



KEVIN M. CUNNIFF

Senior Ecologist

Academic Background

Master of Science, Biology (Marine Ecology Focus), Florida International University, Miami, FL (2006)

Bachelor of Science (Biology), Minors – Marine Science, Environmental Studies, Fairfield University, Fairfield, CT (1998)

Specialized Professional Competence

Mr. Cuniff is a professional marine and wetlands scientist with over 14 years of experience working in coastal and estuarine ecosystems, with particular expertise in seagrass habitats. He also has extensive experience working in mangrove forests, freshwater wetlands, and Everglades tree islands. Mr. Cuniff's focus has been directed toward applied ecological research and monitoring related to the management and restoration of South Florida marine and freshwater wetland resources. He is an accomplished field ecologist with over 1,200 working field days, 3,800 logged research SCUBA dives, and 13,000 hours piloting and trailering research vessels. Mr. Cuniff has experience in management, analysis, and reporting of complex scientific data sets, and is experienced in design of statistically rigorous, hypothesis-based experimental and monitoring research studies. He has worked with university academics, State and federal researchers, and as a professional private-sector consultant. Currently, Mr. Cuniff is conducting research in Florida Bay, funded by Everglades National Park, and is actively involved in the Florida Coastal Everglades Long-Term Ecological Research (FCE-LTER) Program through Florida International University, funded by the National Science Foundation.

Representative Professional Experience

Senior Ecologist, SWC, Hollywood, Miami, and Ft. Myers, FL, 2013-present

Serve as manager of various ecological and land use services for public- and private-sector clients, with responsibilities including data collection and analysis, report writing, and oversight of compliance timetables and budgets.

OPS Research Scientist, Florida International University/Southeast Environmental Research Center, Miami, FL, 2013-present

- Conducting ecological field research for cooperative, Everglades National Park-funded program focused on investigating the status and trends of submerged aquatic vegetation and water quality in the mangrove-ecotonal lakes on the northern fringe of Florida Bay.

Senior Staff Scientist, Cardno ENTRIX, Wellington, FL, 2010-2013

- Project management duties for South Florida Water Management District (SFWMD), legally-mandated regulatory water quality monitoring program work orders, including regular client communications, work order task deliverables, invoicing, reporting, and staff training. Annual work order budgets exceeded \$100,000.
- Results analysis, QA/QC, and reporting from seagrass research studies conducted in the Gulf of Mexico related to

nearshore resource impact assessment stemming from the MC-252 Deepwater Horizon oil spill.

- Reviewed, analyzed, and provided written comments for various Environmental Impact Statements (EISs) for domestic and international clients.
- Conducted wildlife monitoring on an Army Corps of Engineers Everglades restoration project.

Staff Scientist, Cardno TBE, West Palm Beach, FL, 2010–2011

- Contracted position with SFWMD Water Restoration Services Section, to conduct ecological field and experimental research and monitoring in Stormwater Treatment Area (STA) marshes, encompassing a total of 65,000 acres.

OPS Research Scientist, Florida Atlantic University, Boca Raton, FL, 2010-2012

- Conducted ecological field and experimental research for a cooperative, SFWMD-funded seagrass research program focused on investigating the role of salinity stress, hypoxia/anoxia, and sulfide toxicity in periodic seagrass die-off events in Florida Bay.

Senior Environmental Scientist, R.C.T. Engineering, Inc., West Palm Beach, FL, 2005-2010

- Contracted position with the SFWMD, Everglades Division, Florida Bay—Everglades Ecosystem Research Section to conduct ecological field and laboratory research in the Florida Bay estuary related to restoration efforts under the Comprehensive Everglades Restoration Plan (CERP).
- Designed and implemented hypothesis-driven, applied ecological research and monitoring in the Florida Bay estuary, southern Everglades mangrove ecotone, Everglades tree islands, and adjacent freshwater marsh systems related to the on-going management and restoration activities of these ecosystems.
- Reviewed development plans and pilot data for the C-111 Spreader Canal restoration project.
- Authored SFWMD technical reports and peer-reviewed scientific journal manuscripts from ecological field and laboratory research projects and monitoring activities.
- Coordinated collaborative research projects with scientists from universities, state and federal government entities, and the private sector.

Graduate Research Assistant, Florida International University/Southeast Environmental Research Center, Miami, FL, 1999-2004

- Coordinated and conducted field research and laboratory activities for the Seagrass Ecosystems Research Lab (SERL) and Southeast Environmental Research Center (SERC) at FIU in the Florida Keys National Marine Sanctuary (FKNMS) and Gulf of Mexico, funded by the U.S. EPA and NOAA, and in Florida Bay as part of the FCE-LTER Program.



- Conducted extensive field work characterizing and quantifying benthic habitat communities in the FKNMS, southwest coastal shelf of the Gulf of Mexico, and Florida Bay utilizing standardized methods.
- Analyzed and QA/QC'd data for inclusion with the results of multiple cooperative, long-term environmental monitoring programs.
- Contributed ideas and authorship for annual reports and manuscripts published in peer-reviewed scientific journals.
- Assisted other graduate students and post-doctoral researchers in original field and laboratory-based research.

Technical Skills and Knowledge

Marine/Estuarine, Freshwater, and Terrestrial

- Expert working knowledge of seagrass community ecology, marine and estuarine nutrient cycling, and seagrass physiology.
 - Expert working knowledge of community structure and ecological function of Florida marine, estuarine, freshwater, and terrestrial ecosystems, particularly submerged aquatic vegetation habitats, nutrient biogeochemical processes, water quality, and the effects of eutrophication on marine, estuarine, and freshwater plant communities.
 - Extensive working knowledge regarding the effects of hydrology, land use patterns, point and non-point source pollution, nutrient loading, and environmental stochasticity on marine, estuarine, and freshwater wetland habitats, water quality, and food chains.
 - Extensive working knowledge of south Florida mangrove, tropical hardwood hammock, and tree island ecosystem structure and function.
 - Qualified experience in designing and implementing hypothesis-driven, statistically rigorous applied ecological research.
 - Experience with the design and implementation of Minimum Flows and Levels (MFLs) in Florida Bay (salinity) and Total Maximum Daily Loads (TMDLs) in Florida surface waters (nutrients).
 - Excellent and adaptable writing and communication skills for technical and lay audiences.
- #### Field Sampling and Laboratory Expertise
- Extensive field experience in marine, estuarine, and freshwater environments as well as mangrove forests, Everglades tree islands, tropical hardwood hammocks, scrub uplands, and other south Florida wetland and terrestrial environments with 1300+ documented working field days.
 - 13,000+ hours trailering and piloting small boats (11' to 45') with excellent shallow water, inshore, and offshore navigation prowess utilizing GPS technology and nautical charts; proficient in general boat and trailer maintenance.
 - 3,800+ logged scientific research SCUBA dives totaling 3,200+ hours bottom time; excellent free diving skills.
- Extensive experience with marine/estuarine benthic community habitat survey methodologies, including: Braun-Blanquet Cover and Abundance Index, Point-intercept method, implementation of transect sampling, and EMAP stratified-random design.
 - 30,000+ individual marine/estuarine benthic habitat surveys in seagrass and coral reef habitats.
 - Experience working from vessels 11' – 45', airboats, helicopters, all-terrain vehicles, and Everglades marsh platforms.
 - Transect sampling and plant community characterization of coastal benthic habitats, freshwater wetlands, terrestrial uplands and forests, Everglades tree island communities, and mangrove forests.
 - Experience with conducting sediment elevation table (SET) measurements in mangrove forests, Everglades tree islands, and coastal estuaries (Florida Bay).
 - Extensive experience utilizing multi-parameter field sampling instruments, data loggers, and software, as well as routine instrument maintenance, calibration, and performance QA/QC including, but not limited to: YSI sondes (Model 30, 600 Series, and 6600 Series), Hydrolabs, nutrient autosamplers, Li-Cor light meters, leaf-area index canopy light meters, sap-flow instruments, various permanent monitoring platform instruments and gauges, data telemetry, remotely deployed data loggers (e.g., HOBOs—Onset Corporation), fluorometers, spectrophotometers, Dataflow high speed flow-through water quality mapping system, Turner Designs C-6 sampling platform and Cyclops-7 fluorometers, hydro-acoustic benthic mapping, pulse-amplitude modulated (PAM) fluorometry, GPS, and underwater photography.
 - Extensive experience utilizing FDEP/EPA surface water quality and biological tissue sample collection techniques and methodologies, including QA/QC.
 - Extensive experience utilizing FDEP/EPA estuarine, freshwater, and terrestrial soil sampling methodologies, including QA/QC.
 - Extensive experience utilizing FDEP/EPA field-based water quality, biological tissue, and soil sample processing techniques and methodologies, including QA/QC.
 - Extensive experience utilizing FDEP/EPA laboratory bench chemical processing techniques and methodologies for water quality, biological tissue, and soil samples.
 - Extensive experience utilizing automated laboratory analysis instruments, software, and the QA/QC of instrument performance including, but not limited to: Turner Designs 10-AU fluorometer, Fisons NA 1500 NCS elemental analyzer, and Perstorp Analytical Alpkem inorganic elemental analyzer.

Certifications

- Qualified as expert witness by Broward County 13th Circuit Court for testimony in trial matters related to seagrass habitats and endangered species (*Halophila johnsonii*) distribution and seasonality (2009).



- U.S. Coast Guard Auxiliary Boating Safety Instruction, State of Florida (2007).
- American Red Cross Instructor: Lifeguard Training, First Aid, CPR, AED Administration, O₂ Administration (2003).
- NAUI Nitrox Diver (2001).
- AAUS Scientific Diver (1999).
- Class E Driver's License (with Motorcycle), State of Florida (1999).
- PADI Rescue Diver (1997).
- PADI Advanced Open Water Diver (1995).
- PADI Open Water Diver (1994).

Professional and Civic Affiliations

- City of Coconut Creek, FL, Chairman, City Commission Environmental Advisory Board (2008 – 2013).
- Florida Association of Environmental Professionals (2011-present).
- Ecological Society of America (1999-present).
- Coastal and Estuarine Research Federation (1999-present).
- Southeastern Estuarine Research Society (1999-present).

Select Peer-reviewed Publications

Madden, C.J. and **Cunniff, K.M.** 2011. Tropical Connections: Facts about south Florida's marine environment. IAN Press, University of Maryland Center for Environmental Science, Cambridge, Maryland. William L. Krczynski and Pamela J. Fletcher (eds). 452 pp.

Madden, C., Alleman, R., Bennett, R., Kelly, S., **Cunniff, K.M.**, McDonald, A., and Rudnick, D. 2010. Ch. 12: Management and restoration of coastal ecosystems. *2011 South Florida Environmental Report Vol I.* South Florida Water Management District.

Madden, C.J., Rudnick, D.T., McDonald, A.A., **Cunniff, K.M.**, and Fourqurean, J.W. 2009. Development of ecological indicators for assessing seagrass status and trends in Florida Bay. *Environmental Indicators* 9 (6), 68 - 82.

Madden, C., Alleman, R., Bennett, R., Kelly, S., **Cunniff, K.M.**, McDonald, A., and Rudnick, D. 2009. Ch. 12: Management and restoration of coastal ecosystems. *2010 South Florida Environmental Report Vol I.* South Florida Water Management District.

Madden, C., Alleman, R., Bennett, R., Kelly, S., **Cunniff, K.M.**, McDonald, A., and Rudnick, D. 2008. Ch. 12: Management and restoration of coastal ecosystems. *2009 South Florida Environmental Report Vol I.* South Florida Water Management District.

Rudnick, D. et al. 2007. Ch. 12: Management and restoration of coastal ecosystems. *2008 South Florida Environmental Report Vol I.* South Florida Water Management District.

Cunniff, K. M., Kelly, S., and Rudnick, D. 2007. A rapid assessment of the Lake Surprise benthic community and sediments. South Florida Water Management District Technical Report.

Rudnick, D. et al. 2006. Ch. 12: Management and restoration of coastal ecosystems. *2007 South Florida Environmental Report Vol I.* South Florida Water Management District.

Select Presentations

Frankovich, T.A., Barr, J., Morrison, D., Fourqurean, J.W., and **Cunniff, K.M.** 2011. Differential importance of water quality parameters and temporal patterns of submerged aquatic vegetation (SAV) cover in adjacent sub-estuaries distinguished by alternate regimes of phytoplankton and SAV dominance. 21st Biennial Conference of the Coastal and Estuarine Research Federation.

Frankovich, T.A., Morrison, D., Fourqurean, J.W., and **Cunniff, K.M.** 2010. Seasonal patterns in benthic macrophytes and water quality parameters in the Mangrove Lakes region of Florida Bay. Florida Keys Science Conference.

Frankovich, T.A., Morrison, D., Fourqurean, J.W., Barr, J., and **Cunniff, K.M.** 2010. Seasonal patterns in *Chara* and *Halodule* communities in the mangrove lakes and estuaries of the coastal Everglades: Relationships to environmental variables. Greater Everglades Ecosystem Restoration Conference.

Rudnick, D., Boyer, J., Blair, S., Madden, C., Kelly, S., **Cunniff, K.**, and Kelble, C. 2007. Disturbance and ecosystem change in Florida Bay and southern Biscayne Bay. 19th Biennial Conference of the Estuarine Research Federation.

Kelly, S., **Cunniff, K.M.**, Rudnick, D., McDonald, A., and Madden, C. 2007. Analysis of restoration trade-offs: A case study of causeway removal in Florida Bay. 19th Biennial Conference of the Estuarine Research Federation.

Cunniff, K.M. and Fourqurean, J.W. 2003. Factors affecting the reproductive ecology of *Thalassia testudinum* in the Florida Keys National Marine Sanctuary (FKNMS). 17th Biennial Conference of the Estuarine Research Federation.

Cunniff, K.M. and Fourqurean, J.W. 2003. Factors influencing sexual reproduction of the marine angiosperm *Thalassia testudinum*. Florida International University Tropical Biology Symposium.

Cunniff, K.M. and Fourqurean, J.W. 2001. Effect of nutrient addition on the sexual and asexual reproductive output of *Thalassia testudinum*. 16th Biennial Conference of the Estuarine Research Federation.

Cunniff, K.M. and Fourqurean, J.W. 2001. Sexual reproduction of the marine angiosperm *Thalassia testudinum*. Florida International University Tropical Biology Symposium.

