

Michael J. Polito

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Louisiana State University
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Education

- Ph.D. in Marine Biology** 5/2012
University of North Carolina Wilmington (UNCW)
Dissertation: “Examining Niche Partitioning and Dietary Change in Pygoscelis Penguins Using Stable Isotope Analysis”
- B.S. in Marine Biology** 12/2001
University of North Carolina Wilmington (UNCW)
Honors Thesis: “A 1,000-year Record of Adélie Penguin Diets in the Ross Sea, Antarctica”

Professional Appointments

- Assistant Professor** 2014-Present
Louisiana State University (LSU), Baton Rouge, LA
- Guest Scientist** 2014-Present
Woods Hole Oceanographic Institution (WHOI), Woods Hole, MA
- Adjunct Research Faculty** 2012-Present
UNCW, Dept. of Biology and Marine Biology, Wilmington, NC
- Devonshire Postdoctoral Scholar** 9/2012-7/2014
WHOI, Woods Hole, MA
- Biologist / Field Team Leader / Database Manager** 2003-2006
NOAA, Southwest Fisheries Science Center, La Jolla, CA
- Biological Technician / Field Team Leader** 2003
USFWS, Alaska Maritime National Wildlife Refuge, Homer, AK

Grants & Awards

- Louisiana Sea Grant, 2016-18 Omnibus, 2016** (\$157,028)
Expansion of Black Mangroves on Trophic Dynamics in Coastal Louisiana: Implications of Climate Change and Coastal Restoration to Estuarine Fisheries(*PI*)
- National Science Foundation, Division of Polar Programs, 2015** (\$452,468)
Collaborative Research: Investigating Holocene Shifts in the Diets and Paleohistory of Antarctic Krill Predators (*PI*)
- National Science Foundation, Coupled Natural and Human Systems, 2015** (\$249,974)
Poverty Traps and Mangrove Ecosystem Services in Coastal Tanzania (*Co-PI*)

GoMRI-IV, Coastal Water Consortium, 2015	(\$6,207,457)
The Effects of the Macondo oil spill on coastal ecosystems (<i>Co-PI</i>)	
Dalio Explore Fund, WHOI, 2014	(\$419,804)
“The Danger Islands Expedition: A Multi-scale Study of Remote Penguin Supercolonies	
Ocean Life Institute, WHOI, 2013	(\$71,128)
“Integrating Measures of Animal Movements to Estimate the Winter Distribution of Penguins”	
SeaWorld and Bush Gardens Conservation Fund, 2013	(\$18,000)
“Where Do Penguins Go in the Winter? Linking GLS Tracking and Stable Isotope Studies”	
Antarctic Science Bursary, 2013	(£4,600)
“Has Historic Harvesting and Climatic Warming Altered the Trophic Ecology of Penguins?”	
Devonshire Postdoctoral Scholar Award, 2012	(\$90,750)
Woods Hole Oceanographic Institution	
American Ornithologists’ Union Research Grant, 2011	(\$2,493)
“Oxidative Stress and Life History Trade-Offs in Penguins”	
Sigma Xi Grants-in-Aid of Research, 2011	(\$400)
“Oxidative Stress and Sexual Signaling in Gentoo Penguins”	
National Science Foundation, Office of Polar Programs, 2008	(\$503,195)
“Stable Isotope Analyses of Pygoscelid Penguin Remains from Active and Abandoned Colonies in Antarctica” (<i>Co-PI</i>)	
Dr. Ralph W. Brauer Fellowship, UNCW, 2006 and 2007	(\$2,000)
“Stable Isotope Based Diet Studies of Captive and Wild Penguins and their Prey”	

Peer Reviewed Publications (*Student led)

- 1) Levy, H., Clucas G.V., Rodgers A.D, Leache, A.D., Ciborowski K.L., Polito M.J., Lynch H.J., Dunn, M.J., and Hart, T. In Press. Population structure and phylogeography of the Gentoo Penguin (*Pygoscelis papua*) across the Scotia Arc. *Ecology and Evolution*
- 2) **Polito M.J.**, Trivelpiece W.Z., Patterson W.P., Karnovsky N.J., Reiss C.S., and Emslie S.D. 2015. Contrasting specialist and generalist patterns facilitate foraging niche partitioning in sympatric populations of Pygoscelis penguins. *Marine Ecology Progress Series* 519:221-237
- 3) McMahon K.W. [#], **Polito M.J.**[#], Abel S., McCarthy M.D., and Thorrold S.D. 2015. Carbon and nitrogen isotope fractionation of amino acids in an avian marine predator, the Gentoo penguin (*Pygoscelis papua*). *Ecology and Evolution* 5.6:1278-1290 [#]Joint first authors
- 4) Beaulieu M., Thierry A.M., González-Acuña D., and **Polito, M.J.** 2015. Relationships between isotopic values and oxidative status: insights from populations of Gentoo penguins. *Oecologia* 177(4):1211-1220.
- 5) Brasso R.L, Chiaradia A., **Polito, M.J**, Raya Rey, A., and Emslie, S.D. 2015. A comprehensive assessment of mercury exposure in penguin populations throughout the

Southern Hemisphere: Using trophic calculations to identify sources of population-level variation. *Maine Pollution Bulletin* 97 (1), 408-418

- 6) Freer, J.J., Mable, B.K., Clucas G.V., Rodgers A.D., **Polito M.J.**, Dunn, M.J., Naveen, R., Levy, H., and Hart, T. 2015. Limited genetic differentiation among chinstrap penguin (*Pygoscelis antarctica*) colonies in the Scotia Arc and Western Antarctic Peninsula. *Polar Biology* 38(9):1493-1502
- 7) Hinke J.T, **Polito, M.J.**, Goebel, M.E., Jarvis, S, Reiss, C.S., Thorrold, S.R., Trivelpiece, W.Z., and Watters, G.M. 2015. Spatial and isotopic niche partitioning during winter in chinstrap and Adélie penguins from the South Shetland Islands. *Ecosphere* 6(7):125
- 8) **Polito M.J.** 2015. Penguins: Natural History and Conservation. Edited by Pablo Garcia Borboroglu and P. Dee Boersma. *The Quarterly Review of Biology* Vol. 90(1):105-106
- 9) Emslie S.D., **Polito M.J.**, Brasso R.L., Patterson W.P., and Sun L. 2014. Ornithogenic soils and the paleoecology of pygoscelid penguins in Antarctica. *Quaternary International* 352(26):4-15
- 10) Brasso R.L., **Polito, M.J.** and Emslie S.D. 2014. Multi-tissue analyses reveal limited inter-annual and seasonal variation in mercury exposure in an Antarctic penguin community. *Ecotoxicology*, 1-11.
- 11) Brasso R.L., Lang J., Jones C.D., and **Polito M.J.** 2014. Ontogenetic niche expansion influences mercury exposure in the Antarctic silverfish. *Marine Ecology Progress Series* 504: 253–263.
- 12) McLean B.S., Ward J.K., **Polito M.J.**, and Emslie S.D. 2014. Responses of high-elevation herbaceous plant assemblages to low glacial CO₂ concentrations revealed by fossil marmot (*Marmota*) teeth. *Oecologia* 175(4):1117-1127.
- 13) Clucas G.V., Dunn M J., Dyke G., Emslie S.D., Levy H., Naveen R., Polito M.J., Pybus A.D., Rodgers A.D., and Hart, T. 2014. A reversal of fortunes: climate change ‘winners’ and ‘losers’ in Antarctic Peninsula penguins. *Scientific reports* 4
- 14) **Polito M.J.**, Reise C.S., Trivelpiece W.Z., Patterson W.P., and Emslie S.D. 2013. Stable isotopes identify an ontogenetic niche expansion in Antarctic krill (*Euphausia superba*) from the South Shetland Islands, Antarctica. *Marine Biology* 160(6):1311–1323
- 15) Beaulieu M., Thierry A.M., González-Acuña D., and **Polito, M. J.** 2013. Integrating oxidative ecology into conservation physiology. *Conservation Physiology* 1(1)
- 16) Brasso R.L., and **Polito M.J.** 2013. Trophic calculations reveal the mechanism of population-level variation in mercury concentrations between marine ecosystems: Case studies of two polar seabirds. *Marine Pollution Bulletin* 75(1–2):244–249
- 17) Brasso R.L., *Drummond B.E., Borrett S.R., Chiaradia A., **Polito M.J.**, and Raya Rey A. 2013. Unique pattern of molt leads to low intra-individual variation in feather mercury concentrations in penguin. *Environmental Toxicology and Chemistry* 32 (10):2331–2334
- 18) Emslie S.E., **Polito M.J.**, and Patterson W.P. 2013. Stable isotope analysis of ancient and modern gentoo penguin egg membrane supports the krill surplus hypothesis in Antarctica. *Antarctic Science* 25(2): 213-218
- 19) **Polito M.J.**, Koopman H.N., Able S., Walsh J., Goebel M.E. 2012. Physiological constraints and the influence of diet on fatty acids in the yolk of gentoo penguins, *Pygoscelis papua*. *Journal of Comparative Physiology B* 182:703-713

- 20) Hinke J.T., **Polito M.J.**, Reiss C.S., Trivelpiece S.G., and Trivelpiece W.Z. 2012. Flexible reproductive timing can buffer reproductive success of *Pygoscelis* penguins in the Antarctic Peninsula region. *Marine Ecology Progress Series* 454:91-104
- 21) Brasso R.L., **Polito M.J.**, Lynch H.J., Naveen R., and Emslie S.E. 2012. Penguin eggshells reflect homogeneity of mercury in the marine food web surrounding the Antarctic Peninsula. *Science of the Total Environment* 439:165-171
- 22) Naveen R., Lynch H.J., Forrest S., Mueller T., and **Polito M.J.** 2012. First, complete site-wide penguin survey at Deception Island, Antarctica reveals massive declines consistent with climate change. *Polar Biology* 35:1879-1888
- 23) Raya Rey A., **Polito M.J.**, Archuby D., and Coria N. 2012 Stable isotopes identify age and sex-specific dietary partitioning and foraging habitat segregation in Southern Giant Petrels breeding in Antarctica and southern Patagonia. *Marine Biology* 159:1317-1326
- 24) *Vasil C.A., **Polito M.J.**, Patterson W.P., and Emslie S.E. 2012. Wanted: dead or alive? Isotopic analysis ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) of *Pygoscelis* penguin chick tissues support opportunistic sampling. *Rapid Communications in Mass Spectrometry* 26:487-493
- 25) **Polito M.J.**, Trivelpiece W.Z., Karnovsky N.J., Ng E., Patterson W.P., and Emslie S.D. 2011. Integrating stomach content and stable isotope analyses to quantify the diets of pygoscelid penguins. *PLoS ONE*, 6(10):e26642
- 26) **Polito M.J.**, Lynch H.J., Naveen R., and Emslie S.D. 2011. Stable isotopes reveal regional heterogeneity in the pre-breeding distribution and diets of sympatrically breeding *Pygoscelis* penguins. *Marine Ecology Progress Series* 421:265-277
- 27) **Polito M.J.**, Abel S., Tobias C.R., and Emslie S.D. 2011. Dietary isotopic discrimination in gentoo penguin (*Pygoscelis papua*) feathers. *Polar Biology* 34:1057-1063
- 28) Brasso R.L., Abel S., and **Polito M.J.** 2011. Mercury allocation into egg tissues is independent of dietary exposure in gentoo penguins. *Archives of Environmental Contamination and Toxicology*, 62(3):494-501
- 29) Sander M., Garcia S.A., Carneiro A.P.B., Cristofoli S.I., and **Polito M.J.** 2011. Band recoveries and juvenile dispersal of Southern Giant-Petrels, *Macronectes giganteus* (Gmelin, 1789), marked as chicks in Antarctica by the Brazilian Antarctic program (1984/1993). *Marine Ornithology* 38:125-127
- 30) **Polito M.J.**, and Goebel M.E. 2010. Investigating the use of stable isotope analysis of milk to infer seasonal trends in the diets and foraging habitats of female Antarctic fur seals. *Journal of Experimental Marine Biology and Ecology* 395(1-2):1-9
- 31) **Polito M.J.**, Miller A.K., Trivelpiece S.G., and Trivelpiece W.Z. 2010. Maturation increases early reproductive investment in Adélie Penguins *Pygoscelis adeliae*. *Ibis* 152:38-47
- 32) Carneiro A.P.B., **Polito M.J.**, Sander M., and Trivelpiece W.Z. 2010. Abundance and Spatial Distribution of Sympatrically Breeding *Catharacta* Spp. (skuas) in Admiralty Bay, King George Island, Antarctica. *Polar Biology* 33(5):673-682
- 33) **Polito M.J.**, Fisher S., Tobias C.R., and Emslie S.D. 2009. Tissue-specific isotopic discrimination factors in gentoo penguin (*Pygoscelis papua*) egg components: Implications for dietary reconstructions using stable isotopes. *Journal of Experimental Marine Biology and Ecology* 372:106-112

- 34) *Strickland M.E., **Polito M.J.**, and Emslie S.D. 2008. Spatial and seasonal variation in Adélie penguin diets as inferred from stable isotope analysis of eggshell. *Journal of the North Carolina Academy of Science*, 124(3):65-71
- 35) **Polito M.J.**, and Trivelpiece W.Z. 2008. Transition to independence and evidence of extended parental care in the gentoo penguin (*Pygoscelis papua*). *Marine Biology*, 154(2): 231-240
- 36) Sander M., Balbão T.C., **Polito M.J.**, Costa E.S., and Carneiro A.P.B. 2007. Recent decrease in chinstrap penguin (*Pygoscelis antarctica*) populations at two of Admiralty Bay's Islets on King George Island, South Shetland Islands, Antarctica. *Polar Biology* 30(5):659-661
- 37) Emslie, S.D., Berkman P.A., Ainley D. G., Coats, L., and **Polito M.** 2003. Late-Holocene initiation of ice-free ecosystems in the Southern Ross Sea, Antarctica. *Marine Ecology Progress Series* 262:19-25
- 38) **Polito M.**, Emslie S.D., and Walker W. 2002. A 1,000-year record of Adélie penguin diets in the Southern Ross Sea, Antarctica. *Antarctic Science*, 14 (4):327–332

Technical Reports

- 1) **Polito M.J.**, and Drew, E.K. 2003. Results of Seabird Monitoring at St. Paul Island, Alaska in 2003: Summary Appendices. U.S. Fish and Wildl. Serv. Rep., AMNWR 03/11

Teaching: Academic Courses

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|---|--------------|
| Assistant Professor – LSU, Dept. of Oceanography and Coastal Science | 2014-Present |
| <ul style="list-style-type: none"> • Introduction to Oceanography (OCS 1005) • Biology of Marine Vertebrates (OCS 4012) • Marine Isotope Geochemistry (OCS 7130) | |
| Guest Lecturer – LSU, Dept. of Oceanography and Coastal Science | 2014-Present |
| <ul style="list-style-type: none"> • Biological Oceanography (OCS 4550) | |
| Guest Lecturer – UNCW, Dept. of Biology and Marine Biology | 2010-2011 |
| <ul style="list-style-type: none"> • Ecology (BIO 366) & Honors Survey of Biological Research (BIO 499) | |
| Laboratory Instructor – UNCW, Dept. of Biology and Marine Biology | 2006-2008 |
| <ul style="list-style-type: none"> • Marine Biology (BIOL 362) & Principles of Biology (BIOL 201) | |

Teaching: Mentoring

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| Graduate Student Committees Chaired – LSU | 2014-Present |
| <ul style="list-style-type: none"> • Chantel Michelson - Ph.D. Oceanography & Coastal Sciences • Rachael Herman - M.S. Oceanography & Coastal Sciences • Jessica Johnson - M.S. Oceanography & Coastal Sciences | |
| Graduate Student Committee Member – LSU | 2014-Present |
| <ul style="list-style-type: none"> • Justin Hayles – Ph.D. Geology • Kristin Foss – M.S. Oceanography & Coastal Sciences | |
| Other Graduate Student Committee Membership | 2014-Present |
| <ul style="list-style-type: none"> • Dulcinea Groff (Ph.D. - University of Maine) | |

- Natalia Rosciano (Ph.D. - Centro Austral de Investigaciones Cientificas, Argentina)
- Fernanda Valls (Ph.D. - Universidade do Vale do Rio dos Sinos, Brazil)

Mentor for Undergraduate Research – LSU 2014-Present

- Brandeus Davis – B.S. Coastal Environmental Sciences

Mentor for Undergraduate Research – UNCW 2006-2012

Mentored five undergraduate students. Three students (*) published in peer-reviewed journals.

Invited Talks

2015. What can penguins tell us about human impacts in the Antarctica? LSU Museum of Natural Science Seminar Series. February 27, 2015

2014. What can penguins tell us about human impacts in the Antarctica? LSU School of Renewable Natural Resources Seminar Series. October 7, 2014

2014. Mini-Course: Mapping Polar Food Webs Using Stable Isotopes. III Simpósio da Association of Polar Early Career Scientists Brasil. Cabo Frio, Brazil. August 22, 2014

2014. What can penguins tell us about human impacts in the Antarctic marine food web? III Simpósio da Association of Polar Early Career Scientists Brasil. Cabo Frio, Brazil. August 26, 2014

Selected First Author Conference Presentations

Polito M.J., Houghton L, Hinke J, Thorrold S. 2016. Direct Tracking and Compound-Specific Stable Isotope Analysis Identifies Dispersal Routes and Cryptic Latitudinal Trends in the Winter Distribution of Two Antarctic Penguin Species. *2016 Ocean Sciences Meeting, New Orleans, LA, USA*

Polito M.J., Johnson J., Mauney M.T, Davis B., Baustian M., Olin J.A., Jensen O., Lopez-Duarte P., Able K., Fodrie J. 2016. Tracking Carbon Flow through Marsh Food Webs Using Compound Specific-Stable Isotope Analysis. *2016 Gulf of Mexico Oil Spill & Ecosystem Science Conference, Tampa, FL, USA*

Polito M.J., and Beaulieu M., 2013. Age and breeding related shifts in the oxidative status of the gentoo penguin. *8th International Penguin Conference, Bristol, UK*

Polito M.J. Trivelpiece W.Z., Patterson W.P., Reise C.S., and Emslie S.E. 2013. Sympatrically breeding *Pygoscelis* penguins balance niche plasticity and segregation under variable prey conditions. *8th International Penguin Conference, Bristol, UK*

Polito M.J. Brasso R.L., Trivelpiece W.Z., Patterson W.P., and Emslie S.E. 2012. Divergent foraging strategies influence mercury exposure in sympatrically breeding *Pygoscelis* penguins. *Scientific Committee on Antarctic Research (SCAR) Open Science Conference, Portland, OR, USA*

Polito M.J., Reise C.S., Trivelpiece W.Z., Patterson W.P., and Emslie S.D. 2012. Does Size Matter? Ontogenetic niche expansion Antarctic krill (*Euphausia superba*). *SCAR Open Science Conference, Portland, OR, USA*

Polito M.J., Koopman H.N., Able S., Walsh J., and Goebel M.E. 2010. The influence of diet on fatty acids in the yolk of gentoo penguins, *Pygoscelis papua*. *1st World Seabird Conference, Victoria, Canada and 7th International Penguin Conference, Boston, MA, USA*

Polito M.J., Lynch H.J., Naveen R., and Emslie S.D. 2010. Stable isotopes reveal regional heterogeneity in the pre-breeding distribution and diets of sympatrically breeding *Pygoscelis* penguins. *1st World Seabird Conference, Victoria, Canada / 7th International Penguin Conference, Boston, MA, USA*

Polito M.J., Trivelpiece S.G., Trivelpiece W.Z., and Emslie S.D. 2009. Inter-annual variation in the pre-breeding diets of the Adélie penguin (*Pygoscelis adeliae*) as estimated from stable isotope analysis of eggshell. *SCAR Biology Symposium, Sapporo, Japan*

Polito M.J., and Trivelpiece W.Z. 2008. Effects of female age, breeding experience and laying date on clutch and egg size in the Adélie penguin (*Pygoscelis adeliae*). *Duke University Marine Lab Graduate Student Research Symposium, Duke University Marine Lab, Beaufort, NC, USA*

Polito M.J., Strickland M.E., and Emslie, S.D. 2007. Temporal variation in resource utilization by *Pygoscelis* penguins as inferred from stable isotope analysis. *Waterbirds Society Meeting, Barcelona, Spain*

Polito M.J., Burgo Braga R., Dani N., and Trivelpiece W.Z. . 2005. Digital spatial data collection of penguin colonies on the western shore of Admiralty Bay (ASP 128), King George Island, Antarctic Peninsula. *SCAR Biology Symposium, Curitiba, Brazil*

Polito M., Emslie S.D., and Walker, W. 2002. A 1,000-year record of Adélie penguin diets in the Southern Ross Sea, Antarctica. *The Pacific Seabird Group Symposium, Parksville, Canada*

Polito M., Emslie S.D., and Walker, W. 2001. Diet of Adélie penguins at Ross Island, Antarctica. *SCAR Biology Symposium, Amsterdam, The Netherlands*

Professional Services

Proposal Reviewer. NSF Biological Oceanography, National Geographic Global Exploration Fund

Invited Reviewer: Canadian Journal of Zoology, Deep Sea Research II, Global Change Biology, Ibis, Journal of Comparative Physiology - B, Journal of Field Ornithology, Marine Biology, Marine Biology Research, Neotropical Biology & Conservation, Nature (reader panel), Oikos, Polar Biology, Proceeding of the Royal Society - B, PLoS One, Marine Ecology Progress Series, Rapid Communications in Mass Spectrometry

Active Member: American Geophysical Union, American Ornithologists' Union, Association of Polar Early Career Scientists

Committee & Representative Positions:

Postdoc Representative - Diversity Committee, Woods Hole Oceanographic Institution (2012-13)

Treasurer - Woods Hole Oceanographic Institution Postdoctoral Association (2012-13)

Session Chair - Scientific Committee on Antarctic Research Open Science Conference (2012)

President - UNCW Graduate Student Association (2010-11)

Representative - UNCW Biology & Marine Biology Graduate Advisory Committee (2008)