

# Andrew David Thaler

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## **Research Interests**

I am interested in how marine populations interact with each other at local and global scales. My focus is on connectivity among deep-sea ecosystems and understanding how patterns of population structure can influence recovery and recolonization following natural and anthropogenic disturbance.

## **Education**

Ph.D.–Marine Science and Conservation: Duke University, Nicholas School of the Environment 2007–2012  
B.Sc.–Biology: Duke University, Trinity School of Arts and Sciences 2003–2007

## **Research Experience**

Visiting Scientist–Virginia Institute of Marine Science (J McDowell): Conservation Genetics 2015–present  
Post-Doctoral Fellow–Duke University Marine Lab (CL Van Dover): High-throughput Genomics 2012–2013  
PhD Student–Duke University Marine Lab (CL Van Dover): Population Connectivity 2007–2012  
Research Assistant–Duke University (R Vilgalys): Fungi/Rhizome Interaction 2006  
Independent Study–Duke University Marine Lab (R Forward): Mole Crab Circa-tidal Rhythms 2005–2006  
Aquarist Assistant–National Aquarium in Baltimore (J Gomezjurado): Seahorse Breeding Program 2001–2004

## **Communications Experience**

Blackbeard Biologic: Science and Environmental Advisors: CEO 2014–present  
Upwell US: Staff Science Writer for the Upwell Tide Report 2014  
HappiLabs: Science and Social Media Consultant 2014

## **Publications: Lead Author**

- Thaler AD** and Shiffman D (2015) Fish tales: Combating fake science in popular media. *Ocean and Coastal Management*, doi:10.1016/j.ocecoaman.2015.04.005.
- Thaler AD**, Freitag A, Bergman E, Fretz D, Saleu W (2015) Robots as vectors for marine invasions: best practices for minimizing transmission of invasive species via observation-class ROVs. *Tropical Conservation Science*. 8(3): 711-717
- Thaler AD**, Plouviez S, Saleu W, Alei F, Jacobson A, Boyle EA, Schultz TF, Carlsson J, Van Dover CL (2014) Comparative population structure of two deep-sea hydrothermal-vent-associated decapods (*Chorocaris* sp. 2 and *Munidopsis lauensis*) from southwestern Pacific back-arc basins. *PLoS ONE*, 9: e101345.
- Thaler AD**, Zelnio K, Saleu W, Schultz TF, Carlsson J, Cunningham C, Vrijenhoek R, Van Dover CL (2011) The effects of spatial scale on the population dynamics of *Ifremeria nautilei*, a hydrothermal vent endemic gastropod from the southwest Pacific. *BMC Evolutionary Biology*, 11(1): 372. **BMC Highly Accessed Paper**
- Thaler AD**, Vilgalys R, Van Dover CL (2011) Ascomycete phylotypes recovered from a Gulf of Mexico methane seep are identical to an uncultured deep-sea fungal clade from the Pacific. *Fungal Ecology*. doi:10.1016/j.funeco.2011.07.002.
- Thaler AD**, Zelnio KA, Jones R, Carlsson J, Van Dover CL, Schultz T (2010) Characterization of 12 polymorphic microsatellite loci in *Ifremeria nautilei*, a chemoautotrophic gastropod from deep-sea hydrothermal vents. *Conservation Genetics Resources*. doi:10.1007/s12686-010-9174-9.

## **Publications: Co-authored** (\* indicates lead author is an undergraduate advisee)

- McClain C, Balk MA, Benfield MC, Branch TA, Chen C, Cosgrove J, Dove ADM, Helm RR, Hochberg FGE, Gaskins LC, Lee FB, Marshall A, McMurray SE, Schanche C, Stone SN, **Thaler AD** (2015) Sizing Ocean Giants: Patterns of Intraspecific Size Variation in Marine Megafauna. *PeerJ*, 2: e715.
- Shiffman DS, Gallagher AJ, Wester J, Macdonald C, **Thaler AD**, Cooke SJ, Hammerschlag N (2015) A letter of clarification from the authors of “trophy fishing for species threatened with extinction”. *Marine Policy*. 53: 213-214.
- Shiffman DS, Gallagher AJ, Wester J, Macdonald C, **Thaler AD**, Cooke SJ, Hammerschlag N (2014) Trophy fishing for species threatened with extinction: a way forward building on a history of conservation. *Marine Policy*. 50: 318-322.
- \*Boyle EA, **Thaler AD**, Jacobson A, Plouviez P, Van Dover CL (2013) Characterization of 10 polymorphic microsatellite loci in *Munidopsis lauensis*, a squat-lobster from the southwestern Pacific. *Conservation Genetics Resources*, 5: 647-649.
- \*Jacobson A, Plouviez S, **Thaler AD**, Van Dover CL (2013) Characterization of 9 polymorphic microsatellite loci in *Lamellibrachia* sp. 2, a tubeworm found at deep-sea hydrothermal vents and cold seeps. *Conservation Genetics Resources*, 5: 1005-1007.
- Collins PC, Copley J, Boschen R, Forde J, Se-Jong J, Kennedy B, Lindsay D, Marsh L, Nye V, Patterson A, Watanabe H, Yamamoto H, Carlsson J, **Thaler AD** (2013) VentBase: Developing a consensus among stakeholders in the deep-sea regarding environmental impact assessment for deep-sea mining—A workshop report. *Marine Policy*, 42: 334-336.
- \*Jacobson A, Plouviez S, **Thaler AD**, Van Dover CL (2012) Characterization of 13 polymorphic microsatellite loci in *Rimicaris hybisae*, a shrimp from deep-sea hydrothermal vents. *Conservation Genetics Resources*. DOI 10.1007/s12686-012-9825-0.
- Schultz TF, Hsing P-Y, Eng A, Zelnio KA, **Thaler AD**, Carlsson J, Van Dover CL (2010) Characterization of 18 polymorphic microsatellite loci from *Bathymodiolus manusensis* (Bivalvia, Mytilidae) from deep-sea hydrothermal vents. *Conservation Genetics Resources*. doi: 10.1007/s12686-010-9272-8
- Zelnio KA, **Thaler AD**, Jones RE, Saleu W, Schultz TF, Van Dover CL, Carlsson J (2010) Characterization of nine polymorphic microsatellite loci in *Chorocaris* sp. (Crustacea: Caridea: Alvinocarididae) from deep-sea hydrothermal vents. *Conservation Genetics Resources*. doi:10.1007/s12686-010-9243-0.
- Forward RB, **Thaler AD**, Singer R (2007) Entrainment of the activity rhythm of the mole crab *Emerita talpoida*. *Journal of Experimental Marine Biology and Ecology*, 341(1): 10–15.

### **Other publications**

- Thaler AD** (2015) Marine Mining. In Wohl E (Ed.), Environmental Science. Oxford Bibliographies. DOI: 10.1093/OBO/9780199363445-0047.
- Thaler AD** (2014) Book Review: Prager, Ellen. Sex, Drugs, and Sea Slime: The Ocean’s Oddest Creatures and Why They Matter. *Biological Conservation*. 169: 344.
- Thaler AD**, Zelnio KA, Freitag A, MacPherson R, Shiffman D, Bik H, Goldstein M, McClain C (2012) Digital Environmentalism: Tools and strategies for the evolving online ecosystem. In D. Gallagher (Ed.), *Environmental Leadership: A Reference Handbook*. SAGE Reference.
- Thaler AD** (2011) Legacy of Rebirth: Lessons from Monterey Bay. *Trends in Ecology and Evolution*. DOI: 10.1016/j.tree.2011.02.002
- Van Dover CL, Arnaud-Haond S, Clark MR, Smith S, **Thaler AD**, Van den Hove S (in the perpetual void of book chapters that have been reviewed and accepted but the volume has been delayed for 4 years) Application of Biological Studies to Deep-Sea Governance and Management of Deep-Sea Resources.

### **Popular science and other writings** (\*indicates science fiction published in SFWA-approved marketplaces)

Southern Fried Science, Editor-in-Chief: 1000+ articles written by **AD Thaler**, 1800+ articles total. 6 million unique page views over 7 years.

- Thaler AD** (2015) How Man and Machine Unlocked the Ocean’s Depths. *Motherboard*.  
<http://motherboard.vice.com/read/how-man-and-machine-unlocked-the-oceans-depths>

- Thaler AD** (2015) How a Small Island Nation Is Saving the Humble Sea Dick. *Motherboard*.  
<http://motherboard.vice.com/read/how-a-small-island-nation-is-saving-the-humble-sea-dick>
- Thaler AD** (2015) My Two Years as a 'Rogue Scientist' *Chronicle Vitae*. <https://chroniclevitae.com/news/1072-my-two-years-as-a-rogue-scientist>
- Thaler AD** (2015) Can your science be open if your methods are WHACC? *Open Explorer Journal*.  
<https://medium.com/@sfriedscientist/can-your-science-be-open-if-your-methods-are-whacc-558b4b1aba47>
- Thaler AD** (2015) Negotiating Your Way to a Fair Adjuncting Experience. *Chronicle Vitae*.  
<https://chroniclevitae.com/news/997-negotiating-your-way-to-a-fair-adjuncting-experience#sthash.4HMaIWhC.dpuf>
- Thaler AD** (2015) Baltimore's Garbage Wheel, *Hakai Magazine*, May 6, 2015, <http://bit.ly/1Jr2VH1>.
- Thaler AD** (2015) The Rogue Scientist's Guide to Surviving the Postdocalypse. *Chronicle Vitae*.  
<https://chroniclevitae.com/news/958-the-rogue-scientist-s-guide-to-surviving-the-postdocalypse#sthash.pR58RGGR.dpuf>
- \*Thaler AD** (2015) Rockall. *Motherboard*. <http://motherboard.vice.com/read/rockall>
- Thaler AD** (2014) Goat Trippin'. *Modern Farmer*. <http://modernfarmer.com/2014/12/goat-trippin/>
- Thaler AD** (2014) Drones Would Revolutionize Oceanic Conservation, If They Weren't Illegal. *Motherboard*.  
<http://motherboard.vice.com/read/drones-would-revolutionize-whale-watching-if-they-werent-illegal>
- Thaler AD** (2014) The History of Exploding Whales Is the History of the Internet Itself. *Motherboard*.  
<http://motherboard.vice.com/read/the-history-of-exploding-whales-is-the-history-of-the-internet-itself>
- Thaler AD** (2014) Drones, Robotic Rovers and Citizen Scientists Join Forces to Sample a Lake's Biodiversity. *Scientific American*. <http://www.scientificamerican.com/article/drones-robotic-rovers-and-citizen-scientists-join-forces-to-sample-a-lakee28099s-biodiversity/>
- Thaler AD** (2013) Why I Drowned L.A. and the World. *Zocalo Public Square*.  
<http://www.zocalopublicsquare.org/2013/11/01/why-i-drowned-l-a-and-the-world/ideas/nexus/>
- \*Thaler AD** (2013) The Lucky Ones. *Nature*. 495: 276.
- Thaler AD** (2013) Climate Change Is Poised to Cause Chaos in the North Atlantic Herring Fishery. *Huffington Post*.  
[http://www.huffingtonpost.com/andrew-david-thaler/herring\\_b\\_3655024.html](http://www.huffingtonpost.com/andrew-david-thaler/herring_b_3655024.html).
- Thaler AD** (2012) The horrifying physiological and psychological consequences of being Aquaman. *io9*.  
<http://io9.com/5927577/what-it-would-really-be-like-to-be-aquaman>.

### **Invited talks and Seminars**

- Marine science and conservation via low-cost robotics (August 2015)—**AD Thaler**. National Aquarium in Baltimore.
- Marine Ecology via Remote Observation in Papua New Guinea (March 2015)—**AD Thaler**. University of Miami.
- No Mermaids Don't Exist (August 2014) **AD Thaler** and DS Shiffman. International Marine Conservation Congress.
- Blogging Your Scientific Research (July 2014)—**AD Thaler**. Metcalf Institute for Marine and Environmental Reporting.
- Building a low-cost, open-source CTD for science and research (April 2014)—**AD Thaler**. Monterey Bay Aquarium Research Institute.
- DrownYourTown: Lessons in Climate Change Outreach through Real-time Sea Level Rise Modelling (March 2014) **AD Thaler**. Geology-Ecology-Environmental Science Colloquium. California State University, Sacramento.
- Diversity and Connectivity in Deep-sea Hydrothermal Vent Communities from the Caribbean and Western Pacific (September 2013) **AD Thaler**. Mount Desert Island Biological Laboratory.
- The Role of Social Media in Ocean Science and Conservation (February 2012)—**AD Thaler**, M Goldstein, H Bik. Ocean Science Meeting 2012

The First Line of Response—The BP Oil Spill: science, outrage, spin, and dead pelicans (January 2011)—M Goldstein, K Zelnio, H Bik, C McClain and **AD Thaler** at Science Online 2011  
Engaging undergraduates in science communication (January 2011)—**AD Thaler**, J Goldman and D Shiffman at Science Online 2011  
Biology and Diversity at Deep-sea Hydrothermal Vents (June 2008)—**AD Thaler**, TF Schultz, R Jones. University of Papua New Guinea.

### **Research Cruises**

<i>RV Blue Heron</i> (4 days)—UNOLS Chief Scientist Training Cruise, Lake Superior	August 2015
<i>RRS James Cook/ROV Isis</i> (9 days)—sediment coring near Montserrat	March 2013
<i>RRS James Cook/ROV Isis</i> (21 days)—population sampling at Cayman Rise hydrothermal vents	February 2013
<i>R/V Cape Hatteras</i> (1 day)—sediment sampling off Cape Hatteras	March 2011
<i>R/V Point Lobos/ROV Ventana</i> (1 day)—whale bone survey in Monterey Bay	October 2009
<i>M/V NorSky/ROV ST212</i> (30 days)—population sampling at Manus Basin hydrothermal vents	July 2008
<i>SSV Corwith Cramer</i> (6 days)—educational cruise for Invertebrate Zoology	January 2008
<i>R/V Cape Hatteras</i> (23 days)—pelagic and benthic Gulf of Mexico methane seep sampling	August 2007
<i>R/V Nancy Foster</i> (8 days)—SONAR mapping of Atlantic deep-sea coral sites	October 2006

### **Conference presentations**

National Ocean Exploration Forum (November 2015)—TALK Social Media and the Sea. **AD Thaler**.  
International Marine Conservation Congress (August 2014)—TALK Toward deep-sea conservation: Defining natural population structure in hydrothermal-vent-associated species. **AD Thaler**, S Plouviez, TF Schultz, J Carlsson, CL Van Dover.  
Maker Faire (May 2014)—TALK Nerding for Nature: Bringing together technologists and environmental professionals, students and citizen scientists to help understand, protect, and revive the natural world. McGary K, Headrick S, **Thaler AD**.  
American Geophysical Union (December 2013)—POSTER Developing a low-cost open-source CTD for research and outreach. **AD Thaler** and K. Sturdivant.  
Science Online Oceans (October 2013)—SESSION Hacking the Ocean, developing novel tools for marine science and outreach. **AD Thaler**.  
13<sup>th</sup> International Deep-Sea Biology Symposium (December 2012)—SESSION High-throughput sequencing approaches in the Deep-Sea. S Plouviez and **AD Thaler**; POSTER Comparative population genetics of two hydrothermal-vent-endemic species, *Chorocaris* spp. and *Olgasolaris tollmanni* from southwest Pacific back-arc basins. **AD Thaler**, S Plouviez, KA Zelnio, A Jacobson, D Jollivet, J Carlsson, T Schultz, CL Van Dover  
VentBase (April 2012)—TALK Beyond blogging—using new media tools to reach stakeholders. **AD Thaler**  
Ocean Sciences Meeting (February 2012)—POSTER An assessment of microsatellite markers for conservation and management. **AD Thaler** and KA Zelnio  
Duke University Marine Lab Graduate Student Mini-Symposium (September 2011)—TALK A pragmatic assessment of microsatellite markers for conservation and management. **AD Thaler**  
Benthic Ecology (March 2011)—TALK Gene flow among populations of hydrothermal vent-endemic species from Manus Basin. **AD Thaler**, KA Zelnio, TF Schultz, C Cunningham, CL Van Dover  
Benthic Ecology (March 2010)—TALK Gene Flow and Population Structure of *Ifremeria nautilei*, a deep-sea hydrothermal-vent-endemic gastropod, from three Western Pacific Back-Arc Basins. **AD Thaler**, W Saleu, K Zelnio, R Jones, P Jo, PY Hsing, J Carlsson, T Schultz, R Vrijenhoek, CL Van Dover

International Meeting on Chemosynthetically-based Ecosystems (June 2009)—POSTER Genetic variation and population structure of *Ifremeria nautilei* from Manus Basin. **AD Thaler**, J Carlsson, PY Hsing, P Jo, R Jones, T Schultz, CL Van Dover

Duke University Marine Lab Graduate Student Mini-Symposium (November 2008)—TALK Dominant Fungi from Gulf of Mexico methane seep represent a previously undescribed clade. **AD Thaler**, T Schultz, CL Van Dover, R Vilgalys

Mid-Atlantic States Mycology Conference (April 2008)—POSTER Dominant Fungi from Gulf of Mexico methane seep represent a previously undescribed clade. **AD Thaler**, T Schultz, CL Van Dover, R Vilgalys

Ridge 2000: From mantle to microbe (March 2008)—POSTER Dominant Fungi from Gulf of Mexico methane seep represent a previously undescribed clade. **AD Thaler**, T Schultz, CL Van Dover, R Vilgalys

### **Workshops**

OpenROV Lake Tahoe Haxpedition (April 2015) Lake Tahoe, California, USA

Flight for Nature (April 2014) Mare Island, California, USA

Vulcan Ocean Startup Weekend (March 2014) Seattle, Washington, USA

DeSSC Early Career Scientist Training Workshop (December 2013) San Francisco, California, USA

Neptune Minerals Environmental Workshop (June 2012) San Diego, California, USA

Nautilus Minerals Environmental Impact Assessment planning meeting (February 2012) Salt Lake City, Utah, USA

ConGen—Population Genetics Data Analysis Course (August 2009) Flathead Lake Biological Station, Montana, USA

### **Key awards**

UNOLS Chief Scientist Training Cruise	\$1500	2015
#BayBots: Connecting technology and marine conservation through low-cost robotics	\$9996.00	2015
Capacity Building in Papua New Guinea: Marine Ecology and Biodiversity through Remote Observation	\$77,798.56 + logistics	2014
Oceanography for Everyone—The OpenCTD	\$5805	2013
InterRidge/ISA Fellowship: Capacity building: Training and professional development for a visiting scholar from Papua New Guinea	\$5000	2012
Halsted Fellowship	Full Stipend	2011–2012
Oak Foundation Independent Study Advisor Fellowship	Full Stipend	2010–2011

### **Other awards**

DeSSC Early Career Scientist travel award	\$112	2013
Consortium of Open Access Publishing Equity publication grant	\$1915	2011
NESCent Travel Award	\$200	2011
Oak Foundation support for ConGen Workshop	\$1,100	2009
Ridge2000 Student Travel Grant	\$1,000	2009
ChEss Student Travel Grant	\$1,000	2009
Oak Foundation—Fungal diversity in Gulf of Mexico methane seeps	\$1,997	2009
InterRidge Student Travel Grant	\$500	2007

### **Courses Taught or Scheduled**

Social Media for Environmental Communications (Duke)	Spring 2016
Social Media for Environmental Communications (Duke)	Spring 2015
Marine Ecology via Remote Observation (University of Papua New Guinea)	October 2014
Social Media for Environmental Communications (Duke)	Spring 2014

Social Media for Environmental Communications (Duke)	Spring 2013
Research Methods (Duke)	Summer 2011
Undergraduate Independent Study Adviser (Duke)	2010–2011

### **Students Advised**

Emily Boyle (Undergraduate)–Microsatellite marker development	2012–2013
Freddie Alei (Visiting scholar, Papua New Guinea)–Population structure of squat lobster	2012
Alixandra Jacobson (Undergraduate)–Population structure of limpets	2010–2012
William Saleu (Visiting scholar, Papua New Guinea)–Population and conservation genetics	2009–2010

### **Professional Service**

**Reviewer for:** Molecular Ecology, PLoS, BMC Evolutionary Theory, PeerJ, Journal of Fish Biology, NOAA, NSF

**Working Groups:** VentBase, InterRidge Liaison Panel for guidelines on exploration at hydrothermal vents, Indeep Connectivity Working Group, SCB Conservation Marketing

**Professional Societies:** Deep Sea Biology Society, Society for Conservation Biology

### **Outreach**

Science blog and associated media: Southern Fried Science, 7.5 million+ unique visitors; @SFriedScientist twitter feed, 10000+ followers, monthly reach of 500,000+

OpenCTD–Developing a low-cost, open-source CTD for science and education.

Nerds for Nature (2013-2014) organizing local BioBlitzes, Flight for Nature, Maker Faire events, Ecohacks, and other environmentally-themed education, outreach, and research initiatives for Bay Area Makers.

Taxonomy Specialist, BioTrails (September 2013) PI: Dr. Karen James. Mount Desert Island Biological Laboratory. Establishing practices for combining public participation in scientific research with DNA-based species identification.

#DrownYourTown (<http://drownyourtown.tumblr.com/>), Using Google Earth, Twitter, and Tumblr to discuss climate change and sea level rise