014).
- 2014 Project member, Phoenix Islands Protected Area – Expedition Science Meeting (Honolulu, HI, Feb 2014)
- 2013 Project Leader, High School Summer Student Internship Program, University of California – Santa Cruz (Santa Cruz, CA, June – December 2013).
- 2012 Co-Organizer, Workshop II: Sampling animal tissues for stable isotope analysis, 8<sup>th</sup> Annual Isotope Ecology Conference (Brest, France, August 2012).
- 2012 Project Leader, Bates College Career Discovery in Practice, Woods Hole Oceanographic Institution (Woods Hole, MA, January 2012).
- 2010-2011 Member, Falmouth High School Volunteer in Public Schools (VIPS) (Falmouth, MA).

***Manuscript reviewer for:*** *Amino Acids, Aquaculture Research, Coral Reefs, Deep Sea Research, Environmental Science and Technology, Ecosphere, Estuaries, Journal of Animal Ecology, Journal of Experimental Marine Biology and Ecology, Journal of Sea Research, Marine Biology, Marine Ecology Progress Series, Methods in Ecology and Evolution, PLOS One, Progress in Oceanography, Rapid Communications in Mass Spectrometry*

***Grant reviewer for:*** *National Science Foundation, Sea Grant*

***Dive certifications:*** NAUI Advanced Open Water, NAUI Rescue Diver, NAUI Nitrox, NAUI Drysuit, IANTD Closed-Circuit rebreather

**Society membership:** American Association for Underwater Scientists, American Fisheries Society, Association for the Sciences of Limnology and Oceanography, Divers Alert Network, Phi Beta Kappa Society, Sigma Xi Scientific Research Society, WHOI Postdoctoral Association

*Current as of January 2014*

**Letters of Reference**

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Woods Hole Oceanographic Institution  
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Dr. Marilyn Fogel  
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