

# JENNIFER BALMER, PH.D.

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## EDUCATION & TRAINING

### **Postdoctoral Scientist**

Mote Marine Laboratory, Sarasota, FL  
Nat'l Institute of Standards & Technology, Charleston, SC

### **Doctor of Philosophy in Marine Biomedicine & Environmental Sciences**

Medical University of South Carolina, Charleston, SC

### **Bachelor of Science in Marine Biology**

University of Rhode Island, Kingston, RI

## PROFESSIONAL APPOINTMENTS

2017–Present **Visiting Assistant Professor**, The Citadel, Charleston, SC  
2014–Present **Editor/Scientific Secretary**, Arctic Monitoring and Assessment Programme, Norway  
2014–2016 **Consultant**, National Oceanic & Atmospheric (NOAA), Charleston, SC  
2014–2016 **Science Journalist**, Charleston, SC  
2012–2014 **Staff Scientist**, Marine Immunology & Biomedical Programs, Mote Marine Laboratory, Sarasota, FL  
2011–2012 **Postdoctoral Scientist**, Marine Biomedical Program, Mote Marine Laboratory, Sarasota, FL  
2009–2011 **Research Chemist**, National Institute of Standards & Technology, Charleston, SC  
2004–2009 **Biologist**, National Institute of Standards & Technology, Hollings Marine Laboratory, Charleston, SC

## TEACHING & MENTORSHIP

2017–Present **Visiting Assistant Professor**, The Citadel, Charleston, SC  
2016–2017 **Adjunct Instructor**, The Citadel, Charleston, SC  
2014–2015 **Adjunct Instructor**, Trident Technical College (TTC), Charleston, SC  
2013–2014 **Courtesy Faculty**, University of South Florida (USF), Sarasota, FL  
2011–2012 **Research mentor**, NSF Research Experience for Undergraduates (REU) Program  
2011–2012 **Research mentor**, Mote Marine Laboratory Internship Program

## COURSES TAUGHT

BIOL 101	<b>General Biology I</b>	BIOL 340	<b>Pathophysiology</b>
BIOL 102	<b>General Biology II</b>	BIOL 341	<b>Pharmacology</b>
CHM 101	<b>General Chemistry</b>	BIOL 420	<b>Global Environmental Change</b>
FSEM 101	<b>Rewilding Earth</b>	BIOL 610	<b>Global Environmental Change</b> (graduate-level)
NTSS 303	<b>Wild Injustice</b>	BIOL 621	<b>Aquatic Toxicology</b> (graduate-level)

## STUDENTS MENTORED

<b>Brittany Leigh</b> , Mote Marine Lab Summer REU Program	<b>Cristian Baguer</b> , The Citadel
<b>Philip Adams</b> , Mote Marine Lab Summer REU Program	<b>Brittany Mueller</b> , The Citadel
<b>Joelle Zambrano</b> , Mote Marine Lab Summer REU Program	<b>Olivia Jones</b> , The Citadel
<b>Ravyn Thompson</b> , Mote Marine Lab Summer REU Program	<b>Michael Ray</b> , The Citadel

## PEER-REVIEWED PUBLICATIONS

- Vorkamp K, **Balmer J**, Hung H, Letcher RJ, Riget FF, de Wit CA. Current-use halogenated and organophosphorous flame retardants: A review of their presence in Arctic ecosystems. 2019. *Emerging Contaminants*, 5, 179-200.
- Balmer J**, Hung H, Vorkamp K, Letcher R, Muir DCG. Hexchlorobutadiene contamination in the Arctic environment: A review. 2019. *Emerging Contaminants*, 5, 116-122.
- Balmer J**, Morris AD, Hung H, Jantunen L, Vorkamp K, Riget F, Evans M, Houde M, Muir, DCG. Levels and trends of current-use pesticides (CUPs) in the Arctic: An updated review, 2010-2018. 2019. *Emerging Contaminants*, 5, 70-88.
- Balmer J**, Hung H, Yu Y, Letcher R, Muir DCG. Sources and environmental fate of pyrogenic polycyclic aromatic hydrocarbons (PAHs) in the Arctic. 2019, *Emerging Contaminants*, 5, 128-142.
- Vorkamp, K, **Balmer J**, Hung H, Letcher R, Riget F. A review of chlorinated paraffin contamination in Arctic ecosystems. 2019. *Emerging Contaminants*, 5, 219-231.
- de Wit C, **Balmer J**, Muir DCG, Vorkamp K, Wilson S. Chemicals of Emerging Arctic Concern: Preface. 2019. *Emerging Contaminants*, 5, 1-3.
- Balmer J**, Ylitalo GM, Rowles TK, Mullin KD, Wells RS, Townsend FI, Pearce RW, Bolton JL, Zolman ES, Balmer BC, Schwacke LH. Persistent Organic Pollutants (POPs) in Blood and Blubber of Common Bottlenose Dolphins (*Tursiops truncatus*) at three northern Gulf of Mexico sites following the *Deepwater Horizon* Oil Spill. 2018. *Sci Total Environ*. 621, 130-137.
- Perrault JR, Schmid JR, Walsh CJ, **Yordy J**, Tucker AD. Brevetoxin exposure, superoxide dismutase activity and plasma protein electrophoretic profiles in wild-caught Kemp's ridley sea turtles in southwest Florida. 2014. *Harmful Algae*, 37, 194-202.
- Walsh CJ, Butawan M, **Yordy J**, Ball R, Flewelling L, DeWit M, Bonde B. Sublethal red tide toxin exposure in free-ranging manatees affects the immune system via reduced lymphocyte proliferation responses, inflammation, and oxidative stress. 2015. *Aquat. Tox.*, 161, 73-84.
- Walsh CJ, Luer C, **Yordy J**, Cantu T, Miedema J, Leggett SR, Leigh B, Adams P, Ciesla M, Bennett C, Bodine AB. Epigonal conditioned media from bonnethead shark, *Sphyrna tiburo*, induces apoptosis in a T-cell leukemia cell line, Jurkat E6-1. 2013. *Marine Drugs*. 11, 3224-3257.
- Yordy J**, Rossman S, Ostrom PH, Reiner JL, Hughes S, Bargnesi K, Elliott J. Levels of chlorinated, brominated and perfluorinated contaminants in birds of prey spanning multiple trophic levels. *J. Wild. Dis.* 49 (2), 347-354.
- Kucklick JR, **Yordy J**, Schwacke L, Wells R, Hohn A, Guichard A, Zolman E, Younge R, Litz J, Nowacek D, Rowles T, Pugh R, Balmer B, Sinclair C, Rosel P. Bottlenose dolphins as indicators of persistent organic pollutants in the western North Atlantic ocean and northern Gulf of Mexico. 2011. *Environ. Sci. Technol.* 45, 4270-4277.
- Kucklick JR, Pugh RS, Becker PR, Keller JM, Day R, **Yordy J**, Moors A, Christopher S, Bryan C, Schwacke L, Goetz C, Wells R, Balmer BC, Hohn A, Rowles TK. 2010. Specimen Banking for Marine Animal Health Assessment. *Interdisciplinary Studies on Environmental Chemistry- Environmental Specimen Bank*. 4, 15-23.
- Yordy J**, Mollenhauer MM, Wilson, R, Wells RS, Hohn A, Sweeney J, Schwacke, L, Rowles, T, Kucklick JR, Peden-Adams M. Complex contaminant exposure in cetaceans: A comparative E-SCREEN analysis of bottlenose dolphin blubber and mixtures of four persistent organic pollutants. 2010. *Environ. Toxicol. Chem.* 29, 2143-2153.
- Yordy J**, Schwacke L, Rowles T, Balmer B, Wells R, Kucklick J. Contaminant partitioning between blubber and blood in wild bottlenose dolphins: Implications for biomonitoring and health. 2010. *Environ. Sci. Technol.* 44, 4789-4795.
- Yordy J**, Pabst DA, McLellan WA, Wells RS, Kucklick JR. Tissue specific distribution and whole body burden estimates of persistent organic pollutants in the bottlenose dolphin. 2010. *Environ. Toxicol. Chem.* 29, 1263-1273.
- Yordy J**, Wells RW, Balmer BC, Schwacke L, Rowles, T, Kucklick JR. Life history as a source of variation for persistent organic pollutant (POP) patterns in a community of common bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, FL. 2010. *Sci. Total Environ.* 408, 2163-2172.
- Keller JM, Swarthout RF, Carlson BKR, **Yordy J**, Guichard A, Schantz MM, Kucklick JR. Comparison of five extraction methods for measuring PCBs, PBDEs, organochlorine pesticides and lipid content in serum. 2009. *Anal Bioanal Chem.* 393, 747-760.

## SCIENTIFIC REPORTS

- Balmer J** and S Wilson. AMAP Assessment 2018: Biological Effects of Contaminants on Arctic Wildlife & Fish. Key Messages. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. 6 pp.
- Balmer J.** Summary for Policymakers: Chemicals of Emerging Arctic Concern, 2016. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. 12 pp.
- Balmer J**, deWit C, Muir D, Vorkamp K, Wilson S (Eds.) AMAP Assessment 2016: Chemicals of Emerging Arctic Concern. Arctic Monitoring & Assessment Programme (AMAP), Oslo, Norway. xvi+353 pp.

## EDITORIAL WORK

- Saunier S, Bergauer MA, Isakova, I. Best Available Techniques Economically Achievable to Address Black Carbon from Gas Flaring: EU Action on Black Carbon in the Arctic – Technical Report 3. October 2019. 47 pp.
- Tørseth, K, et al. Assessment of observation capacities and data availability for Black Carbon in the Arctic region. 2019. *In production.*

## GRANTS & FELLOWSHIPS

- Protect Our Reefs Research Grant**, 2013-2014  
Synergistic effects of ocean acidification with land-based contaminants on coral larval recruitment and development (with R. Pierce, E. Hall, K. Ritchie). \$24,000
- National Research Council Research Associate Postdoctoral Fellowship**, 2009-2011  
Development of analytical methods for the measurement of pharmaceuticals in environmental matrices.

## SELECTED PRESENTATIONS

- Balmer J**, Muir D, Morris A, Vorkamp K, Rigét F, Hung H. Current Use Pesticides of Emerging Arctic Concern: An Updated Assessment. Arctic Change. Quebec City, Canada. December 11-15, 2017.
- Jones O\*, Reppas-Chrysovitsinos E, MacLeod M, de Wit C, Muir D, Vorkamp K, Wilson S, **Balmer J.** Linking Arctic Science & Policy: Use of the new AMAP assessment to identify policy and infrastructure needs to control point source pollution in the Arctic. Arctic Change. Quebec City, Canada. December 11-15, 2017.
- Mueller B\*, Muir D, Vorkamp K, Letcher R, Wilson S, **Balmer J.** Levels and Trends of Chemicals of Emerging Arctic Concern in Marine Biota. Arctic Change. Quebec City, Canada. December 11-15, 2017.
- de Wit C, **Balmer J**, Muir D, Vorkamp K, Wilson S. The new AMAP Assessment report on Chemicals of Emerging Arctic Concern: Implications for global chemical management. Arctic Change. Quebec City, Canada. December 11-15, 2017.
- deWit C, **Balmer J**, Muir D, Vorkamp K, Wilson S. Highlights from the new AMAP Assessment report on Chemicals of Emerging Arctic Concern. Dioxin 2017, Vancouver, Canada. August 2017
- deWit C, **Balmer J**, Muir D, Vorkamp K, Wilson S Highlights from the new AMAP Assessment report on Chemicals of Emerging Arctic Concern. International Conference on Chemistry and the Environment, Oslo, Norway. June 2017
- Letcher RJ, **Balmer J**, Muir DCG, de Wit CA. Organophosphate esters: Current Status on properties and environmental behaviour, fate and contamination from a multi-media perspective in the Arctic. Dioxin, Florence, Italy, August 2016.
- Vorkamp K, Rigét F, **Balmer J**, Hung H, Letcher R, de Wit C. Novel brominated and chlorinated flame retardants – a review and assessment of their occurrence in the Arctic. Dioxin, Florence, Italy, August 2016.
- deWit C, **Balmer J**, Muir D, Vorkamp K, Wilson S. Highlights from the new AMAP Assessment report on Chemicals of Emerging Arctic Concern. Nordic Environmental Chemistry Conference. Loka Brunn, Sweden, June 2016.
- Vorkamp K and **J Balmer.** Short-chained chlorinated paraffins (SCCPs) in the Arctic. Eleventh Meeting of the Persistent Organic Pollutants Review Committee, Rome, Italy, October 2015.
- K Ritchie, C Luer, C Walsh, **J Yordy**, C Bennett, V Luna. Antibiotic properties associated with epidermal mucus of two ray species, Atlantic Stingray (*Dasyatis sabina*) and Cownose Ray (*Rhinoptera bonasus*). Military Health System Research Symposium, Ft Lauderdale, FL Aug 2013.
- C Walsh, **JE Yordy**, K English, Robert Bonde. Gene expression and lymphocyte proliferation responses are affected in

- peripheral blood leukocytes of the Florida manatee following in vitro exposure to brevetoxin (PbTx-2). Florida International University 15th Annual Biomedical & Comparative Immunology Symposium. March, 2013.
- Walsh CJ, CA Luer, **J Yordy**, J Miedema, B Leigh, P Adams. Epigonal conditioned medium from bonnethead shark induces apoptosis in T-cell leukemia cells, and preferentially targets breast cancer cells compared with normal breast cells. American Elasmobranch Society, World Congress of Herpetology, Vancouver, British Columbia. Aug 2012.
- Luer CA, CJ Walsh, K Ritchie, **J Yordy**, J Miedema, AB Bodine, A Cannons, V Luna. (Co-author). Antimicrobial properties of epidermal mucus from two species of ray (cownose ray, *Rhinoptera bonasus*, and Atlantic stingray, *Dasyatis sabina*). American Elasmobranch Society, World Congress of Herpetology, Vancouver, British Columbia. Aug 2012.
- Walsh CJ, CA Luer, K Ritchie, J Miedema, **J Yordy**, AB Bodine, A Cannons, V Luna, L Edsberg, J Wyffels. Epidermal mucus from cownose ray (*Rhinoptera bonasus*) and Atlantic stingray (*Dasyatis sabina*): Antimicrobial properties and role in wound healing. Gordon Research Conferences, Oceans and Human Health, Biddeford, ME, June 2012.
- Walsh CJ, **Yordy J**, English K, Bonde B. In vitro brevetoxin (PbTx-2) exposure affects gene expression and lymphocyte proliferation in peripheral blood leukocytes of the Florida manatee: Potential impacts on animal health. Florida Marine Mammal Health Conference IV, Sarasota, FL, April 2012.
- Yordy J**, Walsh CJ, English K, Bonde B. Baseline estimates of immune function and oxidative stress in free-ranging manatees. Florida Marine Mammal Health Conference IV, Sarasota, FL, April 2012.
- Reiner JL, Rossman S, Ostrom PH, Hughes S, Bargnesi K, Elliott J, **Yordy J**. Organohalogen contaminants of emerging concern in predatory birds from coastal South Carolina, USA. Society for Environmental Toxicology and Chemistry (SETAC) North America 31st Annual Meeting, Boston, Massachusetts, November 2011.
- Walsh C, Luer C, Leggett S, Cantu T, Miedema J, **Yordy J**. Shark immune cell-derived factors induce apoptosis (programmed cell death) in T-cell leukemia cells. 27th Annual Meeting of the American Elasmobranch Society, Minneapolis, MN, July 2011.
- Yordy J**, Wells RS, Balmer BC, Schwacke L, Rowles TK, Kucklick JR. Life history as a source of variation for persistent organic pollutant patterns in a resident community of bottlenose dolphins. Society for Environmental Toxicology and Chemistry (SETAC) North America 30th Annual Meeting, Portland, Oregon, November 2010.
- Kucklick J, Pugh R, Becker P, Keller J, Day R, **Yordy J**, Moors A, Schwacke L, Goetz C, Wells R, Hohn A, Rowles T. Specimen Banking for Marine Animal Health Assessments. International Symposium on Environmental Specimen Banking (ESBS), Matsuyama, Japan, December 2009.
- Yordy J**, Mollenhauer M, Wilson R, Wells R, Hohn A, Sweeney J, Schwacke L, Rowles T, Kucklick J, Peden-Adams M. Complex contaminant exposure in cetaceans: A comparative E-SCREEN analysis of dolphin blubber and mixtures of four persistent organic pollutants. Society for Environmental Toxicology and Chemistry (SETAC) North America 30th Annual Meeting, New Orleans, Louisiana, November 2009.
- Yordy J**, Schwacke L, Guichard A, Balmer B, Rowles T, Wells R, Kucklick J. Organohalogen contaminant exposure in wild bottlenose dolphins: cumulative influences of biotransformation, life history and diet. Society for Environmental Toxicology and Chemistry (SETAC) North America 29th Annual Meeting, Tampa, Florida, November 2008.
- Yordy J**, Schwacke L, Balmer B, Rowles T, Wells R, Kucklick J. Distribution of organohalogen contaminants between blubber and blood in wild bottlenose dolphins: Implications for biomonitoring and health. Southeast Marine Mammal Symposium (SEAMAMMS), Charleston, South Carolina, March 2008.
- Kucklick, JR, Guichard A, **Yordy J**, Litz J, Wells R, Balmer B, Hohn A, Zolman E, Schwacke L, Rowles T, Hansen L, Berry C, Rosel P. Concentrations and Patterns of Lipophilic Pollutants in Bottlenose Dolphins (*Tursiops truncatus*) as a Function of Geographical Scale and Implications to Dolphin Health. Dioxin, Tokyo, Japan, September 2007.
- Kucklick JR, Keller JM, Swarthout RS, Carlson B, Davis WC, Christopher SJ, **Yordy J**, Flanary J, Schantz MM, Wise SA. Development of Methods for Analysis of PBDEs in Human Serum Reference Materials and Wildlife Blood Samples. Dioxin, Oslo, Norway, August 2006.
- Yordy J**, Kucklick J, Wells R, Balmer B, Swarthout B, Schwacke L, Rowles T. Partitioning of contaminants between blubber, blood and milk in free-ranging bottlenose dolphins: Implications for biomonitoring. 16th Society of Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, San Diego, California, December 2005.
- Kucklick JR, Keller JM, Stapleton HM, **Yordy J**, Peck AM, Swarthout RW, Kannan K, Pugh RS, Becker PR. Temporal and Spatial Trends of "Compounds of Emerging Concern" in Marine Mammals and Sea Turtles. Estuarine Research Federation, Norfolk, Virginia, October 2005.

## POPULAR ARTICLES

**U.S. farms becoming less diverse over time.** *Civil Eats*. Oct 2015  
**Sawfish didn't pave way for modern chompers.** *Science*. Sep 2015  
**African wildlife harbors resistance to first-line antibiotics.** *Science*. Aug 2015  
**The Fine Art of Toxic Waste.** *NPR's Science Friday*. May 2015  
**Aflocklypse Now.** *Audubon*. Mar 2015  
**Protected areas not safe from light pollution** *Science*. Feb 2015  
**White nose syndrome almost completely wiped out North American bat colonies.** *Science*. Feb 2015  
**Polar bears head north as Arctic warms.** *Science*. Jan 2015  
**Soviet collapse was bad for wildlife.** *Science*. Jan 2015  
**Scotland's seals harbor common human pathogen.** *Science*. Jan 2015  
**Wildlife monitoring prevents human outbreaks.** *Science*. Nov 2014  
**Why are polar bears losing their hair?** *Science*. Nov 2014  
**Strangers in your backyard? Thank climate change.** *Audubon*. Nov 2014  
**Seabird losses from Deepwater Horizon estimated at hundreds of thousands.** *Science*. Oct. 2014  
**Pollinator declines may worsen global malnutrition.** *Science*. Oct 2014  
**Narwhal's tusk may be its status symbol.** *Science*. Sept. 2014  
**'Third eye' helps sea turtles sense changes in seasons.** *Science*. Sept 2014  
**Seagrass shields marine life from acidifying oceans.** *Science*. Sep 2014  
**It's not too late for penguins.** *Science*. Aug 2014  
**Feather loss hits Antarctic penguins.** *The Washington Post*. Sep 2014  
**Mysterious penguin disease emerges in Antarctica.** *Science*. Aug 2014  
**Acidifying waters impair shark senses.** *Science*. Aug 2014  
**Plants have unexpected response to climate change.** *Conservation Magazine*. Aug 2014

## PROFESSIONAL DEVELOPMENT ACTIVITIES

**EXCEED Teaching Workshop,** The Citadel, 2019  
**FBI Academic Biosecurity Workshop,** Charleston, 2018  
**Faculty Online Teaching Academy,** The Citadel, 2017  
**Faculty 101 Seminar course,** The Citadel, 2017  
**Teaching Techniques course,** Medical University of South Carolina, 2006

## AWARDS

**National Institute of Standards and Technology,** 2009  
Recognition award for contributions to NOAA bottlenose dolphin health assessments  
**Southeast and Mid-Atlantic Marine Mammal Symposium,** 2008  
Award for Best Doctoral Student Platform Presentation  
**National Institute of Standards and Technology,** 2005  
Recognition award for contributions to collection of samples for National Marine Mammal Specimen Bank at a mass stranding of rough tooth dolphins  
**Southeast and Mid-Atlantic Marine Mammal Symposium,** 2005  
Award for Best Doctoral Student Poster Presentation

## SERVICE

### Academic

**Core Planning Committee Member,** Citadel Center for Climate Studies, 2018-2020  
**Chair,** Biology Department Equipment Committee, The Citadel, 2017-2020  
**Course Coordinator,** Biology 101, The Citadel, 2017

### Professional

**Council member**, Association of Polar Early Career Scientists, 2014 - 2015

**Invited Instructor**, Marine Animal Health & Stranding Network Conference, 2010

**Conference session organizer and co-chair**, 2010

“Contaminant mixtures as Ecological Signatures for Wildlife Populations.” Society for Environmental Toxicology and Chemistry (SETAC) North America Annual meeting

### Editorial

**Grant Proposal Reviewer**, Northern Contaminants Programme, 2018

**Grant Proposal Reviewer**, NOAA Species Recovery Grants to States Grant, 2012

**Journal Peer Reviewer**, 2010-Present: Science of the Total Environment, Marine Pollution Bulletin, Marine Environmental Research, Conservation Physiology, Archives of Environmental Contamination and Toxicology, Environmental Science and Technology

### Community Service, Professional

**Judge**, Haut Gap Science Fair, 2019

**Speaker**, MUSC PhD Pathways Seminar, 2018

**Judge**, Sarasota County Science Fair, 2013

**Speaker**, STEM Science Camp for Girls, 2013

### Community Service, Personal

**Volunteer**, Doors to Freedom, Summerville, Charleston, SC, 2017

**Volunteer**, The Nature Conservancy of South Carolina, Charleston, SC, 2014 - 2015

**Volunteer**, Center for Birds of Prey Rehabilitation Clinic, Charleston, SC, 2007 - 2008

**Volunteer**, Marine Mammal Stranding Network, Charleston, SC, 2004 - 2010

**Volunteer**, Mystic Aquarium Pinniped Rehabilitation Clinic, Mystic, CT, 2001-2002

## PROFESSIONAL MEMBERSHIPS

IUCN World Commission on Protected Areas (WCPA) Connectivity Conservation Specialist Group

International League of Conservation Writers

Society of Environmental Journalists

National Association of Science Writers

Society for Environmental Toxicology and Chemistry (SETAC)

Society for Marine Mammalogy (SMM)

Association of Polar Early Career Scientists

Sigma Xi Scientific Research Society

Phi Beta Kappa Honor Society