

# shanee **stopnitzky**

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## SUMMARY

**Fifteen years of technical research experience**, performing literature reviews, generating hypotheses, field sampling, data collection, analysis and management, laboratory analysis, and technical writing and editing.

**Fifteen years project/program strategy, coordination, operations and management experience**, successfully developing, planning, tracking, and executing projects and programs up to 5 million dollars.

**Ten years of experience in science communication**, teaching technical concepts to diverse audiences with creative content and targeted written media.

**Five years mechanical experience** doing fabrication, repairs, and maintenance of motors, electrical systems, hydraulic and pneumatic systems, and plumbing.

**Five years of experience creating large-scale experiential art** installed at art festivals.

**Proven problem-solving and skill flexibility across disciplines**, showing intellectual dexterity and the ability to acquire and apply new specialized knowledge quickly.

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## EDUCATION

### **Complex System Summer School (competitive entry)**

Santa Fe Institute, Santa Fe 2017

### **PhD student in Ecology and Evolutionary Biology (Marine Biology focus)**

University of California, Santa Cruz  
2014 - 2018 (incomplete)

### **Research Master' s (equivalent) in Marine Biology**

University of Queensland, Brisbane, Australia  
Graduated 2010

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

University of Queensland, Brisbane, Australia  
Graduated 2005

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## ACADEMIC HONOURS

**TBA21 Academy Fellow 2019. \$20,000**

**MIT Ocean Discovery Fellow 2018. \$1,200**

**Living Oceans Foundation Fellow 2014 – 2015. \$45,000**

**UC SC Regents Fellow 2013 – 2014. \$45,000**

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## RESEARCH EXPERIENCE

**Santa Fe Institute 2017, 2019. Collaborative researcher.**

- The energy equivalence principle in ecology as derived from maximum entropy and correlated metabolic rates.
- Quantifying ‘memory’ in ecological, physical, and socio-economic systems.

**University of California, Santa Cruz 2014 – 2018. Principal researcher.**

- Coral reefs as chaos: an assumption-free, system-state approach to causality, dynamics and predictions.
- Estimating non-equilibrium dynamics in biological systems from fractal patterns in nature.
- Emergent resilience in coral reef ecosystems and the critical scale of observation.
- Crook’s hyperensemble approach to maximum entropy of dynamical ecology in disturbed ecosystems.

**University of California, Berkeley 2013. Research assistant.**

- How do benthic organisms withstand moving water?

**University of Southern California 2012. Research assistant.**

- Patterns and processes in marine bacterial, archaeal, and protistan biodiversity, and effects of human impacts.

**University of Queensland 2004 – 2006, 2010. Principal researcher and assistant.**

- Millennial-scale record of *Goniopora* spp. growth rates from the inshore Great Barrier Reef reveals a longterm decline and recent recovery trajectory. Thesis research supervised by Prof John Pandolfi.
- Causes of and recovery after mangrove die back in Moreton Bay. Independent research supervised by Prof Norm Duke.

- Remote Sensing in Developing Countries: A Multidisciplinary Assessment of Integrating Marine Remote Sensing into a Cooperative Management Framework in Fiji. Independent research supervised by Prof Daryl McPhee.
- Anatomical and Behavioral Features of Polarization Sensitivity in Cuttlefish. Independent research supervised by Prof Justin Marshall.
- Benthic habitat mapping of South East Queensland reefs • The effects of light deprivation on *Halophila spinulosa* across depth gradients. Collaborative research supervised by Dr. Benjamin Knowles.
- Dietary preferences of the loggerhead turtle, *Caretta caretta* in Moreton Bay, South East Queensland. Collaborative research in Marine Botany group.
- Effects of nutrient availability on growth biochemistry and photobiology of *Lyngbya majuscula*. Collaborative research in Marine Botany group.
- Ecosystem Health and Monitoring Program: Sewage plume mapping using nitrogen stable isotopic signatures of passive samples in South East Queensland. Collaborative research in Marine Botany group.
- Characterization of shallow benthos in Moreton Bay: sediment type, light availability, chlorophyll content, dissolved oxygen. Collaborative research in Marine Botany group.
- Effects of light reduction and eutrophication on benthic microalgal communities. Collaborative research in Marine Botany group.

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## WORK EXPERIENCE

### **Marine Science Consultant. 2021 – present. Self-employed.**

Independent consultant providing scientific project and program support for a variety of companies including Pisces VI Submarine, Deep 6 Carbon, DiveSight, Le Chambre Bleu, and iTutor.

### **Pisces VI Submarine. 2020 - 2022. Science Director, Operations Crew.**

Developing and executing a scientific program for deep sea research with Pisces VI • Developing global virtual classroom and in-person educational programs on deep sea science and technology, and submersible operations • Submersible operations crew trained in the following positions: Launch Coordinator, Mission Control, Dive Coordinator, Mission Specialist, and Pilot-in-Training.

### **Ozzo Events. 2020. Cultural Experience Design Consultant.**

Developed key features to cultivate cultural connection in a novel online conferencing software.

### **Community Submersibles Project. 2018 - present. Founder and Director.**

Developed world's first public program for manned submersible use and education • Developed world's first submersible pilot and operations crew training course accessible to the public • Fundraised, purchased, and repaired two submersibles • Developed volunteer protocol for maintaining, operating and repairing submersibles.

**Engineered Artworks. 2019. Fabrication Artist.**

Assisted with metal, polycarbonate, hydraulic, and LED system fabrication for the Elektra dragon art car.

**University of California, Santa Cruz. 2014-2018. Teaching Assistant.**

Prepared supporting educational content for core curriculum; lead discussions, activities and laboratory work for undergraduate level courses. Courses taught: Ecology and Evolution, Development and Physiology, Marine Mammals, Evolution, Coral Reef Ecology, Plants and Society.

**Counter Culture Labs. 2014. Co-Founder.**

Co-founded and developed an open public laboratory for citizen science • Has over 1,000 members and daily events • Instructor of citizen marine science classes and projects.

**University of California, Berkeley 2013. Laboratory Assistant.**

Assisted with data collection and analysis of marine biomechanics experiments • Managed all aspects of the Koehl laboratory and research group.

**Self-employed 2012 – 2013. Freelance Startup Business Manager.**

Developed strategic plans for new businesses • Planned, coordinated, tracked and executed projects and programs for startup businesses.

**The Seasteading Institute 2010 – 2011. Oceanographer/GIS Analyst.**

Developed a GIS model for siting autonomous platform-based communities in the ocean • Acquired, created, processed and analyzed oceanographic data layers • Developed employee education materials for manipulating model parameters.

**SWCA Environmental Consultants 2009 – 2010. Assistant Manager – Biology Program/Biologist.**

Assisted with project and budget tracking • Developed proposals for potential clients • Provided technical and analytical support to natural resource project permitting and research • Developed and managed a literature library and database • Performed biological assessments of desert, mountain, coastal and wetland project sites as requested by clients • Performed field work, collected data, analyzed results and reported findings to clients.

**Southern California Edison 2006 – 2009. Technical Scientist II.**

Analyzed social, economic and biological impacts of transmission projects for facilities siting and regulatory compliance • Completed technical reviews of fish and marine mammal take by the San Onofre Nuclear Generating Station cooling system, provided research support on marine projects • Developed methods for NPDES permit compliance for the Pebbly Beach desalination plant on Santa Catalina Island • Managed technical consultants, analyzed data output and prepared reports for review by various agencies • Developed stakeholder analysis methodology and integrated key features into a public involvement process for company use across projects • Coordinated and managed a variety of research projects in all environmental disciplines including: Marine Biology, GIS, Modeling, Wastewater Quality and Biology • Managed a 1.5 million dollar budget for a research project funded by the California Energy Commission.

**Pacific States Marine Fisheries Commission 2007. Fisheries Technician.**

Provided practical, technical support to California Recreational Fisheries Survey research, a multi-agency program • Conducted surveys of recreational fishers and catch, as well as fishing pressure at southern California sites • Identified and collected biometric data on recreational fisheries species • Collected data on

marine mammal interactions with fishers • Acted as a liaison with the public concerning fisheries and marine mammal regulations, status of fisheries and the life history and biology of local organisms.

**Paradise Mountain Ranch 2005 – 2007. Co -founder, Sales and Marketing Manager.**

Created and developed a business plan and budget for a small international equine importing business • Developed relationships with business partners in Europe • Managed over \$500,000 in assets, generated over \$300,000 in sales • Developed and executed a multimedia, international marketing plan including creation of all artwork.

**University of Queensland 2004 – 2006, 2010. Research Assistant.**

Performed literature reviews, field sampling, laboratory analysis and management, data analysis and management, and technical report writing and editing.

**Mosaikon Ltd. 2004. Fisheries Consultant.**

Prepared a 25-year strategic plan proposal for the development of angling ecotourism in the Kamchatka World Heritage Site • Provided technical support on salmonid biology and management to a development agency based at the London School of Economics.

**The Aquatilise Project 2000 – 2001. Project Coordinator.**

Developed a conservation project to drive consumers and commercial retailers towards sustainable aquarium trade • Worked with researchers to create educational materials that detailed coral propagation and captive ornamental breeding techniques • Received a grant from Project Aware for \$1000 to print educational materials.

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## CONFERENCES

**Stopnitzky, S., Knops, P.** Coastal Enhanced Weathering From the Beach to the Lab: Preliminary Results and a Roadmap to Large Scale Deployment. Poster presentation at 2020 American Geophysical Union conference, virtual.

**Stopnitzky, S.** Discoverable phenomena in the secret nature of complex coral reefs. Presented at 2019 TBA21 Academy Convening, Palm Springs, USA.

**Yao, L., Dong, J., Jurgens, A., Kraay, A., Ogle, K., Schwalm, C., Stopnitzky, S., Weismann, J., Zhan, S.** Information measures of land-carbon source-sink dynamics. Presented at 2018 American Geophysical Union conference, Washington, D.C.

**Stopnitzky, S.** What if you could explore the deep sea in a submersible? Presented at 2018 Ocean Exploration Forum, MIT, Boston, USA.

**Stopnitzky, S., Munch, S., Potts, D.** Coral reefs as chaos: an assumption-free, system-state approach to causality, dynamics and predictions. Presented at 2017 Conference on Complex Systems, Cancun, Mexico.

**Stopnitzky, S., Munch, S., Potts, D.** Coral reefs as chaos: an assumption-free, system-state approach to causality, dynamics and predictions. Presented at 2016 International Coral Reef Society Conference, Honolulu, USA.

**Pandolfi, J., Gomez-Cabrera, M., King, B., Stopnitzky, S., Mauffrey, M., Roff, G.** A 1000- year record of coral calcification (*Goniopora* spp.) from the Great Barrier Reef. Presented at the 2012 International Coral Reef Society Conference, Cairns, Australia.

**Stopnitzky, S., Roff, G., Pandolfi, J.** Linear extension rates in *Goniopora* spp. coral from the inshore Great Barrier Reef: a 1000-year history. Presented at 2010 Australian Coral Reef Society Conference, Coffs Harbour, Australia.

**Deming, M., Renard, E., and Stopnitzky, S.** Web-based decision support framework for facility siting. Poster at the 2007 EEI Conference. Vancouver, Canada.

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## PUBLICATIONS

**Stopnitzky, S.** Complex resilience and the ocean's library of ideas. Oceans Rising. Edited by Daniela Zyman, 2021, Sternberg Press.

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## SKILLS

- Python/R programming languages
- Nonlinear dynamics
- Spatial analysis in GIS and remote sensing
- Statistical analysis
- Microscopy, microanalysis and common laboratory analysis
- Underwater research surveys and sampling
- Aquarium animal husbandry
- Topside and underwater photography/videography
- Commercial diver/SCUBA instructor
- 4,000 scuba dives
- 300 free dives (max depth 30m)
- 1,000 boat days (skipper, crew, divemaster)
- Marine systems (electric, hydraulic, plumbing) installation and repair
- Sailing, power boat and boat trailer operation
- Diesel and gasoline engine mechanics
- Submersible pilot and operations crew
- Business administration
- Graphic and web design
- Community organization
- Fundraising (crowdfunding >\$60,000 and traditional >\$150,000)
- Project management
- Experience design

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- Watercolor/gouache painting
- Harp and viola
- Adobe Creative Suite
- Wood, metal, plastics fabrication
- Large-scale art installation
- Advanced animal training and behavior

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## EXPERIENTIAL ART INSTALLATIONS

- The Butterfly Affect: an interactive exhibit using living butterflies to explain the dynamics of chaos.
- Artemiid: an interactive kinetic sculpture boat with 24 fluttering wings controlled by swings, 2500 LEDs, fire effects, and sound system.
- Pandora: an interactive exhibit using glowing flowers to illuminate the vascular system of plants.
- The Firefall: layers of different particle sizes of charcoal are heated up and poured from a balloon-mounted receptacle, creating fluid dynamics of glowing embers that resemble a waterfall.