

THOMAS B KELLY

Postdoctoral Fellow

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- College of Fisheries and Ocean Science, University of Alaska Fairbanks
 - Dept. of Earth, Ocean & Atmospheric Sciences, Florida State University
 - Center for Ocean-Atmospheric Prediction Studies

RELEVANT EXPERIENCE

Ship Time

📅 254 days at sea, 10 cruises 📍 N Pacific, S Pacific, Gulf of Mexico

- Deployment and Recovery of *in situ* drift arrays (inc. sediment trap) and *in situ* pumps (McLane).
- Thorium-234 sampling, processing, and modeling.
- Biological deckboard & *in situ* incubations including: $H^{13}CO_3$, $^{15}NO_3^-$, and $^{15}NH_4^+$.
- Experience with NMEA & AIS location tracking and development of real-time displays.

Marine Particles & Ocean Optics

📅 Jan 2021 - on going 📍 Fairbanks, AK

- Leveraging classic and cutting-edge technology to investigate the biological pump in the Northern Gulf of Alaska.

Ecosystem & Biogeochemical Modeling

📅 Jan 2015 - Dec 2020 📍 Tallahassee, FL

- Use a Linear Inverse Ecosystem Model to investigate the relative importance of active carbon transport compared to passive export.
- After developing a regionally optimized export model, we attribute the inverse relationship between NPP and export efficiency to spatio-temporal decoupling.

EDUCATION

Oceanography, PhD

Florida State University

📅 May 2018 - Dec 2020

Oceanography, Masters

Florida State University

📅 Jan 2015 - April 2018

Biochemistry, BS

Boston College

📅 Aug 2010 - May 2014

CONFERENCES

- Dissertation in Chemical Oceanography, Hawaii (delayed)
- Ocean Sciences Meeting 2020, San Diego, CA (presentation)
- Regional Class Research Vessel Planning Workshop 2019, Gulfport, MS
- GOMOSES 2019, New Orleans, MS. (poster)
- Southeastern Biogeochemistry Symposium, FSU, FL. (organizer)
- Goldschmidt 2018, Boston, MA. (presentation)

INVOLVED PROJECTS

NGA LTER

- Leading the marine particle and ocean-optics research for the Northern Gulf of Alaska LTER site. Research includes sediment trap export and ecosystem functioning & modeling.

BLOOFINZ-IO

- An upcoming (Jan-Feb 2021) NSF project to study Eastern Bluefin Tuna in the Indian Ocean. The cruise will replicate and extend the science started in 2017/2018 (see below).

Bluefin Tuna Ecology

- Involved with both NOAA-funded field campaigns and conducted 100s of deckboard and *in situ* incubations, in addition to sediment trap and Thorium-234 measurements.

SalpPOOP

- An NSF funded project to study the biogeochemical role of Salp fecal pellets. This work was conducted in collaboration with NIWA (New Zealand).
- Conducted carbon particle measurements on the cruise including surface-tethered sediment traps, Thorium-234 and *in situ* pumping.

Trace Element Export

- We deployed trace metal clean sediment traps in order to determine the stoichiometry of TEs in export material and to develop biogeochemical budgets and residence times.

Thorium-234

- Th-234 timeseries from PALMER LTER and CCE LTER, additional samples from GoM and New Zealand.

PARTIAL LIST OF COLLABORATORS

Nicolas Cassar	Duke University	Net Community Production
Moira Decima	NIWA	Zooplankton Ecology
Mati Kahru	Scripps Institute of Oceanography	Remote Sensing
Sven Kranz	Florida State University	Phytoplankton Physiology
Jeffrey Krause	Dauphin Island Sea Lab	Silica Cycling
William M. Landing	Florida State University	Trace Metals
Michael R. Landry	Scripps Institute of Oceanography	Zooplankton Ecology
Peter L. Morton	Florida State University	Trace Metals
Mark D. Ohman	Scripps Institute of Oceanography	Zooplankton Ecology
Hajoon Song	Yonsei University	ROMS Modeling

PUBLICATIONS

In review

- Knapp, A. N., Thomas, R., Stukel, M. R., **Kelly, T. B.**, Landry, M. R., Selph, K. E., et al. Constraining the sources of nitrogen fueling phytoplankton and food webs in the Gulf of Mexico using nitrogen isotope budgets. *Journal of Plankton Research*.
- Gerard, T., Lamkin, J. T., Kelly, T. B., Knapp, A. N., Laiz-Carrión, R., Malca, E., et al. Bluefin Larvae in Oligotrophic Ocean Foodwebs, Investigations of Nutrients to Zooplankton: Overview of the BLOOFINZ-Gulf of Mexico program. *Journal of Plankton Research*.

In press

- **Kelly, T. B.**, Knapp, A. N., Landry, M. R., Selph, K. E., Shropshire, T. A., Thomas, R., et al. Lateral Advection Supports the Oligotrophic Ecosystem of the Open-Ocean Gulf of Mexico. *Nature Geoscience*.
- Stukel, M. R., Gerard, T., **Kelly, T. B.**, Knapp, A. N., Laiz-Carrión, R., Lamkin, J. T., et al. Plankton food webs of the Gulf of Mexico spawning grounds of Atlantic Bluefin tuna. *Journal of Plankton Research*.
- Yingling, N., **Kelly, T. B.**, Shropshire, T. A., Landry, M. R., Selph, K. E., Knapp, A. N., et al. Taxon-Specific Phytoplankton Growth, Nutrient Limitation, and Light Limitation in The Oligotrophic Gulf of Mexico. *Journal of Plankton Research*.
- Landry, M. R., Selph, K. E., Stukel, M. R., Swalethorp, R., **Kelly, T. B.**, Beatty, J., et al. Microbial Food Web Dynamics in the Oceanic Gulf of Mexico. *Journal of Plankton Research*.

2021

- Stukel, M. R., **Kelly, T. B.**, Landry, M. R., Selph, K. E., and Swalethorp, R. (in press). Sinking carbon, nitrogen, and pigment ux within and beneath the euphotic zone in the oligotrophic, open-ocean Gulf of Mexico. 00, 17.
- Selph, K. E., Swalethorp, R., Stukel, M. R., **Kelly, T. B.**, Knapp, A. N., Fleming, K., et al. (in press). Phytoplankton assemblages in the open ocean water of the Gulf of Mexico during May 2017 and 2018. *Journal of Plankton Research*.

2020

- Kranz, S. A., Wang, S., **Kelly, T. B.**, Stukel, M. R., Goericke, R., Landry, M. R., et al. (2020). Lagrangian studies of marine production: a multi-method assessment of productivity relationships in the California Current Ecosystem upwelling region. *Journal of Geophysical Research: Oceans*.
- Wang, S., Kranz, S. A., **Kelly, T. B.**, Song, H., Stukel, M. R., and Cassar, N. (2020). Lagrangian studies of net community production: assessing the effect of diel and multi-day non-steady state factors and vertical fluxes.
- Kahru, M., Goericke, R., **Kelly, T. B.**, and Stukel, M. R. (2020). Satellite estimation of carbon export by sinking particles in the California Current calibrated with sediment trap data. *Deep Sea Research Part II: Topical Studies in Oceanography*, [\[Link\]](#).

2019

- Fender, C. K., **Kelly, T. B.**, Guidi, L., Ohman, M. D., Smith, M. C., and Stukel, M. R. (2019). Investigating Particle Size-Flux Relationships and the Biological Pump Across a Range of Plankton Ecosystem States From Coastal to Oligotrophic. *Front. Mar. Sci.* 6, 603. [\[Link\]](#).
- **Kelly, T. B.**, Davison, P. C., Goericke, R., Landry, M. R., Ohman, M. D., and Stukel, M. R. (2019). The Importance of Mesozooplankton Diel Vertical Migration for Sustaining a Mesopelagic Food Web. *Frontiers in Marine Science* 6. [\[Link\]](#).
- Morton, P. L., Landing, W. M., Shiller, A. M., Moody, A., **Kelly, T.**, Bizimis, M., et al. (2019). Shelf Inputs and Lateral Transport of Mn, Co, and Ce in the Western North Pacific Ocean. *Front. Mar. Sci.* 6, 591. [\[Link\]](#).
- Stukel, M., and **Kelly, T.** (2019). The Carbon:Thorium ratios of sinking particles in the California Current Ecosystem 2: Examination of a thorium sorption, desorption, and particle transport model. *Marine Chemistry*. [\[Link\]](#).

2018

- **Kelly, T. B.**, Goericke, R., Kahru, M., Song, H., and Stukel, M. R. (2018). CCE II: Spatial and interannual variability in export efficiency and the biological pump in an eastern boundary current upwelling system with substantial lateral advection. *Deep Sea Research Part I: Oceanographic Research Papers* 140, 14–25. [\[Link\]](#).
- **Kelly, T. B.**, and Stukel, M. R. (2018). Tbrycekelly/N15-Lim: Initial Release. doi:10.5281/zenodo.1219910.

- Morrow, R. M., Ohman, M. D., Goericke, R., **Kelly, T. B.**, Stephens, B. M., and Stukel, M. R. (2018). CCE V: Primary production, mesozooplankton grazing, and the biological pump in the California Current Ecosystem: Variability and response to El Niño. *Deep Sea Research Part I: Oceanographic Research Papers* 140, 52–62. [[Link](#)].
- Stukel, M. R., Décima, M., and **Kelly, T. B.** (2018). A new approach for incorporating ^{15}N isotopic data into linear inverse ecosystem models with Markov Chain Monte Carlo sampling. *PLOS ONE* 13, e0199123. [[Link](#)].