Joshua P. Kilborn, Ph.D.

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PROFESSIONAL SUMMARY

Academic researcher with a track record of success in the development and application of computational mathematical/statistical methods directed at challenges in marine fisheries, socio-ecological systems' dynamics, and holistic marine resource management. A progressive leader and educator committed to promoting growth, equity, and understanding among all stakeholders through the pursuit of knowledge and providing access to the best possible scientific evidence for fact-based decision making.

As a full-time **Research Assistant Professor** (April 2019-Present), my current responsibilities include the development and administration of novel scientific research and quality graduate student training that both rise to the exacting standards of a preeminent research university. Under the auspices of research, I fully support my work via externally funded grant opportunities (see "Secured Funding – Research Grants") while undertaking proposal creation, budgeting, purchasing and acquisitions, hiring, task management, and project performance. Under the mission of graduate education, I develop all course curriculum, lectures, and evaluation tools for all sections that I teach; I have delivered courses in both in-person and synchronous-online formats.

EDUCATIONAL BACKGROUND

2017 **Ph.D. Marine Science** – Concentration in *Marine Resource Assessment*, University of South Florida, College of Marine Science, St. Petersburg, FL

Dissertation: **Kilborn, J. P.** 2017. *Investigating the Marine Resources in the Gulf of Mexico at Multiple Spatial and Temporal Scales of Inquiry*. Graduate Theses and Dissertations, University of South Florida, College of Marine Science. http.scholarcommons.usf.edu/etd/7046.

2002 **B.S. Mathematics**. Jacksonville University, Jacksonville, FL

Undergraduate Research: Differential equation models of HIV dynamics via CD4+ T cells; 2001

Undergraduate Thesis Project: Minimizing airline expenses for relocation of assets faced with natural disaster – A modeling projecting using the SIMPLEX method; 2002

PROFESSIONAL PREPARATION

7/2021-Present **Ecosystem Technical Committee Member**. Gulf of Mexico Fisheries Management Council. Tampa, FL.

- "*Technical Committees* are special advisory panels made up of academics, agency, and industry personnel with expertise in relevant subject matter that can advise and assist the Council by reviewing relevant subject matter and providing recommendations."

- "The mission of the *Ecosystem Technical Committee* is to incorporate ecological interactions into stock assessments and management goals based on objectives set forth by the Council. The *Ecosystem Technical Committee* will work with Council staff to support the development of the Council's ecosystem-based fishery management plan. This plan will accommodate regional needs in the Gulf of Mexico while considering the existing National Ecosystem Plan and Regional Ecosystem Roadmap Guiding principles."

7/2021-6/2024 **Special Ecosystem Science & Statistical Committee Member**. Gulf of Mexico Fisheries Management Council. Tampa, FL.

- "*Scientific & Statistical Committee Members* are stock assessment or quantitative biologists/ecologists, economists, quantitative anthropologists/sociologists, and other scientists who are knowledgeable about the technical aspects of fisheries in the Gulf of Mexico. Members are appointed for three-year terms."

4/2019-Present **Research Assistant Professor**, University of South Florida, College of Marine Science (USF-CMS), St. Petersburg, FL (see 'Professional Summary')

1/2018-Present **Instructor,** USF-CMS, St. Petersburg, FL

- *Biometry:* Graduate level course covering core concepts of univariate statistical analysis and general coding practices with an emphasis on ecological and biological datasets and implemented in MATLAB and R. Particular focus on experimental design, methods application, and interpretation of results.
- *Applied Multivariate Statistics:* Graduate level course emphasizing hands-on analysis of large, high-dimensional marine ecological and environmental datasets using distribution-free methodologies. Focus on non-normal, highly skewed, and zero-inflated data and relevant analyses. Exploratory analysis, hypothesis testing (canonical analysis), detection of species-environmental relationships (direct gradient analysis), and spatial analysis are emphasized throughout the course. Extensive **MATLAB** and **R** software use throughout the course.

7/2019-12/2020 **Statistical Consultant**, USF-CMS, St. Petersburg, FL. Population and Ecosystem Dynamics Lab (PI: Steven A. Murawski, Ph.D.)

- Gulf of Mexico Research Initiative/C-IMAGE III (No. SA 18-16): Core Area III Synthesis Project to organize, analyze, and synthesize regional time series data collected over the decade post-*Deepwater Horizon* oil spill; Contributed to all relevant products and publications (reference section)

8/2017-4/2019 **Postdoctoral Researcher**, USF-CMS, St. Petersburg, FL. Project title: *Investigating multivariate ecological time-series models to improve our understanding and assessment of the Gulf of Mexico Large Marine Ecosystem* (see 'Secured Funding – Research Grants' for details)

Summer 2016 **Statistical Contractor**, Ocean Conservancy, St. Petersburg, FL

- Develop and document a multivariate statistical model for the Gulf of Mexico fisheries ecosystem (see Kilborn et al. 2018 for details)

Spring 2015 **Statistical Consultant**, Hawaii International Environmental Services (HIES), Kailua, HI

- Evaluate HIES's statistical power analysis of a long-term ecological monitoring (LTEM) program's ability to detect changes as defined in the LTEM program's goals
- Evaluate HIES's critical analysis of a LTEM program's sampling design and statistical methods with particular emphasis on the non-parametric and multivariate nature of the LTEM dataset collected

Fall 2014 **Research Assistant**, USF-CMS, St. Petersburg, FL. Physical Oceanography Lab (PI: Gary Mitchum, Ph.D.)
- Theoretical statistical model verification and MATLAB implementation with algorithm optimization for a project using sea surface height data from tide-gauges to estimate satellite altimeter drift and error

8/2010-12/2017 **Research Assistant & Ph.D. Candidate**, USF-CMS, St. Petersburg, FL. Co-Advisors: David Naar, Ph.D. and Ernst Peebles, Ph.D., (see project details in 'Educational Background')

1/2007-8/2010 **Vice President of Administration**, The Garden Produce Company, Jacksonville, FL
- Oversee Accounts Receivables, Accounts Payables, Personnel Management, and Reception

12/2006-8/2010 **Information Systems Manager**, The Garden Produce Company
- Maintenance and development of company-wide databases for 2000+ customers, 10,000+ inventoried items, and point-of-sale software implementations (remote online and in-person)

10/2004-12/2006 **Territory Sales Manager**, Pitman Produce Company, Jacksonville, FL
- Manager responsible for all facets of territory operations including: solicitation, development, long-term partnerships, and new fresh produce and other perishable product introductions

9/2000-8/2004 **General Manager**, Southend Brewery & Smokehouse, Jacksonville, FL
- General Manager responsible for all facets of unit operations including: purchasing, receiving, inventory, profit-loss analyses, profitability growth solutions, and building maintenance
- Hiring, training, scheduling, and day-to-day management for 40+ employees in fast-paced casual dining experience with on-site craft brewing operations

SECURED FUNDING – RESEARCH GRANTS

2020 **Gulf of Mexico Fishery Management Council** (GMFMC). *Exploring Unexplained Variability in Stock-Recruitment Relationship Estimates for the Gulf of Mexico's Greater Amberjack (Seriola dumerili) Stock with Long-Term, Ecological Time Series*. **Kilborn, J. P.** (**PI**, USF-CMS). ***$85,000***
- Develop mathematical/statistical models and code to analyze the relationship between the stock recruitment of Greater Amberjack (GAJ) and natural environmental variability, particularly with respect to *Sargassum*
- Assess whether a monitoring system can be developed to support near real-time decision making with respect to GAJ and environmental predictions/observations

2017-2021 **National Oceanographic and Atmospheric Administration, Marine Fisheries Initiative** (NOAA, MARFIN). *Investigating multivariate ecological time-series models to improve our understanding and assessment of the Gulf of Mexico Large Marine Ecosystem*. **Kilborn, J. P.** (**PI**, USF-CMS), M. Drexler (Co-PI, Ocean Conservancy). ***$524,106***

- Develop, code, and evaluate the Ecosystem-Level, Management-Indicator Selection Tool (EL-MIST); EL-MIST description in Kilborn et al. (2018)
- Apply EL-MIST to the Gulf of Mexico large marine ecosystem (Gulf LME) to understand the temporal dynamics and system-wide organization of aquatic resources (e.g., fishes, marine mammals, sea turtles, and birds)
- Use EL-MIST to determine which natural (e.g., Atlantic Multidecadal Oscillation, dissolved nutrients) and anthropogenic (e.g., fishing effort, oil industry) factors best account for aquatic resource organization over time
- Use explicit temporal models within EL-MIST to determine management-relevant time scales and their associated biotic resources within the Gulf LME
- Apply EL-MIST to assess the long-term temporal dynamics of the King Mackerel (*Scomberomorus cavalla*) population in the Gulf LME using recent stock assessment outputs
- Contribute to the scientific work in Dell'Apa et al. (2020) listed above that advocates a framework for the development of a fishery ecosystem plan for multispecies management of all fisheries resources throughout the Gulf LME

SPECIAL SKILLS

- Extensive knowledge of **MATLAB**
- Advanced knowledge of the **R**-language, and **RStudio**
- Working knowledge of **Stock Synthesis** and **Git-Hub**
- **Unix-based**, high-performance **cluster computing** utilization
- Data **simulation** and testing (e.g., statistical methods development and optimization)
- Working knowledge **ArcGIS**, **C++**, **Ecopath** with Ecosim, **Fortran**, and **COBOL**
- Extensive knowledge of **Adobe Illustrator**, **Microsoft Windows**, and **Microsoft Office**
- Former certified **Instructor** for the **National Association of Underwater Instructors**
- Former certified **Instructor** for the **Diver's Alert Network**

PEER-REVIEWED MANUSCRIPTS

- Murawski, S. A., **J. P. Kilborn**, A. C. Bejarano, D. Chagaris, D. Donaldson, F. J. Hernandez Jr., T. C. MacDonald, C. Newton, E. Peebles, K. L. Robinson. 2021. A Synthesis of Deepwater Horizon Impacts on Coastal and Nearshore Living Marine Resources. *Frontiers in Marine Science* 7:594862. doi: 10.3389.fmars.2020.594862.
- Schwing, P. T., P. A. Montagna, S. B. Joye, C. B. Paris, E. E. Cordes, C. R. McClain, **J. P. Kilborn**, S. A. Murawski. 2020. A synthesis of deep benthic faunal impacts and resilience following the Deepwater Horizon oil spill. *Frontiers in Marine Science* 7:560012. doi: 10.3389/fmars.2020.560012.
- Dell'Apa, A., **J. P. Kilborn**, W. J. Harford. 2020. Advancing ecosystem management strategies for the Gulf of Mexico's fisheries resources: implications for the development of a fishery ecosystem plan. *Bulletin of Marine Science*. 96(4):617-640. https://doi.org/10.5343/bms.2019.0081.

- **Kilborn, J. P.**, M. Drexler, and D. L. Jones†. 2018. Fluctuating fishing intensities and climate dynamics reorganize the Gulf of Mexico's fisheries resources. *Ecosphere* 9(11):e02487.10.1002/ecs2.2487.
- **Kilborn, J. P.**, D. L. Jones, E. B. Peebles, and D. F. Naar. 2017. Resemblance profiles as clustering decision criteria: Estimating statistical power, error, and correspondence for a hypothesis test for multivariate structure. *Ecology and Evolution*; 7:2039-2057. https://doi:10.1002/ece3.2760.
- Tzadik, O. E., **J. P. Kilborn**, and R. S. Appeldoorn. 2017. Differential habitat use of reef fishes on a shelf-edge off La Parguera, Puerto Rico. *Bulletin of Marine Science*; 93(3):893-914.

PRESENTATIONS & SYMPOSIA

- **Kilborn, J. P.** 2021. Greater Amberjack (*Seriola dumerili*): Exploring Unexplained Variability in the Stock-Recruitment Relationship Estimates in the Gulf of Mexico. **Invited Speaker**: *Gulf of Mexico Fisheries Management Council*. Meeting date: April 14, 2021.
- **Kilborn, J. P.** 2020. Complex Adaptive Fisheries Ecosystems: Exploring the temporal trends, drivers, and states, of the Gulf of Mexico's living marine resources. **Invited Seminar Speaker**: *University of Florida, Fisheries and Aquatic Sciences Program*. Gainesville, FL.
- Schwing, P. T. (presenter), **J. P. Kilborn**, P. Montagna, C. Paris, R. Faillettaz., I. C. Romero, S. B. Joye, W. A. Overholt, G. Brooks, R. Larson, D. J. Hollander, S. A. Murawski, T. Sutton, W. Patterson III. 2020. Assembling the benthic record of species and community change for the Gulf of Mexico following the Deepwater Horizon Event. *Gulf of Mexico Oil Spill & Ecosystem Science Conference*, Tampa, FL.
- Murawski, S. A. (presenter), **J. P. Kilborn**, L. DiPinto, D. Chagaris, D. Donaldson, J. Litz, T. MacDonald, C. Newton, E. B. Peebles, K. Robinson, L. Schwacke, R. Takeshita. 2020. On the Resilience of Coastal/Nearshore Living Resources to Deepwater Horizon: A Harbinger of Future Coastal Restoration Efforts? *Gulf of Mexico Oil Spill & Ecosystem Science Conference*, Tampa, FL.
- Murawski, S. A. (presenter), W. Patterson III, P. T. Schwing, P. Montagna, R. Milligan, T. Sutton, **J. P. Kilborn**, S. Gilbert. 2019. Poster presentation: Vulnerability and Resilience of Species and Ecosystems to Large-Scale Contamination Events: Lessons Learned from the Deepwater Horizon. *American Geophysical Union Fall Meeting*, San Francisco, CA.
- **Kilborn, J. P.** 2019. Ecosystem Impacts of the Deepwater Horizon Event: Detecting Trends and Evaluating Changes in Ecosystems and Populations. *C-IMAGE II; Core Area III Synthesis Workshop #2*, Washington D.C.
- **Kilborn, J. P.** 2019. Explicitly Accounting for Temporal Variability in the Context of EBFM for the Gulf of Mexico's Living Marine Resources 1986-2013. *American Fisheries Society & American Wildlife Society Joint Meeting*, Reno, NV.
- Ellis R. (chair), J. Carroll, **J. P. Kilborn**. 2019. (Symposium) Variation in Life History of Fishes: Accounting for and Incorporating Spatiotemporal Variability in Demographic Rates. *American Fisheries Society & American Wildlife Society Joint Meeting*, Reno, NV
- **Kilborn, J. P.** 2019. Ecosystem Impacts of the Deepwater Horizon Event: Overview – Statistical Methods to Detect Trends & Evaluate Change. *C-IMAGE II; Core Area III Synthesis Workshop #1*, St. Petersburg, FL.
- **Kilborn, J. P.**, M. Drexler, and D. L. Jones. 2018. Using the Ecosystem-Level Management-Indicator Selection Tool to Explicitly Model Temporal Trends and Partition the Variability for Fisheries Resources in a Large Marine Ecosystem. *American Fisheries Society – Annual Meeting*, Atlantic City, NJ.
- **Kilborn, J. P.**, M. Drexler, and D. L. Jones. 2017. An Ecosystem-Level Management-Indicator Selection Tool for the Distillation of Complex Multivariate Datasets: Gulf of

Mexico Case Study. *NOAA Southeast Regional Office – Brown Bag Lunch Seminar Series*, St. Petersburg, FL.

- **Kilborn, J. P.**, M. Drexler, and D. L. Jones. 2017. Describing Three Decades of Fisheries Regime States in the Gulf of Mexico Using an Ecosystem-Level Redundancy Analysis Approach. *International Council for the Exploration of the Sea – Annual Science Conference* (ICES-ASC), Ft. Lauderdale, FL.
- **Kilborn, J. P.**, M. Drexler, and D. L. Jones. 2017. Describing Three Decades of Fisheries Regime States in the Gulf of Mexico Using an Ecosystem-Level Redundancy Analysis Approach. *American Fisheries Society – Annual Meeting*, Tampa, FL.
- **Kilborn, J. P.**, M. Drexler, and C. Ridings. 2016. An ecosystem-level redundancy analysis decision tool to inform the integrated ecosystem assessment indicator selection process. *ICES-ASC*, Riga, Latvia.
- **Kilborn, J. P.**, O. E. Tzadik, and R. S. Appeldoorn. 2015. Differential habitat use and reef-fish community organization among the reef-top and slope morphology within a single shelf-edge ecotone in La Parguera, Puerto Rico. *Gulf and Caribbean Fisheries Institute 68th Conference*, Panama City, Panama.
- **Kilborn, J. P.**, D. L. Jones, and E. B. Peebles. 2014. Detection of unique bentho-demersal fish communities in the high diversity West Florida Shelf ecosystem and the impact of environmental drivers. *ICES-ASC*, A Coruña, Spain.
- **Kilborn, J. P.**, E. B. Peebles, and D.L. Jones. 2013. Poster presentation: Clustering methods for assigning community types, spatial distributions, and habitat associations to multispecies benthic fish communities on the West Florida Shelf, eastern Gulf of Mexico. *ICES-ASC*, Reykjavik, Iceland.
- **Kilborn, J. P.**, E. B. Peebles, D. L. Jones, and D. F. Naar. 2012. Poster presentation: Using one fish community to predict another: Dynamic models of predator distribution based on lower-trophic-level community structure and other habitat features. *ICES-ASC*, Bergen, Norway.
- **Kilborn, J. P.** 2012. An exposition on essential fish habitat. *University of South Florida – College of Marine Science, Graduate Student Symposium*, St. Petersburg, FL.
- **Kilborn, J. P.**, S. Rai. 2001. A differential equation model of HIV dynamics via CD4+ T cells. *National Council of Undergraduate Research*, Lexington, KY.
- **Kilborn, J. P.**, S. Rai. 2000. A differential equation model of HIV dynamics via CD4+ T cells. *Mathematical Association of America – Sectional Meeting*, Ft. Meyers, FL

HONORS & AWARDS

Dec-2017 **Kilborn, J. P.**, *Graduate Student Commencement Ceremony Speech*, University of South Florida Graduate Students' Spring Commencement Ceremony, USF Sun Dome, Tampa, FL

2000 **Outstanding Mathematics Student of the Year**. Jacksonville University. Awarded by Mathematics department. faculty to most promising student for the academic year

1995 **Eagle Scout Award**. Troop 12, Baden Powell Council, Boy Scouts of America

COMMUNITY OUTREACH/SERVICE ACTIVITIES

Oct-2014 **Planning and Logistics Committee**, St. Pete Science Festival Event Dates: October 17-18, 2014

- Coordinated sign-up and logistical needs of 100+ exhibitors in months leading to event

- Organized and planned site map for the day of the event

2011-2014 **Chapter Vice President** (*2012-2014*), SCUBAnauts International, LLC, St. Petersburg, FL Chapter

Dive Safety Officer (*2011-2012*) responsible for all SCUBA diving activities, planning, and safety

Organizer of marine debris coastal cleanups
- Deer Key, FL Keys, USA, May 2012; July 2012
- Clam Bayou Education Center in St. Petersburg, FL, November 2011

2011 **Science Mentor**, USF – College of Marine Science, Oceanography Camp Especially for Girls
- Wax model analogue demonstration of plate tectonics theory
- Assisted in beach profile field study demonstration and active learning for campers

Sept-2011 **Volunteer Artificial Reef Cleanup**, Reef Monitoring Inc., Clearwater Beach, FL

*Note: Dr. Kilborn is a U.S. citizen as has registered for the U.S. selective service.