Curriculum Vitae

Thomas J. Boyd
US Naval Research Laboratory
Marine Biogeochemistry, Code 6114
Washington, DC 20375-5348
(202) 404-6424
thomas.boyd@nrl.navy.mil

EDUCATION

B.S. Biology, Washington and Lee University, Lexington, VA, 1987
B.A. Chemistry, Washington and Lee University, Lexington, VA, 1987
M.S. Marine Biology, Scripps Institution of Oceanography, La Jolla, CA, 1992
Ph.D. Marine Biology, Scripps Institution of Oceanography, La Jolla, CA, 1993

POSITIONS

Laboratory Assistant, Washington and Lee University, Lexington, VA, 1985-1987
Teaching Assistant, University of California, San Diego, La Jolla, CA, 1990
Research Assistant, Scripps Institution of Oceanography, La Jolla, CA, 1987-1994
Research Assistant, California Regional Marine Research Program, La Jolla, CA, 1993-1994
John Knauss Sea Grant Fellow, National Science Foundation, Arlington, VA, 1994-1995
Scientist, Geocenters, Inc., Naval Research Laboratory, Washington, DC, 1995
NRC Research Associate, Naval Research Laboratory, Washington, DC, 1995-1996
Research Microbiologist, Naval Research Laboratory, Washington, DC, 1996-present
Member, Vice-Chair, US NRL Radiation Safety Committee, Washington, DC, 1996-present
Member, Delaware Replacement Vessel Committee (to aid in science mission requirements for the University of Delaware *R/V Cape Henlopen* replacement vessel), Lewes, DE, 2002-2005
Network Technical Representative, Chemistry Division, US NRL, Washington, DC, 2006-present (assistant NTR, 2001-2005)
Program Officer, United States Arctic Military Cooperation Program. Program 2.3. Improving Conditions at Arctic Military Bases. (2003-2006) (concurrent assignment).
Program Officer, National Science Foundation. Earth Sciences Instrumentation & Facilities Program. Detail from NRL – April 2008 to March 2011.

TEACHING EXPERIENCE

High School Tutor, Biology, Lexington High, Lexington, Virginia, 1986-1987
Laboratory Assistant, Washington and Lee University, 1985-1987
Teaching Assistant, Microbiology, University of California, San Diego, 1990
SCUBA Diving Instructor, University of California, San Diego, 1992-1994
SCUBA Diving Instructor, SeaVentures, Fairfax, VA, 1994
Assistant Professor, Adjunct, University of Maryland, College Park, MD, 1999-2007.
Associate Professor, Adjunct, University of Maryland, College Park, MD, 2007-present.

AWARDS AND HONORS

Civilian

Phi Eta Sigma, 1984, Washington and Lee University
Alpha Epsilon Delta, 1985, Washington and Lee University
Phi Beta Kappa, 1986, Washington and Lee University
Biology Departmental Award, 1987, Washington and Lee University
Sigma Xi Grant-in-Aid for Research, 1989, Scripps Institution of Oceanography
Sea Grant Trainee, 1990, Scripps Institution of Oceanography
John Knauss Sea Grant Fellow, 1993, National Science Foundation
NRC Research Associate Award, 1995, Naval Research Laboratory
Alan Berman Basic Research Publication Award, 2005, Naval Research Laboratory
Alan Berman Basic Research Publication Award, 2007, Naval Research Laboratory
Nomination, Stanley Drazek Teaching Excellence Award, 2007, University of Maryland, University College
PMP, 2014, Project Management Institute.

RESEARCH INTERESTS

Microbial utilization of phenolic and other aromatic compounds in freshwater, marine, coastal and soil/groundwater environments. Microbial utilization of dilute organic compounds (amino acids, peptides, simple aromatic compounds and contaminants) in multiple environments. Biogeochemistry of recalcitrant organic matter (humic and aromatic compounds). Separation, characterization, and quantification of organic compounds (including contaminants) in seawater, wastewater, groundwater and freshwater. Specific bacterial attachment and induction of metabolic enzymes. Biochemistry and enzymology of contaminant biodegradation. Chemical identification techniques including stable- and radiocarbon analysis to assess biodegradation of aromatic compounds in contaminated and natural environments. Environmental forensics and the use of carbon isotope ratios to source-apportion chemical mixtures and track contaminant carbon into biogeochemical cycles. Chemometrics.

RESEARCH EXPERIENCE

Participation in 45+ oceanographic research cruises in the Northeast Pacific Ocean off California and Hawaii, Northeast Atlantic, Gulf of Mexico, South Pacific (New Zealand), Sulu Sea, Indian Ocean, and the Baltic Sea. Studies included determinations of microbial population dynamics in Benthic Boundary Layer (BBL), sea-surface microlayer environments, bulkwater and sediments. Sampling and determination of organic compounds and optical properties in estuaries, seawater, groundwater, and municipal wastewaters. Chief Scientist for over 25 cruises (Charleston, SC; Philadelphia, PA, Chesapeake Bay, Middle Atlantic Bight, San Francisco Bay, Gulf of Mexico, Puget Sound). Determination of microbial ecology parameters (contaminant mineralization, bacterial activities, bioremediation) in various contaminated groundwater, freshwater, marine and sediment systems. Training in and use of IR, UV-VIS, and NMR spectroscopy, HPLC and GC/MS, isotope ratio mass spectrometry, accelerator mass spectrometry, gel chromatography and radiolabeled tracers.

PUBLICATIONS (peer review)

1. **Boyd, T.J.**, Montgomery, M.T., Cuenca, R.H., Hagimoto, Y. 2015. Combined radiocarbon and CO_2 flux measurements used to determine *in situ* chlorinated solvent mineralization rate. Environmental Science: Process & Impacts. 17(3):683-692. DOI: 10.1039/C4EM00514G.

2. **Boyd, T.J.**, Pound, M.J., Lohr, D., and Coffin, R.B. 2013. Radiocarbon-depleted CO_2 evidence for fuel biodegradation at the Naval Air Station North Island (USA) fuel farm site. Environmental Science: Process & Impacts. 15(5):912-918. DOI: 10.1039/C3EM00008G.

3. Montgomery, M.T., Coffin, R.B., **Boyd, T.J.** and Osburn, C.L. 2013. Incorporation and mineralization of TNT and other anthropogenic organics by natural microbial assemblages from a small, tropical estuary. Environmental Pollution. 174:257-264.

4. Montgomery, M.T., Coffin, R.B., **Boyd, T.J.**, Smith, J.P., Plummer, R.E., Walker, S.E., and Osburn, C.L., 2011. Mineralization rates of 2,4,6-Trinitrotolene and bacterial production amongst natural microbial assemblages in coastal sediments. Environ. Poll. 159, 3673-3680. doi:10.1016/ j.envpol.2011.07.018.

5. Montgomery, M.T., **Boyd, T.J.**, Osburn, C.L., and Smith, D.C. 2010. PAH mineralization and bacterial organotolerance in surface sediments of the Charleston Harbor estuary. Biodegrdation. 21(2):257-266.

6. Coffin, R.B., Pohlman, J.W., Grabowski, K.S., Knies, D.L., Plummer, R.E., Magee, R.W., and **T.J. Boyd**. 2008. Radiocarbon and Stable Carbon Isotope Analysis to Confirm Petroleum Natural Attenuation in the Vadose Zone. Environmental Forensics. 9(1):75-84.

7. **Boyd, T. J.**, Osburn, C. L., Birgl, K. B., and R. B. Coffin. 2006. Compound-Specific Isotope Analysis Coupled With Multivariate Statistics to Source-Apportion Hydrocarbon Mixtures. Environ. Sci. Technol. 40(6):1916-1924.

8. **Boyd, T.J.**, Montgomery, M.T., Steele, J.K., Pohlman, J.W., Reatherford, S.R., Spargo, B.J., and D.C. Smith. 2005. Dissolved oxygen saturation controls PAH biodegradation in freshwater estuary sediments. Microb. Ecol. 49(2):226-235.