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## Education

Arizona State University	Geography	Ph.D.	2021-Present
University of Hawaii at Hilo	Marine Science	B.S.	2012-2016
University of Hawaii at Hilo	TCBES	M.S.	2016-2019

## Professional Experience

**Research Technician, National Park Service Coral Reef Monitoring and Analysis** 2021 - Present  
**University of Hawaii at Hilo**

**PI: Dr. John Burns**

- Data analysis of coral reef surveys, SfM Photogrammetry Surveys from National Park Service.
- Trainings for underwater SfM Photogrammetry and produce protocols.
- Conducted in-situ SfM Photogrammetry surveys, 3D model processing, and data analytics

**Research Technician, Characterization of marine habitats surrounding Guam** 2019 - 2020  
**University of Hawaii at Hilo**

**PI: Dr. John Burns and Dr. Toni Carrel**

- Established baseline 3D data on the coral communities and underwater cultural heritage (UCH) sites within Navy submerged lands of Guam.
- Conducted in-situ SfM Photogrammetry surveys, 3D model processing, and data analytics
- Managed all data and report writing

**Research Technician, NFWF Grant, University of Hawaii at Hilo** 2018 - 2019

**PI: Dr. John Burns**

- Explored how changing environmental conditions will impact low-lying sand and coral reefs habitats and associated species at French Frigate Shoals.
- Determined how thermal stress and mass coral bleaching are affecting coral community composition and 3D habitat structure at French frigate Shoals.
- Worked as team leader for all in-situ 3D surveys and data management

**NOAA Explorer Grant: Peleliu's Forgotten World War II Battlefield** 2018 - 2019

**PI: Dr. John Burns, Dr. Toni Carrel, Dr. Jennifer McKinnon**

- Mapped unexplored waters at the location of the WWII Battle of Peleliu, Palau. The project goal was to establish baseline data on the coral communities and damage from the war.
- Conducted in-situ SfM Photogrammetry surveys, 3D model processing, and data analytics
- Managed all data and report writing

## Academic Research Experience

**Effects of population demographics on coral health in the** 2016 - 2019

**Papahānaumokuākea Marine National Monument**

**Committee: Dr. John Burns (Advisor), Dr. Misaki Takabyashi, Dr. Marta DeMaintenon, Dr. Randall Kosaki**

- Understanding the effects of population demographics in relation to degraded coral health novel insight on how different coral populations will respond to increased disturbance and disease.
- Results led to changes in NOAA management strategies for monitoring coral health
- Conducted innovative multivariate and statistical modeling to identify drivers of disease

**Monitoring Water Quality at Honokea Loko I‘a at Waiuli, Keaukaha** 2016

**Mentor: Dr. Misaki Takabayashi**

- To benefit the community of Honokea Loko I‘a, water quality parameters are measured to establish more baseline measurements of the fishpond
- Additional help is provided for restoration of the fishpond when needed

**Coral Disease and Community Structure throughout the Northwestern Hawaiian Islands (NWHI)** 2015 – 2016

**Mentors: Dr. Steven Colbert, Dr. John Burns**

- Scientific scuba diving coral health and disease surveys in NWHI
- Examined changes of community structure (% coral cover, species diversity, species richness) travelling up the Hawaiian archipelago.

**Phytoplankton Biomass and Composition of Hilo Bay, Hawai‘i** 2014 - 2015

**Mentor: Dr. Jason E. Adolf**

- Examined phytoplankton biomass by various lab analysis such as chlorophyll, nutrient, and epifluorescence.
- Studied community composition by imaging filtered surface water samples under a scanning electron microscope.

**Investigating Gorilla Ogo at Honohononui, Keaukaha, HI** 2014

**Partners: Kalani Quiocho and Devon Aguiar**

**Mentors: Dr. Misaki Takabayashi and Pelika Bertelmann**

- To benefit the community of Honohononui, benthic surveys were conducted to measure the abundance of an invasive species *Gracilaria salicornia*.

## Publications

Fukunaga, A., **Pascoe, K.H.**, Pugh, A.R., Kosaki, R.K., Burns, J.H.R. (2022). Underwater Photogrammetry Captures the Initial Recovery of a Coral Reef at Lalo Atoll. *Diversity*. 14(1):39. <https://doi.org/10.3390/d14010039>

**Pascoe, K. H.**, Fukunaga, A., Kosaki, R. K., & Burns, J. H. (2021). 3D assessment of a coral reef at Lalo Atoll reveals varying responses of habitat metrics following a catastrophic hurricane. *Scientific reports*, 11(1), 1-9.

Fukunaga, A., Burns, J. H., **Pascoe, K. H.**, & Kosaki, R. K. (2020). Associations between Benthic Cover and Habitat Complexity Metrics Obtained from 3D Reconstruction of Coral Reefs at Different Resolutions. *Remote Sensing*, 12(6), 1011.

Burns, J.H., Weyenberg, G., Mandel, T., Ferreira, S.B., Gotshalk, D., Kinoshita, C.K., Marshall, M.J., Del Moral, N.A., Murphy, S.J., **Pascoe, K.H.** and Runyan, A (2020). A comparison of the diagnostic accuracy of in-situ and digital image-based assessments of coral health and disease. *Frontiers in Marine Science*, 7, 304.

Fukunaga, A., Kosaki, R. K., **Pascoe, K. H.**, & Burns, J. H. (2020). Fish Assemblage Structure in the Northwestern Hawaiian Islands Is Associated with the Architectural Complexity of Coral-Reef Habitats. *Diversity*, 12(11), 430.

Cristobal F.R., Dodge M., Noll B., Rosenberg N., Burns J.H.R., Sanchez J., Gotshalk D., **Pascoe K.H.**, & Runyan A. (2020). Exploration of Coral Reefs in Hawai'i through Virtual Reality: Hawaiian Coral Reef Museum VR. In *Practice and Experience in Advanced Research Computing (PEARC '20)*. Association for Computing Machinery, New York, NY, USA, 545–546. DOI: <https://doi.org/10.1145/3311790.3404542>

Burns, J. H. R., Fukunaga, A., **Pascoe, K. H.**, Runyan, A., Craig, B. K., Talbot, J., ... & Kosaki, R. K. (2019). 3D habitat complexity of coral reefs in the northwestern Hawaiian Islands is driven by coral assemblage structure. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*.

**Pascoe, K. H.** (2019) Community Structure and Demographic Drivers of Partial Mortality in Corals throughout the Papahānaumokuākea Marine National Monument. Diss. University of Hawai'i at Hilo

## Fellowships and Scholarships

‘Imi Na‘auoa Graduate Student Scholarship	2016 – 2019
Hau‘oli Mau Loa Graduate Fellowship	2016 – 2018
Keaholoa Scholar Program	2015 – 2016
Na Ho‘o kama a Pauahi Scholarship	2012 – 2016
NOAA QUEST Scholarship	2014 – 2015
Steve Stone Scholarship	2014 – 2015

## Presentations

**Pascoe, K.H.** (2022). Applications of modern technology on Coral Reefs. Hawaii Institute of Marine Biology, Three Seas Program.

Burns, John H.R., and **Pascoe, K.H.** (2021). Applications of modern technology on Coral Reefs. Coral Gardeners Headquarters.

Cristobal F., Dodge M., **Pascoe K.H.**, Spengler A. (2020) Exploration of Coral Reefs in Hawaii through Virtual Reality: Hawaiian Coral Reefs Museum VR

**Pascoe. K.H.** (2019) HIMB Coral Bleaching and Restoration Symposium: “*Citizen science can utilize 3D surveys methods to enhance monitoring of coral bleaching events.*”

**Pascoe. K.H.** (2019) Master’s Thesis Defense: “*Community Structure and demographic drivers of partial mortality in corals throughout the Papahānaumokuākea Marine National Monument.*”

**Pascoe. K.H.** (2016) Mokupāpapa Discovery Center: “*Monitoring Water Quality at Honokea Loko I‘a at Waiuli, Keaukaha*”

**Pascoe, K.H.**, Rose. J. & Steward K. (2015) Mokupāpapa Discovery Center: “*Student Experiences from the 2015 RAMP Research Cruise*”

**Pascoe K.H.** (2015) University of Hawai‘i at Hilo, Thesis Symposium Hilo, Hawai‘i. Thesis: “*Phytoplankton Biomass and Composition of Hilo Bay, Hawaii.*”

**Pascoe K.H.** (2014) University of Hawai‘i at Hilo, Thesis Symposium Hilo, Hawai‘i. 2014 Thesis Proposal: “*Phytoplankton Biomass and Composition of Hilo Bay, Hawaii.*”

**Pascoe K. H.,** Quioco K., Aguiar D. (2014) Mokupāpapa Discovery Center: Kuula Symposium “*Investigating Gorilla Ogo at Honohononui, Keaukaha HP.*”

**Pascoe K. H.,** Quioco K., Aguiar D. (2014) Hawaii Conservation Convention. Hawai‘i Convention Center Honolulu, Hawai‘i. “*Investigating Gorilla Ogo at Honohononui, Keaukaha HP.*”

## Skills and Techniques

- Data Management and Statistical Analysis in R
- GIS Software and Python for GIS
- Underwater Structure-from-Motion Photogrammetry Image Collection
- 3D Model Rendering in Agisoft
- 3D Habitat Complexity Metric Extractions with GIS and R
- Scientific Scubba Diving Surveys (Inverts, Fish, Coral Health Benthic Substrate, Imaging)
- Scanning Electron Microscope Methods
- Water Quality (chlorophyll, nutrients, and epifluorescence)

## Awards

PEARC20 conference “Best Visualization Showcase Award” 2020

- Exploration of Coral Reefs in Hawaii through Virtual Reality: Hawaiian Coral Reefs Museum VR Sherwood Maynard Award (QUEST Leadership Award) 2015

## Mentoring

- 2019-2020: Sofia Ferria Colman (Ike Wai Scholar), Jazmin Helzer (NPS Intern), Olivia Jaris, Carson Green, Rachel Willard, Shannon Wallace, Danielle Wilde, Brianna Craig (PMNM Intern) – UH Hilo Undergraduates; Keilani Bonis-Erickson, Alex Spengler, Kainalu Steward - UH Hilo Graduate Students; Kevin Bruce (UVIC Graduate Student), Noelle Helder (Ualberta Graduate Student), Shelbie Ishimaru (UC DAVIS, undergrad).
- 2018-2019: Brianna Craig (NOAA Hollings Scholar), Keelee Martin (PMNM Intern), Alexa Runyan, Lily Gavagan, Alex Spenglar, Jessica Talbot, Kainalu Steward - UH Hilo Undergraduates, Kupono Edens, Starsea Kahikina – Ka ‘Umeke Kā‘eo High School
- 2017-2018: Kupono Edens, Starsea Kahikina – Ka ‘Umeke Kā‘eo High School
- 2016-2017: Kupono Edens, Starsea Kahikina – Ka ‘Umeke Kā‘eo High School

## Volunteer Experience

Honokea Loko I‘a	2015-Present
Department of Aquatic Resources	2014-2016
Kiholo Loko I‘a	2015
Marine Option program	2014-2015

Science Olympiad	2015
Edith Kanaka'ole Foundation	2014
Turtle Response team	2014
Ocean Day, Hilo	2012-2013

## Media

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|--|------|
| Mapping Pipeline Project   | 2021 |
| <ul style="list-style-type: none"> <li>• <a href="https://www.hawaiinewsnow.com/2021/12/15/3d-computer-model-pipeline-could-offer-important-clues-about-climate-change/">https://www.hawaiinewsnow.com/2021/12/15/3d-computer-model-pipeline-could-offer-important-clues-about-climate-change/</a></li> <li>• <a href="https://www.reef.com/blogs/news/mapping-pipeline">https://www.reef.com/blogs/news/mapping-pipeline</a></li> <li>• <a href="https://www.surfnewsnetwork.com/17202-2/">https://www.surfnewsnetwork.com/17202-2/</a></li> </ul>  |      |
| MEGA Lab: Live Stream Underwater Camera  | 2021 |
| <ul style="list-style-type: none"> <li>• <a href="https://www.hawaiinewsnow.com/2021/09/16/must-see-tv-people-cant-get-enough-this-uh-hilo-livestream-life-under-sea/">https://www.hawaiinewsnow.com/2021/09/16/must-see-tv-people-cant-get-enough-this-uh-hilo-livestream-life-under-sea/</a></li> </ul>  |      |
| Hokulea, Hikianalia and MEGA Lab's damage assessment of Hurricane Walaka   | 2021 |
| <ul style="list-style-type: none"> <li>• <a href="https://www.hawaiinewsnow.com/2021/06/24/hokulea-hikianalia-survey-hurricane-damaged-reefs-lalo/">https://www.hawaiinewsnow.com/2021/06/24/hokulea-hikianalia-survey-hurricane-damaged-reefs-lalo/</a></li> </ul>  |      |
| UH researchers receive top awards at national computing conference   | 2020 |
| <ul style="list-style-type: none"> <li>• <a href="https://www.hawaii.edu/news/2020/07/23/uh-researchers-pearc20-awards/">https://www.hawaii.edu/news/2020/07/23/uh-researchers-pearc20-awards/</a></li> </ul>  |      |
| Hurricane Walaka and Invasive Red Alga impacts in Papahānaumokuākea  | 2019 |
| <ul style="list-style-type: none"> <li>• <a href="https://www.papahanaumokuakea.gov/new-news/2019/08/15/coral-alga-research/">https://www.papahanaumokuakea.gov/new-news/2019/08/15/coral-alga-research/</a></li> <li>• <a href="https://mauinow.com/2019/08/15/coral-reef-damage-invasive-alga-at-papahanaumokuakea/">https://mauinow.com/2019/08/15/coral-reef-damage-invasive-alga-at-papahanaumokuakea/</a></li> <li>• <a href="https://sanctuaries.noaa.gov/news/aug19/coral-damage-invasive-alga-papahanaumokuakea.html">https://sanctuaries.noaa.gov/news/aug19/coral-damage-invasive-alga-papahanaumokuakea.html</a></li> <li>• <a href="https://www.civilbeat.org/2019/08/papahanaumokuakea-the-reefs-werent-damaged-they-were-just-gone/">https://www.civilbeat.org/2019/08/papahanaumokuakea-the-reefs-werent-damaged-they-were-just-gone/</a></li> <li>• <a href="https://www.hawaiinewsnow.com/2019/08/16/hurricane-walakas-legacy-decimated-reefs-invasive-algae/">https://www.hawaiinewsnow.com/2019/08/16/hurricane-walakas-legacy-decimated-reefs-invasive-algae/</a></li> <li>• <a href="https://www.smithsonianmag.com/smart-news/last-years-hurricane-flattened-one-hawaiis-most-beautiful-coral-reefs-180973008/">https://www.smithsonianmag.com/smart-news/last-years-hurricane-flattened-one-hawaiis-most-beautiful-coral-reefs-180973008/</a></li> </ul> |      |

- <https://www.staradvertiser.com/2019/08/15/breaking-news/noaa-researchers-discover-papahanaumokuakea-reef-wiped-out-by-hurricane-walaka/>
  - <https://weather.com/science/environment/news/2019-08-22-hawaiian-reef-dead-after-hurricane-walaka>
  - <https://earth.gizmodo.com/a-hurricane-obliterated-hawaiis-most-spectacular-reef-1837531241>
- Peleliu’s Forgotten World War II Battlefield 2018
- <https://oceanexplorer.noaa.gov/explorations/18peleliu/background/explorers/explorers.html>
- UH Hilo team to research historic World War II battlefield 2018
- <https://hilo.hawaii.edu/news/press/release/2122>
- The QUEST – Mentoring the Next Generation of Marine Scientists in the Northwestern Hawaiian Islands 2015
- [https://www.papahanaumokuakea.gov/research/ramp2015\\_8\\_24.html](https://www.papahanaumokuakea.gov/research/ramp2015_8_24.html)
- Papahānaumokuākea Marine National Monument RAMP Cruise 2015
- [https://www.papahanaumokuakea.gov/research/ramp2015\\_participants.html](https://www.papahanaumokuakea.gov/research/ramp2015_participants.html)

## References

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