

**Elizabeth Sibert**

Society of Fellows

Harvard University

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**EDUCATION**

<b>PhD</b>	<b>Oceanography</b>	2016
	Scripps Institution of Oceanography, University of California, San Diego	
	Dissertation Title: <i>Ichthyoliths as a paleoceanographic and paleoecological proxy and the response of open-ocean fish to Cretaceous and Cenozoic global change</i>	
	Richard Norris (Advisor); Biological Oceanography Curriculum	
<b>MS</b>	<b>Oceanography</b>	2013
	Scripps Institution of Oceanography University of California, San Diego	
<b>BS</b>	<b>Biology and Marine Sciences</b> , summa cum laude	2008-2011
	University of California, San Diego	

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**ACADEMIC POSITIONS**

2016-2019	Junior Fellow, Harvard Society of Fellows, Harvard University, Cambridge, MA; Affiliated with Museum of Natural History, Museum of Comparative Zoology, Department of Organismic and Evolutionary Biology, and Department of Earth and Planetary Sciences
2011-2016	PhD Student and NSF Graduate Research Fellow, Scripps Institution of Oceanography, La Jolla, CA
2015	Peter Buck Predoctoral Fellow, Smithsonian National Museum of Natural History, Washington DC (June-September, 2015)
2015	Visiting PhD Student, Department of Earth Sciences, University of Oxford, Oxford, UK (March-May, 2015)
2011-2015	Teaching Assistant, Paleobiology and the History of Life, Scripps Institution of Oceanography (5 terms)
2009-2011	Volunteer and Intern, Scripps Institution of Oceanography, La Jolla, CA

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**PUBLICATIONS** (\* indicates undergraduate mentee, + indicates masters student mentee)

*Published*

**Sibert, E.C.**, Cramer, K.L., Hastings, P.A, and Norris, R.D. (2017) *Methods for isolation and quantification of microfossil fish teeth and elasmobranch dermal denticles (ichthyoliths) from marine sediments*. Palaeontologia Electronica 20.1.2T:1-14. <http://palaeo-electronica.org/content/2017/1800-quantifying-ichthyoliths>

**Sibert, E.C.**, Norris, R.D., Cuevas, J.M., and Graves, L.G. (2016) *Pacific Ocean gyre ecosystem structure defined by 85 million year decline in sharks*. Proceedings of the Royal Society B. 283: 20160189. <http://dx.doi.org/10.1098/rspb.2016.0189>

**Sibert, E.C.**, and Norris, R.D. (2015) *New Age of Fishes initiated by the Cretaceous– Paleogene mass extinction*. Proceedings of the National Academy of Sciences 112(28):8537-8542. <http://dx.doi.org/10.1073/pnas.1504985112>

**Sibert, E.C.**, Hull, P.M., & Norris, R.D. (2014) *Resilience of Pacific pelagic fish across the Cretaceous/Palaeogene mass extinction*. *Nature Geoscience* 7(9): 667-670  
<http://dx.doi.org/10.1038/ngeo2227>

Bagulayan, A., J.N. Bartlett-Roa, A.L. Carter, B.G. Inman, E.M. Keen, E.C. Orenstein, N.V. Patin, K.N.S. Sato, **E.C. Sibert**, A.E. Simonis, A.M. Van Cise, and P.J.S. Franks. (2012) *Journey to the center of the gyre: The fate of the Tohoku Tsunami debris field*. *Oceanography* 25(2):200–207, <http://dx.doi.org/10.5670/oceanog.2012.55>

*In prep and in review*

Hsiang, A.Y., Nelson, K., Elder, L.E., **Sibert, E.C.**, Kahanamoku, S.S., Burke, J.E., Kelly, A., Liu, Y., Hull, P.M. *AutoMorph: Accelerating morphometrics with automated 2D and 3D image processing and shape extraction* (in review)

Tomczik, D. M.,<sup>+</sup> Gaskill, D.\*, **Sibert, E.C.**, and Norris, R.D. *Fish community resilience and enhanced export production across the Paleocene-Eocene thermal maximum*. (in revision)

**Sibert, E. C.**, Friedman, M., Hull, P. M., Hunt, E., and Norris, R. D. *A two-pulsed radiation of pelagic fishes following the K/Pg mass extinction* (in prep).

Zill, M. E.<sup>+</sup>, **Sibert, E. C.**, and Norris, R. D. *The Eocene Oligocene Transition: productivity bloom or short-circuit in fishes?* (in prep).

*Non-peer reviewed articles*

**Sibert, E.C.** (2017) *Evolution of the pelagic ecosystem: a history written in tiny teeth*. *The Marine Biologist* Issue 8, April 2017. <http://www.mba.ac.uk/evolution-pelagic-ecosystem-history-written-tiny-teeth>

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## FELLOWSHIPS, GRANTS, AWARDS, SHORT COURSES, AND RESEARCH TRAVEL

*Fellowships and Research Grants*

- 2017 Milton Fund (\$50,000 research grant) through Harvard University
- 2016 Harvard Society of Fellows, 3 year postdoctoral fellowship
- 2016 NSF Postdoctoral Research Fellowship in Biology (declined)
- 2016 University of Michigan Society of Fellows postdoctoral fellowship (declined)
- 2015 Smithsonian Institution Peter Buck Predoctoral Fellowship
- 2015 NSF Graduate Research Internship Program (GRIP) Award
- 2012 American Philosophical Society Lewis and Clark Scholar in Astrobiology  
\$4500 field grant
- 2011 National Science Foundation Graduate Research Fellowship
- 2010 Woods Hole Oceanographic Institution Summer Student Fellow

*Awards and Travel/Workshop grants*

- 2017 Chancellor's Dissertation Medal, UC San Diego
- 2014 NSF Scholarship to attend IsoAstro workshop at University of Wisconsin, Madison
- 2014 Student travel grant to North American Paleontology Convention
- 2013 Student travel grant to 11<sup>th</sup> International Conference on Paleoceanography
- 2012 Outstanding Student Paper Award at AGU Fall Meeting
- 2012 NSF Scholarship to attend the Urbino Summer School in Paleoclimatology

- 2012 Poster Award, Cioppino Conference at Urbino Summer School in Paleoclimateology
- 2010 Travel grant to attend the 10<sup>th</sup> International Conference on Paleoceanography
- 2010 Class of 2010 NOAA Hollings Scholar
- 2010 William H. Stout Merit Scholarship, UC San Diego

*Research travel, Short Courses, and Field Experience*

- 2017 IODP Early Career Researcher Workshop, Austin TX (Jan 2017)
- 2015 Visiting Graduate Student, *University of Oxford Department of Earth Sciences*
- 2014 *The College Classroom: teaching pedagogy through the Center for Teaching Development at UC San Diego*
- 2014 *IsoAstro Workshop*, University of Wisconsin Madison (August 2014)
- 2012 *Urbino Summer School in Paleoclimateology*, Urbino, Italy (July 2012)
- 2012 Paleooceanography field work in central Italy
- 2010 Research assistant, *CalEchoes Cruise* (9 days), sediment, fish, and plankton sampling

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**TEACHING AND MENTORING**

*Teaching*

- 2011-2015 Laboratory Instructor for *Paleobiology and the History of Life* (upper division and graduate-level); Develop, organize, teach, and grade twice-weekly labs, write and administer midterm and final laboratory exams, organize and assist with field trips to accompany lecture course (5 years, annually)
- 2013 Instructor of record, Academic Connections *Introduction to Paleontology* course
- 2011 Co-instructor of record, Academic Connections *Evolution of a Planet* course
- 2011 Teaching Assistant: *BILD 3: Ecology and Evolution* (introductory level)
- 2010 Teaching Assistant: *Introduction to Biological Oceanography* (upper division)
- 2009-2011 Reader, UCSD Mathematics Department for *Math 20C: Multivariable Calculus for Scientists and Engineers*

*Mentoring* (SIO: Scripps Institution of Oceanography; UCSD: Univ. of Calif. San Diego; USD = Univ. of San Diego; SURF: Scripps Undergraduate Research Fellowship summer program)

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|-----------|---|------------------------------------|
| 2017      | Matthew Moody<br><i>OAE1a Phosphate/Oxygen Isotope record</i> | Harvard Undergraduate Student      |
| 2017      | Raashid Chowdhury<br><i>Fish jaw functional morphology</i>    | Northeastern Undergraduate Student |
| 2017      | Leah Rubin<br><i>Fish tooth image analysis</i>                | College of the Atlantic Undergrad  |
| 2015-2016 | Kimberly McComas<br><i>Sapropel fish productivity</i>         | SIO Masters Student                |
| 2016      | Betty Foreman<br><i>Fish at Oceanic Anoxic Event 2</i>        | UCSD Undergrad Independent Study   |
| 2016      | Jacques Lyakov<br><i>Fish Tooth Taphonomy</i>                 | UCSD Undergrad Independent Study   |
| 2016      | Teng Gao<br><i>Fish tooth methods protocols</i>               | UCSD Undergrad Volunteer           |
| 2014-2016 | Michelle Zill   | SIO Masters Student                |

		Began as UCSD undergrad independent study, masters from 4/2015 <i>Eocene-Oligocene Fish production and diversity</i>
2014-2016	Jose Cuevas University of San Diego undergraduate student	USD Undergrad Intern <i>Fish productivity in ocean gyre systems in the Oligocene and Miocene</i>
2012-2015	Douglas Tomczik	SIO Masters Student <i>Fish Production and Diversity across the Paleocene-Eocene Thermal Maximum</i>
2014-2015	Raquel Bryant Brown University undergraduate, senior thesis advised through 2015	SURF SIO Summer Student 2014 <i>Paleocene-Eocene Ichthyoliths from Demerera Rise Site 1258</i>
2014	Eric Schwab	UCSD Undergrad Volunteer <i>Miocene Ichthyoliths</i>
2013-2014	Lana Graves	UCSD Undergrad Independent Study <i>An Eocene-Oligocene Record of Ichthyoliths from the North Pacific</i>
2013	Matthew Howard	UCSD Undergrad Independent Study <i>OAE 2 Ichthyoliths</i>
2013	Tiffany Horiguchi	UCSD Undergrad Volunteer <i>Modern Shark Denticles</i>
2013	Monica Krach	Volunteer, Scripps MAS Student <i>Sapropel Fish Teeth</i>
2012	Matthias Scheer	UCSD Undergrad Independent Study <i>Modern Clupeiform Ichthyolith Taxonomy</i>
2012	Christopher Ladwig	UCSD Undergrad Volunteer <i>Modern Mesopelagic Ichthyoliths</i>

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## PRESENTATIONS

### *Conference Presentations* (\*undergraduate mentee)

**Sibert, E. C.**, M. Friedman, P. M. Hull, G. Hunt, and R. D. Norris. (2016) *Evidence for disaster fauna, two phases of diversification of pelagic fish in the aftermath of the K/Pg mass extinction*. Geological Society of America Annual Meeting, Denver, CO, Sep 25-28, 2016 (Oral Presentation)

**Sibert, E. C.** and R. D. Norris. (2016) *Ecosystem evolution in a greenhouse world: fish evolution and community structure is decoupled from fish production in the Paleogene*. International Conference on Paleogeography, Utrecht, the Netherlands, Aug. 29-Sep. 2, 2016 (Poster presentation).

**Sibert, E. C.**, M. S. Friedman, P. M. Hull, G. Hunt, and R. D. Norris. (2016) *Stable pelagic vertebrate community structure through extreme Paleogene greenhouse conditions*. Ocean Sciences Meeting, New Orleans, LA, Feb. 21-26, 2016 (Oral Presentation).

**Sibert, E. C.** (2015), Norris, R. D., Cuevas, J. M.\*, Graves, L. G.\* *85 million years of pelagic ecosystem evolution: Pacific Ocean deep-sea ichthyolith records reveal fish community dynamics and a long-term decline in sharks*. American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 14-18, 2015 (Oral presentation)

**Sibert, E. C.**, Zill, M. E.\*, Bryant, R. M.\*, Graves, L. G.\*, and Norris, R. D. (2014) *Fish like it Hot? The response of ichthyolith accumulation to changing climates of the Paleogene*.

- American Geophysical Union Fall Meeting, San Francisco, CA. Dec 15-19, 2014 (Oral Presentation)
- Sibert, E. C.** and Norris, R. D. (2014) *The Cretaceous-Paleogene Mass Extinction: Beginning in a new Age of Fishes?* Geological Society of America Annual Meeting, Vancouver, BC. October 19-22, 2014 (Oral Presentation)
- Sibert, E. C.** and Norris, R. D. (2014) *The Cretaceous-Paleogene Mass Extinction: Beginning in a new Age of Fishes?* Inaugural Scripps Student Symposium, La Jolla, CA. September 16, 2014 (Poster)
- Sibert, E. C.** and Norris, R. D. (2014) *The Cretaceous-Paleogene Mass Extinction: Ringing in a new Age of Fishes?* Southern California Geobiology Symposium, Univ. of Southern California, Los Angeles, CA. April 5, 2014 (Poster Presentation)
- Sibert, E. C.** and Norris, R. D. (2014) *An increase in complexity of pelagic fish community structure following the Cretaceous-Paleogene mass extinction.* North American Paleontological Convention, Gainesville, Florida. February 15-18, 2014. (Oral Presentation)
- Sibert, E. C.**, Franks, P. J. S., and Norris, R. D. (2013) *Pelagic ecosystem recovery after the Cretaceous-Paleogene Mass Extinction: insights from ichthyoliths and a trophic transfer model.* International Conference on Paleoceanography, Sitges, Spain, Sept 1-6 2013. (Poster)
- Sibert, E. C.** and Norris, R. D. (2013) *Using Ichthyoliths as a proxy for upper trophic level dynamics through Earth History.* Southern California Geobiology Symposium, CalTech, Los Angeles, CA, April 2013. (Oral Presentation)
- Sibert, E. C.**, Hull, P. M., and Norris, R. D. (2012) *Using Ichthyoliths to Determine the Fish Response to the End-Cretaceous Mass Extinction,* AGU Fall Meeting, San Francisco, December, 2012. (Poster)
- Sibert, E. C.**, Hull, P. M., and Norris, R. D. (2012) *Ichthyoliths: Development of a novel proxy for upper trophic levels of oceanic food webs,* Cioppino Conference, Urbino, Italy. July 22, 2012. (Poster)
- Sibert, E. C.**, Hull, P. M., and Norris, R. D. (2010) *A high-resolution record of the flux of fish teeth and other ichthyoliths across the Cretaceous – Paleogene Boundary in the North Pacific (ODP Site 1209, Shatsky Rise).* International Conference on Paleoceanography, San Diego, CA. August 29-September 3, 2010. (Poster)
- Conference Abstracts* (contributor, \*undergraduate mentee, + masters student mentee)
- Foreman, B.\*, Gao, T.\*, Lyakov, J.\*, and **Sibert, E.C.** (2016) *Methods for isolation and quantification of ichthyoliths from marine sediments.* Southern California Geobiology Symposium, Caltech, Pasadena, CA (Poster)
- Zill, M. E.<sup>+</sup>, **Sibert, E. C.**, and Norris, R. D. (2015) *Decreased temperate but not polar fish productivity across the Eocene-Oligocene Transition: insights from ichthyoliths.* American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 14-18, 2015 (Poster)
- Cuevas, J. M.\*, **Sibert, E. C.**, and Norris, R. D. (2015) *Fish productivity in open-ocean gyre systems in the Late Oligocene and Miocene.* American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 14-18, 2015 (Poster)
- Zill, M. E.\* , **Sibert, E. C.**, and Norris, R. D. (2015) *Using Ichthyoliths to Understand Fish Production During the Eocene-Oligocene Transition.* Southern California Geobiology Symposium, Riverside, CA. April 11, 2015 (poster)

- Bryant, R. M.\*, **Sibert, E. C.**, and Norris, R. D. (2014) *An Early Cenozoic Ichthyolith Record from Demerara Rise (ODP Site 1258: Equatorial Atlantic Ocean)*. American Geophysical Union Fall Meeting, San Francisco, CA. Dec 15-19, 2014 (Poster Presentation)
- Graves, L. G.\*, **Sibert, E. C.**, and Norris, R. D. (2014) *An Eocene-Oligocene Record of Ichthyoliths from the North Pacific*. North American Paleontological Convention, Gainesville, Florida, February 15-18, 2014. (Oral Presentation)
- Herrera, S.; Munro, C.; Nganro, N.; Tunnicliffe, V.; Wirasantosa, S.; **Sibert, E.**; Hammond, S. R.; Bors, E.; Butterfield, D.; Holden, J. F.; Baker, E. T.; Sherrin, J.; Makarim, S.; Troa, R.; Shank, T. M. (2010). *Biodiversity of the Deep-Sea Benthic Fauna in the Sangihe-Talaud Region, Indonesia: Observations from the INDEX-SATAL 2010 Expedition*. Conference Abstract for American Geophysical Union Fall 2010 Meeting, San Francisco, CA. Dec 13-17, 2010.
- Shank, T. M.; Herrera, S.; Bors, E.; Munro, C.; **Sibert, E.**; Nganro, N.; Makarim, S.; Wirasantosa, S.; Tunnicliffe, V.; Baker, E. T.; Butterfield, D. A.; Holden, J. F.; Hammond, S. R. (2010). *Hydrothermal Vents and Organic Falls in the Heart of the Coral Triangle: Chemosynthetic Communities Discovered via Telepresence in the Sangihe-Talaud Region, Northern Sulawesi, Indonesia*. Conference Abstract for American Geophysical Union Fall 2010 Meeting, San Francisco, CA. Dec 13-17, 2010.

#### *Departmental Seminars*

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| 2017 | College of the Atlantic, Climate Change Seminar Series Speaker           |
| 2017 | University of Massachusetts, Lowell Biology seminar                      |
| 2017 | McGill University, Earth and Planetary Sciences Seminar                  |
| 2017 | University of Utah, Geology and Geophysics Seminar                       |
| 2016 | Harvard Museum of Comparative Zoology Seminar                            |
| 2016 | Scripps Institution of Oceanography Institutional Seminar                |
| 2015 | Yale Department of Geology and Geophysics Paleo group seminar            |
| 2015 | Oxford University Palaeo group Seminar                                   |
| 2015 | National Oceanographic Center, University of Southampton invited seminar |

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#### **OUTREACH, SERVICE, AND OTHER SKILLS**

*Reviewer:* Paleooceanography, PLoS ONE, Geology, Nature Ecology and Evolution

*Professional Memberships:* American Association for the Advancement of Science (2011-present), American Geophysical Union (2012-present), Geological Society of America (2012-present), The Oceanography Society (2015-present), The International Association for Geoscience Diversity (IAGD; 2016).

#### *Service*

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| 2014-2016 | Scripps Oceanographic Collections Committee, graduate student representative                               |
| 2014      | Convener for AGU Fall Meeting 2014 session “A Living Planet: Biotic Responses to Earth’s Changing Climate” |
| 2014      | Founding member and organizer of the Scripps Student Symposium   |

### *Outreach*

- 2017 Ask a Paleontologist volunteer, I <3 Science Festival, Harvard Museum of Natural History
- 2017 NOSB Blue Lobster Bowl Science Judge
- 2011-present Short (<3 hour) outreach presentations for local groups in San Diego area and visitors to Scripps.
- 2014-2016 BEWiSE San Diego (middle school girls in science) presenter
- 2012-2014 National Ocean Sciences Bowl Moderator and Science Judge, La Jolla, CA
- 2013 Expand Your Horizons Conference for young women (grades 6-9), Workshop Presenter
- 2003-2008 Volunteer in Visitor Education, New England Aquarium in Boston, MA
- 2008 Girl Scout Gold Award for science outreach programs for middle school girls

### *Language skills*

Proficient in French (read, spoken, and written); basic American Sign Language (ASL)

### *Other skills*

- 2001-present Skilled circus coach, performer, show coordinator, and aerial acrobat, 2001 – present. Instructor and performer at Aerial Revolution (2009-2016); silks program director and lead instructor, UCSD (2012-2016). Have also helped to run summer camps and volunteer circus outreach programs (2007-2011)

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### **SELECT MEDIA COVERAGE**

- 2015: AAAS Science Blog: Fish diversity exploded when dinosaurs went extinct  
<http://news.sciencemag.org/paleontology/2015/06/fish-diversity-exploded-when-dinosaurs-went-extinct>  
[https://www.reddit.com/r/science/comments/3bm9yj/fish\\_diversity\\_exploded\\_when\\_dinosaurs\\_went/](https://www.reddit.com/r/science/comments/3bm9yj/fish_diversity_exploded_when_dinosaurs_went/)
- ARS Technica: Familiar fishes found opportunity in mass extinction  
<http://arstechnica.com/science/2015/06/familiar-fishes-found-opportunity-in-mass-extinction/>
- Phys.org: End of the dinosaurs gave rise to the modern 'Age of Fishes,' researchers find  
<http://phys.org/news/2015-06-dinosaurs-gave-modern-age-fishes.html>
- Voice of America (included radio interview): Dinosaur Demise Leads to Fish Rise  
<http://www.voanews.com/content/dinosaur-demise-leads-to-fish-rise/2851647.html>
- Smithsonian Magazine: After the Dinosaurs Died, Earth Experienced the Age of Fish  
[www.smithsonianmag.com/smart-news/after-dinosaurs-died-earth-experienced-age-fish-180955791/](http://www.smithsonianmag.com/smart-news/after-dinosaurs-died-earth-experienced-age-fish-180955791/)
- AAAS Eureka Alert: Exit Dinosaurs, Enter Fishes (from SIO Press Release)  
[http://www.eurekaalert.org/pub\\_releases/2015-06/uoc--ede062915.php](http://www.eurekaalert.org/pub_releases/2015-06/uoc--ede062915.php)  
[http://ucsdnews.ucsd.edu/pressrelease/exit\\_dinosaurs\\_enter\\_fishes](http://ucsdnews.ucsd.edu/pressrelease/exit_dinosaurs_enter_fishes) (original)
- Digital Journal: Dinosaurs' extinction gave rise to today's fish, study finds  
<http://www.digitaljournal.com/science/dinosaurs-extinction-gave-rise-to-today-s-fish-study-finds/article/437759>
- Nature World News: Post Dinosaur Extinction: Fish, Not Mammals, Dominated  
<http://www.natureworldnews.com/articles/15800/20150726/post-dinosaur-extinction-fish-mammals-dominated.htm>
- 2016: Featured Guest on This Week In Science! (TWIS) Podcast for World Oceans Day  
<http://www.twis.org/2016/06/10/1963/>