

ALEXANDER E. PARKER, PhD

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EDUCATION:

University of Delaware, 2004, Ph.D. Oceanography. Dissertation Title: “*Assessing the Phytoplankton-Heterotrophic Bacterial Link in the Eutrophic Delaware Estuary*”. Prof. Jonathan H. Sharp, Dissertation Committee Chair. Profs. Richard C. Dugdale, David A. Hutchins, David L. Kirchman, Bess B. Ward, committee members.

University of Colorado at Boulder 1995 B.A. Biology, minor Geography

PROFESSIONAL EXPERIENCE:

Dominican University of California, Adjunct Professor, Biology	2007 - Present
Romberg Tiburon Center for Environmental Studies, SFSU, Postdoctoral Fellow	2004 - Present
University of Delaware Graduate College of Marine Studies, Research Assistant	1998 - 2004
NOAA Office of Coast Survey, Silver Spring, MD, Intern	1997 - 1998

RELEVANT FIELD EXPERIENCE:

R/V Fulmar chief scientist and research cruise participant, Gulf of the Farallones, CA, 2007
R/V Hugh R. Sharp research cruise participant, Delaware Estuary and coastal waters, 2006
R/V Roger Revelle research cruise participant, equatorial Pacific Ocean, 2004, 2005
R/V Polaris research cruise participant, San Francisco Bay, 2005-2007
R/V David Star Jordan NOAA, research cruise participant, northern California coast, 2005
R/V Questuary, chief scientist, San Francisco Bay, 2005-2006
USCGC Healy, cruise participant, western Arctic Ocean, 2004
R/V Cape Henlopen, cruise participant, 21 cruises Delaware Bay and coastal waters, 2001-2004
NOAA NERR, extensive small boat sampling, St Jones River estuary, 2002-2003

GRANTS AWARDED:

2006-2008	California Sea Grant <i>CALFED Postdoctoral Science Fellowship</i> (\$152,500)
2001-2004	NOAA-Sea Grant (Co-PI Jonathan Sharp) “Differential carbon and nitrogen transfer in the estuarine microbial loop” (\$120,795)
2000-2003	NOAA National Estuarine Research Reserve <i>Graduate Research Fellowship</i> (\$49,500)

ACADEMIC AWARDS:

- 2005 University of Delaware College of Marine Studies *Publication Award*
2004 ASLO *Student Travel Award*
2003 Delaware Mobile Surf Fishermen Association *Graduate Fellowship*
1999-2000 NSF *Graduate Research Traineeship*
1993-1994 Howard Hughes Biomedical Research *Award for Undergraduates*

PUBLICATIONS:

- Kirchman, D.L., Hill, V, Cottrell, M.T., Malmstrom R.R., **Parker, A.E.** 2007 "Primary production and the processing of organic carbon by heterotrophic bacteria in the western Arctic Ocean." Deep Sea Research II, *Accepted*.
- Sharp, J.H., Yoshiyama, K., **Parker, A.E.**, Schwartz, M. C., Curless, S. E., Beaugard, A.Y., Ossolinski, J., Davis, A.R. "The chemistry of the Delaware Estuary: seasonal and spatial trends and correlations." Estuaries and Coasts, *In review*.
- Parker, A.E.**, V. E. Hogue, F. Wilkerson, R.C. Dugdale "Inorganic nitrogen speciation and phytoplankton growth in the high nutrient, low chlorophyll San Francisco Estuary." Coastal Estuarine and Shelf Science. *In review*.
- Parker, A.E.**, Fuller, J., Dugdale, R.C. 2006 "Estimating dissolved inorganic carbon concentrations from salinity in San Francisco bay for use in ¹⁴C – primary production studies." Interagency Ecological Program for the San Francisco Estuary, **19**(3): 17-22
- Cottrell, M. T., R. R. Malmstrom, Hill, V. **Parker, A.E.** Kirchman, D.L. (2006). "The metabolic balance between autotrophy and heterotrophy in the western Arctic Ocean." Deep Sea Research Part I **53**(11): 1831-1844.
- Parker, A. E.** (2005). "Differential supply of autochthonous organic carbon and nitrogen to the microbial loop of the Delaware Estuary." Estuaries **28**(6): 856-867.
- Sharp, J. H., A. Y. Beaugard, Burdige, D., Cauwet, G., Curless, S. E., Lauck, R., Nagel, K., Ogawa, H., **Parker, A. E.**, Primm, O. (2004). "A direct instrument comparison for measurement of total dissolved nitrogen in seawater." Marine Chemistry **84**(3-4): 181-193.
- Parker, A. E.** (2004). Assessing the phytoplankton-heterotrophic link in the eutrophic Delaware Estuary. PhD thesis Graduate College of Marine Studies. Lewes, University of Delaware. Pps. 272.
- Parker, A.E.**, Yoshiyama, K., Hogue, V.E., Sharp, J.H. "Primary production estimates by the stable isotope ¹³C tracer technique: experimental considerations for work in estuaries." *For submission to Journal of Plankton Research*.

Parker, A.E. “The Contribution of NH_4^+ , NO_3^- , and phytoplankton-released dissolved organic nitrogen to bacterial nitrogen requirements in the Delaware Estuary.” *in prep.*

Parker, A.E., Hogue, V.E., Carpenter, E.J., Marchi, A., Wilkerson, F., Dugdale, R.C. “Phytoplankton carbon and nitrogen assimilation during the spring period in San Francisco Bay, USA.” *in prep.*

PUBLISHED ABSTRACTS AND PRESENTATIONS: (*denotes a student presentation - A.E. Parker - primary research advisor)

Dugdale, R.C., Sharp, J.H., Wilkerson, F., **Parker, A.E.** (2007). “DIN is an inadequate descriptor for evaluating nitrogen based effects on estuarine ecosystems.” Estuarine Research Federation Meeting Providence, RI.

Fuller, J, Wilkerson, F., Hogue, V., **Parker, A.E.**, Dugdale, R.C., Marchi, A. (2007). “Using estuarine phytoplankton to study the physiological effects of elevated pCO_2 on algal growth.” Estuarine Research Federation Meeting Providence, RI.

Marchi, A., Dugdale, R.C., **Parker, A.E.**, Hogue, V., Lew, K., Fuller, J., Wilkerson F (2007). “Influence of San Francisco Estuary Outflow on the Near-shore Gulf of the Farallones Phytoplankton Communities.” Estuarine Research Federation Meeting Providence, RI.

Parker, A.E., Hogue, V.E. Wilkerson, F., Dugdale, R.C. (2007). “Evaluating the Contribution of Bacterioplankton Carbon to the Foodweb of the Northern San Francisco Estuary.” Estuarine Research Federation Meeting Providence, RI.

Wilkerson, F., Hogue V, **Parker AE**, Dugdale RC, Marchi A, Kleckner A, Fuller J (2007). “Anomalously low phytoplankton productivity in northern San Francisco Estuary.” Estuarine Research Federation Meeting Providence, RI.

Parker, A.E., Dugdale, R.C., Wilkerson, F. (2007). “The importance of separate consideration of anthropogenic NH_4 and NO_3 inputs for effective management of estuarine cultural eutrophication.” California Estuarine Society Meeting, Bodega Bay, CA.

Dugdale, R.C., **Parker, A.E.**, Wilkerson, F., Hogue, V.E., Marchi, A. (2007). “Do low phytoplankton growth rates signal the ‘bad’ habitat conditions in Suisun Bay driving the pelagic organism decline?” Interagency Ecological Program Annual Workshop, Monterey, CA.

Parker, A.E., Hogue, V.E., Wilkerson, F., Dugdale, R.C. (2006). “Foodweb support for the threatened delta smelt –evaluating the potential contribution of bacterial carbon for higher trophic levels.” CALFED Science Conference, Sacramento, CA.

*Scott, C., **Parker, A.E.**, Slaughter, A.M. (2006). “Weekly estimates of planktonic respiration rates for central San Francisco Bay and implications for autotrophic-heterotrophic balance.” CALFED Science Conference, Sacramento, CA.

Hogue, V.E. **Parker, A.E.**, Dugdale, R.C., Marchi, A., Wilkerson, F. (2006). "Foodweb support for the threatened delta smelt: the role of excess ammonium in reducing phytoplankton in the San Francisco estuary." CALFED Science Conference, Sacramento, CA.

Parker, A.E., Fuller, J., Dugdale, R.C. (2006). "Estimating dissolved inorganic carbon (DIC) concentrations from salinity in San Francisco bay for use in ^{14}C – primary production studies." Estuarine Ecology Team Meeting, Interagency Ecological Program, Tiburon, CA.

Parker, A.E., Marchi, A., Hogue, V.E., Lew, K., Lorenzi, A.H., Greeley, D., Feely, R., Wilkerson, F., Dugdale, R.C. (2006). "Nutrient utilization and phytoplankton community response during enclosure experiments conducted in the eastern Equatorial Pacific: Testing Fe vs. Si limitation "American Society of Limnology and Oceanography Ocean Science Meeting, Honolulu, HI.

Cottrell, M.T., Malmstrom, R.R., Hill, V., **Parker, A.E.**, Kirchman, D.L. (2006). "The metabolic balance between autotrophy and heterotrophy in the western Arctic Ocean". American Society of Limnology and Oceanography Ocean Science Meeting, Honolulu, HI.

Parker, A.E., Hogue, V.E. Wilkerson, F., Dugdale, R.C. (2005). "Anthropogenic ammonium as a control on estuarine primary production "Estuarine Research Federation Meeting Norfolk, VA.

*Kleckner, A, **Parker, A.E.** Lew, K., Hogue, V.E., Wilkerson, F. (2005). "Temporal and spatial variability of chlorophyll *a* versus particulate carbon and nitrogen relationships in San Francisco Bay: importance for estimating biomass and ecosystem modeling ". Biennial State of the Estuary Conference, Oakland, CA.

Parker, A.E., Hogue, V.E. Wilkerson, F., Dugdale, R.C. (2005). "Investigating the influence of anthropogenic ammonium on estuarine primary production." California Estuarine Society Meeting, Santa Barbara, CA.

Parker, A.E., Curless, S.E., Yoshiyama, K., Sharp, J.H. (2004). "Ammonium suppression of primary production in the Delaware Estuary: evidence from mesocosm experiments." American Society of Limnology and Oceanography Ocean Science Meeting, Honolulu, HI.

Curless, S.E., **Parker, A.E.**, Yoshiyama, K., Sharp, J.H.(2003). "Accurate and precise analysis of primary biological elemental pools to support estuarine mesocosm experiments." American Society of limnology and Oceanography Ocean Science Meeting, Honolulu, HI.

Parker, A.E. (2003). "Direct measurement of carbon and nitrogen cycling within the estuarine microbial loop." American Society of Limnology and Oceanography Aquatic Science Meeting, Salt Lake City, UT.

Parker, A.E. (2003) “C-13 and N-15 isotope tagging experiments to assess the importance of the microbial loop in estuarine systems.” Estuarine Research Federation Meeting, Seattle, WA.

Parker, A.E. (2003). “The Microbial loop within a salt marsh estuary: The St. Jones River, DE.” NOAA National Estuarine Research Reserve Research Coordinators Meeting, Lewes, DE.

Parker, A.E. (2003). “Carbon and nitrogen cycling within the microbial loop.” Graduate College of Marine Studies, Graduate Student Symposium, Lewes, DE.

Sharp, J.H., Bearegard, A.Y., **Parker, A.E.**, Curless, S.E. (2002). “A high temperature combustion instrument comparison for measurement of dissolved organic nitrogen in seawater.” American Society of limnology and Oceanography, Ocean Science Meeting, Honolulu, HI.

Parker, A.E. and Sharp, J.H. (2001). “Differential Carbon and Nitrogen Transfer in the Estuarine Microbial Loop: The Role of Nitrogen Concentration and Quality.” ASLO/AGU Ocean Science Meeting, Albuquerque, NM.

Sharp, J.H. Bearegard, A.Y. and **Parker, A.E.** (2001). “Recent changes in nutrient ratios in estuaries and coastal waters: What is the impact?” Estuarine Research Federation Conference, Miami, FL.

Schwartz, M., **Parker, A.E.**, Bearegard, A.Y., Sharp, J. H. (2000). “Temporal and Spatial Variations in Microbial Biogeochemistry of a coastal plain estuary.” ASLO Aquatic Science Meeting. Copenhagen, Denmark.

Parker, A.E., Bearegard, A.Y., Chandler, E , Schwartz, M., Sharp, J.H. (2000). “Evaluating microbial loop using dual isotope tagging.” AGU/ASLO Ocean Science Meeting, San Antonio, TX.

Bearegard, A.Y., **Parker, A.E.**, Schwartz, M, Sharp, J.H. (2000). “Evaluating estuarine health through nutrient and gas stoichiometry.” AGU/ASLO Ocean Science Meeting, San Antonio, TX.

Parker, A.E. and Lockwood, M. (1998). “Classification of shoreline data for GIS applications.” Coastal Society Meeting. Williamsburg, VA.

PROFESSIONAL SERVICE:

- Reviewer for Coastal, Estuarine and Shelf Science
- Reviewer for Journal of Plankton Research
- Reviewer for Deep Sea Research
- Reviewer for CALFED Science Advisory Board
- Student Representative, Graduate College of Marine Studies Academic Council 2000 - 2004

TEACHING INTERESTS AND EXPERIENCE:

Undergraduate and Graduate Level Teaching

Dominican University of California

BIO 1000 Organismal Biology - Introductory undergraduate course for majors

BIO 1400 Biology Foundations - Introductory undergraduate course for non-majors

BIO 3605 Microbiology Laboratory - Undergraduate laboratory course for majors

Contributed Lectures

San Francisco State University

BIOL 160 Marine Biology

BIOL 502 Biology of the Algae

BIOL 852 Biological Oceanography

University of Delaware

MAST 482 Introduction to Marine Science,

Workshops and Field Trips

- Woodside Priory School, Portola Valley, CA – Guest Oceanographer aboard *S/V Seaward*, San Francisco Bay. 2007
- Estuary Ecology Teacher Workshop, Romberg Tiburon Center – Lecture “*The Health of Urbanized Estuaries: A Reevaluation of the Consequences of Fertilizing our Coastal Waters.*” 2006.
- Partnership for the Delaware Estuary - Lecture “*Historic Changes in Water quality in the Delaware Estuary.*” 2002.
- Governor’s School for Excellence, Wilmington, DE. Summer High School Program Workshop Leader 1999-2000.
- Milton Middle School, Milton, DE – Instructor “*Ecology of Salt Marsh Estuaries.*” 1998, 2003.

Student Mentoring

Mr. Jim Fuller, SFSU, Project Title: “Estimating dissolved inorganic carbon concentrations from salinity in San Francisco bay for use in ^{14}C – primary production studies.”

Ms. Amy Kleckner, SFSU, Project Title: “Temporal and spatial variability of chlorophyll-*a* versus particulate carbon and nitrogen relationships in San Francisco Bay: importance for estimating biomass and ecosystem modeling.”

Ms. Courtney Scott, SFSU, Project Title: “Weekly estimates of planktonic respiration rates for central San Francisco Bay and implications for autotrophic-heterotrophic balance.”

Mr. Charles Buhler, Drake High School, San Anselmo, CA Project Title: “Enumeration of particle-bound and free-living bacteria in the San Francisco Estuary.”

Outreach Activities

- High School Teacher Training in Oceanographic Research Techniques – facilitated and led 1-day trip aboard *RV Fulmar*, 2007.
- Session Chair - National Conference for Undergraduate Research, 2007.
- Science Fair Judge - Marin County, CA, 2006.
- Discovery Day Open House, Romberg Tiburon Center – Organizer and facilitator (for R.C. Dugdale), 2006.
- Judge - Student presentations – Estuarine Research Federation Biennial Conference, 2005.
- Science Fair Judge - Sussex County, DE, High School, 2000, 2001.
- Coach -Ocean Science Bowl - Smyrna High School, Delaware, 2001.
- Judge - National Ocean Science Bowl, Baltimore, MD, 2000.
- Coast Day Celebration, University of Delaware - Organizer and Facilitator (for J. H. Sharp), 1998-2003.

Additional Teaching Experience

Delaware National Estuarine Research Reserve, NOAA, Dover, DE. 1999 – 2004
Reserve Educator for Delaware students grades K - 6.

Sail Caribbean, Tortola, British West Indies 1997 - 1999
Sailing/ Science Instructor – Program leader at 3 week adventure sailing/coral reef ecology Program./Leadership Training Instructor grades 7 - 12.

The Crestwell School, Ft. Myers, FL. 1996 - 1997
Middle school mathematics and geography grades 5 - 8

Newfound Harbor Marine Institute, Big Pine Key, FL 1995- 1996
Instructor –Coral reef ecology at residential summer camp / academic enrichment program grades 4 -12.

PROFESSIONAL MEMBERSHIPS:

American Society of Limnology and Oceanography, Estuarine Research Federation,
California Estuarine Research Society