

## CURRICULUM VITAE

**Michael J. Durako**

### **Personal**

Born: December 30, 1952; Philadelphia, Pennsylvania  
Status: Married, Two Children  
Address: The University of North Carolina at Wilmington  
Department of Biology and Marine Biology  
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### **Education**

Ph.D. Marine Science, 1991 University of South Florida, St. Petersburg, FL 33701  
M.A. Botany, 1978 University of South Florida, Tampa, FL 33620  
B.S. Biology, 1975 Florida Atlantic University, Boca Raton, FL 33432

### **Research Focus**

Ecology, demography, physiology, and reproductive biology of subtropical and tropical marine macrophytes; bio-optical characteristics of coastal waters; photosynthesis in marine systems; restoration ecology; scale effects on ecoindicator variability, marine pollution.

### **Professional Experience**

Current Position: Professor (since 8/04), Department of Biology and Marine Biology, UNCW  
8/97- 5/04: Associate Professor, Department of Biology, tenured 8/00  
5/95- 8/97: Senior Research Scientist, Florida Marine Research Institute - Supervisor of Habitat Assessment and Restoration Research Group within Resource Health and Assessment Section. Supervised 5-Full Time Research Scientists (3 Ph.D.'s) and 8-Temporary (OPS) Research Staff employees.  
2/91-5/95- Research Scientist, Florida Marine Research Institute - Botany and Technical Sciences Section.  
1/89-2/91 - Biological Scientist IV, Bureau of Marine Research - Botany and Technical Sciences Section.  
11/84- 1/89 - Biological Scientist III, Bureau of Marine Research - Botany and Technical Sciences Section.  
8/82-11/84 - Senior Biologist, Bureau of Marine Research - Botany Section.  
9/79-8/82 - Biologist, Bureau of Marine Research - Botany Section.  
1/79-9/79 - Marine Biologist I, Bureau of Marine Research - Botany Section.

Appointed to NOAA-funded Recovery Plan for the recently listed species *Halophila johnsonii*, the only marine plant ever to be listed under the Endangered Species Act. 1999-present  
Ecosystems Team Member, USACE Florida Keys Carrying Capacity Study. 1999-2002  
Team Leader - Florida Bay Program Management Committee, Seagrass Research Team 1998-present.

Moderator - Special session on light requirements of tropical seagrasses, National Turbidity-Seagrass Workshop. 1990.

Member - Florida Dept. Environmental Regulation Seagrass Task Force, 1986/87.

Editor - Proceedings of the Symposium on Subtropical-Tropical Seagrasses of the Southeastern United States, 1986/87.

Reviewer - Granting Agencies

National Science Foundation, Australian Research Council, National Undersea Research Center – UNCW, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Florida Sea Grant, New Hampshire Sea Grant, Florida Game and Freshwater Fish Commission

Reviewer - Journals

Bulletin of Marine Science, Massachusetts Institute of Technology Sea Grant, Marine Ecology - Progress Series - member of Review Staff 2001-present, Marine Biology, Estuaries, American Journal of Botany, Proceedings of the Gulf and Caribbean Fishery Institute, Journal of Coastal Research, Canadian Journal of Botany, Journal of Experimental Marine Biology and Ecology, Caribbean Journal of Science, Coral Reefs, Marine and Freshwater Research, Limnology and Oceanography

Research Team Leader for Young Adult Conservation Corps' Coastal Revegetation Projects, 8/78-12/78.

Graduate Teaching Assistant: 1/77-6/78.

### **Academic Experience**

Visiting Senior Research Fellow - University of Technology, Sydney 1/03-4/04

Courtesy Professor - University of South Florida, Department of Marine Science and University of South Florida, Department of Biology. Credentialed 4/93, Affiliate membership to Graduate Faculty 12/94, appointed to Courtesy Assistant Professor 8/96.

Adjunct Faculty - Eckerd College, Department of Marine Science, 1/96.

*Thesis Advisor:*

#### Undergraduate Honors

Eckerd College - Craig Rose F91/S92

UNCW - Andrea Wimmers, F97/S98; Amy Dixon, F98/S99; Darin Crew, F98/S99; Steven van Sluyter S02/F02

#### Graduate- Master's

UNCW - Lesley Murphy, 2000; Jill Paxson, 2002; John Hackney, 2003; James Henne, 2001; Ron Dean, 2002; Paula Whitfield, 2002; Jennifer Kunzelman, 2003; Amanda Kahn 2004; Robert York, 2005; J. Brooke Landry, 2005; Elizabeth F. Belshe, 2005; Kathryn Chartrand, 2008.

Graduate- Ph.D.  
Amanda Kahn, S06

*Thesis Committee Member:*

Undergraduate Honors

UNCW - Juliet Christian, F98/S99; Laura Stalnaker, S98/F99; Ingrid Fricks S01/F01; Nikki Volmer F01/S02, Carrie Hett F06/S07

Graduate- Master's

USF - Mary Beth Neeley 1996, Craig Rose, Donna Berns 2003  
UNCW -Sebastian Engel, 2000; Barbara Wilson, 2000; Thomas McGinnis, 2002; Erin Zook, 2007; Lee Richbourg, F06

Graduate - Ph.D.

USF - Eva Maria Wysk Koch

Post-doctoral Research Fellows supervised

Dr. Piotr Kowalczyk - 2001-2003

Dr. Marnie L. Campbell - 2003-2004

Dr. Wendy L. Woods - 2003-2005

### **Courses Taught**

1985-1996 - University of South Florida, Department of Marine Science. Course: Biological Oceanography and Introduction to Oceanography. Lecture: Marine macrophytes, Algae, Seagrasses.

Marine and Freshwater Botany, Lecture and Lab. MSN/BIN188 Eckerd College. S96.

Marine and Freshwater Botany, Lecture and Lab. BIO485/585 The University of North Carolina at Wilmington. F97, S99.

Marine Botany, Lecture and Lab. BIO312 The University of North Carolina at Wilmington. S00, S01, S02, S03, S05, S06, S07.

Plant Physiology, Lecture and Lab. BIO340 The University of North Carolina at Wilmington. F99, F01, F03, F05, F06.

Ecology, Lab. BIO366 The University of North Carolina at Wilmington. F97

Introduction to Botany, Lab. BIO205 The University of North Carolina at Wilmington. S98, F98, S99, F99, S00, F00, S01.

Photosynthesis and Light in Aquatic Systems, seminar. BIO495 The University of North Carolina at Wilmington. S98, S03.

Aquatic and Wetland Plant Taxonomy. BIO575 The University of North Carolina at Wilmington. F98, F00, F02, F04.

Seagrass Population Dynamics, seminar. BIO495 The University of North Carolina at Wilmington. S99.

Oceanography Core. BIO602 Lecture: Seagrasses. The University of North Carolina at Wilmington. S03.

Critique of Scientific Literature BIO596. The University of North Carolina at Wilmington. S07.

### Professional Societies

Sigma Xi (full member)

Estuarine Research Federation

American Society of Limnology and Oceanography

Southeastern Estuarine Research Society

### Extramural Funding (48 Awards totaling >\$7,00,000; 28@UNCW: >\$5,000,000)

2007-2008

Tissue Localization of Flavonoid Compounds in *Halophila johnsonii*: Depth and salinity effects. National Marine Fisheries Service, NOAA, Endangered Species Office, \$21,883.

2005-2008

Florida Fish & Wildlife Conservation Commission. Measuring photosynthetic characteristics of Turtlegrass for the South Florida Fish Habitat Assessment Program. (\$200,000)

2005-2007

Experimental investigation of hurricane-related changes in water quality on the photobiology of *Halophila johnsonii*. National Marine Fisheries Service. (\$29,709)

2005-2007

Effects of hurricanes on the distribution of *Halophila johnsonii*. National Marine Fisheries Service. (\$89,855)

2005-06

NOAA/UNCW. Coastal Ocean Research and Monitoring Program. (\$2,770,694)

2004-2005

Florida Fish & Wildlife Conservation Commission. South Florida Fish Habitat Assessment Program. (\$106,000)

2004-05

NOAA/UNCW CORMP. Optical characterization of the waters of Onslow Bay, the Cape Fear River plume and coastal southeastern Carolina. (\$87,667)

2003-04

Effects of irradiance levels and hydrodynamics on seagrass photophysiology and photochemistry. Charles L. Cahill Award for Faculty Research and Development. (\$2,350)

2002-05

South Florida Water Management District/FAU. High salinity, nutrient and multiple stressor effects on seagrass communities of NE Florida Bay: Salinity effects on seagrass seedling development. (\$148,863)

2002-03

NOAA/NMFS. Detecting evidence for sexual reproduction and genetic diversity in flowering populations of *Halophila johnsonii*. (\$24,000)

2002-03

US Geological Survey: Fisheries Habitat Assessment Program - Florida Bay, (\$127,825)

2002-03

NOAA/UNCW CORMP. Optical characterization of the waters of Onslow Bay, the Cape Fear River plume and coastal southeastern Carolina. (\$87,667)

2001-02

- NOAA/NMFS. Detailed survey and assessment of the baseline distribution of *Halophila johnsonii* at its southern distributional limit. (\$50,000)
- 2001-02 NOAA/UNCW CORMP. Optical characterization of the waters of Onslow Bay, the Cape Fear River plume and coastal southeastern Carolina. (\$100,187/\$925,000 total CORMP)
- 2001 USACOE/SeaGrant: Creation of a smooth cordgrass tidal marsh using seedlings optimized for transplantation survival. (\$3900)
- 2000-02 US Geological Survey: Fisheries Habitat Assessment Program - Florida Bay, (\$121,843)
- 2000-01 NOAA/NOS. Reproductive biology, population dynamics, dispersal, and genetic diversity of the endangered seagrass, *Halophila johnsonii*. (\$38,106)
- 2000 NOAA/UNCW Marine Monitoring Program. Optical Characterization of the Waters of Onslow Bay and the Cape Fear River Plume (\$43,882)
- 2000 UNCW/CMS: Identifying Optimal Propagation Conditions for Greenhouse-Grown *Spartina alterniflora* seedlings (\$25,349)
- 2000 Florida International University: The Statistical Relationship between Benthic Habitats and Water Quality in Florida Bay: An Ecologically Relevant Performance Measure for Responding to the USACOE Restudy (\$9,015)
- 1999-00 US Geological Survey: Fisheries Habitat Assessment Program - Florida Bay, (\$118,721)
- 1999 North Carolina Sea Grant - ASB Coastal Ecology Symposium (\$3,730)
- 1998-99 Florida Keys National Marine Sanctuary: Water Quality Monitoring Program -Seagrass Monitoring (\$45,616)
- 1998-99 US Geological Survey: Fisheries Habitat Assessment Program - Florida Bay, (\$203,432)
- 1998 UNCW/CMSR: Compilation and Analyses of Reconstructive Aging Data from Florida Bay FHAP Samples to Assess Basin-specific and Bay-wide Changes in *Thalassia testudinum* Short-shoot Demography (\$4,500)
- 1998-99 Florida Department of Environmental Protection/ US EPA: Multiscale Assessment of the Morphometrics and Demography of *Thalassia testudinum* (Turtle grass): A New Approach to Ecosystem Assessment (\$61,663)
- 1998 University of Florida/ SFWMD: Laboratory microcosm experiments and analysis to test the effect of salinity fluctuation on the physiological health growth and biochemistry of submersed estuarine plants common to northern Florida Bay (\$27,400)

- 1997-1998  
Florida Keys National Marine Sanctuary: Water Quality Monitoring Program - Seagrass Monitoring (\$45,000)
- 1996-1999  
Environmental Protection Agency: Multiscale Assessment of the Population Status of Thalassia testudinum: A New Approach to Ecosystem Assessment (\$870,033)
- 1996  
Florida Keys National Marine Sanctuary: Water Quality Monitoring Program - Seagrass Monitoring (\$48,000)
- 1995-98  
South Florida Water Management District: Responses of Submersed Macrophytes to Fresh Water Inflow to Florida Bay (\$55,000)
- 1995  
Florida Keys National Marine Sanctuary: Water Quality Monitoring Program - Seagrass Monitoring (\$48,000)
- 1995  
Florida Department of Environmental Protection, Fisheries-Habitat Assessment Program- Florida Bay (\$100,000)
- 1994-96  
Environmental Protection Agency - EMAP, Evaluation of Ecological Indicators of Estuarine Trophic State (\$440,000)
- 1994  
Florida Department of Environmental Protection, Fisheries-Habitat Assessment Program- Florida Bay (\$130,000)
- 1994  
Florida Keys National Marine Sanctuary: Water Quality Monitoring Program -Seagrass Monitoring (\$30,000)
- 1994  
Florida Department of Environmental Protection, Pollution Recovery Trust Fund: Biological Resource Assessment of Florida Bay, Study 2 Macrophytes and Mangroves (\$30,000)
- 1993  
National Oceanic and Atmospheric Administration, Coastal Ocean Program: Development of In vitro propagation technologies for marine seagrasses for use in habitat restoration and genetic characterization of seagrass populations (\$85,000)
- 1993  
Sarasota Bay National Estuary Program: New Approaches to Seagrass Restoration. CE994428-93-0 (\$22,000)
- 1993  
Environmental Protection Agency, Gulf of Mexico Program: A bioassay approach to seagrass restoration (\$54,400)
- 1992  
National Oceanic and Atmospheric Administration: Mt. Mitchell/ROPME 100 Day cruise

- for the assessment of the ecological effects of the Persian Gulf War. Leg II- Nearshore biogeochemical processes and community ecology (\$4,500)
- 1991  
Everglades National Park: Photosynthetic capacity as a correlate of *Thalassia testudinum* die-back in Florida Bay, CA5280-1-9008 (\$8,561)
- 1990-1993  
National Oceanic and Atmospheric Administration, Coastal Ocean Program: Acceleration and evaluating development of restored and created seagrass ecosystems (\$64,579)
- 1990  
Office of Coastal Zone Management: Investigations on the causes, extent, and characteristics of a seagrass die-back in Everglades National Park/Florida Bay, CM-283 (\$49,786)
- 1989  
Office of Coastal Zone Management: Investigations on the causes, extent, and characteristics of a seagrass die-back in Everglades National Park/Florida Bay, CM-257 (\$96,127)
- 1989  
United States Fish and Wildlife Service -Florida marine animal health and contamination assessment - Study III. Studies on seagrass die-back in Florida Bay (\$59,080)
- 1989  
Everglades National Park: Evaluation of seagrass die-off in Florida Bay (\$18,660)
- 1988-1990  
Office of Coastal Zone Management: Habitat dependency and fishery resources - Carbon uptake in *Thalassia* sub-task (\$12,000)

**Papers in press, submitted or in preparation (Student authors in bold)**

- Durako, M. J., **Chartrand, K. M.** Submitted. Changes in spectral reflectance in response to salinity variation in *Siderastrea radians* from Florida Bay, Florida USA. Proceedings of the 11<sup>th</sup> International Coral Reef Symposium, Ft. Lauderdale, Florida.
- Durako, M. J., **Kowalczuk, P.**, Mallin, M. A., Cooper, W. J., Souza, J. J., Wells, D. H., Submitted. Spatial and temporal variations in photosynthetically-significant optical properties and water quality in a coastal blackwater river plume. Estuarine Coastal and Shelf Science.
- Kahn, A. E.**<sup>3</sup>, Durako, M. J., Submitted. Photosynthetic tolerances to desiccation of the co-occurring seagrasses *Halophila johnsonii* and *Halophila decipiens*. Aquatic Botany.
- Meng, Y., **Krzysiak, A. J.**, Durako, M. J., **Kunzelman, J. I.**, Wright, J. L. C. In Review. Flavones and flavone glycoosides from sea grass *Halophila johnsonii*. Phytochemistry.
- Kowalczuk, P., Durako, M. J., **Young, H.**<sup>2</sup>, **Kahn, A. E.**<sup>3</sup>, Cooper, W. J., Gonsior, M. Submitted. Application of PARAFAC analysis for characterization of dissolved organic matter fluorescence in the South Atlantic Bight. Part 1: Inter-annual variability of dissolved organic matter fluorescence and its components. Marine Chemistry

- Kahn, A. E., Durako, M. J., Beal, J. L., Stapleton, A. E. Submitted Physiological ecology of *Halophila johnsonii* Eiseman in marine and riverine influenced waters: I environmental and plant structural characteristics. Marine Ecology Progress Series.
- Kahn, A. E., Durako, M. J., Beal, J. L., Stapleton, A. E. Submitted Physiological ecology of *Halophila johnsonii* Eiseman in marine and riverine influenced waters: II photophysiology. Marine Ecology Progress Series.

**Peer-Reviewed Publications (70) (Student authors in bold)**

- Belshe, E. F.**, Durako, M. J., Blum, J. E. 2008. Diel light curves and landscape-scale variation in photosynthetic characteristics of *Thalassia testudinum* in Florida Bay. Aquatic Botany 89:16-22.
- Lin, J., Xie, L., Pietrafesa, L.J., Xu, H., **Woods, W.**, Mallin, M. A., Durako, M.J. 2008. Water quality modeling in the Cape Fear River estuary and its adjacent coastal region, North Carolina. Ecological Modeling 212: 200-217.
- York, R. A.**, Durako, M. J., Kenworthy, W. J., Freshwater, D. W. 2008. Megagametogenesis in *Halophila johnsonii* Eiseman and *Halophila decipiens* Ostenfeld (Hydrocharitaceae). Aquatic Botany 88:277-282.
- Ralph, P.J, Durako, M. J., Enriquez, S., Collier, C., Doblin, M.A. 2007. Impact of light limitation on seagrasses. J. Exp. Mar. Biol. Ecol. 350, 176-193.
- Dean, R. J.**, Durako, M. J. 2007. Physiological integration in the threatened seagrass: *Halophila johnsonii* Eiseman. Bull. Mar. Sci. 81(1):21-35.
- Durako, M. J. 2007. Leaf optical properties and leaf-specific photosynthetic absorptances in several Australian seagrasses. Aquat. Bot. 87: 83-89.
- Durako, M. J., Zieman, J. C. 2007. Seagrass ecology. Pp. 95-112. In: Hunt, J., Nuttle, W. (eds.), Florida Bay Science Program: A synthesis of research on Florida Bay. Fish and Wildlife Res. Inst. Tech Rept. No. 11.
- Belshe, E. F.**, M. J. Durako, and J.E. Blum. 2007. Photosynthetic rapid light curves (RLC) of *Thalassia testudinum* exhibit diurnal variation. J. Exp. Mar. Biol. Ecol. 342: 253-268.
- Kowalczyk, P.**, Durako, M.J., Cooper, W.J., Wells, D., Souza, J.J. 2006. Comparison of radiometric quantities measured in water and above water and derived from SeaWiFS imagery in the South Atlantic Bight. Continental Shelf Research 26: 2433-2453.
- Lin, J., Xie, L., Pietrafesa, L.J., Shen, J., Mallin, M., Durako, M. 2006. Dissolved oxygen stratification in two micro-tidal partially-mixed estuaries. Est. Coastal Shelf Sci. 70: 423-437
- Kahn, A. E.**, Durako, M. J. 2006. *Thalassia testudinum* seedling responses to changes in salinity and nitrogen. J. Exp. Mar. Biol. Ecol. 335: 1-12.
- Kahn, A. E.**, Durako, M. J. 2005. The effect of salinity and ammonium on seed germination in *Ruppia maritima* L. From Florida Bay. Bull. Mar. Sci. 77(3): 453-458.
- Torquemada, Y. F.**, Durako, M. J., Lizaso, J. L. S. 2005. Salinity effects and possible interactions with pH and temperature on photosynthesis and growth of *Halophila johnsonii* Eiseman. Mar. Biol. 148: 251-260.
- Kunzelman, J. I.**, Durako, M. J., Kenworthy, W. J., Stapleton, A., Wright, J. C. L. 2005. Irradiance-induced changes in the photobiology of *Halophila johnsonii* Eiseman. Mar. Biol. 148: 241-250.

- Kowalczyk, P.**, J. Stoń-Egiert, W.J Cooper, R.F. Whitehead, and M.J. Durako. 2005. Characterization of CDOM in the Baltic Sea by excitation-emission matrix spectroscopy. *Mar. Chem.* 96: 273-292.
- Van Sluyter, S.**, M.J. Durako, and C. J. Halkides. 2005. Chitinase activities in *Vitis vinifera* cvs Chardonnay and Cabernet Sauvignon berries are significantly higher than in *Vitis rotundifolia* cv Fry berries. *Am. J. Enology and Viticulture* 56(1):81-85.
- Hackney, J. W.** and M. J. Durako. 2005. A hierarchical approach to the evaluation of variability in ecoindicators of the seagrass *Thalassia testudinum*. In: S.A. Bortone (ed) *Estuarine Indicators*, CRC Press, Boca Raton, FL. pp. 175-192.
- Mallin, M. A., L. B. Cahoon, and M. J. Durako. 2005. Contrasting food-web support bases for adjoining river-influenced and non-river influenced continental shelf ecosystems. *Est. Coastal Shelf Sci.* 62:55-62.
- Runcie, J. W. and M. J. Durako. 2004. Absorbance measurements improve diel estimates of in situ electron transport of *Posidonia australis*. *Aquat. Bot.* 80:209-220.
- Hackney, J. W.** and M. J. Durako. 2004. Size-frequency patterns in morphometric characteristics of the seagrass *Thalassia testudinum* reflect environmental variability. *Ecol. Indicators* 4: 55-71.
- Whitfield, P.E.**, W. J. Kenworthy, M. J. Durako, K. K. Hammerstrom, and M. F. Merello. 2004. Recruitment of *Thalassia testudinum* seedlings into physically disturbed seagrass beds. *Mar. Ecol. Prog. Ser.* 267: 121-131.
- Kowalczyk, P.**, W.J Cooper, R.F. Whitehead, M.J. Durako, and W. Sheldon. 2003. Characterization of CDOM in an organic-rich river and surrounding coastal ocean in the South Atlantic Bight. *Aquat. Sci.* 65: 381-398.
- Durako, M. J., **J. I. Kunzelman**, W. J. Kenworthy, and K. K. Hammerstrom. 2003. Depth-related variability in the photobiology of *Halophila johnsonii* and *Halophila decipiens*. *Mar. Biol.* 142: 1219 - 1228.
- Fourqurean, J. W., J. N. Boyer, M. J. Durako, L. N. Hefty, and B. J. Peterson. 2003. The response of seagrass distribution to changing water quality: predictive models from monitoring data. *Ecol. Appl.* 13(2): 474-489.
- Carlson, P. R., L. A. Yarbro, K. Madley, H. Arnold, M. Merello, L. Vanderbloemen, G. McRae, M J. Durako. 2003. Effect of El Niño on demographic, morphological, and chemical, parameters in Turtle-grass (*Thalassia testudinum*): An unexpected test of indicators. *Environmental Monitoring and Assessment* 81: 393-408.
- Murphy, L. R.**, S. T. Kinsey, and M. J. Durako. 2003. Physiological effects of short-term salinity changes on *Ruppia maritima*. *Aquat. Bot.* 75: 293-309.
- Durako, M. J., and **J. I. Kunzelman**. 2002. Photosynthetic characteristics of *Thalassia testudinum* Banks ex König measured *in situ* by pulse amplitude modulated (PAM) fluorometry: methodological and scale-based considerations. *Aquat. Bot.* 73: 173-185.
- Durako, M. J. 2000. Seagrass die-off in Florida Bay (USA): does this phenomenon represent a trend for coastal waters in the new millenium? In: C. Sheppard (ed.), *Seas at the Millenium: An Environmental Evaluation*, Elsevier, Amsterdam. Pp15-17.
- Durako, M. J., M. O. Hall. 2000. After the die-off: Seagrass dynamics in a perturbed subtropical lagoon. *Biologia Marina Mediterranea* 7(2): 365-368.

- Durako, M. J. 1999. Changes in seagrass abundance and diversity: Is this a good thing? *ASB Bulletin* 46(4):273-285.
- Stumpf, R. P., Frayer, M. L., Durako, M. J., Brock, J. C. 1999. Variations in water clarity and bottom albedo in Florida Bay from 1985 to 1997. *Estuaries* 22 (2B): 431-444.
- Hall, M. O., Durako, M. J., Fourqurean, J. W., Zieman, J. C. 1999. Decadal-scale changes in seagrass distribution and abundance in Florida Bay. *Estuaries* 22 (2B): 445-459.
- Durako, M. J., Duarte, C. M. 1997. On the use of reconstructive aging techniques for assessing seagrass demography: a critique of the model test of Jensen et al. (1996). *Mar. Ecol. Prog. Ser.* 146:297-303.
- Jupp, B. P., Durako, M. J., Kenworthy, W. J., Thayer, G. W., and Schillak, L. 1996. Distribution, abundance, and species composition of seagrasses at several sites in Oman. *Aquat. Bot.* 53:199-213.
- Durako, M. J., Shup, J. J., DeLeon, M. F., and Daeschner, S. W. 1995. A bioassay approach to seagrass restoration. Pp. 44-55 In: F.J. Webb and P. J. Cannizzaro (eds) *Proceedings of the Annual Conference on Ecosystem Restoration and Creation*, Hillsborough Community College Tampa, FL.
- DeLeon, M. F., Durako, M. J., Shup, J. J., and Daeschner, S. W. 1995. Real-world considerations for micropropagating *Ruppia maritima* L. (Widgeon Grass) for seagrass restoration projects. Pp. 27-38 In: F.J. Webb and P. J. Cannizzaro (eds.) *Proceedings of the Annual Conference on Ecosystem Restoration and Creation*, Hillsborough Community College Tampa, FL.
- Durako, M. and F. Wettstein. 1994. Johnson's seagrass: the Rodney Dangerfield of seagrasses. *The Palmetto* 14(3): 3-5.
- Rose, C.D.** and M.J. Durako. 1994. Induced photomorphogenesis by an altered R:FR light ratio in axenic *Ruppia maritima* L. *Bot. Mar.* 37:531-535.
- Durako, M. J. 1994. Seagrass die-off in Florida Bay (USA): changes in shoot demography and populations dynamics. *Mar. Ecol. Prog. Ser.* 110:59-66.
- Durako, M. J. and K. M. Kuss. 1994. Effects of *Labyrinthula* infection on the photosynthetic capacity of *Thalassia testudinum*. *Bull. Mar. Sci.* 54(3):727-732.
- Kenworthy, W. J., Durako, M. J., Fatemy, S. M. R., Valavi, H. & Thayer, G. W. 1993. Ecology of seagrasses in northwestern Saudi Arabia one year after the Gulf War oil spill. *Mar. Poll. Bull.* 27:213-222.
- Durako, M.J., W.J. Kenworthy, S.M.R. Fatemy, H. Valavi, and G.W. Thayer. 1993. Assessment of the toxicity of Kuwait crude oil on the physiology of the seagrasses of the northern Persian Gulf. *Mar. Poll. Bull.* 27:223-227.
- Durako, M.J. and W.M. Sackett. 1993. Effects of CO<sub>2(aq)</sub> on the carbon isotopic composition of the seagrass *Thalassia testudinum* Banks ex König (Hydrocharitaceae). *J. Exp. Mar. Biol. Ecol.* 169:167-180.
- Durako, M.J. 1993. Photosynthetic utilization of CO<sub>2</sub> and HCO<sub>3</sub><sup>-</sup> in the seagrass *Thalassia testudinum* (Hydrocharitaceae). *Mar. Biol.* 115: 373-380.
- Durako, M. J., J. J. Shup, C. J. Andress, and D. A. Tomasko, 1993. Restoration of seagrass beds: Some new approaches with *Ruppia maritima* L. (Widgeon-grass). Pp. 88-101 In: F.J. Webb (ed.) *Proceedings of the 20th Annual Conference on Wetlands Restoration and Creation*, Hillsborough Community College Tampa, FL.

- Durako, M. J., **T. R. Barber**, J. B. C. Bugden, P. R. Carlson, J. W. Fourqurean, R. D. Jones, D. Porter, M. B. Robblee, L. A. Yarbro, R. T. Zieman, and J. C. Zieman. 1993. Seagrass die-off in Florida Bay. Pp. 14-15 In J. D. Jacobsen (ed.), Proc. 1992 Symposium on the Gulf of Mexico, US EPA, Tarpon Springs, FL.
- Durako, M. J., M. O. Hall, F. Sargent, and S. Peck. 1992. Propeller scars in seagrass: An assessment and experimental study of recolonization. Pp. 42-53 In F.J. Webb (ed.) Proceedings of the Nineteenth Annual Conference on Wetlands Restoration and Creation. Hillsborough Community College, Tampa, Florida.
- Durako, M. J. and M. O. Hall. 1992. Effects of light on the stable carbon isotope composition of the seagrass *Thalassia testudinum*. Mar. Ecol. Prog. Ser. 86:99-101.
- Durako, M.J. and W.M. Sackett. 1991. Influence of carbon source on stable isotope composition of the seagrass *Thalassia testudinum*. Pp. 453-462 In Proceedings of an International Symposium on the Use of Stable Isotopes in Plant Nutrition, Soil Fertility and Environmental Studies. International Atomic Energy Agency and the Food and Agriculture Organization of the United Nations, Vienna.
- Koch, E.M.** and M.J. Durako. 1991. In vitro studies of the submerged angiosperm *Ruppia maritima* L.: Auxin and cytokinin effects on plant growth and development. Mar. Biol. 110: 1-6.
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### **Abstracts Published**

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### **Invited Papers Presented**

- Landscape-scale approaches to the assessment of seagrasses in a perturbed subtropical ecosystem. Durako, M.J., Hall, M.O., and Merello, M. Invited session: "New Conceptual Approaches for the Assessment and Evaluation of Seagrass Ecosystems Under Stress" 17<sup>th</sup> International Conference of the Estuarine Research Federation, Seattle, WA. Sept. 14-18, 2003.
- Distribution and abundance of the threatened seagrass *Halophila johnsonii* at its southern distribution limit. Durako, M.J., J. I. Kunzelman, and M. Merello. NOAA *Halophila johnsonii* Monitoring Workshop, St. Petersburg, FL. Feb 25-26, 2003.
- Seagrass dynamics in Florida Bay: The effects of turbidity, hurricanes, and die-off. Invited seminar speaker. Dauphin Island Sea Lab, Fall Seminars, 26 October 2001.
- Shoot-to-landscape scale dynamics of seagrasses in Florida Bay: A tale of die-off, turbidity, hurricanes (and more die-off). Invited seminar speaker: University of Maryland, Horn Point Laboratory Fall 2001 Seminar Series, September 21, 2001.

Seagrass dynamics in a perturbed subtropical lagoon. Invited seminar speaker. Florida Institute of Technology, March 19, 2001.

Regrowth of seagrasses into experimental “propellor” scars: Climax- versus pioneer-species patterns. Workshop on Impacts of Motorized Boats on Shallow Water Systems. Rutgers University, November 7, 2000.

After the die-off: Recent large- and small-scale changes in the seagrass communities in Florida Bay. Invited seminar: Florida Sea Grant Elise B. Newell Seminar Series, Florida Gulf Coast University, February 25, 2000.

Changes in seagrass abundance and diversity: Is this a good thing? Durako, M. J. Coastal Ecology Symposium, ASB Annual Meetings, Wilmington, NC. April 1999

Changes in the Distribution, abundance and species composition of Florida Bay seagrasses:1995-1997. Florida Bay Science Conference, Miami, FL. May, 1998.

Plant-scale considerations in conceptual models of seagrasses in Florida Bay. Workshop on Seagrass Modeling, Research and Monitoring Needs in Florida Bay. Key Largo, FL. January 1998.

The use of micropropagation for producing SAV transplant units. Chesapeake Bay SAV Restoration Workshop. Annapolis, MD. March 1997.

The status and trends of seagrass communities in Florida Bay. 1996 Florida Bay Science Conference. Key Largo, FL. December 1996.

Status of Florida Bay seagrasses. USACOE Workshop on the Design and Specifications for the Florida Bay Water Quality Model, Key Largo, FL. October, 1996.

Florida Department of Environmental Protection's Fisheries Habitat Assessment Program (FHAP): An Assessment of Macrophyte Distribution and Abundance on a Florida Bay-Wide Scale. Florida Bay Science Conference, Gainesville, FL. October, 1995.

Florida Bay seagrasses - what do they tell us about the Florida Bay ecosystem, 125th Annual Meeting of the American Fisheries Society, Tampa, FL. August 1995.

Seagrass habitats and seagrass research in Florida, USACOE Seagrass Mitigation Workshop, Jacksonville, FL. April, 1993.

Seagrass die-off in Florida Bay. 1992 Gulf of Mexico Symposium, Tarpon Springs, FL. December, 1992.

Large scale dieback of seagrasses in Florida Bay: Is it a natural occurrence or man-induced. Tri-State Conference on Preservation and Management of Coastal and Estuarine Resources, Gulf Shores, AL. March, 1990.

Growth responses of light- and dark-cultivated axenic *Thalassia testudinum* seedlings to organic carbon amendment and pH. American Society of Limnology and Oceanography Fall Meetings, 1988.

Seagrass dynamics in St. Andrews Bay. Bay Environmental Study Team (BEST) Summer meeting, Panama City, FL. 1988.

Factors affecting the reproductive ecology of seagrass. Symposium: Environmental Impacts on Seagrass, Eighth Biennial Estuarine Research Conference, Durham, NH. August, 1985.

Coastal fisheries and habitats-Issues and impacts: Northeast Florida. Fish Habitat Symposium: Growth Impacts on Coastal N.E. Florida and Georgia, Jacksonville, FL. 1985.

Salt marsh habitat and fishery resources. Symposium on Florida's Aquatic Habitats and Fishery Resources, Am. Fish. Soc., Fla. Chap. Third Ann. Meeting, Brooksville, FL. 1983.

Seagrass meadows of Tampa Bay: A review. Bay Area Scientific Information Symposium (BASIS), Tampa, FL. May, 1982.

### **Presentations Authored or Co-Authored**

- In situ* responses of *Halophila johnsonii* to hurricane-like water quality conditions. Kahn, A. E., Durako, M. J., Beal, J. L. Estuarine Research Federation Meetings, Providence, R. I., November 4-9, 2007.
- Leaf optical properties and photosynthetic leaf absorptances in seagrasses. Durako, M. J. Estuarine Research Federation Meetings, Providence, R. I., November 4-9, 2007.
- Seagrasses as Indicators of Ecosystem Change in South Florida Estuaries. Hall, M. O., Durako, M. J. Estuarine Research Federation Meetings, Providence, R. I., November 4-9, 2007.
- Glider bio-optical observations incorporated into a coastal observing program in Onslow Bay, NC. Woods, W.L., S. R. Hall, J. L. Williams, M. J. Durako, E. F. Belshe, L. B. Cahoon. 2006 Ocean Optics Meeting. Montreal, CA, 9 October 2006.
- Observations of interannual variability of Chromophoric Dissolved Organic Matter (CDOM) composition in the South Atlantic Bight using PARAFAC analysis. Piotr Kowalczyk, P., Cooper, W.J., Durako, M.J., Young, H., Kahn, A. E. Ocean Optics 2006. Montreal, CA, 9 October, 2006.
- Florida Bay seagrass seedling responses to hyposalinity and ammonium fluctuations: a study of *Thalassia testudinum* Banks ex König. Kahn, A. E., durako, M. J., Koch, M. S. The Florida Bay and Adjacent Marine Ecosystems Science Conference, Duck Key, FL, December 11-14, 2005.
- FHAP South Florida - A New Improved Fisheries Habitat Assessment Program. Hall, M. O., Durako, M.J. Merello, M, Berns, D. Ferenc, K., Hall, F., Belshe, F., Landry, B. The Florida Bay and Adjacent Marine Ecosystems Science Conference, Duck Key, FL, December 11-14, 2005.
- Diel light curves' ability to incorporate temporal and spatial variation of photosynthetic characteristics of *Thalassia testudinum* in Florida Bay. Belshe, E. F. And Durako, M.J. The Florida Bay and Adjacent Marine Ecosystems Science Conference, Duck Key, FL, December 11-14, 2005.
- Bay-scale changes in Florida Bay macrophyte cover: 1995-2004. Landry, J.B. and Durako, M.J. The Florida Bay and Adjacent Marine Ecosystems Science Conference, Duck Key, FL, December 11-14, 2005.
- Profiling phytoplankton productivity using an in situ fluorometer. Belshe, E.F., Durako, M. J. , Woods W. L. 27<sup>th</sup> Annual Southeastern Phycological Colloquy. Harbor Branch Oceanographic Foundation, FL, November 4-6, 2005.
- Octo-PAM: a new approach to measuring simultaneous among-sample variability in chlorophyll fluorescence. Runcie, J., Durako, M. J. 27<sup>th</sup> Annual Southeastern Phycological Colloquy. Harbor Branch Oceanographic Foundation, FL, November 4-6, 2005.
- Landscape-scale changes in macrophyte distribution and abundance in Florida Bay. Landry, J. B., Durako, M.J. 27<sup>th</sup> Annual Southeastern Phycological Colloquy. Harbor Branch Oceanographic Foundation, FL, November 4-6, 2005.
- Evaluating Pulse-Amplitude Modulated Fluorometry for Landscape Scale Assessment of Photosynthetic Characteristics. Belshe, E. F. And Durako, M.J. ERF 2005 18<sup>th</sup> Biennial

- meetings, Norfolk, VA, October 16-21, 2005
- Effects of temperature and pore-water glucose enrichment on quantum yield, leaf absorptance and electron transport rates in *Thalassia testudinum*. Durako, M. J., Kahn, A. E., and Koch, M. ERF 2005 18<sup>th</sup> Biennial meetings, Norfolk, VA, October 16-21, 2005.
- Changes in macroalgal abundance in Florida Bay: 1995-2004. Landry, J.B. and Durako, M. J. ERF 2005 18<sup>th</sup> Biennial meetings, Norfolk, VA, October 16-21, 2005.
- Physics to fish: I. Integrating physical and ecological observations in the coastal ocean. Leonard, L. A., Durako, M.J., Moss M. K., Bingham, F. M., Qi, X., and Pietrafesa, L. J. 2005 ASLO Summer Meeting, Santiago, Spain, June 23, 2005.
- Physics to fish: II. Using coastal ocean observations to identify ecosystem conditions, responses, and linkages. Durako, M.J. and 9 co-authors. 2005 ASLO Summer Meeting, Santiago, Spain, June 23, 2005.
- Salinity effects and possible interactions with pH and temperature on photosynthesis and growth of *Halophila johnsonii* Eiseman. Torquemada, Y.F., Durako, M. J. and Lizaso, L. J. S. 6<sup>th</sup> International Seagrass Biology Workshop, Townsville, AU Sept 25, 2004.
- Ocean color remote sensing in southeastern U.S. coastal waters and evaluation of atmospheric correction improvements to radiometric matchups. Woods, W. L, Kowalczyk, P, Stumpf, R. P., Durako, M. J. Cooper, W.J., Wells, D. H, and Souza, J. J. Ocean Optics 2004, Fremantle, Western Australia, 25-29 October, 2004.
- Assessing seagrass health in Florida Bay: shoot- to-landscape scale approaches applied to a perturbed subtropical ecosystem. University of Sydney, Biology Seminar Series, February 19, 2004.
- Seagrass Dynamics in Florida Bay, USA: A Tale of Die-off, Algal Blooms, Turbidity, Hurricanes (and more die-off). University of Technology Sydney, Seminar Series, March 15, 2004.
- Shoot-to-landscape scale approaches to assessing seagrasses in Florida Bay: A perturbed subtropical estuary. University of Western Australia, Marine Sciences Seminar Series, June 1, 2004.
- Physiological ecology of the threatened seagrass *Halophila johnsonii*. University of Western Australia, Plant Sciences Seminar Series, June 7, 2004.
- Characterizing the photophysiology of seagrasses. Edith Cowan University, Marine Ecology Group meeting, June 21, 2004.
- Using PAM fluorescence to study seagrass photosynthesis. Murdoch University, Marine Sciences PAM group, June 28, 2004.
- Physiological ecology of the threatened seagrass *Halophila johnsonii*. University of North Carolina Wilmington, Biology Seminar Series, September 3, 2004.
- Landscape-scale approaches to the assessment of seagrasses in a perturbed subtropical ecosystem. Durako, M.J., Hall, M.O., Merello, M. 17<sup>th</sup> International Conference of the Estuarine Research Federation, Sept. 14-18, 2003, Seattle, WA.
- The Role of *Thalassia testudinum* Seedlings in the Recovery of Physically Disturbed Seagrass Beds. Whitfield, P.E., Kenworthy, W.J., Durako, M.J., Hammerstrom, K.K., Merello, M. 17<sup>th</sup> International Conference of the Estuarine Research Federation, Sept. 14-18, 2003, Seattle, WA.
- Differential impacts of *Labyrinthula* sp. infection, infestation, and disease on the seagrass

- Thalassia testudinum* (Banks ex Konig) in Florida Bay, USA. Blakesley, B. A., Hall, M. O., Landsberg, J. H., Reese, R. O., Berns, D. M., White, M. W., Durako, M. J. 17<sup>th</sup> International Conference of the Estuarine Research Federation, Sept. 14-18, 2003, Seattle, WA.
- Characterization of CDOM in the Baltic Sea by fluorescence excitation emission matrix spectra. Kowalczyk, P., Ston, J., Cooper, W. J., Whitehead, R. F. and Durako, M. J. Baltic Sea Science Congress 2003 Helsinki . Workshop on Remote sensing and bio-optical modelling of the Baltic Sea., Aug. 28-29, 2003, Helsinki, Finland.
- Chlorophyll and nutrient patterns in river influenced Long Bay versus non-river influenced Onslow Bay ocean regions. Mallin M.A., Cahoon, L.B., Durako, M.J., MacPherson, T.A., Souza, J.J., Wells, D.H.. Southeastern Estuarine Research Society Spring 2003 meetings, Atlantic Beach, NC.
- Seagrass dynamics in Florida Bay 2000-2002: Links with environmental variability. Durako, M.J., Hackney, J., Kunzelman, J. Dean, R., Landry, J.B. Hall, M.O., Merello, M. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystems, Tampa, FL. April 14-16, 2003.
- Thalassia* seedlings in Florida Bay: Can they survive in extreme salinity environments? Kahn, A., Durako, M.J. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystems, Tampa, FL. April 14-16, 2003.
- Recent changes in macroalgal distribution and abundance in Florida Bay: An initial analysis of FHAP macroalgal data. Landry, J.B., Durako, M.J., Merello, M. Hall, M.O. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystems, Tampa, FL. April 14-16, 2003.
- The response of seagrass distribution to changing water quality: Predictive models from monitoring data. Fourqurean, J. W., J. N. Boyer, B. J. Peterson, M. J. Durako, L. N. Hefty. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystems, Tampa, FL. April 14-16, 2003.
- Seagrass monitoring in the Florida Keys National Marine Sanctuary: seasonal patters and long-term trends at permanent monitoring sites. Fourqurean, J.W., Rutten, L.M., Escorcía, S.P., Durako, M.J. Zieman, J. C. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystems, Tampa, FL. April 14-16, 2003.
- The Cape Fear River plume Water quality and ecology. Mallin, M.A., M.R. McIver, M.H. Posey, T.D. Alphin and M.J. Durako. 2003 Southeast Coastal Ocean Science Conference, Charleston, S.C
- Comparison of radiometric quantities measured in water and above water and derived from SeaWiFS imagery in Onslow Bay and Cape Fear River plume area.. Kowalczyk, P., Durako, M. J., Cooper, W. J. Ocean Optics XVI, Santa Fe, NM. Nov 18-22, 2002.
- Spatial and temporal variation in CDOM in a coastal blackwater river plume. Durako, M. J., Kowalczyk, P., Souza, J. J., Mallin, M. A., McIver, M.R. Ocean Optics XVI, Santa Fe, NM. Nov 18-22, 2002.
- Coastal ocean research and monitoring program at the University of North Carolina at Wilmington. Bingham, F. M., M. M. Moss, M. Posey, L. Pietrafesa, M. Mallin, L. Leonard, T. Lankford, N. Grndlay, W. Cooper, M. Durako, T. Alphin. 2002 AGU Fall Meetings, San Francisco, CA.

- Geo-spatial modeling tool for use in the assessment of damaged seagrass bed. Whifield, P. E., Kenworthy, W. J., Fonseca, M. S., Durako, M. J., Julius, B. E., Halls, J. N. 2002 GeoTools Conference, Charleston, SC.
- Characterization of CDOM in an organic rich river and surrounding coastal ocean. Cooper, W. J., Avery, G. B., Durako, M. J., Kieber, R. J., Kowalczyk, P., Skrabal, S. A., Whitehead, R. F., Willey, J. D. 2002 ASLO Summer Meetings, June 2002, Victoria, B.C.
- Mallin, M. A., M. R. McIver, S. H. Ensign, M. J. Durako, D. H. Wells, H. A. CoVan, V. L. Johnson, D. C. Parsons, and J. J. Souza. Water quality of the Cape Fear River - A preliminary assessment. 2002 Southeastern Estuarine Research Society meeting, Savannah, GA.
- Coastal Ocean Research and Monitoring Program at the University of North Carolina at Wilmington. Moss, M., et al., 2002 Ocean Sciences Meeting, February 11-15, 2002, Honolulu, HI.
- Depth-based variability in the photophysiology and photochemistry of *Halophila johnsonii* and *Halophila decipiens*. Michael J. Durako, J. I Kunzelman, W. J. Kenworthy, and K. K. Hammerstrom. 2001 Estuarine Research Federation Conference, November 4-8, 2001, St. Petersburg, FL.
- Photophysiology and photochemistry of *Halophila johnsonii* and *H. decipiens*. Jennifer I. Kunzelman & Michael J. Durako. 2001 Phycological Colloquy, October 14, 2001.
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- Measuring seagrass photosynthesis *in situ* using pulse amplitude modulated (PAM) fluorometry: methodological and scale-based considerations. Michael J. Durako & Jennifer I. Kunzelman. 2001 Phycological Colloquy, October 14, 2001, Wilmington, NC.
- Recent Seagrass Dynamics in Florida Bay. Durako, M. J., J. Paxson,, J. Hackney, M. O. Hall, and M. Merello. 2001 Florida Bay Conference, Key Largo, FL.
- Photosynthetic Characteristics of *Thalassia testudinum* measured *in situ* in Florida Bay: A Tale of Leaves, Lesions, and Locations. Michael J. Durako. 2001 Florida Bay Conference, Key Largo, FL.
- Branching frequency of *Thalassia testudinum* Banks ex König as an indicator of growth potential within ten basins of Florida Bay. Jill C. Paxson and M. J. Durako. 2001 Florida Bay Conference, Key Largo, FL.
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