

## Elizabeth A. Karan

PH.D. STUDENT  
DEPT. OF ECOLOGY AND EVOLUTIONARY BIOLOGY  
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### EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES; LOS ANGELES, CA  
PH.D. ECOLOGY AND EVOLUTIONARY BIOLOGY, 2017–PRESENT  
HARVARD COLLEGE; CAMBRIDGE, MA  
A.B. ORGANISMIC AND EVOLUTIONARY BIOLOGY, 2016

### RESEARCH EXPERIENCE

PH.D. STUDENT, ALFARO LAB; LOS ANGELES, CA 2017–PRESENT

Research areas include: fish macroevolution, phylogenetic comparative methods, reef fish color pattern evolution, hyper-spectral imaging, computer vision, and machine learning. Ph.D. Advisor: Prof. Michael Alfaro.

UNDERGRADUATE RESEARCHER, LAUDER LAB; CAMBRIDGE, MA 2015–2016

Worked towards completion of undergraduate research thesis, “The scales of cnidarian associated fishes and their functional implications”. Thesis Advisor: Prof. George V. Lauder.

RESEARCH ASSISTANT, RADCLIFFE RESEARCH PARTNERSHIP; CAMBRIDGE, MA 2015

Worked on a project investigating the utility of fossilized nacre as a paleothermometer. Principal Investigator: Prof. Pupa Gilbert.

VOLUNTEER, MUSEUM OF COMPARATIVE ZOOLOGY; CAMBRIDGE, MA 2014–2016

Duties included identifying and sorting larval specimens, measuring specimens, and updating the online database. Worked under the supervision of the collection manager, Karsten E. Hartel.

RESEARCH ASSISTANT, OPERATION WALLACEA; WAKATOBI N.P., INDONESIA 2014

Assisted on projects including: anemonefish cohabitation, sponge photosynthesis, mangrove fiddler crab ecology, reef diversity surveillance, and impacts of burrowing sponges

### PUBLICATIONS

ME Alfaro, **EA Karan**, ST Schwartz, AJ Shultz. The Evolution of Color Pattern in Butterflyfishes (Chaetodontidae). *Integrative and Comparative Biology*. 11 July 2019.

PUPA Gilbert, KD Bergmann, CE Myers, MA Marcus, RT DeVol, C-Y Sun, AZ Blonsky, J Zhao, **EA Karan**, E Tamre, N Tamura, AJ Giuffre, S Lemer, G Giribet, JM Eiler, AH Knoll. Nacre tablet thickness records formation temperature in modern and fossil shells. *Earth and Planetary Sciences Letters*. 15 February 2017.

### PRESENTATIONS

EA Karan, ST Schwartz. Quantitative Approaches to Studying Color Pattern Evolution. *Claremont-McKenna College* (guest lecture). Claremont, CA. May 2019.

EA Karan, ME Alfaro. Evolution of False Eyespots in Butterflyfishes: Testing Eye Camouflage and Mimicry as Anti-predator Adaptations. *Society of Integrative and Comparative Biology*. Tampa, FL. January 2019.

EA Karan, DK Wainwright, GV Lauder. The scales of cnidarian associated fishes and their functional implications. *Organismic and Evolutionary Biology Senior Thesis Writers' Poster Session*. Harvard Univ. April 2016.

EA Karan, DK Wainwright, DC Collar. A comparative study of damselfish scale morphology. *Society of Integrative and Comparative Biology*. Portland, OR. January 2016.

## **GRANTS AND FELLOWSHIPS**

**EEB DEPARTMENTAL RESEARCH AWARD 2019**

**NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP 2019**

**UCLA IRVING AND JEAN STONE FELLOWSHIP 2017**

**HARVARD DEAN'S SUMMER RESEARCH AWARD 2015**

**MUSEUM OF COMPARATIVE ZOOLOGY GRANT FOR UNDERGRADUATE RESEARCH 2015**

**HARVARD COLLEGE RESEARCH PRIZE 2015**

**DAVID ROCKEFELLER INTERNATIONAL EXPERIENCE GRANT 2014**

## **SKILLS**

### **COMPUTER LANGUAGES**

C, Python, R, PHP, HTML, JavaScript

### **SOFTWARE**

TensorFlow, Adobe Suite, RevBayes, BEAST, Astral, POY, phyutility, SequenceMatrix, Geneious, MountainsMap, Igor, ImageJ, Linux server administration

### **IMAGING**

Image adjacency and boundary strength analysis, SEM image processing in Photoshop, SEM analysis in wave metrics software, underwater video transects, underwater behavior videography, 3D topography reconstruction of fish scales using GelSight

### **LAB TECHNIQUES**

Dissection, sediment composition gradation, water salinity measurements, water pH measurements, PCR, fish husbandry

### **FIELD TECHNIQUES**

Species identification, species collection, underwater reef transects, fish stereo video surveys, invertebrate surveys, benthic surveys, reef rugosity measurements, recording behavioral observations

### **CERTIFICATIONS**

Open Water Diver – PADI

## **TEACHING AND COURSE SUPPORT**

**INSTRUCTOR, GE CLUSTER 70CW: EVOLUTION OF INTELLIGENCE SPRING 2019**

Constructed all course material, lead a small seminar of 22 students

**TEACHING ASSISTANT, CLUSTER 70B: EVOLUTION OF COMOS AND LIFE B WINTER 2019**

Lead discussion and lab sections

**TEACHING ASSISTANT, CLUSTER 70A: EVOLUTION OF COMOS AND LIFE A FALL 2018**

Lead discussion and lab sections

**TEACHING ASSISTANT, EEB 116: CONSERVATION BIOLOGY SPRING 2018**

Lead discussion sections, created quiz material and learning activities

## **LEADERSHIP AND OUTREACH**

**VOLUNTEER, EXPLORING YOUR UNIVERSE 2019**

Organized and administered interactive science learning activities for children

**VOLUNTEER, AWISE STEM DAY AT UCLA 2019**

Organized and administered interactive science learning activity for young girls

**JUDGE, LOS ANGELES COUNTY SCIENCE & ENGINEERING FAIR 2019**

Evaluated middle and high school projects in Animal Physiology

**COORDINATOR, EEB COMMITTEE: SEMINAR AND ECO EVO PUB 2018 – 2019**

Scheduled and organized biweekly graduate student presentations

## **LANGUAGES**

**ENGLISH** – NATIVE SPEAKER

**GERMAN** – INTERMEDIATE PROFICIENCY (SPEAKING, READING, WRITING)

**SPANISH** – BASIC (SPEAKING, READING, WRITING)

**INDONESIAN** – BASIC (SPEAKING)