



# Max Czapanskiy, PhD

ECOLOGY | DATA SCIENCE

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## Education

### Stanford University

PHD IN BIOLOGY

Pacific Grove, CA

2022

- Advised by Jeremy Goldbogen
- Dissertation: Baleen whale physiology revealed through the integration of bio-logging and ecoinformatics

### San Francisco State University

MS IN GEOGRAPHIC INFORMATION SYSTEMS

San Francisco, CA

2018

- Advised by Ellen Hines
- Thesis: Using energy landscapes to understand seabird movement and spatial ecology
- Graduate hood, College of Science & Engineering

### Columbia University

BS IN COMPUTER SCIENCE

New York, NY

2014

## Employment

### NOAA / UC Santa Cruz

POSTDOCTORAL SCHOLAR

2022 - present

### Stanford University

STANFORD DATA SCIENCE SCHOLAR

2019 - 2021

### U.S. Geological Survey Western Ecological Research Center

BIOLOGICAL SCIENCES TECHNICIAN

2014 - 2017

### University of Montana Avian Science Center

AVIAN POINT COUNT TECHNICIAN

2014

### Friends of Cooper Island

FIELD ASSISTANT AND DATA ANALYST

2012 - 2013

### Point Blue Conservation Science

MARINE ECOLOGY INTERN

2013

### Microsoft

SOFTWARE DEVELOPER ENGINEER IN TEST

2009 - 2012

## Publications

### Field measurements reveal the risk of microplastic ingestion by filter-feeding megafauna

Nature Communications

KAHANE-RAPPORT, S.R., CZAPANSKIY, M.F., FAHLBUSCH, J.A., FRIEDLAENDER, A.S., CALAMBOKIDIS, J., ..., SAVOCA, M.S.

2022

### Fast and furious: energetic tradeoffs and scaling of high-speed foraging in rorqual whales

Integrative Organismal Biology

GOUGH, W.T., CADE, D.E., CZAPANSKIY, M.F., POTVIN, J., FISH, F.E., ..., GOLDBOGEN, J.A.

2022

### Blue whales increase feeding rates at fine-scale ocean features

Proceedings of the Royal Society B

FAHLBUSCH, J.A., CZAPANSKIY, M.F., CALAMBOKIDIS, J., CADE, D.E., ABRAHMS, B., ..., GOLDBOGEN, J.A.

2022

### Baleen whale inhalation variability revealed using animal-borne video tags

PeerJ

NAZARIO, E.C., CADE, D.E., BIERLICH, K., CZAPANSKIY, M.F., GOLDBOGEN, J.A., ..., FRIEDLAENDER, A.S.

2022

### How reproducibility will accelerate discovery through collaboration in physio-logging

Frontiers in Physiology

CZAPANSKIY, M.F., BELTRAN, R.S.

2022

## An accelerometer-derived ballistocardiogram method for detecting heart rates in free-ranging marine mammals

CZAPANSKIY, M.F., PONGANIS, P.J., FAHLBUSCH, J.A., SCHMITT, T.L., GOLDBOGEN, J.A.

*Journal of Exp. Bio.*

2022

## Elephant seals time their long-distance migrations using a map sense

BELTRAN, R.S., YUEN, A.L., CONDIT, R., ROBINSON, P.W., CZAPANSKIY, M.F., ..., COSTA, D.P.

*Current Biology*

2022

## Scaling of maneuvering performance in baleen whales: larger whales outperform expectations

SEGRE, P.S., GOUGH, W.T., ROUALDES, E.A., CADE, D.E., CZAPANSKIY, M.F., ..., GOLDBOGEN, J.A.

*Journal of Exp. Bio.*

2022

## Tools for integrating inertial sensor data with video bio-loggers, including estimation of animal orientation, motion, and position

CADE, D.E., GOUGH, W.T., CZAPANSKIY, M.F., FAHLBUSCH, J.A., KAHANE-RAPPORT, S.R., ..., GOLDBOGEN, J.A.

*Animal Biotelemetry*

2021

## Baleen whale prey consumption based on high-resolution foraging measurements

SAVOCA, M.S., CZAPANSKIY, M.F., KAHANE-RAPPORT, S.R., GOUGH, W.T., FAHLBUSCH, J.A., ..., GOLDBOGEN, J.A.

*Nature*

2021

## Modelling short-term energetic costs of sonar disturbance to cetaceans using high-resolution foraging data

CZAPANSKIY, M.F., SAVOCA, M.S., GOUGH, W.T., SEGRE, P.S., WISNIEWSKA, D.M., ..., GOLDBOGEN, J.A.

*Journal of Applied Ecology*

2021

## Scaling of oscillatory kinematics and Froude efficiency in baleen whales

GOUGH, W.T., SMITH, H.J., SAVOCA, M.S., CZAPANSKIY, M.F., FISH, F.E., ..., GOLDBOGEN, J.A.

*Journal of Exp. Bio.*

2021

## Cervical air sac oxygen profiles in diving emperor penguins: parabronchial ventilation and the respiratory oxygen store

WILLIAMS, C.L., CZAPANSKIY, M.F., JOHN, J.S., ST LEGER, J., SCADENG, M., PONGANIS, P.J.

*Journal of Exp. Bio.*

2021

## Why whales are big but not bigger: Physiological drivers and ecological limits in the age of ocean giants

GOLDBOGEN, J.A., CADE, D.E., WISNIEWSKA, D.M., POTVIN, J., ..., CZAPANSKIY, M.F., ..., PYENSON, N.D.

*Science*

2019

## Extreme bradycardia and tachycardia in the world's largest animal

GOLDBOGEN, J.A., CADE, D.E., CALAMBOKIDIS, J., CZAPANSKIY, M.F., FAHLBUSCH, J., ..., PONGANIS, P.J.

*PNAS*

2019

## Diving behavior of Pink-footed Shearwaters *Ardenna creatopus* rearing chicks on Isla Mocha, Chile

ADAMS, J., FELIS, J.J., CZAPANSKIY, M.F., CARLE, R., HODUM, P.

*Marine Ornithology*

2019

## Collision and displacement vulnerability to offshore wind energy infrastructure among marine birds of the Pacific Outer Continental Shelf

KELSEY, E.C., FELIS, J.J., CZAPANSKIY, M.F., PEREKSTA, D.M., ADAMS, J.

*Journal of Env. Mgmt.*

2018

## IN REVIEW

## rstickleback: supervised behavior detection in bio-logging data

CZAPANSKIY, M.F., MANN, A.

*Journal of Open Source Software*

## TECHNICAL REPORTS

## Habitat Affinities and At-Sea Ranging Behaviors among Main Hawaiian Island Seabirds: Breeding Seabird Telemetry, 2013–2016.

ADAMS, J., FELIS, J.J., CZAPANSKIY, M.F.

*OCS Study BOEM 2020-006.*

2020

## Trends in mammalian predator control trapping events intended to protect ground-nesting, endangered birds at Haleakalā National Park, Hawai'i: 2000–14.

KELSEY, E.C., ADAMS, J., CZAPANSKIY, M.F., FELIS, J.J., YEE, J.L., KAHOLOAA R.L., AND BAILEY, C.N.

*U.S. Geological Survey Open-File Report 2019-1122.*

2019

# Teaching and Mentoring

## Undergraduate researcher mentor

REEFS MENTOR

*Stanford University*

2022

- Mentored Lilah McCormick in quantitative ecophysiology.
- Lilah learned reproducible research techniques in R and is writing a paper about measuring cardiac function in narwhals.

## Just Enough Software Engineering (For Scientists)

Stanford University

LEAD INSTRUCTOR AND COURSE DESIGNER

2021

- Self-directed, mastery-oriented software engineering course for biosciences graduate students
- Two-week intensive short course

## Introduction to Physiological Ecology

Stanford University

TEACHING ASSISTANT

2021

## Undergraduate researcher mentor

CSU Monterey Bay REU

NSF REU MENTOR

2019

- Mentored Hayden Smith in quantitative analysis.
- Hayden presented his work at the 2020 Society for Int. and Comp. Bio. Meeting and published it in the *Journal of Exp. Bio.* (Gough et al., 2021).

## Data Carpentry

The Carpentries

CERTIFIED INSTRUCTOR

2018 - present

## Introduction to Ecology

Stanford University

TEACHING ASSISTANT

2018

## Introduction to GIS

San Francisco State University

TEACHING ASSISTANT

2016 - 2017

## Software

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### stickleback ([pypi.org/project/stickleback](https://pypi.org/project/stickleback))

A MACHINE LEARNING PIPELINE FOR DETECTING FINE-SCALE BEHAVIORAL EVENTS IN BIO-LOGGING DATA

Python

### rstickleback ([github.com/FlukeAndFeather/rstickleback](https://github.com/FlukeAndFeather/rstickleback))

AN R INTERFACE TO THE STICKLEBACK MACHINE LEARNING PIPELINE

R

### catsr ([doi.org/10.5281/zenodo.5140484](https://doi.org/10.5281/zenodo.5140484))

TOOLS FOR READING AND VISUALIZING 3D BIO-LOGGING DATA; ACCOMPANIES CADE ET AL. (2021)

R

### beats ([github.com/FlukeAndFeather/beats](https://github.com/FlukeAndFeather/beats))

INTERACTIVE TOOLS FOR IMPORTING, ANNOTATING, AND VALIDATING ECG BIO-LOGGER DATA

R

## Conference presentations

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### Stickleback: A machine learning pipeline for detecting behavioral events in bio-logging data

Online

7TH INTERNATIONAL BIO-LOGGING SYMPOSIUM

2021

### Quantifying the Influence of Energy Windscares on Seabird Distributions

Portland, OR

OCEAN SCIENCES MEETING

2018

### Modeling Seabird Habitat Accessibility

Pacific Grove, CA

SOCIETY FOR CONSERVATION GIS ANNUAL CONFERENCE

2017

### Taking the Plunge: Comparing Diving Behavior of Red-footed and Brown Boobies Breeding on Lehua Islet, Hawaii

Turtle Bay, HI

PACIFIC SEABIRD GROUP ANNUAL MEETING

2016

## Awards and scholarships

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- Stanford Data Science Scholar Fellowship, Stanford Data Science Initiative (2020)
- Stanford Graduate Fellowship, Vice Provost for Graduate Education (2018)
- Graduate Hood, San Francisco State University, College of Science and Engineering (2018)
- Esri Development Center Student of the Year, Esri (2018)
- COAST Research Award, California State University, Council on Ocean Affairs (2018)
- Maxwell Memorial Scholarship, San Francisco State University, College of Science and Engineering (2017)
- Pease Award, San Francisco State University, Department of Geography and Environment (2017)
- CWEP Award for Graduate Student Writing, San Francisco State University (2017)