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Assistant Research Professor
University of Maine
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EDUCATION

University of Delaware, Graduate College of Marine Studies, Lewes, DE (2008)
Ph.D. in Marine Biology-Biochemistry
Graduate Advisor: Timothy E. Targett, Ph.D.

Roger Williams University, Bristol, RI (May 2000)
Bachelor of Science with honors (Magna cum laude) - Marine Biology
Minor - Chemistry

Sea Education Association (SEA), Woods Hole, MA (Fall 1998)

RESEARCH EXPERIENCE

Adjunct Faculty in the Department of Civil and Environmental Engineering, University of Delaware (2010 – present)

Post-doctoral Researcher, Department of Civil and Environmental Engineering, University of Delaware (2007-2010).

Current Projects: FY 2010-2012: Can TMDL Models Reproduce the Nutrient Loading-Hypoxia Relationship?

FY 2009-2011: Collaborative Research: Process Based Statistical Interpolation Methods for Improved Analysis of WATERS Test-bed Observations and Water Quality Models

FY 2008-2011: NASA EPSCoR Research Project: Building and Enhancing a Competitive and Sustainable Remote Sensing Infrastructure for Critical Zone Studies and Cutting Edge Research.

FY 2007 – 2012: Modeling hypoxia and ecological responses to climate and nutrients

FY 2007 – 2009: Development of a prototype system for multidisciplinary shared cyberinfrastructure – Chesapeake Bay Environmental Observatory (CBEO)

FY 2006 – 2008: Linking water quality models with individual-based models to investigate impacts of diel-cycling hypoxia on nursery habitat quality for estuarine dependent fishes

Research Assistant, University of Delaware, Lewes, DE (2001-2008)

PH.D. Dissertation: Behavior of juvenile estuary-dependent fish in relation to the spatial and temporal dynamics of diel-cycling hypoxia in an estuarine tributary

Undergraduate Senior Honors Program, Roger Williams University, Bristol, RI (2000)

Honors Thesis title: The effect of temperature and salinity on the optimum growth rate of *Tautoga onitis*

FUNDING HISTORY (co-investigator or co-author)

Can TMDL Models Reproduce the Nutrient Loading-Hypoxia Relationship? Investigators:

Dominic M. Di Toro (University of Delaware (UD)), **Damian C. Brady** (UD), William P. Ball (Johns Hopkins University (JHU)), and Rebecca Murphy (JHU).

Funding Agency: Water Environment Research Federation (WERF). Project Period: 2010-2011 funded at \$175,000.

NASA EPSCoR Research Project: Building and Enhancing a Competitive and Sustainable Remote Sensing Infrastructure for Critical Zone Studies and Cutting Edge Research.

Investigators: Dermott Mullan, Xiao-Hai Yan, Donald Sparks, Dominic Di Toro, Vic Klemas, Young-Heon Jo, and **Damian C. Brady** (UD). Funding Agency: NASA EPSCoR. Project Period: 2008 – 2011 funded at \$749,769 and matched at \$750,124.

Collaborative research: Process Based Statistical Interpolation Methods for Improved Analysis of WATERS Test-bed Observations and Water Quality Models. Principal Investigators: William P. Ball and Frank Curriero (JHU) and Dominic Di Toro and **Damian C. Brady** (UD). Funding Agency: National Science Foundation – Environmental Engineering. Project Period 2009 – 2012 funded for \$252,193

CHRP07: Modeling Hypoxia and ecological responses to Climate and Nutrients. Lead Investigator: W. Michael Kemp (University of Maryland Center for Environmental Studies – Horn Point Laboratory (UMCES-HPL)) and Co-PIs: Ming Li and Elizabeth North (UMCES-HPL), Walter Boynton and David Secor (University of Maryland Center for Environmental Studies –Chesapeake Bay Laboratory (UMCES-CBL)), Dominic M. Di Toro and **Damian C. Brady** (UD), and Katja Fennel (Dalhousie University). NOAA's Coastal Hypoxia Research Program. Project Period 2007 – 2012 funded for \$2,321,845

A Prototype System for Multi-Disciplinary Shared Cyberinfrastructure – Chesapeake Bay Environmental Observatory (CBEO). Principal Investigators: Thomas Gross (Chesapeake Research Consortium (CRC)), William P. Ball (JHU), Dominic M. Di Toro (UD), William M. Kemp (UMCES-HPL), Michael Piasecki (Drexel University), and Randal Burns (JHU), to the National Science Foundation in Cyberinfrastructure. Project Period: 2007-2010 funded for \$2,149,906

Integrated Water Quality Monitoring, Habitat Mapping, and Fish Tracking with an Automated Underwater Vehicle. A proposal funded by the Delaware EPSCoR Seed Grant Program. Principal Investigators: Arthur Trembanis, Dominic Di Toro and Timothy E. Targett (UD). Project Period 2006 for \$48,000.

Linking Water Quality Models with Individual-based Models to Investigate Impacts of Diel-cycling Hypoxia on Nursery Habitat Quality for Estuarine Dependent Fishes. NOAA Coastal Hypoxia Research Program. Principal Investigators: Timothy E. Targett, Dominic M. Di Toro (UD), and Robert J. Diaz (College of William and Mary). Project Period: 2005-2008

Impact of Hypoxia on Quality and Quantity of Estuarine Nursery Habitat: Patterns of in situ Growth and Swimming Avoidance Activity & Costs in Estuarine-Dependent Fishes. Delaware Sea Grant Program, NOAA, US Department of Commerce, under grant No. NA03OAR4170011 (project R/F 23) to T.E. Targett. Project Period: Feb. 1, 2003 – Jan. 31, 2005

Hypoxia and Estuarine Nursery Habitat Quality: An Experimental and Modeling Approach Linking Low Dissolved Oxygen with Fish Survival and Growth
Delaware Sea Grant, NOAA, US Department of Commerce, Project: R/F-21.
Principal Investigators: Timothy E. Targett, James A. Rice, and Kenneth A. Rose
University of Delaware College of Marine & Earth Studies, Lewes Campus (Targett), North Carolina State University (Rice), Louisiana State University (Rose), Project Period: Feb. 1, 2001 – Jan. 31, 2004

TEACHING & EDUCATION EXPERIENCE

2011: Instructor at the University of Maine: MATLAB for Marine Scientists

2010-present: Adjunct Professor at Husson University, Bangor, ME teaching the laboratory sections of General Biology II and Principles of Chemistry I

2005-2009: Guest Lecturer at the University of Delaware in Advanced Water Quality Modeling & Fish Topics

2005: Guest Lecturer at Delaware State University in Marine Biology: “The Functional Role of Estuaries: Can We Break Them?”

2000: Wildlife Educator, Wildlife Conservation Society, Bronx Zoo,
Taught wildlife science to K-12th grade.

2000: Education Consultant, Metis Associates, New York, New York,
Data analysis particularly concerning program development and evaluation

Summer 1996 & 1997: Marine Mammal Demonstration Narrator and Assistant Trainer,
Wildlife Conservation Society New York Aquarium for Wildlife Conservation,

Narrated marine mammal demonstrations (three shows daily for 1400 people) and assisted in care, training and behavioral observations for California sea lions, Atlantic bottle-nosed dolphins, and beluga whales

PUBLICATIONS

Brady, D.C., Di Toro, D.M., Xu, L., & Kirby, J.T. (*in prep*) Photosynthesis-respiration model of diel-cycling hypoxia in an estuarine tidal tributary in the Delaware Coastal Bays. *Ecological Modeling*

Brady, D.C. & Targett, T.E. (*submitted*) Movement of juvenile weakfish (*Cynoscion regalis*) and spot (*Leiostomus xanthurus*) in relation to diel-cycling hypoxia in an estuarine tributary: Assessment using acoustic telemetry. *Marine Ecology Progress Series*

Brady, D.C., Targett, T.E. (2010) Characterizing the escape response of air-saturation and hypoxia-acclimated juvenile summer flounder (*Paralichthys dentatus*) to diel-cycling hypoxia. *Journal of Fish Biology*, **77**(1): 137-152.

Breitburg, D.L., Craig, J.K., Fulford, R.S., Rose, K.A., Boynton, W.R., **Brady, D.C.**, Ciotti, B.J., Diaz, R.J., Friedland, K.D., Hagy, J.D. III, Hart, D.R., Hines, A.H., Houde, E.D., Kolesar, S.E., Nixon, S.W., Rice, J.A., Secor, D.H., Targett, T.E. (2009) Nutrient enrichment and fisheries exploitation: interactive effects on estuarine living resources and their management. *Hydrobiologia*, **629**(1): 31-47.

Tyler, R.M., **Brady, D.C.**, Targett, T.E. (2009) Temporal and spatial dynamics of diel-cycling dissolved oxygen in estuarine tributaries. *Estuaries and Coasts*. **32**(1): 123-145.

Brady, D.C., Tuzzolino, D.M., Targett, T.E. (2009) Behavioral responses of juvenile weakfish, *Cynoscion regalis*, to diel-cycling hypoxia: swimming speed, angular correlation, expected displacement and effects of hypoxia acclimation. *Canadian Journal of Fisheries and Aquatic Sciences*. **66**(3): 415-424.

Fennel, K., **Brady, D.C.**, Di Toro, D.M., Fulweiler, R., Gardner, W.S., Giblin, A., McCarthy, M.J., Rao, A., Seitzinger, S., Thouvenot-Korppoo, Tobias, C. (2009) Modeling denitrification in aquatic sediments. *Biogeochemistry*. **93**(1-2): 159-178.

CBEQ Project Team: Ball, W.P., **Brady, D.C.**, Brooks, M.T., Burns, R., Cuker, B.E., Di Toro, D.M., Gross, T.F., Kemp, W.M., Murray, L., Murphy, R.R., Perlman, E., Piasecki, M., Testa, J.M., Zaslavsky, I. (2008) Prototype system for multi-disciplinary shared cyberinfrastructure: Chesapeake Bay Environmental Observatory (CBEQ). *Journal of Hydrologic Engineering, ASCE*. **13**(10): 960-970.

CONTRIBUTED AND INVITED RESEARCH PRESENTATIONS

Ball, W.P., Bosch, J.A., Brady, D.C., Di Toro, D.M., Kemp, W.M., Murphy, R.R., & Testa, J.M. Association of Environmental Engineering and Science Professors, Tampa Bay, FL, July 2011

Contributed Paper: Hypoxia in Chesapeake Bay: Mining decades of data for new insights

Brady, D.C., Testa, J., Di Toro, D.M., & Kemp, W.M. Chesapeake Bay Modeling Symposium, Annapolis, MD, May 2010

Invited Paper: Sediment-Water Oxygen and Nutrient Exchanges in Chesapeake Bay: Insights from Model-Data Comparisons

CBEO Project Team: Ball, W.P., Burns, R., Cuker, B.E., Di Toro, D.M., Kemp, W.M., Murray, L., Piasecki, M., Zaslavsky, I., Aguayo, M., Bosch, J., Brady, D.C., Murphy, R.R., Perlman, E., Rodriguez, M., Testa, J.M., & Whitenack, T. American Geophysical Union, San Francisco, CA, December 2009

Contributed Paper: The Design and Application of a Chesapeake Bay Environmental Observatory

Brady, D.C. & Targett, T.E. Coastal and Estuarine Research Federation, Portland, OR, November 2009

Contributed Paper: Movement of juvenile weakfish (*Cynoscion regalis*) and spot (*Leiostomus xanthurus*) in relation to diel-cycling hypoxia in an estuarine tributary: Assessment using acoustic telemetry

Brady, D.C., Di Toro, D.M., Kirby, J.T., Xu, L., & Targett, T.E. Estuarine Research Federation Conference, Providence, RI, November 2007

Contributed Paper: Water quality modeling of diel-cycling hypoxia in Delaware's Coastal Bays

Brady, D.C., Tuzzolino, D.M., & Targett, T.E. 31st Annual Larval Fish Conference, St. John's, Newfoundland, Canada, July 2007

Contributed Paper: Laboratory and field evaluation of juvenile weakfish (*Cynoscion regalis*) behavioral responses to diel-cycling hypoxia in estuarine tributaries.

Targett, T.E., Brady, D.C., & Stierhoff, K.L. Ecological Impacts on Living Resources Workshop, Stennis Space Center, Bay St. Louis, MS. March 2007

Contributed paper: Diel-cycling hypoxia in shallow estuarine waters: Impacts on fish growth and movements.

Brady, D.C. & Di Toro, D.M. Denitrification Modeling Across Terrestrial, Freshwater, and Marine Systems. The Institute of Ecosystems Studies, Millbrook, NY. November 2006.

Invited Presentation: "Sediment Flux Modeling: Special Emphasis on Denitrification"

Brady, D.C., Tuzzolino, D.M., & Targett, T.E. Tidal Finfish Advisory Council, Delaware Department of Natural Resources & Environmental Control. Dover, DE. November 2006.

Invited Presentation. “Examining the resource value of benthic habitats affected by low dissolved oxygen to weakfish and summer flounder”

Brady, D.C., Tyler, R.M., & Targett, T.E. 7th Annual Shallow Water Science and Management Conference, Atlantic City, NJ. September 2006.

Contributed Paper: “Spatial and Temporal Variability in Diel-Cycling Hypoxia: Causes and Consequences”

Brady, D.C. Delaware’s Center for the Inland Bays Science and Technical Advisory Committee, Lewes, DE. January 2006.

Invited Presentation: “A How To Guide For Estuary-Dependent Fish Avoiding Hypoxia in Delaware’s Inland Bays”

Brady, D.C., Tuzzolino, D.M., & Targett, T.E. Estuarine Research Federation Conference. Norfolk, VA. October 2005.

Contributed Paper. “Hypoxia-induced searching strategies of juvenile weakfish: How do interacting kineses facilitate hypoxia avoidance and survival?”

Brady, D.C. American Fisheries Society 135th Annual Meeting. Anchorage, AK. September 2005

Contributed Paper: “Integrating fish behavior and water quality models: Hypoxia-induced searching strategies of juvenile weakfish”

Brady, D.C. Mid-Atlantic Chapter-American Fisheries Society Annual Meeting, Rider University, NJ. 2005.

Invited Presentation. “Searching for oxygen: Deriving a mechanistic understanding of weakfish behavior during hypoxia”

Brady, D.C. & Targett, T.E. Flatfish Biology Conference. Westbrook, CT. December 2004.

Contributed Paper. “Behavioral responses of summer flounder and weakfish to declining dissolved oxygen: interspecific and intraspecific comparisons”

Brady, D.C. University of Delaware College of Marine Studies Graduate Student Symposium. Lewes, DE. November 2004.

Invited Presentation. “Behavioral responses of fishes to declining dissolved oxygen: avoidance and acclimation”

Brady, D.C., & Targett, T.E. VI International Congress on the Biology of Fish. Manaus, Brazil. August 2004.

Contributed Paper. “Behavioral responses of juvenile estuarine-dependant fishes to declining dissolved oxygen: avoidance, recovery, and acclimation”

Brady, D.C. & Targett, T.E. Tidal Finfish Advisory Council, Delaware Department of Natural Resources & Environmental Control. Dover, DE. June 2004.

Invited Presentation. “Moving targets: linking water quality to juvenile weakfish and summer flounder”

Brady, D.C. & Stierhoff, K.L. UD College of Marine Studies Ocean Current Lecture Series. Lewes, DE. 2002.
Invited Presentation. “The stresses on fish and graduate students in and around Delaware Bay”

FELLOWSHIPS AND DISTINCTIONS

Frances Severance Award for Best Thesis or Dissertation in the College of Marine and Earth Studies Marine Biosciences Program, Lewes, 2008

Center for the Inland Bays Award, Center for the Inland Bays, Rehoboth, DE, 2008

Best Student Oral Presentation at the Mid-Atlantic Chapter of the American Fisheries Society, Rider University, Lawrenceville, NJ. 2005.

Best Student Oral Presentation in the “Fish Locomotion” Symposium. VI International Congress on the Biology of Fish, Manaus, Brazil. August 2004.

Marian R. Okie Fellow. University of Delaware Graduate College of Marine Studies. 2004 – 2005

Marine Biology/Biochemistry Program Fellow. University of Delaware Graduate College of Marine Studies. 2001-2002.

UNIVERSITY SERVICE, VOLUNTEER OUTREACH, AND EDUCATION

Developing the University of Maine’s School of Marine Sciences Graduate level course in Marine Biology

Reviewed manuscripts for Estuaries and Coasts, Marine Ecology Progress Series, Journal of Marine Systems, Fisheries Oceanography, Journal of Environmental Management, African Journal of Biotechnology

Served on the Peer Advisory Panel for the National Oceanic and Atmospheric Association (NOAA) Coastal Hypoxia Research Program. February 2010.

Served on the University of Delaware’s College of Earth Ocean, and Environment Search Committee for an Academic Coordinator

Student Representative for the University of Delaware Graduate College of Marine Studies Academic Council, 2005-2007.

University of Delaware College of Marine Studies Lunch Lecture Series for Research Experience for Undergraduate (REU) interns, “Applying to Graduate School in the Marine Sciences” (Summers 2003-2006).

Marine Biology Educator, Partnership for the Delaware Estuary, Wilmington, DE (2004)

Marine Biology Educator, Mariner Middle School, Milford, DE (2002-2003)

Marine Biology Educator, H.B. DuPont Middle School, Hockessin, DE (2002-2003 & 2006)

Marine Biology Educator, Governor's School for Excellence, Lewes, DE (2001-2004)

Judge, Sussex County Science Fair (2002)

University of Delaware College of Marine Studies Ocean Currents Lecture Series Lecturer (2002).

GRADUATE COURSES

Marine Biology (A-); Marine Biochemistry (A); Coastal Field Biology (A); Statistics in the Marine Sciences (A); Ecology and Evolution of Coral Reefs (A); Genetics of Marine Organisms (A); Marine Inorganic Chemistry (A); Writing Papers in the Marine Sciences (A-); Ichthyology: Systematics, Physiology, & Ecology (A); Introductory PERL for Biologists (A); Advanced Water Quality Modeling (A-); Physiology of Marine Organisms (A); ; Topics in Fish Biology (7 semesters, A's); Benthic Boundary Layer Seminar (A); Marine Biology-Biochemistry Seminar (2 semesters, A), Eutrophication and Sediment Flux Modeling (A-), Principles of Water Quality Criteria (audited)

GPA: 3.93

UNDERGRADUATE COURSES

Biology I & II; Principles of Chemistry I & II; Calculus I & II; Expository Writing; Critical Writing for Science Majors; Marine Zoology; Organic Chemistry I & II; Probability and Statistics; Physics I & II; Introduction to Speech Communication; Scientific Communication; Principles of Oceanography; Practical Oceanographic Research; Nautical Science; Marine Technology; Maritime Studies; Ichthyology; Animal Behavior; Environmental Analysis II; Botany; Evolution; Freshwater/Estuarine Ecology; Herpetology; Marine Phycology; Biochemistry; Ornithology; Instrumental Methods of Analysis; Advanced Chemistry Lab

GPA: 3.71

PROFESSIONAL AFFILIATIONS

American Fisheries Society

Mid-Atlantic Chapter Member

Mid-Atlantic Chapter Student Representative 2004

Estuaries and Early Life History Sections Member

The Coastal & Estuarine Research Federation

SKILLS AND CERTIFICATION

Programming: ArcGIS Editor, FORTRAN, MATLAB®, SQL Server, and VBA

Statistical Packages: SAS, SPSS, Systat, and DTREG

Ecosystem Modeling Experience:

Water Quality Modeling:

Row Column AESOP (RCA)

Chesapeake Bay Eutrophication Model (CE-Qual-ICM)

Hydrodynamic Modeling:

Estuarine Coastal Ocean Model with Sediment module (ECOMSED)

Regional Ocean Modeling System (ROMS)

Larval Transport Lagrangian Model (LTRANS)

Watershed Modeling

Hydrologic Simulation Program – FORTRAN (HSPF)

NAUI Open Water Dive (1999)

USCG Small Boat Operators Certification (2001)

REFERENCES

Dr. Timothy E. Targett, Professor of Marine Biosciences, University of Delaware-College of Earth, Ocean, and Environment

Email: ttargett@udel.edu

Phone: (302) 645-4396

Dr. Dominic M. Di Toro, Professor, University of Delaware-Department of Civil & Environmental Engineering

Email: dditoro@ce.udel.edu

Phone: (302) 831-4092

Dr. Kevin Craig, Professor, Florida State University-Coastal and Marine Laboratory

Email: kevin.craig@bio.fsu.edu

Phone: (850) 697-8550

Dr. Kenneth Rose, Professor, Louisiana State University-Department of Oceanography and Coastal Sciences

Email: karose@lsu.edu

Phone: (225) 578-6346

Dr. W. Mike Kemp, Professor, University of Maryland Center for Environmental Science, Horn Point Laboratory

Email: kemp@hpl.umces.edu

Phone: (410) 221-8436