

# Tyler A. Y. Phelps

## *Curriculum vitae*

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573 Scott Street Apt I, San Francisco, CA 9417, USA

### Education

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- 2018 – 2020  
(Expected)      **Master of Science, San Francisco State University**
- Ecology, Evolution and Conservation Biology (*Summa cum laude*)
  - M.Sc. Thesis: Identifying Drivers of Community Structure in Mesophotic Fish Assemblages
- 2013 – 2017      **Bachelor of Science, University of Hawai'i at Hilo**
- Marine Science Major, Chemistry Minor, Marine Option Program Certificate in "Reef Fish Monitoring"
  - B.Sc. Thesis: Ecological Impacts of the Hawaiian Cleaner Wrasse (*Labroides phthirophagus*) on fish assemblages from Hawai'i Island

### Peer-Reviewed Publications

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5. Shepherd, B., H. T. Pinheiro, **T. Phelps**, E. Easton, A. Perez-Matus and L. A. Rocha (*in press*) A New Species of *Chromis* (Teleostei: Pomacentridae) from Mesophotic Coral Ecosystems of Rapa Nui (Easter Island) and Salas y Gómez, Chile. *Copeia*
4. Shepherd, B., H.T. Pinheiro, **T. Phelps**, A. Perez-Matus and L. A. Rocha (2019) *Luzonichthys kiomeamea* (Teleostei: Serranidae: Anthiadinae), a new species from a mesophotic coral ecosystem of Rapa Nui (Easter Island). *Journal of the Ocean Science Foundation*, 33: 17-27.
3. Shepherd, B., **T. Phelps**, H.T. Pinheiro, A. Perez-Matus and L. A. Rocha (2018) *Plectranthias ahiahiata* (Teleostei, Serranidae: Anthiadinae), a new species of perchlet from mesophotic ecosystems at Rapa Nui (Easter Island) *Zookeys* 762: 105-116.
2. **Phelps, T. A.** and J. Lotts (2018) MAST 2017: Survey of Amphibious Vessels of O'ahu. *Proceedings of the Maritime Archaeology and History of Hawai'i and the Pacific Symposium* 29: 8.
1. **Phelps, T. A.**, C. N. Kane, J. H. R. Burns and J. P. Beets (2017) Scooters and Scaridae: Utilizing Diver Propulsion Vehicles to Answer Ecological Questions. *Proceedings of the American Academy of Underwater Sciences 36<sup>th</sup> Scientific Symposium* 36: 82.

### Manuscripts in Preparation

3. **Phelps, T. A.**, H. T. Pinheiro, B. Shepherd, T. J. Donaldson and L. A. Rocha (2019) Mesophotic fish community structure in a degraded Micronesian coral reef. *Manuscript in preparation*.

2. Shepherd, B., **T. Phelps**, H. T. Pinheiro, C. R. Rocha and L. A. Rocha (2019) Two new species of *Plectranthias* (Teleostei, Serranidae: Anthiadae), from mesophotic coral ecosystems in the tropical Central Pacific. *Manuscript in preparation*.

1. **Phelps, T. A.** and J. P. Beets (2018) Ecological Impacts of the Hawaiian Cleaner Wrasse (*Labrodies phthirophagus*) on fish assemblages from Hawai'i Island. *Manuscript in preparation*.

## Research Grants, Scholarships and Awards

2019	ARCS Scholar, Eco & Evo Biology	<b>Achievements Rewarding College Scientists (ARCS)</b>	\$10,000
2019	Travel and Teaching Scholarship	San Francisco State University	\$1,000
2018	Symposium Travel Grant	University of Hawai'i Foundation	\$200
2017	Best Student Presentation Award	<b>American Academy of Underwater Sciences</b>	\$300
2017	Field Research Training Grant	<b>Women Diver's Hall of Fame</b>	\$1,275
2016	Symposium Travel Grant	University of Hawai'i at Hilo	\$210
2016	Field Research Grant	University of Hawai'i at Hilo	\$6,720
2016	Research Internship Scholarship	Bermuda Institute of Ocean Sciences	\$1,600
2016	Research Project Grant	<b>Bermuda Institute of Ocean Sciences</b>	\$3,230
2016	Travel Grant	Washington State University	\$950
2015	Federal Pell Grant	<b>U.S. Department of Education</b>	\$14,394
2015	Field Project Leader Scholarship	<b>National Oceanic and Atmospheric Administration</b>	\$1,250
2013	Global Citizen Grant	Soka University of America	\$700
2013	Celebrate Community Grant	Soka University of America	\$1,500
2013	Independent Research Grant	Soka University of America	\$3,500
2012	Merit Scholarship	<b>Soka University of America</b>	\$60,000
<b>Total Awarded</b>			<b>\$106,829</b>

### Select Funding Descriptions (from bolded items above)

- 2019 **Achievements Rewarding College Scientists (ARCS)** scholarship as the only recipient in the Ecology, Evolution and Conservation Biology program for San Francisco State University (\$10,000 for 1 year).
- 2017 "Scooters and Scaridae: Utilizing Diver Propulsion Vehicles to Answer Ecological Questions" by the **American Academy of Underwater Sciences**, awarded Best Student Presentation at 2017 Diving for Science Symposium (\$300).
- 2017 Training grant by the **Women Diver's Hall of Fame** to complete safety training for field research (\$1,275).
- 2016 "Reproduction Ecology and Patterns of Ontogenetic Migration in Invasive Lionfish" **Bermuda Institute of Ocean Sciences** with PI Gretchen Goodbody-Gringley (\$3,230 for 1 summer).
- 2015 Four Federal Pell Grants by **U.S. Department of Education** in financial support of undergraduate attendance at the University of Hawaii at Hilo (\$14,394 over 2 years).

- 2015 Selected as one of five field project leaders in scientific diving field school with the University of Hawaii. Scholarship by the **National Oceanic and Atmospheric Administration (NOAA)** (\$1,250 for 1 summer).
- 2012 Merit scholarship awarded for high academic excellence upon admittance to **Soka University of America** (\$60,000 for 2 years).

### Awards

- 2019 Outstanding Graduate Assistant, *San Francisco State University* – In recognition for going above and beyond the duties of a graduate assistant in the Ecology and Evolution of Marine Systems (BIOL 670) and Scientific Diving and Boating (MSCI 306) courses.
- 2017 Best Student Presentation, *American Academy of Underwater Sciences* – Awarded for best student presentation at the Diving for Science symposium.
- 2017 Best Research Project, *University of Hawai'i Marine Option Program Symposium* – In recognition for best student research project, "Scooters and Scaridae."

## Academic Experience

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### Teaching

- 2019 **Ecology and Evolution of Marine Systems (BIOL 670)**, *San Francisco State University*  
Title: Teaching Assistant, 4 credit undergraduate course with 8 students.
- 2019 **Scientific Diving and Boating (MSCI 306)**, *San Francisco State University*  
Title: Co-Instructor, 4 credit undergraduate course with 8 students.
- 2018 **World of Plants (BIOL 150)**, *San Francisco State University*  
Title: Lab Instructor, 2 credit lab course with 30 students.
- 2017 **Scientific Diver Qualification Course**, *University of Hawaii at Hilo*  
Title: Co-Instructor, 3 credit undergraduate and graduate course with 12 students.
- 2016 **Quantitative Underwater Ecological Surveying Techniques (MARE 264)**, *UH Hilo*  
Title: Teaching Assistant, 3 credit undergraduate and graduate field course, 24 students.

### Undergraduate Research Supervision

- 2019 Antonello Pagliuca (*San Francisco State University, SFSU*) "Reef fish diversity is associated with coral cover in Kaneohe Bay."
- 2019 Geana Ayala (*SFSU*) "Interaction between the Hawaiian conspicuous sea cucumber and seagrass (*Halophila decipiens*) beds in Kaneohe Bay."
- 2019 Keishae Vann (*SFSU*) "Mangrove invasion is associated with reduced invertebrate diversity of assemblages in the invasive alga, *Gracilariaria salicornia*."

- 2019 Laura Herrera (*SFSU*) “Elusive and endangered: comparing plankton abundance with the distribution of manta rays in Kaneohe Bay using eDNA.”
- 2019 Mandy Hansen (*SFSU*) “Invasive mangroves reduce habitat for burrowing shrimp and goby pairs in Kaneohe Bay.”
- 2019 Mariel Avila (*SFSU*) “Knowing your customers: Observing variation between fish assemblages and clientele of the Hawaiian Cleaner Wrasse.”
- 2019 Noelle Kaslly (*SFSU*) “Do zooplankton respond to distinct bio-acoustic soundscapes?”
- 2016 Megan Omura (*University of Hawaii at Manoa*), Samantha Flounders (*University of Hawaii at Manoa*), Wakea Po (*University of Hawaii at Hilo*) and Amanda Padilla (*West Maui Community College*) “The effect of rugosity on juvenile fish abundance.”

### Guest Lectures and Invited Seminars

Date	Topic	Venue & Location
2019, November	Exploration and Ecology of Twilight Zone Fishes	U.S. Coast Guard Station Golden Gate (Marin, CA)
2019, November	Fish Ecology in the “Twilight Zone”	ARCS Scholarship General Meeting (San Francisco, CA)
2019, October	Exploration and Ecology of Twilight Zone Fishes	California Academy of Sciences (San Francisco, CA)
2019, July	Exploration and Ecology of Mesophotic Reefs	Monterey Bay Aquarium Research Institute (Monterey, CA)
2019, February	Twilight Zone Ecosystem Exploration	Pro Scuba Dive Center (Scott’s Valley, CA)
2018, December	Ecology of Mesophotic Coral Reefs	Monterey Bay Aquarium (Monterey, CA)
2018, August	Exploration of Mesophotic Ecosystems	Shark Bait Dive Club (Yorba Linda, CA)
2018, July	Exploration of Mesophotic Ecosystems	South Orange County Dive Club (Laguna, CA)
2018, July	Exploration of Mesophotic Ecosystems	Long Beach Yacht Club (Long Beach, CA)
2018, July	Ecology of Mesophotic Reefs	*Aquarium of the Pacific (Long Beach, CA)

\*Aquarium of the Pacific Lecture series recorded presentation: <https://youtu.be/NvXRiKCuz3I>

Recorded interview: [http://www.aquariumofpacific.org/multimedia/player/tyler\\_phelps](http://www.aquariumofpacific.org/multimedia/player/tyler_phelps)

### Conference Presentations

9. **Phelps, T. A.**, H. T. Pinheiro, B. Shepherd, T. J. Donaldson and L. A. Rocha (2020, *expected*) Mesophotic fish community structure in a degraded Micronesian coral reef. 14<sup>th</sup> International Coral Reef Symposium, Bremen, Germany.

8. **Phelps, T.** and J Lotts (2018) MAST 2017: Survey of Amphibious Vessels of O’ahu. 29<sup>th</sup> Annual Maritime Archaeology and History of Hawai’i and the Pacific Symposium, Honolulu, HI.
7. **Phelps, T.**, C. Kane, J. Burns and J. Beets (2017) Scooters and Scaridae: Utilizing New Technology to Answer Ecological Questions. AAUS Diving for Science Symposium, Alpena, MI.
6. **Phelps, T.** (2016) Assessing the Impacts of the Hawaiian Cleaner Wrasse (*Labroides phthirophagus*) on Hawai’i Fish Communities. UH Hilo – Senior Capstone Symposium, Hilo, HI.
5. **Phelps, T.** (2017) Scooters and Scaridae: Utilizing New Technology to Answer Ecological Questions. University of Hawai’i Marine Option Program Symposium, Ke’ei, HI.
4. **Phelps, T.** (2016) Proposed Assessments of Ecological Impacts on Fish Assemblages by the Hawaiian Cleaner Wrasse (*Labroides phthirophagus*). UH Hilo Marine Science Symposium, Hilo, HI.
3. **Phelps, T.** and G. Goodbody-Gringley (2016) Reproduction Ecology and Patterns of Ontogenetic Migration in Invasive Lionfish. Bermuda Institute of Ocean Sciences (BIOS), St. George, Bermuda.
2. Omura, M., A. Padilla, S. Flounders, W. Po and **T. Phelps** (2015) The Effects of Rugosity on Juvenile Fish Abundance. QUEST Symposium, Ke’ei, HI.
1. Sheu, J., **T. Phelps**, J. Golding, M. Yoneyama and K. Steward (2014) Characterizing reef structure: A benthic analysis of coral diversity and abundance by depth. QUEST Symposium, Ke’ei, HI.

### Field Experience

Has led or participated in 23 scientific expeditions (including three oceanographic cruises) in the following tropical seas:

^\***Bahamas** (2016), **Belize** (2015), ^**Bermuda** (2016) , **Brazil** (\*Fernando de Noronha, 2019), **Cambodia** (2013), \***Easter Island** (Chile, 2017), **French Polynesia** (\*Tahiti, 2018; \*Mo’orea, 2018), \***Galapagos** (Ecuador, 2020 expected), \***Guam** (2018), **Hawaii** (Oahu, 2018; Maui, 2016, \*Hawai’i Island, 2014 – 2018), **Honduras** (Utila Island, 2013 & 2014), **Kiritimati** (2017), ^\***Marshall Islands** (2019), \***Maldives** (2020, expected), **Mexico** (2015, 2017), \***Palau** (2016), \***Philippines** (2017).

^Denotes location of oceanographic cruise

\*Denotes mesophotic expedition using mixed-gas rebreathers to survey 100 – 150 m depth

## Complementary Field and Research Experience Information

2016 – Present	<b>California Academy of Sciences:</b> Mesophotic Field Expeditions <ul style="list-style-type: none"><li>• Field sampling conducted with CAS originating as an undergraduate collaborator at UH Hilo, evolving to data collection for graduate school research. Under advisement of Dr. Luiz Rocha.</li><li>• Expedition objectives: biodiversity assessments of mesophotic habitats through surveys, fish community structure characterization, specimen collections (over 20 new species since 2017) and sensor deployments.</li></ul>
2016 – 2017	<b>University of Hawai'i at Hilo Marine Science:</b> Undergrad Senior Thesis <ul style="list-style-type: none"><li>• Project title: <b><i>Ecological Impacts of the Hawaiian Cleaner Wrasse (<i>Labroides phthirophagus</i>) on fish assemblages from Hawai'i Island.</i></b></li><li>• In development of senior thesis research, found the community structure was significantly different at adjacent reefs when compared to cleaning stations. While species richness was significantly higher at cleaning stations, overall abundance and diversity was not significantly different at cleaning stations. Interestingly, the behavioral roles of cleaner wrasses varied from east and west sites on Hawai'i Island.</li></ul>
2015 – 2017	<b>University of Hawai'i Marine Option Program (MOP):</b> Research Project <ul style="list-style-type: none"><li>• Developed original methods and protocols for using diver propulsion vehicles to conduct parrotfish surveys to support herbivory research along multiple depth gradients in collaboration with PhD candidate, Corinne Kane (Washington State University).</li><li>• Winner of "Best Research Project" at 2017 MOP symposium.</li></ul>
2015 – 2017	<b>Washington State University:</b> Research Field Assistant <ul style="list-style-type: none"><li>• Support dissertation field work for Dr. Corinne Kane.</li><li>• Conducting mesophotic fish surveys, benthic photo-quadrats, algal transplant experiments, fish behavior videos, acoustic receiver deployment and fish tagging using closed circuit rebreathers.</li></ul>
2016	<b>Project Baseline &amp; Nekton Mission:</b> Research Assistant & Safety Diver <ul style="list-style-type: none"><li>• Assisted in lionfish research by dissecting samples on the R/V <i>Baseline Explorer</i>, analyzing gonad density, preparing coral/lionfish tissue samples for DNA extraction.</li><li>• Oversaw safety of mesophotic divers by creating checklists and emergency protocols, such as in-water lionfish envenomation treatment with decompression obligations.</li></ul>
2016	<b>Bermuda Institute of Ocean Science (BIOS):</b> Research Intern <ul style="list-style-type: none"><li>• Under mentorship of Dr. Gretchen Goodbody-Gringley. Project Title: <b>Reproductive Ecology and Patterns of Ontogenetic Migration by Invasive Lionfish in Bermuda.</b></li><li>• Developing evidence for determining patterns of ontogenetic shift in invasive lionfish by examining the relationship between standard length, biomass, and gonad mass across mesophotic depths.</li></ul>

- 2016 **R/V *Atlantic Explorer*: Hydrostation Research Cruise**
- Title: **Ship Scientist**. Under mentorship of chief scientist: Afonso Goncalves. Cruise 61295 to the Bermuda Hydrostation, the longest ongoing physical oceanography research station in the world.
  - Prepared CTD and Niskin bottles for deployments to 3,500 meters. Assisted in water sample analysis, such as Winkler oxygen titrations.
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- 2013 **Soka University of America: Invasive Fish Research in Cambodia**
- Under mentorship of Dr. Anthony Mazeroll. Project title: **Assessing the Impacts of Invasive Freshwater Fish Species in Cambodia**.
  - Developed project proposal, travel logistics, processing genetic fish samples, research paper, poster presentation, grant proposal, field logistics, specimen collections, and meeting with government officials.

## Outreach Experience

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### Outreach Publications

**Phelps, T.**, K. Shoultz, J. Emmert, C. Thacker and J. Gunderson (2018) *Citizen Science Diver Textbook*. National Association of Underwater Instructors, 35p.

Livingstone, J., M. DeCroix, P. Oliver, M. Williams, J. Heine, J. Bookspan, J. Gunderson, S. Hogborn, J. Larsen, B. Lidyoff, R. Lutz, C. Meilahn, M. van Niekerk, **T. Phelps**, S. Ruia, M. Russell and M. Tong(2017) *Master Scuba Diver Textbook*. National Association of Underwater Instructors, 289p.

Oliver, P., C. Barbay, J. Gunderson, S. Hogborn, J. Larsen, R. Lutz, D. McLaughlin, C. Meilahn, M. van Niekerk, **T. Phelps**, S. Ruia, M. Russell, R. Shaw, F. Toal, M. Tong, T. Tysaal, C. Widerman, N. Bates and S. Duffy (2016) *Leadership and Instruction Textbook*. National Association of Underwater Instructors, 291p.

28 monthly dive safety publications in *Seawords* magazine by the University of Hawai'i Marine Option Program from January 2016 – 2019 at <https://issuu.com/seawords>

### Institutional Activities (California Academy of Sciences)

Led approximately 20 tours of the ichthyological collection ranging from middle school to graduate students.

Led and participated in approximately 10 ichthyology exhibitions conducting informative activities and expressing conservation messages at NightLife events at Cal Academy and the 2018 San Francisco Science Festival (age range of participants, elementary school – adults)

### Volunteering

- 2016 – Present **National Association of Underwater Instructors (NAUI):**  
Scientific Diving and University Program, Training Committee
- Title: **Chairman**. Lead team of ten international members to development of training materials and standards for NAUI in collaboration with staff from NAUI headquarters.

2015 – Present	<p><b>United States Coast Guard (USCG):</b> Auxiliary Boat Crew</p> <ul style="list-style-type: none"> <li>Title: <b>Boat Crew.</b> Conduct maritime patrols, aid in search and rescue missions with active duty United States Coast Guard members, respond to marine safety hazards such as coastal cleanups.</li> </ul>
2015 – 2017	<p><b>University of Hawai'i at Hilo:</b> SeaSTARS Reef Monitoring Program</p> <ul style="list-style-type: none"> <li>Title: <b>Lead Science Diver.</b> Sea Surveying, Training, and Response Squad (SeaSTARS). Overseeing mentorship of surveying techniques to new research divers, increasing depth authorizations, developing research projects with monthly assessment data.</li> </ul>
2015 – 2017	<p><b>University of Hawai'i at Hilo Marine Science Department:</b> Marine Science Student Mentor</p> <ul style="list-style-type: none"> <li>Responsible for advising new marine science majors (freshmen and transfer students) in both academics and student life.</li> </ul>
2015 – 2017	<p><b>National Marine Fisheries Service and NOAA:</b> Turtle Responder</p> <ul style="list-style-type: none"> <li>Volunteer with Hawai'i's Sea Turtle Response Team to aid in the catch/release of injured sea turtles, transport to Oahu for medical care.</li> </ul>
2015	<p><b>University of Hawai'i at Hilo:</b> Marine Science Department</p> <ul style="list-style-type: none"> <li>Volunteering with "Teaching Marine Science" class, at Waiakea Elementary School. Duties included teaching tide pool ecology to 3<sup>rd</sup> graders, setting up touch tanks, and assisting with lesson plans.</li> </ul>

## Complementary Information

### Research Appearances in Media

- 2019 Business Insider, China Daily, CNN, CNET, Daily Mail, Earther, Flip Science, Forbes, Fox News, Hakai Magazine, IFL Science, Quartz Africa, Marvel, Mongabay, MSN, New York Post, OceanX, Phys.org, Pulse, Reefs.com, ScienMag, Stitcher Podcast, Verge, Wildlife Society, World Economic Forum
- 2018 ABC7 News, Mongabay, National Geographic, Newsweek, New York Times, NBC News, PBS, Smithsonian, USA Today
- 2017 BBC, California Academy of Sciences, Chilean National News, Italian National News, Rapa Nui Local News, Reefs.com, Science in the Extremes, Sport Diver Magazine, The Guardian, The Weather Channel, University of Hawai'i at Hilo
- 2016 Alucia Productions, Bermuda Broadcasting, CNN International, PBS News Hour, Nekton Mission
- Pre-2016 Soka University of America (2015), FM101.1 URH Radio Interview (2014), Cambodia National News (2013)

### Certifications

Course Director Designation (highest certification in diving industry) for *NAUI*  
65 Scuba diving instructor level certifications across 5 agencies including deep diving, since 2014  
30 Scuba diving repair certifications across 10 manufacturers, since 2014  
15 Emergency Responder instructor level certifications across 3 agencies, since 2012  
Boat Crew qualified with U.S. Coast Guard Auxiliary, since 2015



## Professional Memberships

American Academy of Underwater Sciences  
American Association for the Advancement of Science  
American Fisheries Society  
American Society of Ichthyologists and Herpetologists  
International Coral Reef Society  
Western Society of Naturalists

## References

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Dr. Luiz Rocha, Associate Curator and  
Follett Chair of Ichthyology  
*California Academy of Sciences*

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participating CAS expeditions  
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*University of Hawai'i at Hilo –  
Marine Science Department*

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*Bermuda Institute of Ocean Sciences*

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