

# DEEP-SEA BIOLOGY



DSBS  
2018

XV<sup>TH</sup> SYMPOSIUM • MONTEREY, CALIFORNIA

**The XVth triennial Deep-Sea Biology Symposium** was held at the Conference Center and Marriott hotel in Monterey, California, from the 9th to the 14th of September, 2018. There were 172 oral presentations (42 by students), 59 lightning talks, and 195 posters (44 by students) presented by participants from at least 34 countries. Many thanks to the session chairs, listed on subsequent pages, who reviewed and organized sessions.



#### **Symposium Organizers**

Steven Haddock  
George Matsumoto  
Mariah Salisbury

#### **Organizing Committee**

Susan von Thun  
Anela Choy  
Steve Litvin  
Shannon Johnson  
Lonny Lundsten  
Todd Walsh  
Paris Stefanoudis  
Jacob Winnikoff  
Elan Portner  
Dana Lacono  
Alana Sherman

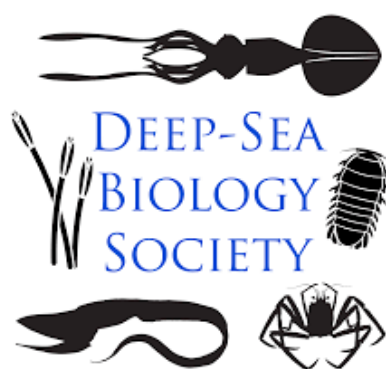
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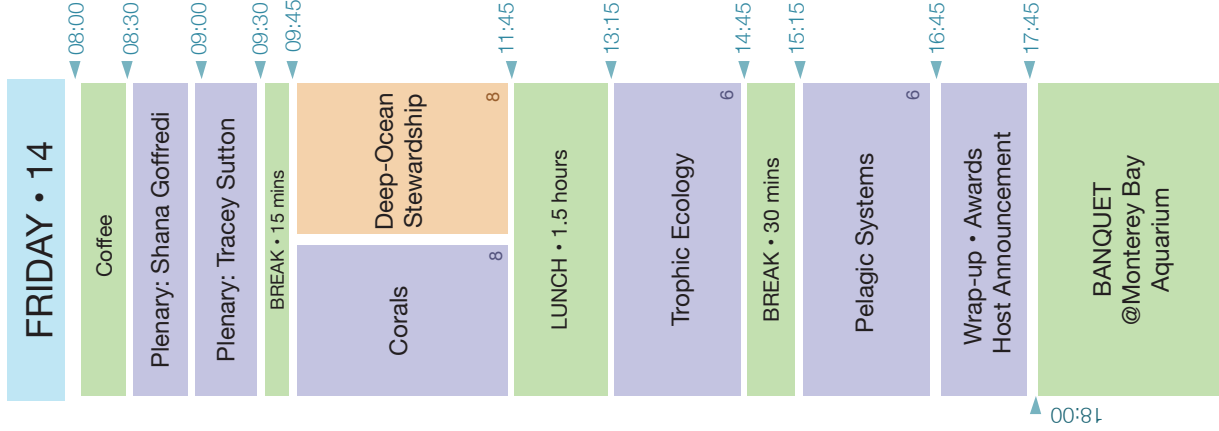
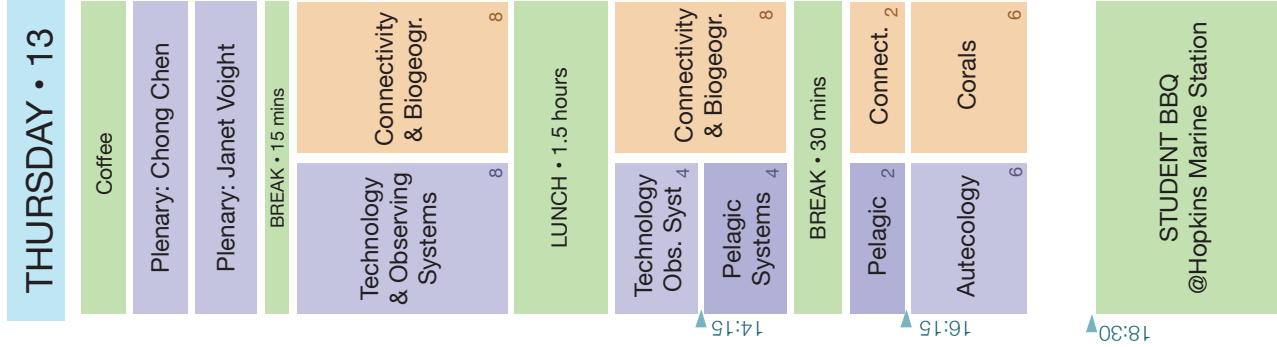
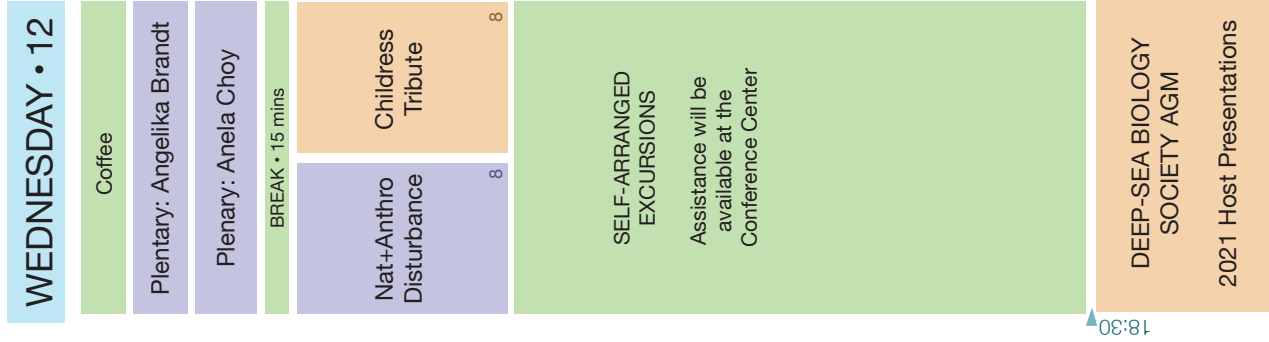
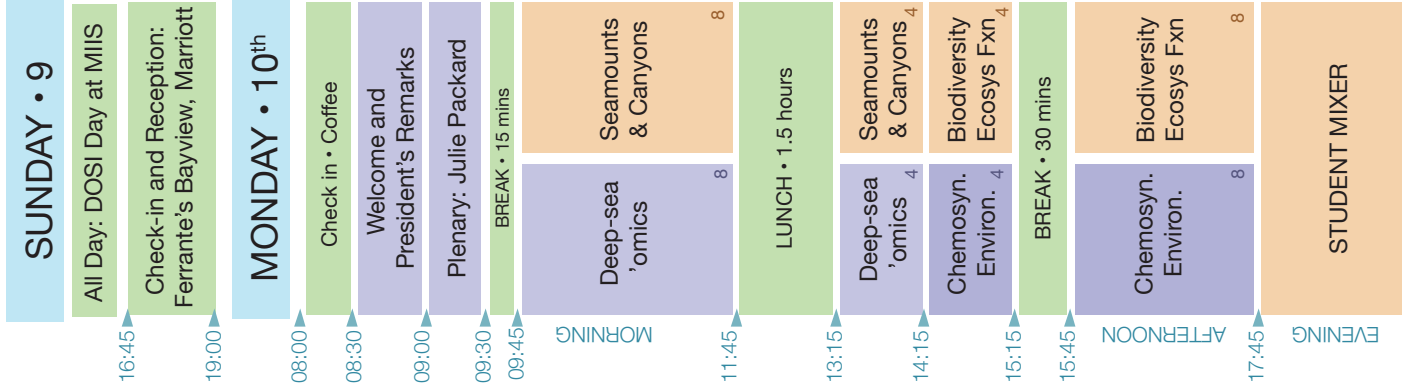




# Overview: September 10-14

## ROOM LEGEND

- Serra • Conf. center
- San Carlos • Marriott



# PLENARY SPEAKERS

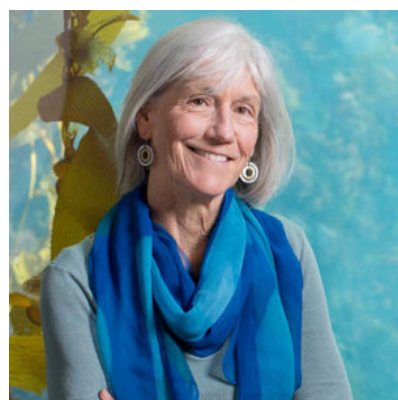
Monday • September 10

## Adrian Glover

*Researcher, Natural History Museum in London  
President, Deep-Sea Biology Society*

### Welcoming remarks

Adrian Glover is a Researcher (equivalent to a faculty-type position) in the Life Sciences Department at the Natural History Museum in London, the third most visited natural history museum in the world (after the Smithsonian and the AMNH in New York), with just under 5 million visitors per year. Adrian leads the Deep-Sea Systematics and Ecology Research Group in the new Darwin Centre and is building on a strong history of deep-sea biology work at the museum and its close collaboration with the University of Southampton (where Adrian holds a Visting Researcher position), the National Oceanography Centre and a range of other oceanographic departments in the UK and across the world. Adrian's research focus is on deep-sea DNA taxonomy and natural history, deep-sea biodiversity and Antarctic marine biology. He has published over 70 scientific papers and participated in 17 deep-sea oceanographic cruises, and he occasionally likes to play in shallow-water with his robot submarine, REX. You can follow Adrian, his research group and the adventures of REX on twitter.



## Julie Packard

*Executive Director of the Monterey Bay Aquarium*

### Changing Seas and Changing Minds

Julie Packard is a founding executive director of the Monterey Bay Aquarium. Based on a lifelong passion for science and nature, she and her family founded the Aquarium over 30 years ago to expand awareness and understanding of Monterey Bay and the ocean beyond. Today, the Aquarium is a major provider of environmental education programs for California teachers, students and teens, as well as a growing player in ocean conservation worldwide. Julie chairs the board of the Monterey Bay Aquarium Research Institute, a leader in deep ocean science and technology and she's deeply engaged in ocean conservation through her work as a trustee of the David and Lucile Packard Foundation. Julie served as a member of the Pew Oceans Commission which published a blueprint for improving governance of America's ocean waters, and more recently served on the California Parks Forward Commission to develop a sustainable path for California's state parks. Julie holds a master's degree in biology from U.C. Santa Cruz with a focus in marine algal ecology. When not at the Aquarium you can find Julie on, in or around water, enjoying the natural wonders of California, her native state.



Wednesday • September 12

## Angelika Brandt

*Head of Department, Senckenberg Museum*

### **Northwest Pacific deep-sea biodiversity**

Since April 2017 Angelika Brandt has been the head of the Marine Zoology department and curator of the section Crustacea at the Senckenberg Museum. Before that she worked for more than 21 years in the crustacean department of the Zoological Museum of the University of Hamburg. Brandt collaborated with the Senckenberg Research Institute since she was a member of the foundation committee of the German Centre of Marine Biodiversity in Wilhelmshaven and Hamburg (DZMB). Her work focuses on the systematics, ecology, and evolution of peracarid crustaceans — in particular Isopoda from deep-sea and polar habitats. In the framework of the Census of the Marine Life, she was involved in the Antarctic and deep-sea field projects CAML and CeDAMar (Census of the Diversity of Abyssal Marine Life). Her work documented high biodiversity of Southern Ocean deep-sea invertebrates (e.g. Brandt *et al.* 2007). In recent years, her research has concentrated on the identification of drivers of evolution in the deep sea, such as dispersal barriers (Brandt *et al.* 2017; Riehl *et al.* in press), as well as on advancing deep-sea sampling methods (Brandt *et al.* 2016). She currently performs international deep-sea research in the Northwest Pacific and Southern Ocean.



## Anela Choy

*Assistant professor at the Scripps Institution of Oceanography*

### **Weaving a web of predators, prey, and humans, from the surface ocean to the deep sea**

Dr. Anela Choy is an assistant professor at the Scripps Institution of Oceanography at the University of California, San Diego, with the Biological Oceanography group of the Integrated Oceanography Division. Previously, Anela was a Postdoctoral Research Fellow at the Monterey Bay Aquarium Research Institute. Anela's research centers on the structure and function of open ocean and deep-sea food webs, uniquely applying a targeted combination of biochemical tracers (stable isotopes, fatty acids, trace metals) alongside in-situ observations and traditional diet methods. Anela received a Ph.D. (2013) and M.S. (2008) in Oceanography from the University of Hawaii, and has recently been recognized for her research and outreach efforts with the 2018 UNESCO-L'Oréal International Rising Talents Award, and the 2016 AAAS-L'Oréal USA For Women in Science Fellowship.

Thursday • September 13

## Chong Chen

Research Scientist, Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

### A 3D perspective on evolutionary adaptation

Dr. Chen is a Research Scientist at the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), a position he took up in April 2018. Born in mainland China, he moved to Japan at the age of five and to Hong Kong at 10. He received a BA (Hons.) degree in Biological Sciences from the University of Oxford in 2011, followed by a DPhil in Zoology in 2015 also at the University of Oxford. Chen then moved to Japan to take up a three-year International Postdoctoral Fellowship at JAMSTEC until starting in the current position. To date, he has participated in 20 research cruises totalling over 300 days to explore deep-sea ecosystems around the globe. He is widely interested in how different animals are adapted to 'extreme' ecosystems such as hydrothermal vents. One major theme of his research investigates anatomical adaptations of deep-sea animal using state-of-the-art 3D reconstruction technology. Chen is also a taxonomist and systematist with an expertise in gastropod molluscs. The scaly-foot gastropod (*Chrysomallon squamiferum*) he described in 2012 was selected as one of the top 10 marine species of the last decade by the World Register of Marine Species.



## Janet Voight

Associate Curator of Invertebrate Zoology at Field Museum, Chicago

### The Deep Sea and Me: Evolutionary Biology at Depth

Janet Voight studies octopods and wood-boring clams. After earning her PhD at the University of Arizona, a mere 212.5 mile drive through the Sonoran Desert to the intertidal zone of the

Northern Gulf of California, she began to focus on deep-sea mollusks. A veteran of 22 research cruises, all undertaken after she turned 40, she served as Chief Scientist on two cruises with the *HOV ALVIN*, and was a Principal Investigator on nine other cruises. Dr. Voight studies octopus biology and evolution using tools ranging from morphometrics to sexual selection to morphology-based systematics of the order; her work on wood-boring bivalves (Xylophagaidae) encompasses ecology, taxonomy and systematics. Some of her scientific papers (especially those involving octopus sex) generated press and media attention that vastly expanded the impact of her research.



Friday • September 14

## Shana Goffredi

*Associate Professor of Biology at Occidental College*

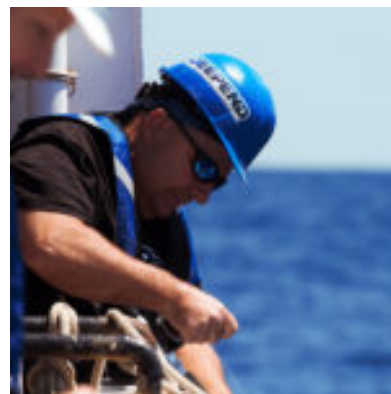
### ***Symbiotic Life in the Deep: A Continuum of Discovery***

Dr. Shana Goffredi's research interests mainly concern beneficial symbiotic partnerships between bacteria and marine invertebrates. For 25 years, she has been exploring the deep ocean. She focuses on the physiology and biochemistry of deep-sea symbiotic systems, within the context of ecological questions and how environmental influences dramatically affect their functioning. At Occidental College, she teaches courses on Zoology, Microbial Diversity, and Symbiosis. She is panelist and workshop leader for the Girls in Science program for high-school students, conducted by the Ocean Institute. Her B.S. is in Biology/Marine Science from the Univ. of San Diego and her Ph.D. is in Ecology, Evolution, and Marine Biology from UC Santa Barbara.

## Tracey Sutton

*Associate Professor, Halmos College of Natural Sciences and Oceanography, Nova Southeastern University*

### ***On the importance of baselines in deep ocean stewardship: a cautionary tale from the deep-pelagic Gulf of Mexico and beyond***



Dr. Sutton's lab is located in the Guy Harvey Oceanographic Center in Dania Beach ([www.nova.edu/ghoc](http://www.nova.edu/ghoc)). He is Director and Principal Investigator of the DEEPEND Research Consortium ([www.deependconsortium.org](http://www.deependconsortium.org)), a 70-member, 22-institution organization focused on the dynamics of, and human impacts on, the deep sea. Dr. Sutton is an Advisory Board member of the Deep Ocean Stewardship Initiative ([dosi-project.org](http://dosi-project.org)), an invited Expert Panelist on the United Nations First and Second Ocean Assessments, and a society-elected member of the Board of Governors of the American Society of Ichthyologists and Herpetologists. Research projects in Dr. Sutton's lab include: studies of the ecological structure of large deep-sea ecosystems (Gulf of Mexico, Sargasso Sea, US Atlantic Seaboard, North Atlantic, Southern Ocean); global deep-pelagic biogeography, management and conservation; food web structure and trophic interactions in deep-sea ecosystems; benthic-pelagic coupling in deep-sea ecosystems (reefs, canyons, slopes, seamounts); physical oceanographic drivers of oceanic systems; and the taxonomy and systematics of deep-sea fishes.

# Session List and Daily events

## Deep-Sea Biology Symposium • September 10-14, 2018

Updated: 18-Sep-2018 • [Symposium Page](#)



SESSION	DAY AND TIME PERIOD	CO-CHAIRS	LOCATION
<b>Advances in taxonomy and phylogenetics</b>	Tuesday midday	Allen Collins, Lonny Lundsten	SAN CARLOS
<b>Autecology</b>	Thursday afternoon	Janet Voight, Fanny de Busserolles	SERRA
<b>Biodiversity and ecosystem functioning</b>	Monday midday and afternoon, Tuesday afternoon	Moriaki Yasuhara, Paris Stefanoudis	SAN CARLOS
<b>Chemosynthetic ecosystems</b>	Monday midday and afternoon	Shana Goffredi, Diva Amon	SERRA
<b>Connectivity and biogeography</b>	Thursday morning, midday, afternoon	Shannon Johnson, Ana Hilario	SAN CARLOS
<b>Corals</b>	Thursday afternoon and Friday morning	Steve Litvin, Santiago Herrera, Branwen Williams	SAN CARLOS AND SERRA
<b>Deep-ocean stewardship</b>	Friday morning	Maria Baker, Lisa Levin, Susan von Thun	SAN CARLOS
<b>Deep-sea omics</b>	Monday morning and midday	Andrea Quattrini, Franck Lejzerowicz, Santiago Herrera	SERRA
<b>James J. Childress</b>	Wednesday morning	Erik Thuesen, Brad Seibel	SAN CARLOS
<b>Mining impacts</b>	Tuesday midday and afternoon	Adrian Glover, Craig Smith, Daphne Cuvelier	SERRA
<b>Natural and anthropogenic disturbance</b>	Tuesday afternoon and Wednesday morning	Verena Tunnicliffe, Chris Yesson, Katherine Dunlop	SERRA
<b>Pelagic systems</b>	Friday afternoon	Tracey Sutton, Dhugal Lindsay	SERRA
<b>Seamounts and canyons</b>	Monday morning and midday	Malcolm Clark, Tina Molodtsova	SAN CARLOS
<b>Technology and observing systems</b>	Thursday morning and midday	Brian Kieft, Alana Sherman, Luciana Genio, Amanda Netburn	SERRA
<b>Trophic ecology</b>	Friday midday	Anela Choy, Rachel Jeffreys	SERRA

# Daily Schedule of Talks and Events

**SUNDAY 16:45 to 19:00: Check in and Reception.** Ferrante's Bayview at the top of the Marriott

## MONDAY • 10th

**08:00 COFFEE and CHECK-IN**

**08:30 WELCOME AND PRESIDENT'S REMARKS by Adrian Glover**

**09:00 PLENARY: Julie Packard: *Changing seas and changing minds***

**09:30 BREAK**

**09:45 OMICS • SERRA**  
**Genomics of habitat choice and adaptation to ocean depth**  
**Michelle R. Gaither**, Georgios A. Gkafas, Menno de Jong, Fatih Sarigol, Francis Neat, Thomas Regnier, Daniel Moore, Darren R. Gröcke, Neil Hall, Xuan Liu, John Kenny, Anita Lucaci, Margaret Hughes, Sam Haldenby, A. Rus Hoelzel

**10:00 The (meta)genome of a single worm: Unexpected evolutionary and ecological insights from nematode -Omics**  
**Holly M. Bik**, Taruna Schuelke, Tiago José Pereira, Sarah M. Hardy

**10:15 The sexually dimorphic visual system of lanternfishes (Myctophidae)**  
**Fabio Cortesi**, Fanny de Busserolles; Justin Marshall

**10:30 The evolution of bioluminescent light organs in deep-sea shrimp**  
**Heather Bracken-Grissom**, Danielle De Leo, Charles GoLightly

**09:45 SEAMOUNTS • SAN CARLOS**  
**Identification of ecologically important areas within a large network of seamounts (Northeast Pacific)**  
**Cherisse Du Preez**, Tammy Norgard

**10:00 Interdisciplinary approaches for predictive mapping to assist spatial management within submarine canyons**  
**T.R.R. Pearman**, Grange, L., Robert, K., Callaway, A., Lo Iacono, C., Hall, R., Huvenne, V.A.I.

**10:15 Exploration and Quantitative Sampling in Diverse Deep Water Habitats in Cordell Bank National Marine Sanctuary**  
**Danielle Lipski**, Dan Howard, Kaitlin Graiff, Gary Williams, Guy Cochrane, Michael Carver

**10:30 SAIs and Recovery of VME Taxa on Seamounts of the NWHI and Southern Emperors**  
**Amy Baco**, E. Brendan Roark, Nicole Morgan, Beatriz Mejia Mercado



10:45 **Deep-sea fishes use multiple rod opsins for vision**  
**Zuzana Musilova**, Fabio Cortesi, Michael Matschiner, Wayne IL Davies, Sara M Stieb, Fanny de Busserolles, Martin Malmström, Ole K Tørresen, Jessica K Mountford, Reinhold Hanel, Kjetill S Jakobsen, Karen L Carleton, Sissel Jentoft, Justin Marshall, Walter Salzburger

11:00 **Evidence for extraocular photoreception among deep-sea bioluminescent crustaceans**  
**Danielle De Leo**, Heather Bracken-Grissom

11:15 **Genomics of gelatinous zooplankton: challenges and progress**  
**Darrin T. Schultz**, N.K. Schaefer, W.R. Francis, L.M. Christianson, S.H.D. Haddock, R.E. Green

11:30 **Environmental drivers of bacterioplankton community structure in the northern Gulf of Mexico**  
**Joe Lopez**, Cole Easson

10:45 **Deep-sea Lebanon: A first assessment of the benthic biodiversity of Lebanese canyons**  
**Ricardo Aguilar**, Silvia Garcia, Allison L. Perry, Helena Álvarez, Jorge Blanco, Ghazi Bitar

11:00 **Topographic Effects on Bait-Attending Fauna: Examining the Effect of Abyssal Hills Using Baited Cameras**  
**Astrid Leitner**, Jennifer M. Durden, Craig R. Smith, and Jeffrey C. Drazen

11:15 **Multiscale variability of Mozambique Channel seamount megafauna, oceanographic and geological drivers**  
**Karine Olu**, M. Boulard, E. Miramontes, L. Corbari, I. Van den Beld, G. Jouet, S. Jorry

11:30 **Submarine canyons provide link between river catchments and remote deep-sea ecosystems off New Zealand**  
**Daniel Leduc**, Scott Nodder, Max Gibbs, Andrew Swales, Andrew Kingston, Ashley Rowden, Fabio De Leo, Craig Smith, Joshu Mountjoy, Brittany Graham, Arne Pallentin

11:45 **LUNCH**

13:15 **OMICS • SERRA**  
**From Genomes to Populations to Communities: Using Genomic Techniques to Study Deep-sea Coral Diversity**  
**Meredith V. Everett**, Linda K. Park

13:30 **Under pressure: adaptation of deep-sea amphipods revealed using a multi-'omics approach**  
**Heather Ritchie**, Alan J Jamieson, Stuart B. Piernney

13:45 **A Phylogenomic Perspective on the Relationships of Gadiform Fishes (Paracanthopterygii: Gadiformes)**  
**Adela Roa-Varon**, Chenhong Li, Carole Baldwin, Rebecca Dikow, Guillermo Orti, Eric J. Hilton

14:00 **Investigating sponge microbiome and metabolome along a depth gradient**  
**Karin Steffen**, Anak Agung Gede Indraningrat, Ida Erngren, Jakob Haglőf, Lisa Becking, Hauke Smid, Ellen Kenchington, Curt Pettersson, Paco Cárdenas & Detmer Sipkema

13:15 **SEAMOUNTS • SAN CARLOS**  
**Do environmental drivers of benthic assemblages in submarine canyons scale spatially in heterogenous seascapes?**  
**Thomas Schlacher**, Franziska Althaus, Alan Williams, Vanessa Lucieer, Ben Gilby, Phil Alderslade, Mark Green ; Andrew Olds

13:30 **Ecological communities and drivers of biodiversity within the transverse ridge of the Vema Fracture Zone**  
**Lissette Victorero**, Emily Sym, Laura F. Robinson, Michelle L. Taylor, Daniel O.B Jones, Veerle A.I. Huvenne

13:45 **The Benthic Communities of the New England and Corner Rise Seamounts**  
**Abby Lapointe**, Les Watling

14:00 **The Meso- and Bathypelagic Fish Community in a Submarine Canyon**  
**Trevor Kenchington**, Daphne Themelis, Shannon DeVaney, Ellen Kenchington



14:15 **CHEMOSYN. • SERRA**  
**The KleptoShimp and the Yeti Crab: Cross-species symbiont transmission at methane seeps.**

**Andrew Thurber**, Will Ridgeon, Gavin Thurston, and the British Broadcast Corporation

14:30 **Faunal Microdistribution of the Pelagia hydrothermal vent field: A 3 D reconstruction approach**

**Klaas Gerdes**, Pedro Martinez-Arbizu, Ulrich Schwarz-Schampera, Terue C. Kihara

14:45 **Is it the Egg first or the Shrimp? – Diversity and evolution of the microbial communities colonizing broods of the vent shrimp *Rimicaris exoculata* throughout embryonic development**

**Pierre Methou**, Ivan Hernández-Ávila, Valérie Cueff-Gauchard, Florence Pradillon, Marie-Anne Cambon-Bonavita

15:00 **Environmental conditions, substratum nature and biotic interactions on hydrothermal fauna colonization patterns at Lucky Strike**

**Joan Alfaro-Lucas**, Martin Foviaux, Loïc Michel, Gauthier Schaal, Daniela Zeppilli, Florence Pradillon, Jozée Sarrazin

15:15 **BREAK**

15:45 **CHEMOSYN. • SERRA**  
**Discovery of an extensive deep-sea fossil serpulid reef associated with an active cold seep, Santa Monica Basin, CA**

**Magdalena N. Georgieva**, Charles K. Paull, Crispin T.S. Little, Mary McGann, Diana Sahy, Daniel Condon, Lonny Lundsten, Jack Pewsey, David W. Caress and Robert C. Vrijenhoek

16:00 **Comparative host anatomy and bacterial associations in chemosymbiotic *Alviniconcha* gastropods**

**Sven R. Laming**, Katia Leglise, Marie-Anne Cambon-Bonavita, Florence Pradillon

16:15 **Heterogeneity of Methane Seep Biomes Across a Margin Ecosystem**

**Sarah Seabrook**, Fabio C. De Leo, Andrew R. Thurber

14:15 **BIODIVERSITY • SAN CARLOS**  
**Biodiversity and Process Gradients in an Area of Deep-water Convection and Acidification**

**David Côté**, Sheena Roul, Kristin Heggland, Evan Edinger

14:30 **Deep-sea bioregions based on network analyses**

**Juliette Delavenne**, Boris Leroy, Tim O'Hara, Enrique Macpherson, Maud Mouchet, Sarah Samadi

14:45 **Using metabolic theory to assess structure and function in the deep-sea benthos, including microbial and metazoan dominance.**

**Claire Laguionie Marchais**, Brian J. Bett, Gordon L.J. Paterson, Kenneth L. Smith, Jr. and Henry A. Ruhl,

15:00 **Using species area relationships to improve deep-sea sampling strategies**

**Nicola L. Foster**, Andrew Foggo; Kerry L. Howell;

15:45 **BIODIVERSITY • SAN CARLOS**  
**Do biodiversity – ecosystem functioning relationships shift across methane seepage gradients?**

**Oliver S. Ashford**, Guillermo F. Mendoza, Dante Capone, Shuzhe Guan, Erik Cordes, Victoria Orphan, Sujung Lim, Kat Dawson, Andrew K. Sweetman, Jennifer Le, Jorge Cortés, Olivia S. Pereira, Greg W. Rouse, Lisa A. Levin

16:00 **Factors affecting trophic patterns of offshore benthic invertebrates at a Sub Antarctic archipelago**

**Eleonora Puccinelli**, Christopher D. McQuaid, Isabelle J. Ansoorge

16:15 **Submarine canyons as centres of bioturbation activity and distinct ecosystem functioning**

**Craig M. Robertson**, Demopoulos AWJ, Bourque JR, Mienis F, Duineveld GCA, Lavaleye MSS, Brooke SD, Ross SW, Rhode M and Davies AJ

16:30	<b>First record of frenulate siboglinids on cold seep carbonates and their influence on the biology and geochemistry at a seep site in the north Atlantic</b> <b>Arunima Sen</b> , Tobias Himmler, Wei Li Hong, Raymond W. Lee, Jochen Knies, Aivo Lepland	16:30	<b>Estimating the abundance, distribution, and diversity of deep seafloor life through surveying, macro-ecological analysis, and modelling</b> <b>Henry A Ruhl</b> , Claire Laguione-Marchaise, Jennifer Durden, Noëlie Benoist, Andrew Yool, Daniel OB Jones, Katherine M Dunlop, Kenneth L Smith Jr., and Brian J Bett
16:45	<b>Characterization of western Atlantic margin seeps and their contribution to the deep-sea red-crab fishery.</b> <b>Phillip J Turner</b> , Bernard Ball, Ian Grace, Doreen McVeigh, Craig Young, Cindy L Van Dover	16:45	<b>Macrofaunal community structure and ecosystem function of organic-rich habitats on the Washington-Oregon margin</b> <b>Young E.L.</b> , Smith, C.R., Amon, D.J., Halanynch, K.M.
17:00	<b>Adaptation to the deep-sea hydrothermal vents and cold seeps: insights from the transcriptome and lysine acetylome of <i>Alvinocaris longirostris</i> in both environments</b> <b>Min Hui</b> , Jiao Cheng, Zhongli Sha	17:00	<b>Arctic benthic size spectra, biomass and production (Fram Strait)</b> <b>Maria Włodarska-Kowalczyk</b> , Barbara Górka, Thomas Soltwedel, Ingo Schewe
17:15	<b>Across-axis transition of hydrothermal vent fauna in southern Mariana Trough</b> <b>Hiromi Kayama Watanabe</b> , Stacey E Beaulieu, Florence Pradillon, Kana Komaki, Susan Mills, MiHye Seo, Tomomi Ogura, Hiroka Hidaka, Sayaka Mino, Takenori Sasaki, Katsunori Fujikura, Jun-ichiro Ishibashi, Shigeaki Kojima	17:15	<b>Biodiversity–ecosystem functioning relationships in long-term time series and palaeoecological records: deep sea as a test bed</b> <b>Moriaki Yasuhara</b> , Hideyuki Doi, Chih-Lin Wei, Roberto Danovaro, Sarah E. Myhre
17:30	<b>Vertical migration of gastropod larvae from hydrothermal vents: oxygen isotope and trace element analyses</b> <b>Takuya Yahagi</b> , Kentaro Tanaka, Tomihiko Higuchi, Kotaro Shirai, Yasunori Kano	17:30	<b>Biodiversity and vulnerability of the Ligurian deep circalittoral megabenthic communities</b> <b>Francesco Enrichetti</b> , Toma Margherita, Carlos Dominguez-Carrió, Bavestrello Giorgio, Betti Federico, Simonepietro Canese, Cattaneo-Vietti Riccardo, Bo Marzia

17:45 **STUDENT MIXER - San Carlos Room**

**TUESDAY • 11th**

08:00 **COFFEE**

08:30 **LIGHTNING TALKS (See schedule below)**

09:30 **BREAK**

09:45 **LIGHTNING TALKS**

10:45 **POSTER PREVIEW**

11:45 **LUNCH**

13:15 **MINING • SERRA**  
**Very high macrofaunal diversity in an area targeted for nodule mining in the eastern CCZ**  
**Craig R. Smith**, Iris Altamira, Diva Amon, Amanda Ziegler, Clifton Nunnally, and Cassandra Turner

13:30 **Cetacean and shark fossils are abundant in the eastern Clarion Clipperton Zone**  
**Diva Amon**, Erik Simon-Lledo, Robert Boessenecker, Daniel Jones, Chee Kong Chim, Helen Pei San Wong, Koh Siang Tan, Amanda Ziegler, Adrian Glover, Craig Smith

13:45 **Seamounts as refuge areas for fauna from mined nodule fields?**  
**Daphne Cuvelier**, Pedro Ribeiro, Sofia Ramalho, Daniel Kersken, Pedro Martinez-Arbizu, Ana Colaço

14:00 **Evaluating the nature of midwater mining plumes and their potential effects on midwater ecosystems: a workshop report**  
**Jeffrey C. Drazen**, Craig R. Smith, Kristina Gjerde and the workshop participants

14:15 **The biodiversity of animals living on polymetallic nodules in the eastern Clarion-Clipperton Zone**  
**Adrian Glover**, Dahlgren TG, Wiklund H, Smith CR

14:30 **Sample size and biological estimation in abyssal megafauna**  
**Daniel Jones**, Erik Simon-Lledo, Noelle M. Benoist, Brian J. Bett, Jeff Ardron, Veerle A. I. Huvenne

14:45 **Experimental assessment of the effect of sediment disturbance and substrate burial on deep-sea meiobenthic communities**  
**Lisa Mevenkamp**, Katja Guilini, Alastair Brown, Antje Boetius, Johan De Grave, Brecht Laforce, Dimitri Vandenberghe, Laszlo Vincze, Ann Vanreusel

13:15 **TAXONOMY • SAN CARLOS**  
**The impact of intragenomic variation on alpha-diversity estimations in metabarcoding studies: A case study based on 18S rRNA amplicon data from marine nematodes**  
**Tiago Jose Pereira**, Holly Bik

13:30 **Eastern Pacific scaleworms (Polynoidae, Annelida) from seeps, vents and whalefalls.**  
**Gregory Rouse**, Avery Hiley, Sigrid Katz, Johanna Lindgren

13:45 **Bathyal slope to hadal trench: diversity and biogeography of Solenogastres (Mollusca) in the Northwest Pacific**  
**Franziska S. Bergmeier**, Peter Kohnert, Angelika Brandt, Katharina M. Jörger

14:00 **Multi-locus phylogenetic analysis of Amphipoda supports monophyly of the pelagic suborder Hyperidea**  
**Leann M. Biancani**, Karen J. Osborn, Michael P. Cummings

14:15 **Genetic connectivity and adaptive evolution in the squat lobsters *Shinkaia crosnieri* inhabiting both hydrothermal vent and cold seep habitats**  
**Jiao Cheng**, Min Hui, Zhongli Sha

14:30 **New Species of Narcomedusae (Hydrozoa, Trachylina) Collected by NOAA Okeanos from the Musician Seamounts, Pacific Ocean**  
**Allen Collins**, Michael Ford, Dhugal Lindsay & Rebecca Helm

14:45 **Clarifying the Pacific glass squids: Who are the cranchiids in your neighbourhood?**  
**Aaron Boyd Evans**, Kat Bolstad

15:00 **Do nodules matter for meio- and macrofauna in the Clarion Clipperton Fracture Zone?**  
**Ellen Pape**, Nene Lefaible, Tania Nara Bezerra, Hendrik Gheerardyn, Bart De Smet, Ann Vanreusel

15:00 **Evolution and ecology of Macellicephalinae scale worms (Polynoidae, Annelida)**  
**Brett C. Gonzalez**, Karen Osborn, Katrine Worsaae

15:15 **BREAK**

cancel **MINING • SERRA**  
**Broad and fine scale variations affect local megafauna at the CCZ**  
**Erik Simon-Lledo**, Jennifer M. Durden, Noelle M. Benoist, Timm Schoening, Rachel M. Jeffreys, Brian J. Bett, Veerle A. I. Huvenne, Daniel O.B. Jones

15:45 **BIODIVERSITY • SAN CARLOS**  
**Abyssal ecosystems and biogeochemical cycles revealed by in-situ experiments**  
**Hidetaka Nomaki**, Eugenio Rastelli, Teresa Amaro, Masashi Tsuchiya, Koji Seike, Tomo Kitahashi, Hisami Suga, Norio Miyamoto, Nanako O Ogawa, Roberto Danovaro, Takuro Nunoura, Naohiko Ohkouchi

16:00 **Alpha and beta diversity of polychaete assemblages across Clarion-Clipperton Zone**  
**Paulo Bonifacio**, Lénaïck MENOT

16:00 **Abyssal bioluminescence**  
**J. Mallefet**, T. O'Hara

16:15 **Biodiversity of megabenthos in the western Clarion Clipperton Zone**  
**Jennifer M. Durden**, Craig R. Smith, Astrid Leitner, Jeff Drazen, Diva Amon and the DeepCCZ Project Scientists

16:15 **Patch dynamics of beta diversity across multiple spatial scales in the deep Gulf of Mexico macrofauna communities**  
**Clifton C. Nunnally**, Craig McClain

16:30 **DISTURBANCE • SERRA**  
**Benthic habitats in West Greenland**  
**Chris Yesson**, Kirsty Kemp, Mona Fuhrmann, Stephen Long, Nanette Hammeken, Martin Blicher

16:30 **Habitat use and associations of demersal fish in the vicinity of the Sub-Antarctic Prince Edward Islands.**  
**Charles von der Meden**, Ofer Gon, Hannah Truter, Lara Atkinson

16:45 **Understanding UK deep-sea biodiversity sensitivity from sediments to seamounts**  
**Laura Robson**, Ellen Last, Harvey Tyler-Walters, Heidi Tillin

16:45 **Deep-reef fish assemblages of the Great Barrier Reef shelf-edge (Australia)**  
**Tiffany Sih**, Michael J. Kingsford, Mike Cappel

17:00 **Exploring partial effects of environment and trawling on biodiversity and ecosystem functioning**  
**Jesse van der Grient**, Alex Rogers

17:00 **Functional morphology of deep-sea fishes from micro-computed tomography**  
**Mackenzie Gerringer**, Abigail A. von Hagel, Adam P. Summers

17:15 **Impacts of deep-sea Greenland halibut trawling on benthic ecosystems**  
**Stephen Long**, Dr Chris Yesson, Dr Mona Fuhrmann, Dr Martin Blicher

17:15 **Functional biodiversity of New Zealand's marine fishes across depth.**  
**Elisabeth Myers**, Marti Anderson, David Erme, Libby Liggins, Clive Roberts, Euan Harvey

17:30 **Microplastics are a serious threat for deep-water coral reefs**  
**Leila Chapron**, Peru E., Engler A., Godéré I., Ghiglione J.F., Lebris N., Meistertzheim A.L., Pruski A. M., Purser A., Vétion G., Galand P. E., Lartaud F.

17:30 **Changes in reef fish communities from the altiphotic to the rariphotic**  
**Paris Stefanoudis**, Lucy Woodall, Alex Rogers

17:45 **POSTER SESSION - Serra Room**

# WEDNESDAY • 12th

08:00 **COFFEE**

08:30 **PLENARY: Angelika Brandt • Northwest Pacific deep-sea biodiversity: German-Russian deep-sea expeditions and data mobilisation**

09:00 **PLENARY: Anela Choy • Weaving a web linking predators, prey, and humans, from the surface ocean to the deep sea**

09:30 **BREAK**

09:45 **DISTURBANCE • SERRA**  
**Is the northern expansion of Atlantic cod (*Gadus morhua*) impacting scavenging communities in high Arctic fjords?**  
**Katherine Dunlop**, Paul Renaud, Jørgen Berge, Andrew Sweetman

10:00 **Recovery in the deep sea from trawling: insights from New Zealand**  
**Malcolm Clark**, David Bowden, Ashley Rowden, Rob Stewart

10:15 **Effects of a seamount protected area on deep-water demersal fishes (Condor seamount, NE Atlantic)**  
**Eva Giacomello**, Alexandra Rosa, Diana Catarino, Gui Menezes

10:30 **Cold-water corals as indicators of anthropogenic impact in the deep sea: lessons learned from the Deepwater Horizon oil spill**  
**Fanny Girard**, Rafaelina Cruz, Tyler R. Harpster, Orli Glickman, Lena M. Bullock, Timothy D. McElroy, Gino DiNicola, Thomas P. Albertson, Charles R. Fisher

10:45 **Community dynamics at inactive and active vent sites at the 9°N East Pacific Rise after a volcanic eruption**  
**Sabine Gollner**, Breea Govenar, Pedro Martinez Arbizu, Susan Mills, Nadine Le Bris, Markus Weinbauer, Timothy M. Shank, Monika Bright

09:45 **CHILDRESS • SAN CARLOS**  
**Darnit Jim, I'm a biologist not an engineer: Or...how I learned to stop worrying and love deep sea biology**  
**Peter Girguis**, Roxanne Beinart

10:00 **Critical oxygen levels of marine zooplankton and the consequences of ocean deoxygenation**  
**Brad A Seibel**

10:15 **Vision and Bioluminescence in Deep-sea Crustaceans**  
**Tamara Frank**

10:30 **A biomechanical description of tomopterid polychaetes using high-speed video analysis**  
**Nadege Aoki**, Kakani Katija, Ariel Harned, Josh Havassy, Natalia Mushigian, Samhita Murthy, Karen Osborn

10:45 **Swimming activity of a vertically migrating deepwater shark in relation to temperature**  
**Mark Royer**, Danny Coffey

11:00 **Detecting the effect of scientific drilling on meiofauna with the traditional, metagenomic and image-based methods**  
**Tomo Kitahashi**, Sachie Sugime, Masatoshi Nakamura, Miyuki Nishijima, Kentaro Inomata, Masashi Tsuchiya, Hiromi Kayama Watanabe, Hiroyuki Yamamoto

11:15 **Persistent impacts of the Deepwater Horizon oil spill on megafauna.**  
**Craig R. McClain**, Clifton Nunnally, Mark Benfield

11:30 **Sponge removal by bottom trawling in the Flemish Cap area (northwest Atlantic): implications for ecosystem functioning**  
**Christopher K. Pham**, F.J. Murillo, C. Lirette, M. Maldonado, A. Colaço, E. Kenchington

11:00 **Black holes in the deep: II. optics of the skin of deep-sea fish**  
**Sönke Johnsen**, K.J. Osborn, K.N. Thomas, F.E. Goetz, B.H. Robison

11:15 **Pressing Concerns: New Approaches to Studying Protein Adaptation to High Pressure in Ctenophores**  
**Jacob R. Winnikoff**, T.M. Wilson†, T.Bachtel†, E.V. Thuesen† and S.H.D. Haddock

11:30 **The brains and sensory specializations in the midwater hyperiid amphipods**  
**Chan Lin**, Karen J. Osborn

11:45 **EXCURSIONS**

18:30 **ANNUAL GENERAL MEETING and FUTURE HOST PRESENTATIONS - San Carlos**

## THURSDAY • 13th

08:00 **COFFEE**

08:30 **PLENARY: Janet Voight • *The Deep Sea and Me: Evolutionary Biology at Depth***

09:00 **PLENARY: Chong Chen • *A 3D perspective on evolutionary adaptation***

09:30 **BREAK**

09:45 **TECHNOLOGY • SERRA**  
**Subseafloor observatories reveal microbial deep biosphere in oceanic crust**  
**Beth N. Orcutt**

09:45 **CONNECTIVITY • SAN CARLOS**  
**Barriers in the deep sea: is cosmopolitanism possible?**  
**Simon Bober**, Saskia Brix, Torben Riehl, Martin Schwentner, Angelika Brandt



10:00 **Observing the Deep-sea Ecosystem with a Continuously Monitoring Instrument Suite**  
**Alana Sherman**, Paul McGill, Richard Henthorn, John Ferreira, Christine Huffard, Ken Smith, Jr.

10:15 **Introducing GOSSIP (General Ocean Survey and Sampling Iterative Protocol)**  
**Lucy C. Woodall**, Dominic A. Andradi-Brown, Andrew S. Brierley, Malcolm R. Clark, Douglas Connelly, Rob A. Hall, Kerry L. Howell, Veerle A.I. Huvenne, Katrin Linse, Rebecca E. Ross, Paul Snelgrove, Paris V. Stefanoudis, Tracey T. Sutton, Michelle Taylor, Thomas F. Thornton, Alex D. Rogers,

10:30 **Expanding deep-sea observation through access to industry infrastructure**  
**Andrew R. Gates**, Peter I. Macreadie, Dianne L. McLean, Paul G. Thomson, Julian C. Partridge, Daniel O. B. Jones, Mark C. Benfield, Shaun P. Collin, David J. Booth, Luke L. Smith, Erika Techera, Danielle Skropeta, Tammy Horton, Charitha Pattiaratchi, Todd Bond, Ashle

10:45 **Observing the deep ocean using submerged echosounders**  
**Stein Kaartvedt**, Thor A. Klevjer, Anders Røstad, Ingrid Solberg

11:00 **Identification of benthic epifauna from images using computer vision**  
**Nils Piechaud**, Christopher Hunt; Kerry L. Howell

11:15 **The Ocean Observatories Initiative: A Long-Term, Deep-Sea Time Series in Real-Time**  
**Michael Vardaro**, Leila Belabbassi, Lori M Garzio, Friedrich Knuth, Michael J Smith, Charles Sage Lichtenwalner, John Kerfoot, Michael F Crowley

11:30 **Chasing larvae and microbes: the project LO3CAted**  
**Luciana Génio**, Clara Rodrigues; Nikoleta Bellou; Ana Hilário; Craig M. Young; Marina R. Cunha

10:00 **The evolutionary origins of abyssal biodiversity — new ideas from biogeography and habitat mapping**  
**Torben Riehl**, Nico Augustin, Simon Bober, Saskia Brix, Colin Devey, Nele Heitland, Lidia Lins, Anne-Cathrin Woelfl, Angelika Brandt

10:15 **Biogeography of the upper bathyal of the Pacific Ocean**  
**Natalie Summers**, Les Watling

10:30 **Hiding in plain sight: cryptic new species of *Bolinopsis*.**  
**Shannon Johnson**, Lynne Christianson, Jacob R. Winnikoff, Steven Haddock

10:45 **Describing benthic assemblages of conservation interest (VMEs) in South Atlantic UK Overseas Territories**  
**Amelia Bridges**, David Barnes, James Bell, Rebecca Ross, Kerry Howell

11:00 **Modelling of key species dispersal and population connectivity at different habitats of the MAR"**  
**Ana Colaço**, Maria Rakka, Pedro Ribeiro, Marina Carreiro e Silva; Manuela Juliano

11:15 **High Genetic Diversity and Connectivity in Common CCZ Taxa**  
**Thomas G Dahlgren**, Helena Wiklund, Adrian Glover, Craig Smith, Dan Jones, Annika Janssen, Pedro Martinez Arbizu, Lenka Neal, Paulo Bonifacio, Sergio Taboada, Lenaick Menot, Bart de Smet, Ann Vanreusel, Ellen Pape, Ascensao Ravara, Marina Cunha.

11:30 **Genetic connectivity from the Arctic to the Antarctic: *Sclerolinum contortum* and *Nicomache lokii* (Annelida) are both widespread in reducing environments**  
**M.H. Ellertsen**, Georgieva, MN, Kongsrud, JA, Linse, K, Wiklund, H, Glover, AG, Rapp, HT

11:45 **LUNCH**

13:15	<b>TECHNOLOGY • SERRA</b> <b>New technology reveals the structure and function of deep-sea, giant larvacean mucus houses</b> <b>Kakani Katija</b> , Alana Sherman, Rob Sherlock, and Bruce Robison	13:15	<b>CONNECTIVITY • SAN CARLOS</b> <b>Latitude and depth gradients explain distribution patterns of hydroids (Cnidaria) in the deep Atlantic Ocean</b> <b>M.O. Fernandez</b> , Collins, A.G.; Marques, A.C.
13:30	<b>A pilot design of an autonomous plankton pump for assessing deep-sea coral and sponge zooplankton communities in the western Gulf of Alaska</b> <b>Rachel Wilborn</b> , Chris Rooper, Pam Goddard	13:30	<b>Phylogeography and phylogeny of Spionidae and Polynoidae (Annelida) from the Vema-Transit expedition and the Puerto Rico Trench</b> <b>Theresa Guggolz</b> , Martin Schwentner, Karin Meißner, Angelika Brandt
13:45	<b>Water column exploration from the surface to the abyss: community recommendations for a collaborative observing network</b> <b>Amanda N. Netburn</b> , Anni Djurhuus, Bruce Robison, Marsh Youngbluth, Enrique Montes	13:45	<b>Do modelled larvae disperse well over the depth gradient?</b> <b>Howell K.L.</b> , Foster, N.L., Nimmo-Smith, A., Rogers, A.D., Ross, R.E., Stashchuk, N., Vlasenko, V.
14:00	<b>Vertical migration's why and when revisited with new technology</b> <b>Kelly Benoit-Bird</b> , Mark Moline, Brandon Southall	14:00	<b>Can small brooders be widely distributed? – diversity and distribution of Tanaidacea (Crustacea) in CCZ</b> <b>Magdalena Błażewicz</b> , Piotr Jóźwiak, Anna Stepień, Aleksandra Jakiel, Lenaick Menot
14:15	<b>PELAGIC • SERRA</b> <b>Potential complexity of zooplankton responses to deoxygenation: very small oxygen differences matter</b> <b>Karen Wishner</b> , Chris Roman, Brad Seibel, Curtis Deutsch, Dawn Outram, C. Tracy Shaw, Allison Smith-Mislan, Matt Birk, Danielle Moore, Shannon Riley	14:15	<b>Does the Mid-Atlantic Ridge hinder dispersal in the deep sea?</b> <b>Lidia Lins</b> , Sofie Derycke, Tania Nara Bezerra, Ann Vanreusel
14:30	<b>Exploring the Midwater Time Series of Monterey Bay</b> <b>Rob Sherlock</b> , Reisenbichler, K.R., Messie, M., Schlining, B., Schlining, K.L., von Thun, S., Walz, K.R., and B.H. Robison	14:30	<b>Diversity and biogeography of deep-sea nematodes in the Clarion-Clipperton Fracture Zone: a molecular approach</b> <b>Lara Macheriotou</b> , Sofie Derycke, Ann Vanreusel
14:45	<b>The evolution and diversification of the siphonophore prey capture apparatus</b> <b>Alejandro Damian-Serrano</b> , Steven Haddock, Casey Dunn	14:45	<b>The shelf as pathway for peracarid crustaceans</b> <b>Saskia Brix</b> , Jörundur Svavarsson, Sarah Schnurr, Robert M. Jennings, Anna Jazdzewska, Anne-Nina Lörz
15:00	<b>How fishes create connections in pelagic ecosystems: Lanternfishes (Myctophidae) in the Gulf of Mexico</b> <b>Rosanna J. Milligan</b> , Tracey T. Sutton	15:00	<b>Climate Change Effects on Dispersal from the Western Pacific Hydrothermal Vents</b> <b>Satoshi Mitarai</b> , Kirk B. Sato, Sasha Shchepetkin, James C. McWilliams, Lauren S. Mullineaux, and Lisa A. Levin
15:15	<b>BREAK</b>		

15:45	<b>PELAGIC • SERRA</b> <b>Are giant larvaceans a missing link in deep-sea food webs?</b> <b>Bruce Robison</b> , Kim Reisenbichler, Rob Sherlock, Anela Choy, Kakani Katija all MBARI, Karen Osborn Smithsonian, NMNH, Henk-Jan Hoving GEOMAR, Kiel	15:45	<b>CONNECTIVITY • SAN CARLOS</b> <b>Larval dispersal contributes to genetic diversity and connectivity of limpet (<i>Lepetodrilus nux</i>) populations in the Okinawa Trough</b> <b>Yuichi Nakajima</b> , Masako Nakamura, Hiromi Kayama Watanabe, Satoshi Mitarai
16:00	<b>Optimizing vision in twilight conditions: the story of the pearlside</b> <b>Fanny de Busserolles</b> , Fabio Cortesi, Jon Vidar Helvik, Wayne Davies, Rachel Templin, Robert Sullivan, Craig Michell, Jessica Mountford, Shaun Collin, Xabier Irigoien, Stein Kaartvedt, Justin Marshall	16:00	<b>Reproduction and connectivity of the vent/seep ophiuroid <i>Ophioctenella acies</i></b> <b>Craig M. Young</b> , Caitlin Plowman, Cliff Cunningham, Bernard Ball, Christina Ellison, Zoe Wellschlagel, Cindy Lee Van Dover
16:15	<b>AUTECOLOGY • SERRA</b> <b>Hi! Lights: Bioluminescent communication of a mesopelagic lanternfish</b> <b>José Paitio</b> , Shiro Takei, Masakazu Iwasaka, Fanny de Busserolles, Justin Marshall and Yuichi Oba	16:15	<b>CORALS • SAN CARLOS</b> <b>Multi-Species Comparative Connectivity Patterns of Deep-Sea Coral Populations</b> <b>Santiago Herrera</b> , Matthew Galaska, Andrea Quattrini, Annalisa Bracco, Guangpeng Liu, Peter Etnoyer
16:30	<b>The curious tale of <i>Astomonema</i> in the deep sea – a chemosynthetic worm feeling at home in high-deposition heterotrophic sediments</b> <b>Jeroen INGELS</b> , Allcock L, Bourque JR, Demopoulos AWJ, Kiriakoulakis K, Martin D, Robertson CM, Roman S, Rueggeberg A, Vanreusel A, Wolff G	16:30	<b>Methodologies and tools for restoration of degraded deep-sea coral gardens in the Azores</b> <b>Marina Carreiro-Silva</b> , M Carreiro-Silva, Bilan M, Godinho A, Martins I, Rakka M, Morato T
16:45	<b>Buoyancy, migration, and foraging in the abyss: How do deep-sea fishes balance the energy budget?</b> <b>Imants G. Priede</b>	16:45	<b>Population genomics reveals complex connectivity patterns among southeast Alaskan red tree coral (<i>Primnoa pacifica</i>) populations</b> <b>Cheryl L. Morrison</b> , Meredith V. Everett, Rhian G. Waller, Robert P. Stone
17:00	<b>Recruitment and growth of Arctic deep-sea invertebrates in a long-term experiment</b> <b>Kirstin Meyer</b> , Melanie Bergmann, Thomas Soltwedel	17:00	<b>Cold-water coral communities on rocky walls: Distribution from global to colony scales</b> <b>Katleen Robert</b> , Daniel O.B. Jones, Aggeliki Georgiopoulou and Veerle A.I Huvenne
17:15	<b>A first glimpse into the physiology and metabolism of Indian Ocean vent gastropod holobionts</b> <b>Julia Sigwart</b> , Chong Chen, Ken Takai	17:15	<b>Thermal acclimation range of two Mediterranean cold-water coral species</b> <b>Stéphanie Reynaud</b> , Orejas Covadonga, Campagno Andrea, Gori Andrea, JimenezCarlos, Ferreier-Pages Christine
17:30	<b>Pacific flatnose <i>Antimora microlepis</i> and blue hake <i>A. rostrata</i>: global overview of ecology, inter- and intra-species relationships, and chemical compositions</b> <b>Alexei M. Orlov</b> , Svetlana Yu. Orlova, Alexandr M. Sytov, Elena V. Vedishcheva, Pavel K. Afanasiev, Ilya I. Gordeev, Roman V. Artemov, Valeria V. Gershunskaya, Igor V. Grigorov, Nikolai B. Korostelev, Natalia I. Lazareva	17:30	<b>Genotype-specific response of <i>Lophelia pertusa</i> to low pH</b> <b>A. Glazier</b> , A.Weinnig, C.Gomez, M.Kurman, S. Herrera, E. Cordes

18:30 **STUDENT BBQ • Hopkins Marine Station**

# FRIDAY • 14th

08:00 **COFFEE**

08:30 **PLENARY: Shana Goffredi • *Symbiotic Life in the Deep: A Continuum of Discovery***

09:00 **PLENARY: Tracey Sutton • *On the importance of baselines in deep ocean stewardship: a cautionary tale from the deep-pelagic Gulf of Mexico and beyond***

09:30 **BREAK**

09:45 **CORALS • SERRA**  
**Deep-Sea Coral and Sponge Ecosystems of the US: A Decade of Discovery and Stewardship**  
**Thomas F. Hourigan**, Peter J. Etnoyer; Stephen D. Cairns

09:45 **STEWARDSHIP • SAN CARLOS**  
**Linking climate change to societal issues in the deep ocean**  
**Lisa A. Levin**, Maria Baker, Marina Careiro Silva, William Cheung, Ana Colaco, Daniel Dunn, Ron Etter, Nadine LeBris, Telmo Morato, Craig Smith, Tony Thompson, Cindy Van Dover, Chih Lin Wei, Joana Xavier

10:00 **Oxygen and nutrient dynamics of a cold-water coral reef in the North-East Atlantic Ocean.**  
**Evert de Froe**, Sandra Maier, Furu Mienis, Gerard Duineveld, Marc Lavaleye, Dick van Oevelen

10:00 **A habitat classification to support spatial planning associated with deep-sea mining**  
**Kirsty McQuaid**, Martin Attrill, Adrian Glover, Daniel Jones, Erik Simon-Lledo, Kerry Howell

10:15 **Energy and nutrient recycling on cold-water coral reefs: The use of bacterial and DOM-derived carbon by key reef filter feeders**  
**Sandra R. Maier**, Kutti, Tina; Bannister, Raymond; van Breugel, Peter; van Rijswijk, Pieter; Trammer, Anton; van Oevelen, Dick

10:15 **The effect of research effort on global biodiversity and anthropogenic risk at deep-sea hydrothermal vents**  
**Andrew Thaler**

10:30 ***Antipathella subpinnata* as model species: life history and autoecology**  
**Martina Coppari**, Mestice Fulvia, van de Water Jeroen, Ferrier-Pagès Christine, Betti Federico, Costantini Federica, Bertuccio Valentina, Bavestrello Giorgio, Bo Marzia

10:30 **Scoping the value of additional deep-sea Marine Protected Areas in the seas around Scotland, UK**  
**Alice Cornthwaite**

10:45 **Using 3D photogrammetry to investigate how cold-water coral reef structural complexity influences biodiversity and community assemblages.**  
**David Price**, Veerle Huvenne, Katleen Robert, Claudio Lo Iacono, Alex Callaway, Rob Hall, Laura Grange

10:45 **Exploring the Seafloor to Achieve Deep-Sea Habitat Conservation Victories off the US West Coast**  
**Geoffrey Shester**, Ben Enticknap, Erin Kincaid, Ashley Blacow, Mariel Combs, Jon Warrenchuk, and Susan Murray

11:00 **Large-scale survey of deep-sea coral microbiomes in the Gulf of Mexico reveals potential symbioses**

**Sam Vohsen**, Iliana Baums, Chuck Fisher

11:15 **Deep-sea corals document changing stable isotope chemistry in the Southern California Bight.**

**Branwen Williams**, Sarah Barnes, Mark Knaak, Chris Caldwell, Matt McCarthy, and Peter Etnoyer

11:30 **A window opens from the mesopelagic: A proteinaceous deep-sea coral's view of biogeochemistry and ecosystem change above.**

**Thomas P. Guilderson**, Robert Dunbar, Matthew McCarthy, Kelton McMahon, E. Brendan Roark, Yuan Shen, Owen Sherwood, and Branwen Williams

11:00 **A deep-sea mining decision-making process using the Guided Interactive Statistical Decision Tools**

**Aharon Fleury**, Tom Stockton, Paul Black

11:15 **Selective commercial line fishing and biodiversity conservation co-exist on seamounts in a deep-sea marine reserve**

**Alan Williams**, Judy Upston, Mark Green, Ken Graham

11:30 **Merging dance and science: An offbeat combination**

**Kyra Schlining**, Fran Spector Atkins

11:45 **LUNCH**

13:15

#### **TROPHIC • SERRA**

**Food-web dynamics and isotopic niches within two deep-sea canyons and adjacent slope habitats**

**Amanda W.J. Demopoulos**, McClain-Counts, J., Bourque, J., Chaytor, J.D., Brooke, S., Ross, S.W., Smith, B.J.

13:30

**Shifts in deep-sea food webs linked to climate and food supply**

**Rachel M Jeffreys**, David S.M. Billett, Brian J. Bett, George A. Wolff

13:45

**Methane seep ecotones: sphere of trophic influence on carbonate macrofauna**

**Olivia S. Pereira**, Jennifer Le, Jennifer Gonzalez, Erik Cordes, Victoria J. Orphan, Sean Mullin, Kat S. Dawson, Shana K. Goffredi, Greg W. Rouse, Lisa A. Levin

14:00

**Red, Hot, Dexterous Devils: Influence of environmental variability on diet of Humboldt squid (*Dosidicus gigas*) in the Gulf of California, Mexico**

**Elan Portner**, Unai Markaida, Kelly Benoit-Bird, Chad Waluk, Carlos Robinson, and William Gilly

14:15

**Trophic structure of deep-pelagic micronekton as revealed through bulk and compound-specific stable isotope analysis**

**Travis Richards**, Tracey Sutton; David Wells

14:30

**Trophic structure of two co-occurring species of deep-sea sharks**

**Jón Sólmundsson**, Klara B. Jakobsdóttir, Hildur Pétursdóttir

14:45

**BREAK**

- 15:15 **PELAGIC • SERRA**  
**Northern elephant seals carrying oceanographic tags indicate mesopelagic prey availability in the Northeastern Pacific**  
**Theresa R Keates**, Rachel R. Holser, Luis A. Hückstädt, Patrick W. Robinson, and Daniel P. Costa
- 15:30 **The perils of bad taxonomy for leading edge science: a case study with the genus *Aegina*, and the consequences for Deep Learning**  
**Dhugal Lindsay**, Mary Grossmann, Mitsuko Hidaka-Umetsu, Jun Nishikawa, Hiroshi Miyake, Ryo Minemizu, Russell Hopcroft, Bastian Bentlage, Allen Collins
- 15:45 **Reconciling morphology and molecules to explore diversity and distribution of gossamer worms (Polychaeta, Tomopteris)**  
**Karen Osborn**, Sarit Truskey, Leann Biancani
- 16:00 **Appraisal of Microplastic Ingestion in Deep-pelagic Fishes and Crustaceans in the Gulf of Mexico and Straits of Florida**  
**Ryan Bos**, Tracey Sutton, and Tamara Frank
- 16:15 **Now you see me, now you don't: Cephalopod visual ranges and implications for deep-sea visual ecology**  
**Kate Thomas**, Sonke Johnsen, Mike Vecchione
- 16:30 **New observations of bioluminescent behavior and fluorescence in the deep sea and open ocean**  
**Steven Haddock**, W.R. Francis, D.T. Schultz, C.W. Dunn, B. Erwin, S. Martini, L.M. Christianson, E.V. Thuesen

16:45 **Wrap up • Awards • Host Announcement - Serra Room**

18:00 **BANQUET • Trolleys to Monterey Bay Aquarium**



# LIGHTNING TALK ORDER

## Deep-Sea Biology Symposium 2018

Updated: 17-Sep-2018 • [Symposium Page](#)

Lightning talks will be divided into two sessions Tuesday morning at 08:30 and 09:45 in the Serra Room. Only **presenting authors** are listed here. Co-authors can be seen in the [program.pdf](#) file, and affiliations are listed in the [abstracts.pdf](#) document.



### SESSION 1 • Tuesday 8:30

#### Advances in taxonomy and phylogenetics

POSTER 02 ⚡ Advances in taxonomy and phylogenetics

Raissa Hogan • **Mitogenomics and phylogeny of Northeast Atlantic Pennatulacea**

POSTER 03 ⚡ Advances in taxonomy and phylogenetics

Li Junyuan • **The mitochondrial genomic characters of an ancient hadal amphipod from Mariana 10,908 m trench**

POSTER 08 ⚡ Advances in taxonomy and phylogenetics

Genki Kobayashi • **Evolutionary shifts in habitat depths of bamboo worms (Annelida: Maldanidae)**

POSTER 11 ⚡ Advances in taxonomy and phylogenetics

Elin Thomas • ***Chiridota heheva* - the cosmopolitan holothurian**

#### Autecology

POSTER 14 ⚡ Autecology

B.P. Burford • **Visual signaling by a group-forming squid in the deep sea**

POSTER 15 ⚡ Autecology

YOSHIHIRO FUJIWARA • **Discovery of a colossal slickhead (Alepocephaliformes: Alepocephalidae): An active-swimming top predator in Suruga Bay, Japan**

POSTER 16 ⚡ Autecology

Jesse T. Kelly • **Inferred post-spawning reproductive system morphology in female *Octopoteuthis sicula* Rüppell, 1844 (Cephalopoda: Octopoteuthidae)**

POSTER 17 ⚡ Autecology

Frank Parrish • **Flow characteristics of deep sea coral and sponge communities**

POSTER 20 ⚡ Autecology

Maeva Perez • **A CRISPR focus on *Ridgeia piscesae* endosymbiont population structure**

## Biodiversity and ecosystem functioning

POSTER 23 ⚡ Biodiversity and ecosystem functioning

Hronn Egilsdottir • **The biodiversity of bivalves and gastropods north and south of the Greenland-Iceland-Faroe ridge**

POSTER 25 ⚡ Biodiversity and ecosystem functioning

Ana K. Luna-Cruz • **Deep-water Holothuroids from the West Coast of Baja California, Mexico: Taxonomy and some Ecological Aspects.**

POSTER 27 ⚡ Biodiversity and ecosystem functioning

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POSTER 59 ⚡ Biodiversity and ecosystem functioning

Irina Zhulay • **Epifaunal communities at ridge, plateau and basin locations in the Chukchi Borderland, Arctic deep sea**

POSTER 60 ⚡ Biodiversity and ecosystem functioning

Jonatha Giddens • **Exploring patterns of biodiversity in the deep-sea with National Geographic's Deep-ocean Dropcam**

## SESSION 2 • Tuesday 9:45

### Chemosynthetic ecosystems

POSTER 63 ⚡ Chemosynthetic ecosystems

Corinna Breusing • **Symbiont-host decoupling in eastern Pacific vesicomyid clams**

POSTER 65 ⚡ Chemosynthetic ecosystems

Brennan Phillips • **Deep-sea hydrothermal vents as natural egg-case incubators at the Galapagos Rift**

POSTER 66 ⚡ Chemosynthetic ecosystems

Daniela Zeppilli • **Nematode-prokaryote interactions in deep-sea hydrothermal vents**

POSTER 68 ⚡ Chemosynthetic ecosystems

Coral Diaz-Recio Lorenzo • **Meiofaunal diversity at the hydrothermal vent site ABE in the Eastern Lau Spreading Center**

POSTER 73 ⚡ Chemosynthetic ecosystems

David Price • **Patterns of microbial community assemblages and chemical fractionation of the Rainbow hydrothermal vent plume**

POSTER 76 ⚡ Chemosynthetic ecosystems

Makoto Sugimura • **What does *Calyptogen* sp move looking for? Behavior observation of *Calyptogen* sp in rearing tank**

POSTER 79 ⚡ Chemosynthetic ecosystems

Yi Yang • **Genomic comparison of symbionts in deep-sea tubeworms reveals their functional similarities and differences in symbiotic relationships with the host**

### Connectivity and biogeography

POSTER 81 ⚡ Connectivity and biogeography

Adelaide Rhodes • **Deep Sea Biodiversity Patterns of Tanaidacea (Crustacea: Peracarida) in the Gulf of Mexico**

POSTER 83 ⚡ Connectivity and biogeography

Rebecca E. Ross • **Combining connectivity and biogeography: How *Pheronema carpenteri* aggregations may be particularly vulnerable marine ecosystems**

POSTER 89 ⚡ Connectivity and biogeography

Eva Ramirez-Llodra • **HACON: assessing the role of the Gakkel Ridge as a connectivity pathway between ocean basins**

## Corals

POSTER 96 ⚡ Corals

Tina Molodtsova • **Black Coral Garden on the Summit of Middle Bank (Hawaii)**

POSTER 99 ⚡ Corals

C. Tyler Fountain • **Polyp to Population: A Tale of Two Corals**

POSTER 101 ⚡ Corals

Nissa Kreidler • **Habitat Suitability Mapping for Southern California Bight Deep Sea Corals and Sponges**

POSTER 105 ⚡ Corals

Erin E. Easton • **Overlooked diversity of mesophotic (coral) ecosystems**

## Deep-ocean stewardship

POSTER 106 ⚡ Deep-ocean stewardship

Dr Maria Baker • **The Deep Ocean Stewardship Initiative - Advancing Science in Policy**

POSTER 111 ⚡ Deep-ocean stewardship

Ben Enticknap • **Protecting the Deep-Sea: Geospatial Analysis of Pacific Essential Fish Habitat and Rockfish Conservation Area Changes**

POSTER 115 ⚡ Deep-ocean stewardship

Charles A. Boch • **Going deeper: Fragments of hope in the deep sea.**

## James J. Childress

POSTER 129 ⚡ James J. Childress

Telissa M. Wilson • **Not all ctenophores have evolved equally: Ecophysiological interpretation of metabolic enzyme activities of deep-sea ctenophores**

POSTER 130 ⚡ James J. Childress

Tiffany S. Bachtel • **Effects of Hydrostatic Pressure on the Metabolic Enzymes of Ctenophores from Different Habitat Depths**

POSTER 131 ⚡ James J. Childress

Gaudron SM • **Are reproductive functional traits in polychaetes and bivalves from deep-sea reducing habitats phylogenetically or environmentally constrained?**

POSTER 132 ⚡ James J. Childress

Josh Havassy • **The kinematics of *Tomopteris* swimming: differences between power and recovery strokes**

TUESDAY

4 of 6

Lightning Talks

## Mining impacts

POSTER 137 ⚡ Mining impacts

Felix Janssen • **Experimental polymetallic nodule mining affects deep-sea microbial communities and functions**

POSTER 144 ⚡ Mining impacts

Travis Washburn • **Environmental Risk Assessment of Deep-Sea Mining at Manganese Nodule Beds and Hydrothermal Vents**

## Natural and anthropogenic disturbance

POSTER 146 ⚡ Natural and anthropogenic disturbance

Larissa Lemon • **Population density of abyssal epibenthic holothurians using fine scale time-series imagery (2007-2017)**

POSTER 149 ⚡ Natural and anthropogenic disturbance

Julien Marticorena • **Restoration in the deep sea: results of a disturbance experiment**

## Pelagic systems

POSTER 158 ⚡ Pelagic systems

Manabu Bessho-Uehara • **Biochemistry of deep-sea gelatinous luminous animals**

POSTER 160 ⚡ Pelagic systems

Mitsuko Hidaka-Umetsu • **Comparative ROV surveys reveal jellyfish blooming in deep-sea Calderas**

## Seamounts and canyons

POSTER 162 ⚡ Seamounts and canyons

Beatriz Mejia-Mercado • **Structure of the deep-sea fish assemblages on Necker Island, Northwestern Hawaiian Islands**

## Technology and observing systems

POSTER 171 ⚡ Technology and observing systems

Christine L Huffard • **The Station M time series study turns 29: A retrospective and outline of new directions**

POSTER 173 ⚡ Technology and observing systems  
Brian Schlining • **MBARI Media Management**

POSTER 174 ⚡ Technology and observing systems  
Tom Van Engeland • **Food supply mechanisms to Norwegian cold-water coral reefs using the LoVe cabled ocean observatory**

POSTER 177 ⚡ Technology and observing systems  
Adrian Glover • **Deep Sea ID v1.3: a field guide to the marine life of the deep sea**

## Trophic ecology

POSTER 181 ⚡ Trophic ecology  
Diana L Salcedo • **Benthic macrofaunal trophic structure and organic carbon flux at deep vent and seep systems of the Southern Gulf of California (Pescadero and Alarcon Rise)**

POSTER 183 ⚡ Trophic ecology  
Kat Bolstad • **In-situ observations of an intact natural whale fall in Palmer Deep, Western Antarctic Peninsula**

POSTER 184 ⚡ Trophic ecology  
Claudia Klimpfinger • **Labial Cartilages - more to it than meets the eye**

POSTER 185 ⚡ Trophic ecology  
Franziska S. Bergmeier • **Molecular analyses of *Solenogaster* gut contents to investigate the diversity of food sources**

POSTER 186 ⚡ Trophic ecology  
Katherine Dunlop • **Scavenging processes on jellyfish carcasses across a fjord depth gradient**

POSTER 192 ⚡ Trophic ecology  
Karine Olu & L.N. Michel • **Towards a stable isotope database for deep-sea foundation species**

POSTER 194 ⚡ Trophic ecology  
Erik V. Thuesen • **Nutritional interactions in a midwater community off Southern California inferred from stable carbon and nitrogen isotope ratios**



# POSTERS

Posters will take place on Tuesday at 10:45 and 17:45 in the Serra room, with lightning talk sessions Tuesday morning at 08:30 and 09:45.

Updated: 18-Sep-2018 • [Symposium Page](#)



## SESSIONS

- Advances in taxonomy and phylogeny
- Autecology
- Biodiversity and ecosystem functioning
- Chemosynthetic ecosystems
- Connectivity and biogeography
- Corals
- Deep-ocean stewardship
- Deep-sea 'omics
- James J. Childress
- Mining impacts
- Natural and anthropogenic disturbance
- Pelagic systems
- Seamounts and canyons
- Technology and observing systems
- Trophic ecology

## Advances in taxonomy and phylogenetics

POSTER 1 • Advances in taxonomy and phylogenetics

### From Hansen report to IceAGE program – a century of the research of small peracarids around Iceland

Anna Stępień, Piotr Jóźwiak, Aleksandra Jakiel, Magdalena Błażewicz

POSTER 2 ⚡ Advances in taxonomy and phylogenetics

### Mitogenomics and phylogeny of Northeast Atlantic Pennatulacea

Raissa Hogan, Kevin Hopkins, Chris Yesson, Louise Allcock

POSTER 3 ⚡ Advances in taxonomy and phylogenetics

### The mitochondrial genomic characters of an ancient hadal amphipod from Mariana 10,908 m trench

Li Junyuan, Zeng Cong; Yan Guoyong; He Lisheng

POSTER 4 - Advances in taxonomy and phylogenetics

### Polychaetes from Australia's Eastern Abyss

Laetitia Gunton, Pat Hutchings, Robin Wilson, Anna Murray, Hannelore Paxton, Ingo Burghardt, Tim O'Hara

POSTER 5 - Advances in taxonomy and phylogenetics

### Biodiversity Exploration and Phylogeny of Cocculinidae (Gastropoda: Cocculiniformia)

Hsin Lee, Wei-Jen Chen; Sarah Samadi

POSTER 6 - Advances in taxonomy and phylogenetics

### Progress on the research of fish systematics and evolution through the Tropical Deep-Sea Benthos program

Wei-Jen Chen, Sarah Samadi

POSTER 7 - Advances in taxonomy and phylogenetics

### First records of *Nicella* coral garden epibionts of the Brazilian continental margin

PAULA BRAGA GOMES, Cordeiro, Ralf Tarciso; Lima, Suellen; Campos, Felipe Ferreira; Lima, Gislaine Vanessa; Targino, Alessandra Karina Gomes

POSTER 8 ⚡ Advances in taxonomy and phylogenetics

### Evolutionary shifts in habitat depths of bamboo worms (Annelida: Maldanidae)

Genki Kobayashi, Ryutaro Goto, Tsuyoshi Takano, Shigeaki Kojima

POSTER 9 • Advances in taxonomy and phylogenetics

### From shallow to deep: phylogeny and evolutionary radiation of marine mussels (Bivalvia: Mytilidae)

Jun Liu, Helu Liu, Haibin Zhang

POSTER 10 • Advances in taxonomy and phylogenetics

### Phylogeny and biogeography of deep-sea wood boring Xylophaginae (Mollusca, Bivalvia)

Chiara Romano, V. Tunnicliffe, G. W. Rouse, D. Martin

POSTER 11 ⚡ Advances in taxonomy and phylogenetics

### *Chiridota heheva* - the cosmopolitan holothurian

Elin Thomas

POSTER 12 - Advances in taxonomy and phylogenetics

### Three Siphonostomatoid Copepods (Dirivultidae) from a Deep-sea Hydrothermal Vent Field in the Central Indian Ridge

Jimin Lee, Ok Hwan Yu, Dongsung Kim, Il-Hoi Kim

POSTER 13 - Advances in taxonomy and phylogenetics

### Different, different but same? Extreme morphological plasticity in deep-sea limpets

Chong Chen, Hiromi K. Watanabe, Yukiko Nagai, Takashi Toyofuku, Kei Sato, Robert G. Jenkins, Ting Xu, Jin Sun, Jian-Wen Qiu, Ken Takai, Katsunori Fujikura, Takenori Sasaki

## Autecology

POSTER 14 ⚡ Autecology

### Visual signaling by a group-forming squid in the deep sea

B.P. Burford, Robison, B.H.

POSTER 15 ⚡ Autecology

### Discovery of a colossal slickhead (Alepocephaliformes: Alepocephalidae): An active-swimming top predator in Suruga Bay, Japan

YOSHIHIRO FUJIWARA, M. Kawato, J. Y. Poulsen, S. Tsuchida, H. Iida, Y. Chikaraishi, N. Ohkouchi, K. Oguri, S. Goto, G. Ozawa, S. Tanaka, M. Miya, T. Sado, K. Kimoto, T. Toyofuku, K. Fujikura

POSTER 16 ⚡ Autecology

### Inferred post-spawning reproductive system morphology in female *Octopoteuthis sicula* Rüppell, 1844 (Cephalopoda: Octopoteuthidae)

Jesse T. Kelly

POSTER 17 ⚡ Autecology

### Flow characteristics of deep sea coral and sponge communities

Frank Parrish, Thomas Oliver

POSTER 18 - Autecology

### Reproductive ecology of dragonfishes (Stomiiformes: Stomiidae) in the Gulf of Mexico

April Cook, Alex Marks, Tracey Sutton

POSTER 19 - Autecology

### Reproductive biology and ecology of Pacific hagfish (*Eptatretus stoutii*) and Black hagfish (*Eptatretus deani*)

Aharon Fleury

POSTER 20 ⚡ Autecology

### A CRISPR focus on *Ridgeia piscesae* endosymbiont population structure

Maeva Perez, Bernard Angers, Kim Juniper

POSTER 21 - Autecology

### Response of sea urchin fitness traits to environmental gradients across the southern California oxygen minimum zone

Kirk N Sato, Andreas J. Andersson ; James M.D. Day ; Jennifer R.A. Taylor ; Michael B. Frank ; Jae-Young Jung ; Joanna McKittrick ; Lisa A. Levin

POSTER 22 - Autecology

### Clade-based differences in deep-sea wood-boring bivalves potentially impact associated animals

Janet R Voight, Raymond W Lee

## Biodiversity and ecosystem functioning

POSTER 23 ⚡ Biodiversity and ecosystem functioning

### The biodiversity of bivalves and gastropods north and south of the Greenland-Iceland-Faroe ridge

Hronn Egilsdottir, Niall McGinty, Gudmundur Gudmundsson

POSTER 24 + Biodiversity and ecosystem functioning

### Deep-water macrofauna diversity and functional traits at Gulf of Mexico central coast: General patterns associated to depth and temporal variation

Ivan Hernandez-Avila, Daniel Pech

POSTER 25 ⚡ Biodiversity and ecosystem functioning

### Deep-water Holothuroids from the West Coast of Baja California, Mexico: Taxonomy and some Ecological Aspects.

Ana K. Luna-Cruz, Michel E. Hendrickx

POSTER 26 - Biodiversity and ecosystem functioning

### Benthic carbon mineralization in hadal trenches: inter and intra-trench variations

Frank Wenzhoefer, Ronnie N Glud

POSTER 27 ⚡ Biodiversity and ecosystem functioning

### Uncovering morphological and molecular deep-sea biodiversity - NW Pacific amphipods case study

Anna Jazdzewska, Tomasz Mamos

POSTER 28 ⚡ Biodiversity and ecosystem functioning

### Population density, size structure, and reproductive stage of *Elpidia heckeri* and *Kolga hyalina* (Holothuroidea, Elpidiidae) in the abyssal of Central Arctic Ocean

Antonina Kremenetskaia, Elena Rybakova, Anatoliy L. Drozdov, Andrey Gebruk, Antje Boetius,

POSTER 29 ⚡ Biodiversity and ecosystem functioning

### Deep- sea nematode communities during Arctic spring bloom: a morphometric approach

Katarzyna Grzelak, Marta Gluchowska; Klaudia Gregorczyk; Nathalie Morata; Monika Kędra; Magdalena Błażewicz

POSTER 30 - Biodiversity and ecosystem functioning

### Lessons learned since 2011 about cephalopods in the Gulf of Mexico

Heather Judkins, M. Vecchione, L. Timm, I. Romero, T. Richards, A. Cook, T. Sutton

POSTER 31 ⚡ Biodiversity and ecosystem functioning

### Benthic habitat and megafaunal diversity on the Angolan Continental Slope (SE Atlantic)

Simone Pfeifer, Brian J. Bett, Daniel O.B. Jones

POSTER 32 - Biodiversity and ecosystem functioning

### **Protected development in deep-sea invertebrates. The rule in the southwestern Atlantic?**

Pamela Rivadeneira, Pastorino, Guido; Teso, Valeria; Martínez, Mariano; Laurretta, Daniel; Berecochea, Juan José; Brogger, Martín; Flores, Jonathan; Pertossi, Renata; Sánchez, Noelia and Penchaszadeh, Pablo E.

POSTER 33 - Biodiversity and ecosystem functioning

### **Pelagic-benthic coupling in a glaciomarine fjord, Andvord Bay (Antarctica)**

Amanda Ziegler, Craig R. Smith, Mattias Cape

POSTER 34 - Biodiversity and ecosystem functioning

### **The Deep-sea Ecosystem: Assessment of the biodiversity and abundance of deep-water fauna in the Exuma Sound, Eleuthera, Bahamas, and the Northeastern Gulf of Mexico.**

Mackellar Violich, Grubbs, R.D. ; Brooks, E.

POSTER 35 - Biodiversity and ecosystem functioning

### **Body-size spectra, ecological hypotheses, and metabolic theory in seafloor ecology**

Noëlie Benoist

POSTER 36 - Biodiversity and ecosystem functioning

### **Culturing deep-sea sponge associated microbes: systematic assessment of culturing methods**

Poppy Best, Matthew Koch, Kerry Howell, Mathew Upton, Alistair Bishop, Nicola Foster and Phillip Warburton

POSTER 37 - Biodiversity and ecosystem functioning

### **Filling in the Gaps: Forming Partnerships to Expand Genetic Libraries**

Stephanie L. Bush, Michael J. V. O'Mahoney, Simon J. Pecnik, Marshall H. Boyd

POSTER 38 - Biodiversity and ecosystem functioning

### **Characterization of deep-sea sponge ecological function in the Azores comparison with other North Atlantic Banks**

Ana Colaço, Creemer, M.,; Beazley Lindsay; Defise, A.,; Goulart, J.,; Pham, C.,; Silva, T.,; R.L. Reis, G. S. Diogo, E, Martins,

POSTER 39 - Biodiversity and ecosystem functioning

### **A genetic fingerprint of Amphipoda from Icelandic waters – the baseline for further biodiversity and biogeography studies**

Anna Jażdżewska, Laure Corbari, Amy Driskell, Inmaculada Frutos, Charlotte Havermans, Ed Hendrycks, Lauren Hughes, Anne-Nina Lörz, Bente Stransky, Anne Helene S. Tandberg, Wim Vader, Saskia Brix

POSTER 40 - Biodiversity and ecosystem functioning

### **Diversity, abundance, and distribution of deep-sea Tanaidacea off Iceland – IceAGE project**

Piotr Józwiak, Anna Stępień, Aleksandra Jakiel, Magdalena Błażewicz

POSTER 41 - Biodiversity and ecosystem functioning

### **Megabenthic communities of Central Arctic based on photographic survey and trawl data**

Elena Rybakova, Antonina Kremenetskaia, Andrey Vedenin, Antje Boetius, and Andrey Gebruk

POSTER 42 - Biodiversity and ecosystem functioning

### **Deep-sea Isopoda (Crustacea, Malacostraca) of the Northwest Pacific: new concept of biodiversity based on the results of expeditions SoJaBio, Kurambio, and SokhoBio**

Olga A. Golovan, Marina V. Malyutina, Angelika Brandt

POSTER 43 - Biodiversity and ecosystem functioning

### **Sea anemones from deep sea in Brazil: What we already know and what is missing?**

PAULA BRAGA GOMES, YAGO ARAUJO MELO, ALESSANDRA TARGINO

POSTER 44 - Biodiversity and ecosystem functioning

### **Oxygen minimum zones and vertical zonation of benthic fauna in the Revillagigedo Archipelago, Mexico**

Karla Haiat Sasson, Brennan T. Phillips, Steven Carey, Christopher N. Roman, Claus Siebe, Esmerelda Morales Domínguez, Leigh Marsh, Karen F. Wishner

POSTER 45 - Biodiversity and ecosystem functioning

### **Spatial variability of benthic taxonomic diversity in the Atlantic and Pacific**

Anita Hollingsworth, D.O.B. Jones, H.A. Ruhl, C.R. Young

POSTER 46 - Biodiversity and ecosystem functioning

### **Rapid changes and long-term cycles in an abyssal benthic megafaunal community observed over 29 years in the northeast Pacific**

Linda A Kuhn, Christine L. Huffard, Kenneth L. Smith, Jr.

POSTER 47 - Biodiversity and ecosystem functioning

### **New Records of *Synallactes virgulosolidus* Massin & Hendrickx, 2010 (Echinodermata: Holothuroidea) from the Eastern Pacific**

Ana K. Luna-Cruz, Michel E. Hendrickx

POSTER 48 - Biodiversity and ecosystem functioning

### **The diversity and morphology of the echinoderms in the deep-sea of the Kurile-Kamchatka Trench**

Anastassya S. Maiorova

POSTER 49 - Biodiversity and ecosystem functioning

### **Element concentration and distribution in nematodes from 3 geographically distinct areas using synchrotron radiation X-ray fluorescence**

Lisa Mevenkamp, Johan De Grave, Brecht Laforce, Dimitri Vandenberghe, Laszlo Vincze, Ann Vanreusel

POSTER 50 - Biodiversity and ecosystem functioning

## Physiological differences of abyssal holothurians to a varying OM input

Hidetaka Nomaki , Teresa Amaro, Eugenio Rastelli, Yohei Matsui, Roberto Danovaro, George A. Wolff

POSTER 51 - Biodiversity and ecosystem functioning

## Sea anemones on subantarctic sea pens: parasitism?

CARLOS DANIEL PEREZ , Schejter L., Acuña F., Garese A., Cordeiro, R.T.

POSTER 52 ⚡ Biodiversity and ecosystem functioning

## Computer Vision for Automated Identification and Enumeration of Deep-Sea Corals and Sponges

Andrea M. Quattrini , Yekaterina Kharitonova, Anthony Romm, Angela Zhao, Amanda W.J. Demopoulos

POSTER 53 - Biodiversity and ecosystem functioning

## Evolving approaches for deep ocean observing and the collection of data for essential ocean variables in biology and ecosystems

Henry A Ruhl, The DOOS BioEco Task Team

POSTER 54 - Biodiversity and ecosystem functioning

## Intra- and inter-field variations in *Bathymodiolus azoricus* deep-sea faunal assemblages along the northern Mid Atlantic Ridge

Sarrazin Jozee, Marie Portail, Cécile Cathalot, Agathe Laes, Bérengère Husson, Erwann Legrand, Pierre-Marie Sarradin

POSTER 55 ⚡ Biodiversity and ecosystem functioning

## A novel benthic ecosystem possibly associated to gas-emissions discovered in a high altitude Chilean lake by the NASA Planetary Lake Lander (PLL) Project

Virginie Tilot, N. A. Cabrol, V. A. Parro, E. Moreno Ostos, Nieves Lopez-Gonzalez, Fabian Figuero Rebolledo, P. Sobron, E.W. Smith, C. Tambley, V. Gallardo and the Planetary Lake Lander team.

POSTER 56 - Biodiversity and ecosystem functioning

## Depth-related Skeletal Reduction in Snailfishes (Liparidae)

Abigail von Hagel, Tsoi, R; Kolmann, MA; Gerringer, ME; Orr, JW; Farina, SC

POSTER 57 ⚡ Biodiversity and ecosystem functioning

## Are fish associations with corals and sponges more than an affinity to structure: evidence across two widely divergent ecosystems

Rachel Wilborn, Chris Rooper-NOAA AFSC, Pam Goddard, Rachel Wilborn

POSTER 58 - Biodiversity and ecosystem functioning

## A Novel and Kinetically Stable Cu/Zn-superoxide Dismutase from Hadal Sea Cucumber *Paelopatides* sp.

Haibin Zhang , Yanan Li,

POSTER 59 ⚡ Biodiversity and ecosystem functioning

## Epifaunal communities at ridge, plateau and basin locations in the Chukchi Borderland, Arctic deep sea

Irina Zhulay, Katrin Iken, Paul Renaud, Bodil Bluhm

POSTER 60 ⚡ Biodiversity and ecosystem functioning

## Exploring patterns of biodiversity in the deep-sea with National Geographic's Deep-ocean Dropcam

Jonatha Giddens, Alan Friedlander, Whitney Goodell, Alan Turchik

POSTER 61 - Biodiversity and ecosystem functioning

## Successful life strategies of isopods from the family Munnopsidae for colonizing deep-sea habitats

Marina Malyutina

# Chemosynthetic ecosystems

POSTER 62 - Chemosynthetic ecosystems

## 'Do not stop listening. Message forthcoming'

Ana Hilário, Eva Ramirez-Llodra; Fredrik Soreide

POSTER 63 ⚡ Chemosynthetic ecosystems

## Symbiont-host decoupling in eastern Pacific vesicomyid clams

Corinna Breusing, Shannon B. Johnson, Robert C. Vrijenhoek, C. Robert Young

POSTER 64 - Chemosynthetic ecosystems

## Metagenomics of symbiont communities in *Bathymodiolus* mussels from the US mid-Atlantic reveals complex elemental cycling

D. Katherine Coykendall, Lakyn Sanders, Robert S. Cornman, Nancy G. Prouty, Christina Kellogg, Sandra Brooke, Amanda W. J. Demopoulos, and Cheryl L. Morrison

POSTER 65 ⚡ Chemosynthetic ecosystems

## Deep-sea hydrothermal vents as natural egg-case incubators at the Galapagos Rift

Brennan Phillips, Pelayo Salinas-de-Leon, David Ebert, Mahmood Shivji, Forencia Ceritti-Pereyra, Cassandra Ruck, Charles R. Fisher, Leigh Marsh

POSTER 66 ⚡ Chemosynthetic ecosystems

## Nematode-prokaryote interactions in deep-sea hydrothermal vents

Daniela Zeppilli, Laure Bellec, Valérie Cueff-Gauchard, Lucile Durand, Marie Portail, Loïc Michel, Jozée Sarrazin, Ann Vanreusel, Marie-Anne Cambon Bonavita

POSTER 67 - Chemosynthetic ecosystems

## Stable isotopic insights into chemosynthetic food webs at two methane seeps in the US Atlantic margin

Amanda W.J. Demopoulos, McClain-Counts, J., Bourque, J., Brooke, S., Ross, S.W., Prouty, N



POSTER 68 ⚡ Chemosynthetic ecosystems

### **Meiofaunal diversity at the hydrothermal vent site ABE in the Eastern Lau Spreading Center**

Coral Diaz-Recio Lorenzo, Daisy ter Brugge, Sabine Gollner

POSTER 69 - Chemosynthetic ecosystems

### **Distribution and ecological succession of hydrothermal vent communities on a sulfide edifice characterized from 3D photogrammetric reconstructions**

Fanny Girard, Marjolaine Matabos, Aurélien Arnaubec, Mathilde Cannat, Pierre-Marie Sarradin, Jozée Sarrazin

POSTER 70 - Chemosynthetic ecosystems

### **First insights into the biodiversity of the Colombian Caribbean deep sea**

Luisa F. Dueñas, Santiago Herrera, Jorge León, Vladimir Puentes

POSTER 71 - Chemosynthetic ecosystems

### **Distribution patterns of chemosymbiotic bivalves of the subfamily Pliocardiinae (Bivalvia: Vesicomidae) from the North-West Pacific**

Elena M. Krylova, E.V. Kolpakov, S.N. Sharina, H. Sahling, S.V. Galkin, V.A. Nadtochy

POSTER 72 - Chemosynthetic ecosystems

### **Community structure and spatial distribution of vent fauna in the hydrothermal fields of North Fiji Basin based on ROV visual survey**

Won-Gi Min, Dongsung Kim, Taewook Kang, Se-Jong Ju

POSTER 73 ⚡ Chemosynthetic ecosystems

### **Patterns of microbial community assemblages and chemical fractionation of the Rainbow hydrothermal vent plume**

David Price, Sabine Haalboom, Gerard Duineveld, Marc Lavaleye, Judith Van Bleijswijk, Henko De Stijter, Harry Witte, Furu Mienis

POSTER 74 - Chemosynthetic ecosystems

### **Biomarker fingerprint of anaerobic oxidation of methane in authigenic carbonate precipitation from cold seeps along the Mid-Atlantic, USA**

Nancy Grumet Prouty, Pamela Campbell-Swarzenski

POSTER 75 - Chemosynthetic ecosystems

### **A new yeti crab phylogeny. East Pacific regional extinctions?**

Christopher Roterman, Won-Kyung Lee, Xinming Liu Rongcheng Lin, Xinzheng Li Yong-Jin Won

POSTER 76 ⚡ Chemosynthetic ecosystems

### **What does *Calyptogena* sp move looking for? Behavior observation of *Calyptogena* sp in rearing tank**

Makoto Sugimura, Yuka Koyano, Yoshiriro Suzuki, Miku Ota, Takami Nobuhara, Yukiko Ngai, Takashi Toyokuni

POSTER 77 - Chemosynthetic ecosystems

### **Meiobenthic communities from cold seeps of the Olimpi mud volcano field in the eastern Mediterranean**

N. Lampadariou, Sevastou K., Podaras D., Tselepides A.

POSTER 78 - Chemosynthetic ecosystems

### **Environmental Controls of Nitrogen Sources to Chemosynthetic Mussels using Amino Acid Nitrogen Isotopes**

Natasha Vokhshoori, Matthew D. McCarthy, Hilary G. Close, Nancy Prouty

POSTER 79 ⚡ Chemosynthetic ecosystems

### **Genomic comparison of symbionts in deep-sea tubeworms reveals their functional similarities and differences in symbiotic relationships with the host**

Yi Yang, Jin Sun, Yanan Sun, Ting Xu, Jian-Wen Qiu, Pei-Yuan Qian

POSTER 80 - Chemosynthetic ecosystems

### **Cold-seep ostracods from the western Svalbard margin: direct palaeo-indicator for methane seepage?**

Moriaki Yasuhara, Kamila Sztaybor, Tine L. Rasmussen, Hisayo Okahashi, Runa Sato, Hayato Tanaka

## **Connectivity and biogeography**

POSTER 81 ⚡ Connectivity and biogeography

### **Deep Sea Biodiversity Patterns of Tanaidacea (Crustacea: Peracarida) in the Gulf of Mexico**

Adelaide Rhodes, Melissa Rohal, Elani Morgan, Paul Montagna, Jill Bourque, Amanda Demopoulos

POSTER 82 + Connectivity and biogeography

### **Elemental fingerprints of cold-seep mussel larvae: insights to deep-sea connectivity**

Luciana Genio, Brandon Puckett, David B. Eggleston, Fredrick J. Fodrie, Marina R. Cunha, Craig M. Young

POSTER 83 ⚡ Connectivity and biogeography

### **Combining connectivity and biogeography: How *Pheronema carpenteri* aggregations may be particularly vulnerable marine ecosystems**

Rebecca E. Ross, Edward J.G. Wort, Kerry L. Howell

POSTER 84 + Connectivity and biogeography

### **Mitochondrial phylogenomics resolves the origin and evolution of deep-sea hydrothermal vent alvinocaridid shrimps (Decapoda, Caridea)**

Shao'e Sun, Zhongli Sha

POSTER 85 - Connectivity and biogeography

### **Species Distribution Modeling: Utility and Applications for Midwater Fishes**

Shannon C. DeVaney

POSTER 86 - Connectivity and biogeography

## **Population structure and reproduction of the alvinocaridid shrimp *Rimicaris exoculata* on the Mid-Atlantic Ridge: variations between habitats and vent fields**

Ivan Hernandez-Avila, Marie-Anne Cambon-Bonavita, Jozée Sarrazin and Florence Pradrillon

POSTER 87 - Connectivity and biogeography

## **Genetic diversity and connectivity of the endosymbionts of *Riftia pachyptila* tubeworms**

Sook-Jin Jang, Yong-Jin Won

POSTER 88 - Connectivity and biogeography

## **Predictive distribution of vulnerable marine ecosystems in arctic and subarctic waters.**

Steinunn H Olafsdottir, J.M. Burgos, L. Buhl-Mortensen, P. Buhl-Mortensen, P. Steingrund and S.Á. Ragnarsson

POSTER 89 ⚡ Connectivity and biogeography

## **HACON: assessing the role of the Gakkel Ridge as a connectivity pathway between ocean basins**

Eva Ramirez-Llodra, Stefan Buenz, Hans Tore Rapp, Tina Kutti, Ana Hilario, Chris German, Autun Purser, Eoghan Reeves, Benedicte Ferre, Giuliana Panieri & Odd Aksel Bergstad

POSTER 90 - Connectivity and biogeography

## **Population structure and connectivity of deep-sea amphipods in geographically isolated trenches**

Heather Ritchie, Alan J. Jamieson, and Stuart B. Pierney

POSTER 91 - Connectivity and biogeography

## **Connectivity between shallow and deep reef communities around Bermuda**

Paris Stefanoudis, Lucy Woodall, Alex Rogers

POSTER 92 - Connectivity and biogeography

## **Connecting ocean physical and biogeochemical properties with the spatial distribution of mesopelagic fish abundance/biomass**

Jeanna Hudson, Donglai Gong

## **Corals**

POSTER 93 + Corals

## **Relationships among ages, growth rates, banding periodicities, and gross morphology in deep-sea Primnoidae corals.**

Emma Choy, Branwen Williams, Kelly Watanabe, Mary Knaak, Bob Stone, Thomas Lorenson, and Peter Etnoyer

POSTER 94 + Corals

## **Ecology, distribution and time-series analyses of mesophotic and deep-water coral assemblages on a tropical island slope, Isla Roatán, Honduras**

Peter Etnoyer, Charles Messing, Karl Stanley, Tomasz Baumiller, Thomas Shirley

POSTER 95 - Corals

## **Ecological Role of Patchy Cold-Water Coral Habitats in Submarine Canyons of the Bay of Biscay**

Lenaick Menot, Inge MJ van den Beld, Sophie Arnaud-Haond, Jean-François Bourillet, Jaime S. Davies, Brigitte Guillaumont, Karine Olu

POSTER 96 ⚡ Corals

## **Black Coral Garden on the Summit of Middle Bank (Hawaii)**

Tina Molodtsova, Christopher Kelley, Meagan Putts

POSTER 97 - Corals

## **Reproductive traits of the cold-water coral *Dendrophyllia cornigera* (NE Atlantic)**

Albert León, Alfredo Veiga, Amalia Grau, Patricia Puerta, Covadonga Orejas

POSTER 98 - Corals

## **Evaluation of the fertility of deep-water corals in southeastern Brazil**

Nathalia Bastos, Halesio Barros, Ricardo Coutinho

POSTER 99 ⚡ Corals

## **Polyp to Population: A Tale of Two Corals**

C. Tyler Fountain, Rhian G. Waller, Peter J. Auster

POSTER 100 - Corals

## **Identification of the black coral family Antipathidae (Cnidaria: Antipatharia) using a multi-faceted taxonomic method**

Poppy Keogh, Raissa Hogan, Louise Allcock

POSTER 101 ⚡ Corals

## **Habitat Suitability Mapping for Southern California Bight Deep Sea Corals and Sponges**

Nissa Kreidler, Andre Buchheister, Mark Henderson

POSTER 102 - Corals

## **First assessments of a poorly known deep-sea coral fauna: the Northern Brazilian Slope**

Carlos Daniel Perez, Ralf T. Cordeiro

POSTER 103 - Corals

## **Stylasterid corals in the deep sea of New Caledonia region**

Daniela Pica, Stefania Puce, Sarah Samadi and Magalie Castelin

POSTER 104 - Corals

## **Black corals of the Whittard Canyon, Ireland**

Raissa Hogan, Giulia La Bianca, Marina Wirth, Martin White, Louise Allcock

POSTER 105 ⚡ Corals

## **Overlooked diversity of mesophotic (coral) ecosystems**

Erin E. Easton, David Hicks, Javier Sellanes, Ariadna Mecho

## Deep-ocean stewardship

POSTER 106 ⚡ Deep-ocean stewardship

### The Deep Ocean Stewardship Initiative - Advancing Science in Policy

Dr Maria Baker, Prof Lisa Levin, Kristina Gjerde, Harriet Harden-Davies, Elva Escobar

POSTER 107 • Deep-ocean stewardship

### Effects of sampling effort on species richness results at hydrothermal vents, and implications for building baselines.

Cobley A, Glover, A.G., Copley, J.T., Baker, M.

POSTER 108 - Deep-ocean stewardship

### Status of the environmental regulatory landscape of deep-seabed mining, and how to engage as experts

Cobley A, Glover, A.G., Copley, J.T., Baker, M.

POSTER 109 - Deep-ocean stewardship

### Designating Marine Protected Areas in the deep-sea, the UK's experience to date

Alice Cornthwaite

POSTER 110 • Deep-ocean stewardship

### The deep sea and me: Development and evaluation of an exhibit to gauge public perception of Oregon's deep sea

Katherine D. Darr, Sarah Seabrook, Steven J. Dundas, Andrew R. Thurber

POSTER 111 ⚡ Deep-ocean stewardship

### Protecting the Deep-Sea: Geospatial Analysis of Pacific Essential Fish Habitat and Rockfish Conservation Area Changes

Ben Enticknap, B. Mecum, G. Shester, A. Blacow, E. Kincaid, M. Combs, S. Murray

POSTER 112 • Deep-ocean stewardship

### Engaging Undergraduate Students in Live Deep-Sea Expeditions with the Okeanos Explorer

Tara Harmer Luke

POSTER 113 - Deep-ocean stewardship

### What is the 'worth' of the deep sea to the public?

Sarah Seabrook, Katie Darr, Steve Dundas, Andrew Thurber

POSTER 114 • Deep-ocean stewardship

### Developing effective outreach tools to communicate fishing impacts in Greenland

Chris Yesson, Kirsty Kemp, Mona Fuhrmann, Stephen Long, Nanette Hammeken, Martin Blicher

POSTER 115 ⚡ Deep-ocean stewardship

### Going deeper: Fragments of hope in the deep sea.

Charles A. Boch, Andrew DeVogelaere, Erica Burton, Chad King, and James P. Barry.

POSTER 116 - Deep-ocean stewardship

## Assessing the microbial ecosystem service impacts of deep sea mining

Beth N. Orcutt

## Deep-sea omics

POSTER 117 + Deep-sea omics

### Revising abyssal biodiversity through eDNA based biodiversity inventories

Sophie Arnaud-Haond, Brandt Miriam, Zeppilli Daniela, Liautard-Haag Cathy, Leblais Erwan, Poulain Julie, Patrick Winckler, Orejas Covadonga, Florence Pradillon

POSTER 118 • Deep-sea omics

### Phylogeography of *Paramuricea*: The role of water mass and depth in the evolution of deep-sea corals

Andrea M. Quattrini, J.M. Adams, L. Allcock, S.C. France, J. Grinyó, P. Lopez-Gonzalez, V. Wareham-Hayes, E.E. Cordes, and C.S. McFadden

POSTER 119 + Deep-sea omics

### The enigmatic genome of an obligate ancient *Spiroplasma* symbiont in a hadal holothurian

Lisheng He Antoine Danchin Yong Wang

POSTER 120 + Deep-sea omics

### The use of high-throughput sequencing to elucidate deep-sea ecosystem services

Jennifer Le, Franck Lejzerowicz, Tristan Cordier, Jan Pawlowski, Lisa Levin

POSTER 121 + Deep-sea omics

### Biomining toolkits of the deep-sea mussel *Bathymodiolus platifrons* and its shallow-water relative *Modiolus philippinarum*

Jin Sun, Ting Xu, Huawei Mu, Bolan Song, Jian-Wen Qiu, Pei-Yuan Qian

POSTER 122 • Deep-sea omics

### Genomic signals of convergent evolution in Lake Baikal sculpin and deep sea fishes

Andres Aguilar, Carl St. John, Michael Sandel, Sergei Kirilchik, Baktiar Bogdanov, David Neely

POSTER 123 - Deep-sea omics

### Response of Deep-sea hydrothermal vent Epsilonproteobacteria *Sulfurovum* sp. NBC37-1 and *Nitratiruptor* sp. SB155-2 to heavy metals

Angela Ares, Takuro Nunoura, Sanae Sakai, Yuko Hasegawa, Yoshiteru Iinuma, Toshio Sasaki, Simone Pigolotti, Satoshi Mitarai.

POSTER 124 - Deep-sea omics

### Partnering with the Ocean Genome Legacy to Advance our Understanding of Black Corals (Order Antipatharia)

Naomi Chery, Katherine Parra, Annie Evankow, David Stein, Daniel Distel, Hannah Appiah-Madson, Rachael Ross, Emmanuelle Sanon, Nadia Alomari, Raven Johnson, Angela Vasovic, Annie Horowitz, Horia Lee Popa, Benjamin Short, Daniel Kourehjan, Danny M.



Vasquez, Estefania Rodriguez, Dennis M. Opresko, Mercer R. Brugler,

POSTER 125 - Deep-sea omics

### **Molecular adaptation of a deep-sea fish inferred from transcriptome sequencing**

Yi Lan , Jin Sun, Chong Chen, Jian-Wen Qiu, Pei-Yuan Qian

POSTER 126 - Deep-sea omics

### **Microbiomes and Bacterial Symbionts of Deep Sea Anglerfish in the Gulf of Mexico**

Jose V. Lopez, Lindsay Freed, Cole Easson, Tracey Sutton, Dante Fenolio

POSTER 127 • Deep-sea omics

### **Circadian Clocks in Mesopelagic Fish**

Inga Angelica Frøland Steindal, David Whitmore, Kjetill Jakobsen, Sissel Jentoft

POSTER 128 - Deep-sea omics

### **Episodic Diversifying Selection, Recombination, and Symbiont Capture Characterize the Evolutionary History of Maternally-transmitted Clam Symbionts**

Deborah Yarrow, C R Young

## **James J. Childress**

POSTER 129 ⚡ James J. Childress

### **Not all ctenophores have evolved equally: Ecophysiological interpretation of metabolic enzyme activities of deep-sea ctenophores**

Telissa M. Wilson, Steven H.D. Haddock§, Erik V. Thuesen

POSTER 130 ⚡ James J. Childress

### **Effects of Hydrostatic Pressure on the Metabolic Enzymes of Ctenophores from Different Habitat Depths**

Tiffany S. Bachtel, Telissa M. Wilson, Jacob.R. Winnikoff ‡§, Erik V. Thuesen, Steven H.D. Haddock§

POSTER 131 ⚡ James J. Childress

### **Are reproductive functional traits in polychaetes and bivalves from deep-sea reducing habitats phylogenetically or environmentally constrained?**

Gaudron SM, Lefebvre S and Duperron S

POSTER 132 ⚡ James J. Childress

### **The kinematics of *Tomopteris* swimming: differences between power and recovery strokes**

Josh Havassy, Kakani Katija, Nadege Aoki, Ariel Harned, Natalia Mushigian, Samhita Murthy, Karen Osborn

POSTER 133 • James J. Childress

### **Black holes in the deep: I. ultrastructure of the skin of deep-sea fish**

Karen J. Osborn, Sonke Johnsen, Freya E. Goetz, Katie N. Thomas, Bruce H. Robison

POSTER 134 - James J. Childress

## **Bioactive Compounds from a Marine Yeast *Cystobasidium benthicum* Isolated from Deep-Sea Sediment**

Hwa-Sun LEE, Hyi-Seung LEE, Jong Seok LEE, Yeon-Ju LEE, Jihoon LEE, and Hee Jae SHIN

POSTER 135 - James J. Childress

### **Trimethylamine oxide and betaine as potential piezolytes (pressure counteractants) in deep-sea pelagic cnidaria, fishes and ctenophores**

Paul H. Yancey, Erin Hennessey, Elizabeth Wong, Chloe Weinstock

## **Mining impacts**

POSTER 136 + Mining impacts

### **Meiofaunal communities in the Clarion-Clipperton Zone: geographic distribution and link with environmental conditions**

Freija Hauquier , Macheriotou L, Bezerra TN, Egho G, Martínez Arbizu P, Janssen F, Vanreusel A

POSTER 137 ⚡ Mining impacts

### **Experimental polymetallic nodule mining affects deep-sea microbial communities and functions**

Felix Janssen, Tobias Vonnahme, Massimiliano Molari, Frank Wenzhöfer, Matthias Haeckel, Antje Boetius

POSTER 138 - Mining impacts

### **Polynoids from Clarion-Clipperton Fracture Zone: new species and phylogenetic insights**

Paulo Bonifácio, Lénaick MENOT

POSTER 139 - Mining impacts

### **Contrasting distributional patterns in closely related isopod species from the Pacific nodule province (CCZ) inferred from mtDNA and morphological data**

Stefanie Kaisera, Saskia Brix, Terue Cristin Kihara, Inga Mohrbeck, Annika Janssen, Rob Jennings

POSTER 140 - Mining impacts

### **Effects of sedimentation from deep-sea mining: a benthic disturbance experiment**

Malcolm Clark, Craig Stevens, Scott Nodder, Ashley Rowden, Vonda Cummings

POSTER 141 - Mining impacts

### **Biogeography of Bait-Attending Fauna Across the CCZ**

Astrid Leitner, Sage Morningstar, Jens Greinert, Jennifer M. Durden, Craig R. Smith, and Jeffrey C. Drazen University of Hawaii Manoa GEOMAR

POSTER 142 • Mining impacts

### **Meiobenthos at a former deep-sea experimental disturbance test site twenty years post-disturbance**

Teresa Radziejewska, Joanna Rokicka-Praxmajer, Brygida Wawrzyniak-Wydrowska

POSTER 143 - Mining impacts

### **Approach to the Management of Benthic Megafaunal Assemblages of the CCZ (Eastern Pacific) in the Face of Anthropogenic Impacts**

Virginie Tilot, R. Ormond, J. Moreno Navas, T.S.Catala, J. Mallefet

POSTER 144 ⚡ Mining impacts

### **Environmental Risk Assessment of Deep-Sea Mining at Manganese Nodule Beds and Hydrothermal Vents**

Travis Washburn, Phil Turner, Cindy Van Dover

POSTER 145 - Mining impacts

### **Characterization of deep-sea macrobenthos in the Korea exploration claim area in the Clarion-Clipperton Fracture Zone**

Ok Hwan Yu, Hyung-Gon Lee, Dongsung Kim, Kyeong Hong Kim, Chan-Min Yoo

## **Natural and anthropogenic disturbance**

POSTER 146 ⚡ Natural and anthropogenic disturbance

### **Population density of abyssal epibenthic holothurians using fine scale time-series imagery (2007-2017)**

Larissa Lemon, Christine Huffard, Linda Kuhn, Ken Smith

POSTER 147 • Natural and anthropogenic disturbance

### **Phenotypic response and recovery of *Lophelia pertusa* to hydrocarbon and dispersant exposure with the combined stressors of high temperature and low pH**

Alexis M. Winnig, Dan F. Deegan, and Erik E. Cordes

POSTER 148 • Natural and anthropogenic disturbance

### **Mesophotic and deep environments of Isla del Coco, Costa Rica, Eastern Tropical Pacific**

Jorge Cortés, Beatriz Naranjo-Elizondo

POSTER 149 ⚡ Natural and anthropogenic disturbance

### **Restoration in the deep sea: results of a disturbance experiment**

Julien Marticorena, Matabos Marjolaine, Cathalot Cecile, Colaco Ana, Laës-Huon Agathe, Ramirez-Llodra Eva, Rodier Philippe, Sarrazin Jozée

POSTER 150 • Natural and anthropogenic disturbance

### **OSIRIS: a scenario-tool to explore multiple interacting stressors on a system**

Jesse van der Grient, Richard Bailey

POSTER 151 - Natural and anthropogenic disturbance

## **By-catch of deep-sea sponges by bottom trawls and bottom longlines on the Northeast Atlantic**

Pablo Durán Muñoz, F. Javier Murillo & Christopher K. Pham

POSTER 152 - Natural and anthropogenic disturbance

### **Bottom-trawling fisheries influence on macrofaunal assemblages from the West Iberian margin**

Sofia P. Ramalho, Clara F. Rodrigues, Mariana Almeida, Patricia Esquete, Luciana Génio

POSTER 153 • Natural and anthropogenic disturbance

### **Vent assemblage on a large sulphide deposit, Niua Volcano, Tonga**

Verena Tunnicliffe, Brandy Biggar, Rachel Boschen-Rose, Thomas Giguère, Thomas Kwasnitschka

## **Pelagic systems**

POSTER 154 • Pelagic systems

### **Ecology of the barracudinas (Paralepididae) in the Gulf of Mexico**

Richard Jones, Tracey Sutton, April Cook, Jon Moore

POSTER 155 - Pelagic systems

### **Evidence of Crustacean Gut Fullness Contributing to Asynchronous Vertical Migration**

Ryan Bos, Tracey Sutton and Tamara Frank

POSTER 156 - Pelagic systems

### **A Tool for Classification of Mesoscale Water Mass Structure for Pelagic Community**

Rosanna J. Milligan, Matthew W. Johnston, Cole G. Easson, Sergio deRada, Bradley Penta, David English, Tracey T. Sutton

POSTER 157 - Pelagic systems

### **Potential for color vision in the deep-sea: how widespread are rod opsin (Rh1) duplications among deep-sea fishes?**

Fanny de Busserolles, Fabio Cortesi, Justin Marshall

POSTER 158 ⚡ Pelagic systems

### **Biochemistry of deep-sea gelatinous luminous animals**

Manabu Bessho-Uehara, Warren R Francis, Steven H.D. Haddock

POSTER 159 - Pelagic systems

### **Comparative ROV surveys reveal jellyfish blooming in deep-sea Calderas**

Mitsuko Hidaka-Umetsu, Lindsay DJ, Yamamoto H

POSTER 160 • Pelagic systems

### **Prey patch distributions in the central North Pacific Subtropical Gyre determined through the diet of longnose lancetfish (*Alepisaurus ferox*)**

Jessica Perelman, Elan Portner, Jeffrey Drazen, and Anela Choy

## Seamounts and canyons

POSTER 161 - Seamounts and canyons

### Ligurian seamounts: unveiling deep biodiversity and new Mediterranean VMEs

Bo Marzia, Coppari Martina, Betti Federico, Canese Simonepietro, Costantini Federica, Massa Francesco, Bavestrello Giorgio

POSTER 162 ⚡ Seamounts and canyons

### Structure of the deep-sea fish assemblages on Necker Island, Northwestern Hawaiian Islands

Beatriz Mejia-Mercado, Nicole B. Morgan, E. Brendan Roark, Allison Metcalf, Kelly Klein, Amy R. Baco

POSTER 163 + Seamounts and canyons

### Fine scale benthic invertebrate megafaunal assemblage structure on the North Pacific seamount Mokumanamana

Nicole B. Morgan, Savannah Goode, E. Brendan Roark, Amy R. Baco

POSTER 164 - Seamounts and canyons

### Benthic communities on encrusted deep-sea seamounts located in the largest oceanic desert

Juliette Delavenne, Keszler, Louise; Castelin, Magalie; Lozouet, Pierre; Maestrati, Philippe; Samadi, Sarah

POSTER 165 - Seamounts and canyons

### Mapping community structure of canyons and seamounts of the Northeastern US Atlantic Margin and the environmental factors that influence their distributions

Jenn Dijkstra, Kristen Mello, Mashkoor Malik Derek Sowers, and Larry Mayer

POSTER 166 - Seamounts and canyons

### Geographic variation of bacterial communities in a seamount with cobalt-rich ferromanganese crusts

AKIRA IGUCHI, Miyuki NISHIJIMA, Yuki YOSHIOKA, Atsushi SUZUKI, Yuichiro TANAKA, Hideki SUGISHIMA, Takaaki MATSUI, Nobuyuki OKAMOTO

POSTER 167 - Seamounts and canyons

### Beyond the vents: Megafauna of the mid-Atlantic Ridge

Lenaick Menot, Fanny Planchette, Catherine Borremanslfremer, Centre de Bretagne, REM/EEP/LEP

POSTER 168 - Seamounts and canyons

### Amphipods in a seamount with cobalt-rich ferromanganese crusts in the north Pacific

Miyuki Nishijima, Akira IGUCHI, Yuki YOSHIOKA, Ryuich MIWA, Atsushi SUZUKI, Yuichiro TANAKA, Takaaki MATSUI, Yoshiaki IGARASHI, Nobuyuki OKAMOTO

POSTER 169 - Seamounts and canyons

### Deep Benthic Ecosystems in an Antarctic Fjord Reveal High Export Flux and Sensitivity to Climate Warming

Craig R. Smith, Andrew K Sweetman; Clifton Charles Nunnally; McKenna Lewis; Emily Young, Maria Vernet; and Amanda F Ziegler

POSTER 170 - Seamounts and canyons

### Internal tides affect benthic community structure in an energetic submarine canyon off SW Taiwan

Chih-Lin Wei, Jian-Xiang, Liao; Guan-MingChen; Ming-Da, Chiou; Sen Jan

## Technology and observing systems

POSTER 171 ⚡ Technology and observing systems

### The Station M time series study turns 29: A retrospective and outline of new directions

Christine L Huffard, Alana D. Sherman, Paul R. McGill, Rich G. Henthorn, John G. Ferreira, Linda Kuhn, Henry A. Ruhl, Kenneth L. Smith Jr.

POSTER 172 - Technology and observing systems

### Functional responses of a canyon ecosystem to organic pulses: an experimental strategy to monitor transient climate-sensitive processes

Nadine LE BRIS, Erwan Peru, Dimitri Kalenitchenko, Franck Lartaud, Gilles Vétion, Pierre Galand, Audrey Pruski

POSTER 173 ⚡ Technology and observing systems

### MBARI Media Management

Brian Schlining, Nancy Jacobsen Stout, Lonny Lundsten, Linda Kuhn, Kyra Schlining, Susan von Thun

POSTER 174 ⚡ Technology and observing systems

### Food supply mechanisms to Norwegian cold-water coral reefs using the LoVe cabled ocean observatory

Tom Van Engeland, Olav Rune Godø, Espen Johnsen, Gerard C. A. Duineveld, Dick van Oevelen

POSTER 175 - Technology and observing systems

### Seasonal overwintering of *Neocalanus* spp. (Copepoda, Calanoidea) in Barkley Canyon, NE Pacific, revealed from a deep-sea cabled observatory: insights into particulate organic carbon flux

Fabio Cabrera De Leo, Bruno Ogata, Akash R. Sastri, Martin Heesemann, Steve Mihály, Moira Galbraith, Michael G. Morley

POSTER 176 - Technology and observing systems

### Longterm deployments of stationary echosounders reveal individual fish behaviour

Svenja Christiansen, Josefin Titelman, Øystein Langangen, Leif Asbjørn Vøllestad, Stein Kaartvedt

POSTER 177 ⚡ Technology and observing systems

### Deep Sea ID v1.3: a field guide to the marine life of the deep sea

Adrian Glover, Higgs, ND, Horton, T, Porrer, A

POSTER 178 - Technology and observing systems

## Exploiting and conserving deep-sea genetic resources

Claire Laguionie Marchais, Ryan YOUNG, Mark JOHNSON, Bill BAKER, A. Louise ALLCOCK

POSTER 179 • Technology and observing systems

## Deep-sea biodiscovery: An untapped resource for biomedical application

Ryan M. Young, Amin Tashakor, Howard Fearnhead, Mark Johnson, Bill J. Baker and A. Louise Allcock

POSTER 180 - Technology and observing systems

## Mesobot: A new autonomous underwater vehicle for tracking and sampling animals and particles in midwater

Kakani Katija, Annette Govindarajan, Joel Llopiz, Peter Wiebe, Mike Risi, Brett Hobson, John Breier, Bruce Robison, Steve Rock, and Dana Yoerger

## Trophic ecology

POSTER 181 ⚡ Trophic ecology

## Benthic macrofaunal trophic structure and organic carbon flux at deep vent and seep systems of the Southern Gulf of California (Pescadero and Alarcon Rise)

Diana L Salcedo, Luis A Soto

POSTER 182 - Trophic ecology

## Ecological roles and trophic diversity of the cephalopod assemblage near Bear Seamount in the Northwest Atlantic Ocean

Michelle D. Staudinger, Valerie Hartigan, Elaina Jorgensen, Heather Judkins, Annie Lindgren, Elizabeth K. Shea, and Michael Vecchione

POSTER 183 ⚡ Trophic ecology

## In-situ observations of an intact natural whale fall in Palmer Deep, Western Antarctic Peninsula

Kat Bolstad, Amsler, M.O.; De Broyer, C.; Komoda, M.; Iwasaki, H.

POSTER 184 ⚡ Trophic ecology

## Labial Cartilages - more than meets the eye

Claudia Klimpfinger, Jürgen Kriwet

POSTER 185 ⚡ Trophic ecology

## Molecular analyses of *Solenogaster* gut contents to investigate the diversity of food sources

Franziska S. Bergmeier, Lukas Ostermair, Gerhard Haszprunar, Katharina M. Jörgen, Franziska S. Bergmeier

POSTER 186 ⚡ Trophic ecology

## Scavenging processes on jellyfish carcasses across a fjord depth gradient

Katherine Dunlop, Daniel O. B. Jones Andrew K. Sweetman

POSTER 187 - Trophic ecology

## Food web functioning in Oxygen minimum zones: insights from worldwide isotopic data

Rachel M Jeffreys, Lisa A Levin, Jennifer Gonzalez, Erik Sperling

POSTER 188 - Trophic ecology

## Trophic ecology of hydrothermal-vent communities in Juan de Fuca Ridge

Julien Marticorena, Lelièvre Yann, Sarrazin Jozée, Schaal Gauthier, Day Thomas, Legendre Pierre, Hourdez Stéphane, Matabos Marjolaine.

POSTER 189 - Trophic ecology

## Distribution of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of deep-sea crabs and invertebrates on the Hupo Bank of East Sea (Sea of Japan)

Won-Gi Min, Young-II Kim, Chang-Keun Kang, Dongsung Kim, Yun-Bae Kim

POSTER 190 - Trophic ecology

## Carbon and nitrogen stable isotope signatures of macrobenthic nematodes from the Kuril-Kamchatka Trench (Pacific Ocean)

Vladimir V. Mordukhovich, Serguei I. Kiyashko

POSTER 191 ⚡ Trophic ecology

## Towards a stable isotope database for deep-sea foundation species

L.N. Michel, S. Dubois, B. Hayden, G. Lepoint, K. Olu, G. Schaal, J. Sarrazin

POSTER 192 - Trophic ecology

## Assemblage structure and trophic ecology of the tubeshoulders (Osmeriformes: Platytroctidae), a biomass-dominant bathypelagic fish family

Michael Novotny, Tracey Sutton

POSTER 193 - Trophic ecology

## On parasitism in mesopelagic fishes as a function of trophic ecology and vertical distribution

Matthew S. Woodstock, Christopher A. Blonar, and Tracey Sutton

POSTER 194 ⚡ Trophic ecology

## Nutritional interactions in a midwater community off Southern California inferred from stable carbon and nitrogen isotope ratios

Erik V. Thuesen, James J. Childress, Brad A. Seibel, Stephen A. Macko

POSTER 195 - Trophic ecology

## The structure of food webs in the Mariana and Kermadec trenches from stable isotope analysis

Andrew Tokuda, Mackenzie E. Gerringer, Brian N. Popp, Natalie J. Wallsgrove, Eleanna Grammatopoulou, Daniel J. Mayor, Jeffrey C. Drazen