

# Jarrold J. Scott

I study [microbial diversity](#). My approach is holistic, spanning [marine](#) & [terrestrial](#) systems to understand how simple organisms coalesce into complex communities & how these communities affect host biology, biogeochemical cycles, & ecosystem-level processes. I also work to make [my research](#) more accessible & exciting, transparent & reproducible. I use & [teach](#) open-source tools to create [web products](#) that communicate science more effectively.



## CURRENT APPOINTMENT

2022 -



### Research Associate

Smithsonian Tropical Research Institute

📍 Panama



## EDUCATION

2011

2006



### PhD Microbiology

University of Wisconsin

📍 Madison, Wisconsin USA

2002

1998



### BSc Aquatic Biology, Minor in Archaeology

University of Texas

📍 Austin, Texas USA



## PRIOR RESEARCH POSITIONS

2017

2022



### STRI/Moore Foundation Postdoctoral Fellow

Smithsonian Tropical Research Institute

📍 Panama

• Microbial ecology of coral reefs & mangrove ecosystems across the Isthmus of Panama. The Eastern Pacific & Western Atlantic.

2016

2012



### Postdoctoral Research Associate

Bigelow Laboratory for Ocean Sciences

📍 East Boothbay, Maine USA

2011

2010



### Graduate Fellow

University of Wisconsin

📍 Madison, Wisconsin USA

2010

2009



### Predoctoral Fellow

Smithsonian Tropical Research Institute

📍 Gamboa, Panama

2005

2002



### Research Technician

University of Texas

📍 Austin, Texas USA



## MARINE FIELD EXPERIENCE

2020

2017

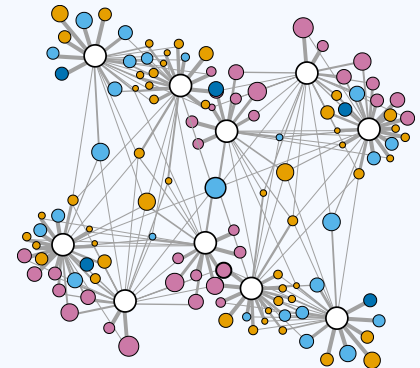


### Caribbean Field Work

Smithsonian Tropical Research Institute

📍 Bocas del Toro, Panama

Extensive field work around the Bocas del Toro archipelago.



📄 [Download a PDF of this CV](#)

🌐 [Web version of CV](#)

## CONTACT INFO

✉ [jarrod.jude.scott@gmail.com](mailto:jarrod.jude.scott@gmail.com)

🐙 [github.com/jarroldscott](https://github.com/jarroldscott)

🏷 [ORCID](#)

🌐 [web](#)

## SKILLS

Marine & terrestrial field work.

PADI Rescue Diver certification.

Bioinformatics (amplicon, genomic, & metagenomic). [anvi'o](#), [DADA2](#), [mothur](#), [oligotyping](#), [MED](#), [R](#), [Python](#).

Web Products [R Markdown](#), [CSS](#), [HTML](#), [HUGO](#), [blogdown](#), [xaringan](#), [reveal.js](#), [pagedown](#).

Fire Fighter I & II certification.

Knots

- 2020  
|  
2017
- **Expeditions to Isla Coiba**  
Smithsonian Tropical Research Institute  
5 expeditions over the past 3 years  
📍 Isla Coiba, Panama
  - **R/V Revelle & ROV Jason II (cruise RR1413)**  
[Submarine Ring of Fire - Ironman Cruise](#)  
November 23 – December 21  
📍 Mariana BackArc Basin
  - **R/V Atlantic Explorer (cruise AE1410)**  
[Chief Scientist Training Cruise](#)  
May 31 – June 10  
📍 Barbados to Bermuda
  - **R/V Thompson, ROV Jason II, & AUV Sentry (cruise TN293)**  
[FeMo Deep Iron Eaters](#)  
March 4 – April 1  
📍 Lo'ihl Seamount, Hawaii
  - **R/V Knorr & ROV Jason II (cruise KN209-02)**  
[Woods Hole Oceanographic Institution](#)  
October 16 – November 14  
📍 Mid-Atlantic Ridge
  - **R/V Longhorn**  
University of Texas  
📍 Gulf of Mexico



## TERRESTRIAL FIELD EXPERIENCE

- 2010  
|  
2008
- **Microbial Ecology of Fungus-Growing Ants**  
Smithsonian Tropical Research Institute  
• Four expeditions to Panama  
• 15-month residency at STRI  
• Field & lab experiments with fungus-growing ants  
📍 Panama
  - **Biogeography of Fungus-Growing Ants**  
University of Texas  
Multiple field expeditions to understand the biogeography of fungus-growing ants & their fungal symbionts.  
📍 Mexico & Panama
  - **Molecular Ecology of Cichlids in Northern Mexico**  
University of Texas  
Molecular analysis of cichlid fish endemic to aquifer fed pools of the Cuatro Ciénegas Basin.  
📍 Coahuila, Mexico
  - **Mayan Archaeological Surveys**  
University of Texas  
Extensive surveys & excavations of Mayan archaeological sites in lowland tropical rain forests.  
📍 Northwestern Belize

Use [this link](#) to learn more about Isla Coiba.

All research cruises from 2012 - 2014 were to study the microbial ecology of deep-sea hydrothermal systems, specifically iron-oxidizing communities.

I've also worked on a lobster boat in Maine & a seine boat in Alaska.

A lot of my field experience in terrestrial systems is on fungus-growing ants in the Neotropics.



## RECENT TEACHING EXPERIENCE

- 2022 ● **Data Specialist & Project Coordinator**  
STRI-McGill NEO Tropical Biology Field Course 📍 Panama  
  - Guide project design & implementation.
  - Assist students with field work.
  - Reproducible analytical workflows using R Markdown.
  - Natural history of neotropical marine & terrestrial ecosystems.

Field sites incl. [Barro Colorado Island](#), [Bocas del Toro](#), [Agua Salud](#), & [Isla Coiba](#).
- 2020 ● **Instructor & Course Creator**  
[Web Products & Data Curation](#) 📍 Panama  

Online course about creating web-based reproducible workflows using open source software tools and platforms. The course website can be found [here](#).
- 2020 ● **Course Instructor**  
STRI-McGill NEO Tropical Biology Field Course 📍 Panama  
  - Guide project design & implementation.
  - Assist students with field work.
  - Reproducible analytical workflows using R Markdown.
  - Natural history of neotropical marine & terrestrial ecosystems.

Field sites incl. [Barro Colorado Island](#), [Ft Sherman Canopy Crane](#), [Pipeline Road Forests](#), [Agua Salud](#) & [Isla Coiba](#).
- 2019 ● **Marine Biology Instructor**  
STRI-McGill Tropical Biology Field Course 📍 Isla Coiba, Panama  
  - Guide project design & implementation.
  - Snorkeling class for inexperienced students.
  - Assist students with field work.
- 2018 ● **Workshop Creator & Organizer**  
Marine Microbiome Workshop 📍 Bocas del Tora, Panama  

From model organisms to ecosystems: scaling-up our understanding of host-microbe symbiosis in the sea.

  - Conceived, created & designed workshop.
  - Handled workshop logistics & organization.
  - Led discussions & working groups.

[Click here](#) for the course tutorial site

[Click here](#) for the course website.

I teach the way I learn. My goal is to create a venue where students can be curious, get their hands dirty, make mistakes, & explore. I'm here to help students see what's possible, not tell them what to do.

[Click here](#) for the course blog & [here](#) for the course website.

[Click here](#) for the workshop website & [here](#) for the publication written by workshop participants.



## WEB PRODUCTS

- 2021 ● **SWELTR**  
Reproducible bioinformatic workflows for the study **Soil Warming Experiment** in **Lowland Tropical Rainforest**.  
📍 Barro Colorado Island, Panama
- 2021 ● **Hypocolypse**  
Reproducible bioinformatic workflows for the study *Rapid ecosystem-scale consequences of acute deoxygenation on a Caribbean reef*.  
📍 Bocas del Toro, Panama

Reproducible Workflows

Reproducible Workflows

- 2021 ● **Istmobiome Project**  
Reproducible bioinformatic workflows for the Istmobiome microbiome project.  
📍 Panama
- 2020 ● **BocasBiome**  
Reproducible bioinformatic workflows for the study *The gut microbiome stability of a butterflyfish is disrupted on severely degraded Caribbean reef habitats..*  
📍 Bocas del Toro, Panama
- 2020 ● **ProjectDIGEST**  
Reproducible bioinformatic workflows for the study *Intestinal microbes: an axis of functional diversity among large marine consumers.*  
📍 Pickles Reef, Florida USA
- 2020 ● **Cacao Fermentation**  
Talk about the microbiology of cacao fermentation. 📍 Bocas del Toro, Panama
- 2020 ● **Rethinking the Diversity of Life**  
Talk about understanding diversity through a molecular lens.  
📍 Bocas del Toro, Panama
- 2019 ● **How the Isthmus of Panama Changed the World**  
Talk about how life changed on land & in the sea after the closure of the Isthmus of Panama.  
📍 Bocas del Toro, Panama
- 2022 ● **R Markdown Fieldguide**  
Web project tutorial site for the 2022 STRI-McGill NEO Tropical Biology Field Course.  
📍 Panama
- 2020 ● **Web Products & Data Curation**  
Website for course on using open-source software tools to create web-based reproducible workflows.  
📍 Panama
- 2020 ● **Web Project Guide**  
Web project guide book for 2020 STRI-McGill NEO Tropical Biology Field Course.  
📍 Panama
- 2018 ● **Workshop Guide**  
Web site for the first STRI/Moore Foundation Marine Microbiome Workshop.  
📍 Bocas del Toro,

Public Presentations

Courses & Workshops

## + ADDITIONAL TRAINING & CERTIFICATIONS

- 2018 ● **PADI Rescue Diver Certification Course**  
Panama Dive School 📍 Bocas del Toro, Panama

- 2017 ● **PADI Advanced Open Water Diver Certification Course**  
Panama Dive School 📍 Bocas del Toro, Panama
- 2017 ● **PADI Open Water Diver Certification Course**  
Panama Dive School 📍 Bocas del Toro, Panama
- 2016 ● **PoreCamp**  
University of Exeter Sequencing Center 📍 Penryn, England  
1-week hands-on training bootcamp on deploying Oxford Nanopore's portable sequencing platform, the [MinION](#).
- 2015 ● **Complex Systems Summer School**  
Santa Fe Institute 📍 Santa Fe, New Mexico USA  
4-week intensive course on complex systems.
- 2014 ● **UNOLS Chief Scientist Training Cruise**  
The University-National Oceanographic Laboratory System 📍 Barbados to Bermuda.  
2-week course on how to effectively plan for, acquire, utilize, & report on time at sea for multi-disciplinary research & education.
- 2013 ● **Fire Fighter I & II. NFPA 1001-2006**  
Southern Maine Community College 📍 Portland, Maine USA  
Year-long training course for Fire Fighter I & II Certification.
- 2007 ● **Microbial Diversity Course**  
Marine Biological Labs 📍 Woods Hole, Massachusetts USA  
6-week intensive course. Cultivating, & isolating diverse microbes. Molecular & computational analyses.
- 2001 ● **Marine Botany & the Biology of Fish**  
University of Texas Marine Science Institute. 📍 Port Aransas, Texas USA
- 2000 ● **Archaeological Field Techniques**  
The Programme for Belize Archaeological Project 📍 Orange Walk District, Belize  
Intensive field course on Mayan art, architecture, & iconography.



## FELLOWSHIPS

- 2014 | 2012 ● **Smithsonian Institution Genomics Postdoctoral Fellowship**  
*declined* 📍 Panama
- 2011 | 2010 ● **Wisconsin Distinguished Graduate Fellowship**  
College of Agriculture & Life Science 📍 University of Wisconsin
- 2010 | 2009 ● **Smithsonian Institution Predoctoral Fellowship**  
Smithsonian Tropical Research Institute 📍 Panama

[Click here](#) to learn more.

[Click here](#) for the 2015 CSSS proceedings.

[Click here](#) for the final report from the 2014 UNOLS training cruise.

[Click here](#) to learn more.

Learn more on the [course website](#).



## PEER REVIEWED PUBLICATIONS

- 2022 ● **Microbial diversity declines in warmed tropical soil and respiration rise exceed predictions as communities adapt.**  
[Nature Microbiology 7, 1650–1660 \(2022\)](#)  
Nottingham AT, **Scott JJ**, Saltonstall K, Broders K, Montero-Sanchez M, Püspök J, Bååth E, Meir P.
- 2022 ● **The gut microbiome variability of a butterflyfish increases on severely degraded Caribbean reefs**  
[Communications Biology 5, 770 \(2022\)](#) @  
Clever F, Sourisse JM, Preziosi RF, Eisen JA, Rodriguez Guerra EC, **Scott JJ**, Wilkins LGE, Altieri AH, McMillan WO, Leray M.
- 2021 ● **Rapid ecosystem-scale consequences of acute deoxygenation on a Caribbean reef**  
[Nature Communications 12, 4522 \(2021\)](#) @  
Johnson MD, **Scott JJ**, Leray M, Lucey N, Lucia Rodriguez L, Wied W, Altieri AH.
- 2020 ● **Intestinal microbes: an axis of functional diversity among large marine consumers**  
[Proceedings of the Royal Society B: Biological Sciences 287:\(20192367\)](#) @  
**Scott JJ**, Adam TC, Duran A, Burkepile DE, Rasher DB.
- 2020 ● **A Genus definition for Bacteria and Archaea based on a standard genome relatedness index**  
[mBio 11\(2020\):e02475-19](#) @  
Barco RA, Garrity GM, **Scott JJ**, Amend JP, Nealson KH, Emerson D.
- 2018 ● **Biological rejuvenation of iron oxides in bioturbated marine sediments.**  
[The ISME Journal. 12\(2018\):1389-1394.](#) @  
Beam JP, **Scott JJ**, McAllister SM, Chan CS, McManus J, Meysman FJ, Emerson D.
- 2017 ● **Bringing microbial diversity into focus: high-resolution analysis of iron mats from the Lō'ihi Seamount.**  
[Environmental Microbiology. 19\(2017\):301-316.](#)  
**Scott JJ**, Glazer BT, Emerson D.
- 2017 ● **Physiological and ecological implications of an iron-or hydrogen-oxidizing member of the Zetaproteobacteria, *Ghiorsea bivora*, gen. nov., sp. nov.**  
[The ISME Journal. 11\(2017\):2624-2636.](#) @  
Mori JF, **Scott JJ**, Hager KW, Moyer CL, Küsel K, Emerson D.
- 2017 ● **Biogeography of mutualistic fungi cultivated by leafcutter ants.**  
[Molecular Ecology. 26\(2017\):6921-6937.](#)  
Mueller UG, Ishak HD, Bruschi SM, Smith CC, Herman JJ, Solomon SE, Mikheyev AS, Rabeling C, **Scott JJ**, Cooper M, Rodrigues A.

[Click here](#) for the project website & reproducible workflows from this paper.







[Click here](#) for the project website & reproducible workflows from this paper.

[Click here](#) for the project website & reproducible workflows from this paper. Johnson, **Scott**, Leray, & Lucey contributed equally to the work.

[Click here](#) for the project website & reproducible workflows from this paper.

Editor's Pick

- 2017 ● ***In situ* estimates of iron-oxidation and accretion rates for iron-oxidizing bacterial mats at Lō'ihi Seamount.**  
[Deep Sea Research Part I: Oceanographic Research Papers. 126\(2017\):31-39.](#)  
 Emerson D, Scott JJ, Leavitt A, Fleming E, Moyer C.
- 2016 ● **Exploring the “SHARKCANO”: biogeochemical observations of the Kavachi Submarine Volcano (Solomon Islands).**  
[Oceanography. 29\(2016\):160-169.](#) ⓘ  
 Phillips BT, Dunbabin M, Henning B, Howell C, DeCiccio A, Flinders A, Kelley KA, Scott JJ, Albert S, Carey S, Tsadok R.
- 2015 ● **Microbial iron mats at the Mid-Atlantic Ridge and evidence that Zetaproteobacteria may be restricted to iron-oxidizing marine systems.**  
[PLoS One. 10\(2015\):e0119284.](#) ⓘ  
 Scott JJ, Breier JA, Luther III GW, Emerson D.
- 2015 ● **Baleen whales host a unique gut microbiome with similarities to both carnivores and herbivores.**  
[Nature Communications. 6\(2015\):8285.](#) ⓘ  
 Sanders JG, Beichman AC, Roman J, Scott JJ, Emerson D, McCarthy JJ, Girguis PR.
- 2015 ● **Microbial iron oxidation in the arctic tundra and its implications for biogeochemical cycling.**  
[Applied & Environmental Microbiology. 81\(2015\):8066-8075.](#) ⓘ  
 Emerson D, Scott JJ, Benes J, Bowden WB.
- 2015 ● **Unique honey bee (*Apis mellifera*) hive component-based communities as detected by a hybrid of phospholipid fatty-acid and fatty-acid methyl ester analyses.**  
[PloS One. 10\(2015\):e0121697.](#) ⓘ  
 Grubbs KJ, Scott JJ, Budsberg KJ, Read H, Balser TC, Currie CR.
- 2014 ● **Convergent bacterial microbiotas in the fungal agricultural systems of insects.**  
[mBio. 5\(2014\):e02077-14.](#) ⓘ  
 Aylward FO, Suen G, Biedermann PH, Adams AS, Scott JJ, Malfatti SA, del Rio TG, Tringe SG, Poulsen M, Raffa KF, Klepzig KD.
- 2014 ● **Using *in situ* voltammetry as a tool to identify and characterize habitats of iron-oxidizing bacteria: from fresh water wetlands to hydrothermal vent sites.**  
[Environmental Science: Processes & Impacts 16\(2014\):2117-2126.](#)  
 MacDonald DJ, Findlay AJ, McAllister S, Barnett JM, Hredzak-Showalter P, Krepski ST, Cone SG, Scott JJ, Bennett SK, Chan CS, Emerson D, GW Luther III.

- 2013 ● ***Leucoagaricus gongylophorus* produces diverse enzymes for the degradation of recalcitrant plant polymers in leaf-cutter ant fungus gardens.**  
[Applied & Environmental Microbiology](#) 79(2013):3770-3778.   
 Aylward FO, Burnum-Johnson KE, Tringe SG, Teiling C, Tremmel DM, Moeller JA, **Scott JJ**, Barry KW, Piehowski PD, Nicora CD, Malfatti SA.
- 2013 ● **A phylogenetic analysis of the phylum Fibrobacteres.**  
[Systematic & Applied Microbiology](#). 36(2013):376-382.  
 Jewell KA, **Scott JJ**, Adams SM, Suen G.
- 2012 ● **Metagenomic and metaproteomic insights into bacterial communities in leaf-cutter ant fungus gardens.**  
[The ISME Journal](#). 6(2012):1688-701.   
 Aylward FO, Burnum KE, **Scott JJ**, Suen G, Tringe SG, Adams SM, Barry KW, Nicora CD, Piehowski PD, Purvine SO, Starrett GJ.
- 2011 ● **The genome sequence of the leaf-cutter ant *Atta cephalotes* reveals insights into its obligate symbiotic lifestyle.**  
[PLoS Genetics](#). 7(2011):e1002007.   
 Suen G, Teiling C, Li L, Holt C, Abouheif E, Bornberg-Bauer E, Bouard P, Caldera EJ, Cash E, Cavanaugh A, Denas O, Elhaik E, Fav MJ, Gadau J, Gibson JD, Graur D, Grubbs KJ, Hagen DE, Harkins TT, Helmkampf M, Hu H, Johnson BR, Kim J, Marsh SE, Moeller JA, Muoz-Torres MC, Murphy MC, Naughton MC, Nigam S, Overson R, Rajakumar R, Reese JT, **Scott JJ** Smith CR, Tao S, Tsutsui ND, Viljakainen L, Wissler L, Yandell MD, Zimmer F, Taylor J, Slater SC, Clifton SW, Warren WC, Elsik CG, Smith CD, Weinstock GM, Gerardo NM, Currie CR.
- 2010 ● **Microbial community structure of leaf-cutter ant fungus gardens and refuse dumps.**  
[PloS One](#) 5(2010):e9922.   
**Scott JJ**, Budsberg KJ, Suen G, Wixon DL, Balser TC, Currie CR.
- 2010 ● **An insect herbivore microbiome with high plant biomass-degrading capacity.**  
[PLoS Genetics](#). 6(2010): e1001129.   
 Suen G, **Scott JJ**, Aylward FO, Adams SM, Tringe SG, Pinto-Tomás AA, Foster CE, Pauly M, Weimer PJ, Barry KW, Goodwin LA.
- 2010 ● **Monoculture of leafcutter ant gardens.**  
[PLoS One](#). 5(2010):e12668.   
 Mueller UG, **Scott JJ**, Ishak HD, Cooper M, Rodrigues A.
- 2009 ● **Polymorphic microsatellite markers for the symbiotic fungi cultivated by leaf cutter ants (Attini, Formicidae).**  
[Molecular Ecology Resources](#). 9(2009):1391-1394.  
**Scott JJ**, Kweskin MK, Cooper M, Mueller UG.
- 2009 ● **Mycangimycin, a polyene peroxide from a mutualist *Streptomyces*.**  
[Organic Letters](#). 11(2009):633-636.   
 Oh DC, **Scott JJ**, Currie CR, Clardy J.



2009

- **Bionectriol A, a polyketide glycoside from the fungus Bionectria sp. associated with the fungus-growing ant, Apterostigma dentigerum.** [Tetrahedron Letters. 50\(2009\):6834-6837.](#)

Freinkman E, Oh DC, **Scott JJ**, Currie CR, Clardy J.

2008

- **Bacterial protection of beetle-fungus mutualism**  
**Scott JJ**, Oh DC, Yuceer MC, Klepzig KD, Clardy J, Currie CR.  
[Science. 2008 322\(5898\):63.](#)

See accompanying Perspective:  
Bugs Bugs. Berenbaum MR, Eisner  
T. 2008. [Science. 322:52-53.](#)

*The source code for this cv is  
available [here](#). I made it with the R  
package [pagedown](#) and help from  
the Internet, especially this [repo](#).*

*Last updated on 2022-11-01.*