

# Umihiko Hoshijima

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## Education

- 2013-2018     **Ph.D.**– Ecology, Evolution and Marine Biology  
University of California Santa Barbara
- 2009-2013     **B.S. Biological Sciences** – University of California Santa Cruz  
Honors in the Major; Minors in Chemistry, Electronic Music

## Professional Experience

- 2018-present     **Postdoctoral Researcher.** Department of Ecology and Evolutionary Biology, University of California, Santa Cruz.  
Advisor: Professor Kristy Kroeker
- 2013-2018     **Graduate Research.** Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara.  
Advisor: Professor Gretchen Hofmann
- 2016-2018     **Graduate Research.** Santa Barbara Coastal Long-Term Ecological Research (SBC-LTER) project. PI: Dr. Dan Reed
- 2010-2013     **Lab and Field Technician.** National Marine Fisheries Service, NOAA, Santa Cruz, CA. Advisor: Dr. Sean Hayes
- 2012     **NSF - REU Internship.** Shannon Point Marine Center, Western Washington University, Washington
- 2007     **Lab Technician.** The Scripps Research Institute, San Diego, CA.

## Grants in Support of Research

- 2015     **Santa Barbara Coastal LTER Supplemental Equipment Grant**  
*Physiological responses of kelp forest organisms to low pH and O<sub>2</sub>.*  
(\$7,555)
- 2014     **California Sea Grant – Global Chance Ecophysiology of egg masses and juveniles of the kelp forest fish, *Scorpaenichthys marmoratus*.** Co-written with PI, G. Hofmann. (\$24,999)
- 2014     **UCSB Associated Students Coastal Fund – Sensor deployments in kelp forests measuring carbon dioxide and oxygen levels to assess the impacts of a changing ocean.** (\$1,414)

## Fellowships and Awards

- 2014-2017     **National Science Foundation** Graduate Research Fellowship (GRFP)
- 2014     **Continuing Student Graduate Fellowship.** Department of Ecology, Evolution and Marine Biology, UC Santa Barbara. (\$6,000).

- 2013-2014      **Graduate Fellowship** Department of Ecology, Evolution and Marine Biology, UC Santa Barbara.
- 2012            **National Science Foundation** Research Experience for Undergraduates (NSF-REU) recipient. Shannon Point Marine Center, Western Washington University, Washington.

## Peer-Reviewed Publications

**Umihiko Hoshijima** and Gretchen E. Hofmann. Variability of Seawater Chemistry in a Kelp Forest Environment Is Linked to *in situ* Transgenerational Effects in the Purple Sea Urchin, *Strongylocentrotus purpuratus*. *Frontiers in Marine Science* (2019). doi: 10.3389/fmars.2019.00062

Kevin M. Johnson, Juliet M. Wong, **Umihiko Hoshijima**, Cailan S. Sugano, and Gretchen E. Hofmann. Seasonal transcriptomes of the Antarctic pteropod, *Limacina helicina antarctica*. *Marine Environmental Research* (2018). doi:10.1016/j.marenvres.2018.10.006

**Umihiko Hoshijima**, Juliet M. Wong, and Gretchen E. Hofmann. Additive effects of pCO<sub>2</sub> and temperature on the respiration rates of the Antarctic pteropod, *Limacina helicina antarctica*. *Conservation Physiology* (2017). doi:10.1093/conphys/cox064

Kevin M. Johnson, **Umihiko Hoshijima**, Cailan S. Sugano, Alice T. Nguyen, and Gretchen E. Hofmann. Shell dissolution observed in *Limacina helicina antarctica* from the Ross Sea, Antarctica: paired shell characteristics and *in situ* seawater chemistry. *Biogeosciences Discussions* (2016). doi:10.5194/bg-2016-467

Brent B. Hughes, Kamille K. Hammerstrom, Nora E. Grant, **Umihiko Hoshijima**, Ron Eby, Kerstin Wasson. Trophic cascades on the edge: fostering seagrass resilience via a novel pathway. *Oecologia* (2016). doi:10.1007/s00442-016-3652-z

Emily B. Rivest, Margaret O'Brien, Lydia Kapsenberg, Chris C. Gotschalk, Carol A. Blanchette, **Umihiko Hoshijima**, and Gretchen E. Hofmann. Beyond the Benthos and the benthos: dataset management planning and design for time series of ocean carbonate chemistry associated with Durafet® - based pH sensors. *Ecological Informatics* (2016). doi:10.1016/j.ecoinf.2016.08.005

## Manuscripts in Preparation and Review

Wong, J.M., Leach, T., Kozal, L., **Hoshijima, U.**, Hofmann, G.E. Transgenerational effects in an ecological context: Conditioning of adult sea urchins to upwelling conditions alters the progeny's response to differential pCO<sub>2</sub> levels (In review).

**Hoshijima, U.** and Hofmann, G.E. A time series of year-round pH from the Ross Sea, Antarctica: inter and intra-annual trends. (In preparation).

**Hoshijima, U.**, Dilly, GF, Rivest, EB, Kapsenberg, L., Nguyen, A.T., Johnson, K.M., Kroeker, K.J.,

Sanford, E., Rose, J.M., Blanchette, C.A., Chan, F., Chavez, F.P., Gaylord, B., Helmuth, B., Hill, T.M., McManus, M.A., Menge, B.A., Nielsen, K.J., Raimondi, P.T., Russell, A.D., Washburn, L., and Hofmann, G.E.. Exploring local adaptation to ocean acidification in *Mytilus californianus* during simulated upwelling events (in preparation).

## Presentations of Research

**Hoshijima, U.** and Kroeker, K.K. Environmental history drives physiological responses to global change in marine invertebrates. Departmental Seminar, Ecology and Evolutionary Biology. University of California, Santa Cruz, March 15, 2019.

**Hoshijima, U.** and Kroeker, K.K. Metabolic responses of kelp forest grazers to current and near-future seasonal extremes of temperature and pH in Southeast Alaska. Western Society of Naturalists, November 2018.

**Hoshijima, U.** and Hofmann, G.E. Spatiotemporal variability of seawater chemistry and dissolved oxygen in a kelp forest environment and linkages to in situ transgenerational effects in the purple sea urchin, *Strongylocentrotus purpuratus* (poster). Gordon Research Conference, Global Change Biology; July 2018.

**Hoshijima, U.**, Hofmann, G.E. Ocean acidification in Santa Barbara and Antarctica. **Keynote Speaker.** Next Generation Science Standards: Local Phenomena Summer Institute, June 20, 2017.

**Hoshijima, U.**, Hofmann, G.E. Marine sensor networks informing biological experiments at Mohawk Reef (poster). Santa Barbara Coastal Long-term Research Symposium, November 2016.

Bachhuber, S.M., Wong, J.M., **Hoshijima, U.**, Johnson, K.M., Sugano, C.S., Hofman, G.E. Transgenerational impacts of pH and temperature on early stage purple sea urchins, *S. purpuratus* (poster). Western Society of Naturalists, November 2016.

**Hoshijima, U.** How Antarctic pteropods (swimming snails) will cope with future ocean change. Sunday Science Lecture Series, McMurdo Station, Antarctica. October 29, 2016.

Hofmann, G.E., Johnson, K.M., **Hoshijima, U.**, Wong, J.M. Antarctic Pteropods (*Limacina helicina antarctica*) as a Sentinel Organism for the Impact of Ocean Acidification. Oceans in a High CO<sub>2</sub> world, April 2016.

**Hoshijima, U.** and Hofmann, G.E. Metabolic Effects of CO<sub>2</sub> and Temperature Stress on *Limacina helicina antarctica*. Graduate Student Symposium, UC Santa Barbara. February 2, 2016.

Hofmann, G.E., K.M. Johnson, **Hoshijima, U.**, Wong, J.M., and Sugano, C. Pteropods, little marine snails, as an indicator of climate change. Sunday Science Lecture Series, McMurdo Station, Antarctica. November 22, 2015.

Hofmann, G.E., **Hoshijima, U.**, Bachhuber, S. The Value of Long-term Oceanographic Data Sets for Global Change Ecology (poster). Western Society of Naturalists, November 2015.

**Hoshijima, U.** and van Alstyne, K. NSF-REU final presentation, Shannon Point Marine Center, Anacortes, WA. August 2012.

## Teaching

### Workshops:

- **Co-Instructor:** Durafet Sensor Analysis Workshop. UC Santa Cruz, CA. November 2018.

- **Instructor (4 workshops)** – *Scientific Programming in R*. UC Santa Barbara, CA. April 2015, April 2016, April 2017, May 2018). Designed lesson plans for “Intro to R”, “Data Manipulation with reshape2, dplyr, and pipes”, and “Data visualization with ggplot2”.

#### University Courses:

- Teaching Assistant - *Global Change Biology* (EEMB 155). UC Santa Barbara (Summer 2015).
- Lab Teaching Assistant – *The Diversity of Life* (EEMB 3L). UC Santa Barbara (Spring 2014).

#### Workshops Attended

- *Climate Engagement Program* –Professor Kristy Kroeker, UC Santa Cruz, CA. September 11-14, 2017.
- *The Civic Scientist – how to become an effective public communicator*. Richard Hayes, *The Union of Concerned Scientists*. April 28, 2017.
- *Autonomous pH Sensors – Best Practices*. Scripps Institute of Oceanography, San Diego, CA. August 4-8, 2014.
- Scientific Programming Python Workshop, UC Santa Barbara, CA. January 30-31, 2014.

#### Field Research

- **Field Team Leader** – Sitka, Alaska (14 weeks in 2018). PI: Professor Kristy Kroeker
- **Field Team Leader, Antarctic Scientific Diver** – United States Antarctic Program (USAP); McMurdo Station, Antarctica (6 weeks in 2016). PI: Professor Gretchen Hofmann.
- **Research Assistant, Antarctic Scientific Diver** – USAP; McMurdo Station, Antarctica (11 weeks in 2015 and 2014). PI: Professor Gretchen Hofmann.
- Channel Islands Research Cruise for Acidification Studies (CIRCAS), Santa Barbara, CA; **NOAA R/V Shearwater** (2 days, 2016; 2 days, 2015; 5 days, 2014). PI: Professor Gretchen Hofmann.
- NOAA SWFSC Salmon Cruise, California Current; **F/V Frosti** (6 days, 2011). Chief Scientist: Dr. Sean Hayes.

#### Research Diving

- 300+ dives, 150+ hours logged
- Experience in low visibility, ice diving (McMurdo Station, Antarctica), drysuit diving.
- AAUS: Scientific diving authorization maintained at UC Santa Cruz (100ft) with drysuit authorization.
- UCSB Diving Control Board representative, 2017-2018
- NAUI: Advanced Open Water, Rescue Diver, Teaching Assistant, EANx, and Master Diver certifications.
- PADI: Open Water certification.
- First Aid, CPR, DAN O<sub>2</sub> Certifications maintained 2012-present.

#### Student Advising

2018	Sabrina Garcia (lab assistant/undergrad)
2018	Lauren Strobe (lab assistant/undergrad)
2018	Zofia Danielson (high school student)
2018	Muriel Reid (high school student)
2017-2018	Maddie Housh (lab assistant/technician)
2016-2017	Margarita McInnis (lab assistant/undergrad)
2013-2015	Silke Bacchuber (lab assistant/technician)
2013-2016	Cailan Sugano (lab assistant/technician)

## Public Education and Outreach

- Guest Lecturer, *Science and Policy of Global Change* (ENSTU 309), California State University, Monterey Bay, March 25, 2019.
- Guest Lecturer, *Graduate Professional Development* (EEMB 510), UC Santa Barbara. April 24, 2018.
- *Live music and Antarctic Diving*. World Oceans Day Event, Santa Barbara, CA. June 3, 2017.
- *On Thin Ice: Exploring global change biology in the Antarctic with art and science*. Public lecture series, Sierra Nevada Aquatic Research Laboratory, March 2, 2017.  
<https://youtu.be/CyRiDlleBaw?t=10m43s>
- *Diving Under Antarctic Ice: Researching seawater pH dynamics and marine biology in one of the last true marine wildernesses*. UC Santa Barbara SCUBA club, February 7, 2017.
- *Under the Ice*. INT91: Early start program for high school students. July 27, 2016.
- *Global Change Biology and Antarctic Diving*. Science “Pub Talk” Series hosted by the Santa Barbara Natural History Museum. July 11, 2016.
- *Antarctica: On Thin Ice*. World Oceans Day Event, Santa Barbara, CA. June 4, 2016.
- *To Antarctica and Back Again: Researching seawater pH dynamics and marine physiology in one of the last true marine wildernesses*. Paradise Dive Club Lectures Series, Santa Barbara, CA. May 31, 2016.
- Guest Lecturer, *Graduate Professional Development* (EEMB 510), UC Santa Barbara. April 15, 2016.
- Career Panelist. *Biology Mentoring and Engagement* (MCDB 13), UC Santa Barbara. April 12, 2016.
- Career Panelist. *Processes in Aquatics Systems* (EEMB 142B), UC Santa Barbara. February 12, 2016.
- Guest Lecturer. *Exciting Developments in Biology Research* (INT 94ES), UC Santa Barbara. January 29, 2016.
- *Global Change Biology and Antarctic Diving*. Marine Science course, La Jolla High School, CA. January 5, 2016.
- *Antarctic Research and Coldwater Diving*. Paradise Dive Club Lectures Series, Santa Barbara, CA. August 2015.
- Guest Lecturer, *Intro to Oceanography* (Earth 3), UC Santa Barbara. June 6, 2015.
- *Kelp Forests on Acid: Local Climate Change Mitigation in a Changing Ocean*. Grad Slam competition, UC Santa Barbara. April 2015. **Semifinalist**.
- *Global Change Biology: From California to Antarctica*. Marine Science course, La Jolla High School, CA. January 2015.

## Academic Service

- *Reviewer*, Scientific Reports.
- *Co-Chair*, Gordon Research Seminar on Ocean Global Change Biology, 2018.
- *Skype a Scientist*: video conferencing with K-12 science classrooms (2017-present).
- *Chair, Cohort representative and Webmaster*. Graduate Student Advisory Committee (GSAC). UC Santa Barbara. 2013-Present, Chair (2016-17), Vice Chair (2015-16) and Webmaster (2017).
- Contributor and panelist for the NOAA Channel Islands Marine Sanctuary Condition Report, 2016.
- *Mentor for junior high school students and families*. Family Ultimate Science Exploration (FUSE), Center for Science and Engineering Partnerships, UC Santa Barbara. Leading science activities for junior high school students and families. 2016.
- *Mentor for undergraduate biology students*. Graduate Biology Mentorship Association (BIOME), UC Santa Barbara. Panelist at 5 events geared towards undergraduate exposure to different career paths. 2014-2016.

## In the News

- *Counting critters in the kelp forest*. Rachel Cassandra, KCAW (public radio, Southeast Alaska). <https://www.kcaw.org/2018/08/01/counting-critters-in-the-kelp-forest/>
- *Shedding New Light on the Mysteries of Antarctica's Long, Dark Winter*. Sarah Laskow, **Atlas Obscura**. <https://www.atlasobscura.com/articles/when-is-winter-in-antarctica>
- *Sisters of the Blue* (Podcast/Radio Show). KCSB 91.9FM. July 12, 2017. <https://www.sistersoftheblue.com/radio/2017/11/9/17colo43nmt2fznnkkwdngthd5b0bm>
- *The Dissolving Sentinels of the Southern Ocean*. Michael Lucibella, **The Antarctic Sun** (NSF US Antarctic Program). <http://antarcticsun.usap.gov/science/contentHandler.cfm?id=4207>
- *Pteropods and B-134*. Shaun O'Boyle (NSF Antarctica Artists and Writers Program). <https://popantarctica.wordpress.com/2015/11/17/pteropods-b-134/>
- *Asians Doing Everything*. <http://asiansdoingeverything.tumblr.com/post/128280622030/name-umihiko-hoshijima-location-santa-barbara-ca>
- *UCSB Hofmann Lab Examines Effects of Ocean Acidification on Sculpin*. <https://thebottomline.as.ucsb.edu/2015/03/ucsb-hoffman-lab-examines-effects-of-ocean-acidification-on-rockfish>
- *Graduate Student Umi Hoshijima Takes on Bitter Cold and Lightning-quick Penguins*. UCSB GradPost. <http://gradpost.ucsb.edu/headlines/2014/12/1/graduate-student-umi-hoshijima-takes-on-bitter-cold-and-ligh.html>