

## **Jane Marie Caffrey**

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### Education:

University of Maryland. Ph.D. Marine Environmental and Estuarine Studies Program. 1989. Dissertation title: The Effect of Submersed Macrophytes on Nitrogen Cycling in Estuarine Sediments.

Louisiana State University. M.S. Marine Science. 1983. Thesis title: The Influence of Physical Factors on Water Column Nutrients and Suspended Sediments in Fourleague Bay, Louisiana

Cornell University. A.B. Biology. 1981.

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### Professional Experience:

Associate Professor. Center for Environmental Diagnostics and Bioremediation. University of West Florida. Since May 2008

Research Associate Professor. Center for Environmental Diagnostics and Bioremediation. University of West Florida. 2006 – May 2008

Research Assistant Professor. Center for Environmental Diagnostics and Bioremediation. University of West Florida. 1999 - 2006

Research Oceanographer. Institute of Marine Science. University of California, Santa Cruz. June 1995-June 2003.

Research Coordinator. Elkhorn Slough National Estuarine Research Reserve. December 1995-December 1998.

Oceanographer, Water Resources Division, U.S. Geological Survey, June 1993-June 1995

Adjunct Faculty. Department of Oceanography. Florida State University. Summer 1994.

Post-Doctoral Research Associate. Water Resources Division. U.S. Geological Survey. June 1991-June 1993.

Fulbright scholar. Department of Ecology and Genetics. University of Aarhus. Denmark. Aug. 1990- May 1991.

Post-Doctoral Research Associate. Horn Point Environmental Laboratories.  
University of Maryland Jan-June 1990.

Graduate Research Assistant. Horn Point Environmental Laboratories. University  
of Maryland 1984-1989.

Research Associate. Center for Wetland Resources. Louisiana State University  
Jan-Aug. 1984.

Graduate Research Assistant, Center for Wetland Resources, Louisiana State  
University 1981-1983.

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Publications:

**Caffrey, J.M.**, N. Bano, J.T. Hollibaugh and J. Haskins. The effect of upwelling on short-term variability in sediment biogeochemistry in Elkhorn Slough, CA. In review to Aquatic Microbial Ecology.

Murrell, M.C., J. Campbell, J.E Hagy, and **J.M. Caffrey**. 2009. Benthic and water column processes in a subtropical estuary: effects of light and nutrient on oxygen fluxes. Estuarine Coastal and Shelf Science.81:501-512.

Smith, K.A. and **J.M. Caffrey**. 2009. The Effects of Human and Climatic Impacts on Sediment Nitrogen Dynamics in an Urban Estuary, Escambia Bay, Florida, USA. Hydrobiologia. 627:67-85.

**Caffrey, J.M.**, N. Bano, K. Kalanetra and J. T. Hollibaugh. 2007. Environmental factors controlling ammonia-oxidation by ammonia oxidizing Bacteria and Archaea. ISME Journal 1:660-662.

**Caffrey, J.M.**, T.P. Chapin, H.W. Jannasch, and J.C. Haskins. 2007. High nutrient pulses, tidal mixing and biological response in a small California estuary, Elkhorn Slough, CA, USA: variability in nutrient concentrations from hourly to decadal time scales. Estuarine, Coastal and Shelf Science 71: 368-380.

**Caffrey, J.M.**, M.C. Murrell, C. Wigand and R. McKinney. 2007. Effect of nutrient loading on biogeochemical and microbial processes in a New England high salt marsh. Biogeochemistry 82:251-264.

DiDonato, G.T., E.M. Lores, M.C. Murrell, L.M. Smith, and **J.M. Caffrey**. 2006. Benthic nutrient flux in a small estuary in northwestern Florida (USA). Gulf and Caribbean Research. 18:15-25.

Murrell, M.C. and **J.M. Caffrey**. 2005. High cyanobacterial abundance in three Gulf of Mexico estuaries. Gulf and Caribbean Research. 17:95-106.

- Chapin, T.P., **J.M. Caffrey**, H.W. Jannasch, L. Coletti, J.C. Haskins and K. Johnson. 2004. Nitrate sources and sinks in Elkhorn Slough, CA: results from continuous in situ nitrate analyzers. *Estuaries* 27:882-894
- Caffrey, J.M.** 2004. Factors controlling net ecosystem metabolism in U.S. estuaries. *Estuaries* 27: 90-101
- Caffrey, J.M.** 2003. Production, Respiration and Net Ecosystem Metabolism in U.S. Estuaries. *Environmental Monitoring and Assessment*. 81: 207-219.
- Caffrey, J.M.**, N.E. Harrington, I. Solem, and B.B. Ward. 2003. Biogeochemical Processes in a Small California Estuary: 2. Nitrification Activity, Community Structure and Role in Nitrogen Budgets. *Marine Ecology Progress Series*. 248: 27-40.
- Caffrey, J.M.**, N.E. Harrington, and B.B. Ward. 2002. Biogeochemical Processes in a Small California Estuary: 1. Benthic Fluxes and Pore Water Constituents Reflect High Nutrient Freshwater Inputs. *Marine Ecology Progress Series*. 233:39-53.
- Caffrey, J.M.**, M. Brown, B. Tyler, M. Silberstein (eds.) 2002. Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA.
- Caffrey, J.M.**, M. Silberstein and L. Strnad. 2002. Chapter 1. Introduction. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA
- Caffrey, J.M.** 2002. Chapter 3. Climate. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA.
- Caffrey, J.M.** and W. Broenkow. 2002. Chapter 4. Hydrology. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA
- Silberstein, M., C. Zabin, L. Newberry, D. Mountjoy, L. Strnad, **J.M. Caffrey**. 2002. Chapter 7. Post Columbian History to Present Day Land Use. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA
- Zimmerman, R. and **J.M. Caffrey**. 2002. Chapter 8. Primary Producers. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary:

an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA

**Caffrey, J.M.** 2002. Chapter 12. Biogeochemical Cycling. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA

**Caffrey, J.M.**, Mountjoy, D., M. Silberstein and C. Zabin. 2002. Chapter 14. Management Issues for the Elkhorn Slough Watershed. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA

**Caffrey, J.M.** and C. Zabin. 2002. Chapter 15. Summary. IN Caffrey, J.M., M. Brown, B. Tyler, M. Silberstein (eds.) Changes in a California Estuary: an Ecosystem Profile of Elkhorn Slough. Elkhorn Slough Foundation. Moss Landing, CA.

Mortazavi B., R.L. Iverson, W. Huang, F.G. Lewis, and **J.M. Caffrey**. 2000. Nitrogen Budget of Apalachicola Bay, a Bar-built Estuary in the Northeastern Gulf of Mexico. Marine Ecology Progress Series. 195:1-14.

**Caffrey, J.M.**, J.E. Cloern, and C. Grenz. 1998. Changes in Production and Respiration during a Spring Phytoplankton Bloom in San Francisco Bay, California: Implications for Net Ecosystem Metabolism. Marine Ecology Progress Series. 172:1-12

**Caffrey, J.M.**, D.E. Hammond, J.S. Kuwabara, L.G. Miller, and R.R. Twilley. 1996. Benthic Processes in South San Francisco Bay: The Role of Organic Inputs and Bioturbation. In. pp. 425-444. J.T. Hollibaugh (ed.). San Francisco Bay: The Ecosystem. AAAS Pacific Division.

**Caffrey, J.M.** 1995. Spatial and seasonal patterns in sediment ammonium concentrations and regeneration rates in San Francisco Bay, CA. Estuaries. 18: 219-233.

**Caffrey, J.M.** and L.G. Miller. 1995. A comparison of two nitrification inhibitors used to measure nitrification rates in estuarine sediment. FEMS Microbiology Ecology. 17:213-220.

**Caffrey, J.M.**, N.P. Sloth, H. Kaspar, and T.H. Blackburn. 1993. Effect of organic loading on nitrification and denitrification in a marine sediment microcosm. FEMS Microbiology Ecology. 12:159-167.

Seitzinger, S.P., L.P. Nielsen, **J.M. Caffrey**, and P.B. Christensen. 1993. Denitrification measurements in aquatic sediments: a comparison of three methods. Biogeochemistry 23:147-167.

- Caffrey, J.M.** and W.M. Kemp. 1992. Influence of the submersed plant, Potamogeton perfoliatus L., on nitrogen cycling in estuarine sediments. *Limnology and Oceanography*. 37:1483-1495.
- Caffrey, J.M.** and W.M. Kemp. 1991. Seasonal and spatial patterns of oxygen production, respiration and root-rhizome release in Potamogeton perfoliatus L. and Zostera marina L. *Aquatic Botany* 40:109-128.
- Caffrey, J.M.** and W.M. Kemp. 1990. Nitrogen cycling in sediments with submerged macrophytes: Microbial transformations and inorganic pools associated with estuarine populations of Potamogeton perfoliatus L. and Zostera marina. *Marine Ecology - Progress Series*. 66:147-160.
- Kemp, W.M., P. Sampou, **J. Caffrey**, M. Mayer, K. Henriksen and W.R. Boynton. 1990. Ammonium recycling versus denitrification in Chesapeake Bay sediments. *Limnology and Oceanography* 35:1545-1563.
- Denes, T.A. and **J.M. Caffrey**. 1988. Changes in seasonal water transport in a Louisiana estuary, Fourleague Bay, Louisiana. *Estuaries* 11(3):184-191.
- Caffrey, J.M.** and J.W. Day, Jr. 1986. Control of the variability of nutrients and suspended sediments in a Gulf Coast estuary by climatic forcing and spring discharge of the Atchafalaya River. *Estuaries* 9:295-300.
- Caffrey, J.M.** N. Bano and J.T. Hollibaugh. Sulfide inhibition of nitrification in estuarine sediments. In prep.
- Caffrey, J.M.**, T.P. Chapin, H.W. Jannasch, S. Phipps and L. Edmiston. The importance of runoff and tidal mixing in controlling nutrient concentrations in two Gulf of Mexico estuaries. In prep.

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## Reports

- Caffrey, J.M.** and R. Noble. 2007. ASLO and the National Water Quality Monitoring Council. *ASLO Bulletin* 16:22-23.
- Sanger, D.M., M.D. Arendt, Y. Chen, E.L. Wenner, A.F. Holland, D. Edwards and **J. Caffrey**. 2002. A synthesis of water quality data: National Estuarine Research Reserve system-wide monitoring program (1995-2000). National Estuarine Research Reserve Technical Report Series 2002: 3. South Carolina Department of Natural Resources, Marine Resources Division Contribution No. 500. 135 p.
- Wenner, E.L., A.F. Holland, M.D. Arendt, Y. Chen, D. Edwards, C. Miller, M. Meese, and **J.M. Caffrey**. 2001. A synthesis of water quality data from the National Estuarine Research Reserves system wide monitoring program. Report to NOAA Estuarine Reserve Division. MRD contribution No 459.

- Caffrey, J.M.**, A.P. DeVogelaere, J.E. Holte, and ABA Consultants. 1998. Elkhorn Slough Bibliography (Fourth Edition). Elkhorn Slough Foundation.
- Caffrey, J.**, S. Shaw, M. Silberstein, A. DeVogelaere, M. White, K. Parker, and K. Thomasberg. 1997. Central Bay Estuarine Water Quality Monitoring Program 1988-1997. Data Report. Elkhorn Slough National Estuarine Research Reserve and Elkhorn Slough Foundation.
- Caffrey, J.M.**, S. Shaw, M. Silberstein, A. DeVogelaere, and M. White. 1997. Water quality monitoring in Elkhorn Slough: a summary of results 1988-1996. unpublished report to Elkhorn Slough Foundation and Elkhorn Slough National Estuarine Research Reserve.
- Werner, M.R., M. Silberstein, M. Los Huertos, S. Gliessman, J. Newman, R. Tjeerdema, **J. Caffrey**, S. Shaw, A. De Vogelaere, J. Mason. 1997. Agriculture and wetlands, examining the interface at the Azevedo Ranch and the Elkhorn Slough National Estuarine Research Reserve in coastal central California. A final report submitted to the U.S. Department of Commerce National Oceanic and Atmospheric Administration.
- Caffrey, J.M.** 1997. Chapter 4 - The Chemical Environment. In. Science Applications International Corporation (eds.) Outer Continental Shelf Environmental Studies Program: Northeastern Gulf of Mexico Coastal and Marine Data Search and Synthesis; Synthesis Report. U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division, USGS/BRD/CR -- 1997-004. 304 p.
- Caffrey, J.M.** 1996. Effect of land-use practices on nutrient dynamics in subtidal estuarine sediments in Elkhorn Slough, CA. Final report to National Oceanic and Atmospheric Administration, Sanctuaries and Reserves Division. Grant # NA47OR0198.
- Caffrey, J.M.** and B.B. Ward. 1996. Data Report for Cruise No. 94-119 in the Eastern Tropical North Pacific. Institute of Marine Science, University of California Santa Cruz.
- Edmunds, J.L., B.E. Cole, J.E. Cloern, **J.M. Caffrey**, and A.D. Jassby. 1995. Studies of the San Francisco Bay, California, Estuarine Ecosystem. Pilot regional monitoring results, 1994. U.S. Geological Survey. Open-File Report 95-378. 436 pages.
- Jassby, A.D., Cloern, J.E., Cole, B.E., and **Caffrey, J.M.** 1995, Choosing optimum station configurations for summarizing water quality characteristics, in 1994 Annual Report, San Francisco Estuary Regional Monitoring Program for Trace Substances: San Francisco Estuary Institute, p. 185-197.

Jassby, A., Cloern, J.E., **Caffrey, J.**, Cole, B., and Rudek, J., 1994, San Francisco Bay/Delta Regional Monitoring Program plankton and water quality pilot study, 1993, in 1993 Annual Report, San Francisco Estuary Regional Monitoring Program for Trace Substances: San Francisco Estuary Institute, p. 117-128.

**Caffrey, J.M.**, B.E. Cole, J.E. Cloern, J. Rudek, A.C. Tyler, and A.D. Jassby. 1994. Studies of the San Francisco Bay, California, Estuarine Ecosystem. Pilot regional monitoring results, 1993. U.S. Geological Survey. Open-File Report 94-82. 412 pages.

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### Book Reviews

**Caffrey, J.M.** 2001. Review of "Nitrogen loading in coastal water bodies: An atmospheric perspective" edited by R.A. Valigura, et al. *Limnology and Oceanography*. Vol 46(6):1584.

**Caffrey, J.M.** 2000. Review of "Coastal Ecosystem Processes" by D.M. Alongi. *Quarterly Review of Biology*. Vol 75.

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### Professional Societies:

American Geophysical Union  
American Society of Limnology and Oceanography  
Estuarine Research Federation  
Society of Wetland Scientists

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### Synergistic Activities:

Member Science Advisory Committee for Georgia Coastal Ecosystem Long Term Ecological Research.

Member National Water Quality Monitoring Council

NSF Chemical Oceanography Panel May 2004, May 2007

Review proposals for NOAA, NSF, Sea Grant (Florida, Georgia, Louisiana, Maryland)

Review manuscripts for *Science*, *Estuarine Coastal and Shelf Science*, *Estuaries and Coasts*, *Biogeochemistry*, *Marine Ecology Progress Series*, *FEMS Microbiology Ecology*, *Aquatic Microbial Ecology*, *Limnology and Oceanography*, *Deep Sea Research*; *Journal of Coastal Research*, *Journal of the North American Benthological Society*; *Hydrobiologia* and *Journal of Marine Research*.

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### Grants and Honors:

2008-2010 Atmospheric Deposition of Mercury and Trace Metals in the Pensacola Bay Watershed. with Bill Landing, Florida State University. Electric Power Research Institute

- 2004-8 Atmospheric Deposition of Mercury and Trace Metals in the Pensacola Bay Watershed. with Bill Landing, Florida State University. Environmental Protection Agency.
- 2003 Effect of Diurnal and Weekly Water Column Hypoxic Events on Nitrification and Nitrogen Transformations in Estuarine Sediments. with Tim Hollibaugh, University of Georgia. National Science Foundation. Chemical Oceanography
- 2001 A Synthesis of Water Quality Data from the National Estuarine Research Reserve's System Wide Monitoring Program. with A.F. Holland and E. Wenner, SCDNR. NOAA.
- 1998 In Situ Nutrient Monitoring in Estuaries. with Hans Jannasch, MBARI. Cooperative Institute for Coastal and Estuarine Environmental Technology.
- 1998 Community structure and species composition of nitrifying bacteria in aquatic environments. with Bess Ward, Princeton. NSF-Biological Oceanography
- 1998 Award for most collaborative research in poster session of the Monterey Bay Sanctuary Symposium. March 1998. Nutrient Inputs to Elkhorn Slough, CA: Interpreting an 8 Year Record of Volunteer Water Quality Monitoring.
- 1995 Role of the Flocculent Layer and Sediments in Carbon and Nitrogen Mineralization in San Francisco Bay. Institute of Marine Science, Shell Oil settlement
- 1994 Effect of land-use practices on nutrient dynamics in subtidal estuarine sediments in Elkhorn Slough, CA. NOAA, Sanctuaries and Reserves Division
- 1990 Fulbright Scholarship.
- 1990 National Research Council Postdoctoral Research Associateship

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#### Courses Taught:

Aquatic Botany BOT 4404 - University of West Florida

Estuarine Ecology PCB 4048/PCB 5445 - University of West Florida

Directed Study: Topics in Coastal Oceanography

Directed Study: Bio-Mathematical Modeling - University of West Florida

Directed Study: Topics in nutrient cycling in shallow estuaries – University of West Florida

Introductory Oceanography for non majors – Florida State University, University of California Santa Cruz

Special Topics: Denitrification in Estuaries – Florida State University

#### Graduate Students:

Kristin Smith. Master's student. University of West Florida.

Student advising

Jennifer Chastain. Master's student. University of West Florida. Member of committee

Jon Stewart. Master's student. University of West Florida. Member of committee

Kate Shepard. Master's student. University of West Florida. Member of committee

Nathaniel Davila. Undergraduate. University of West Florida. Directed study

Brandon Jarvis. Master's student. University of West Florida. Member of committee

Virginia Eller. Undergraduate. University of West Florida. Directed study

Jeffrey Allison. Master's student. University of West Florida. Member of committee

Matt Wagner. Master's student. University of West Florida. Member of committee

Bruno Giri. PhD student. University of Georgia. Member of committee

Neil Harrington. Master's student. University of California Santa Cruz. Member of committee

Student mentoring/student workers:

Melissa Overton. Master's Student. Student worker

Autumn Dunn. Undergraduate. Student worker

Jessie Brown. Undergraduate. Student worker

Kay Li. High School. Pensacola High School IB program. mentor

Jennie Robinson. High School. Pensacola High School IB program. mentor

Monika Scott. Undergraduate. University of West Florida. Student worker

Sara Cleveland. Master's student. Florida State University. mentor

Tanner Martin. Undergraduate. University of West Florida. Student worker

Francine Aftanas. Undergraduate. University of West Florida. Student worker

Nicole Beck. PhD student. University of California Santa Cruz. mentor

Behzad Mortazavi. PhD student. Florida State University. mentor

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Recent Presentations:

The Effect of Upwelling on Short Term Variability in Sediment Biogeochemistry in a Small California Estuary, Elkhorn Slough, CA, USA. American Society of Limnology and Oceanography. January 26-30, 2009. Nice, France.

- Atmospheric deposition of mercury, trace metals and major ions in the Pensacola Bay watershed: implications for Choctawhatchee Bay. Symposium on Choctawhatchee Bay. June 1-2, 2008.
- Atmospheric Deposition of Mercury, Trace Metals and Major Ions in the Pensacola Bay Watershed. National Monitoring Conference May 18-23, 2008. Atlantic City, NJ.
- Application of the diagenetic model CANDI in Pensacola Bay. Ocean Sciences meeting. March 2-7, 2008. Orlando, FL N. Davila – presenter.
- Ammonia oxidation and ammonia-oxidizing Bacteria and Archaea populations from estuaries with differing histories of hypoxia. Estuarine Research Federation meeting November 2007, Providence, RI.
- Nutrient Cycling In Escambia Bay Sediments. NW Florida Symposium. October 5, 2007, Pensacola FL.
- Atmospheric Deposition of Mercury, Trace Metals and Major Ions in the Pensacola Bay Watershed. NW Florida Symposium. October 5, 2007, Pensacola FL.
- Nitrification Response to Intermittent Hypoxia in Three Southeastern Estuaries. February 2007. American Society of Limnology and Oceanography, Santa Fe., NM.
- The effects of human and climatic impacts on sediment nitrogen dynamics in Escambia bay, Florida. February 2007. American Society of Limnology and Oceanography, Santa Fe., NM. K Smith – presenter.
- Nitrification and Benthic Fluxes in Three Southeastern Estuaries: Response to Intermittent Hypoxia. Invited presentation - Louisiana Universities Marine Consortium. December 2006.
- Sources and Sinks of Nitrogen in Weeks Bay, AL. Alabama-Mississippi Bays and Bayous Symposium. November 2006. Mobile, AL
- Total gaseous mercury concentrations in Pensacola, FL. March 2006. American Chemical Society. Atlanta, GA.
- Spatial and temporal variability in precipitation chemistry in the Pensacola Bay watershed. March 2006. American Chemical Society. Atlanta, GA.
- Comparing nitrification and nutrient dynamics in three estuaries: Weeks Bay, AL; Pensacola Bay, FL; and the Duplin River, GA. October 2005 Estuarine Research Federation. Norfolk, VA. K. Smith presenter.
- Comparing porewater nutrients and sediment characteristics in three estuaries: Weeks Bay, AL; Pensacola Bay, FL; And The Duplin River, GA October 2005 Estuarine Research Federation. Norfolk, VA. E. Gaige presenter.
- Combining long-term and high frequency water quality data to understand ecological processes in estuaries October 2005 Estuarine Research Federation. Norfolk, VA.